Exceptional Events Demonstration for Ozone Exceedances

Southern California 2020 Wildfire Events

December 8, 2021

CALIFORNIA
AIR RESOURCES BOARD

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Acronyms

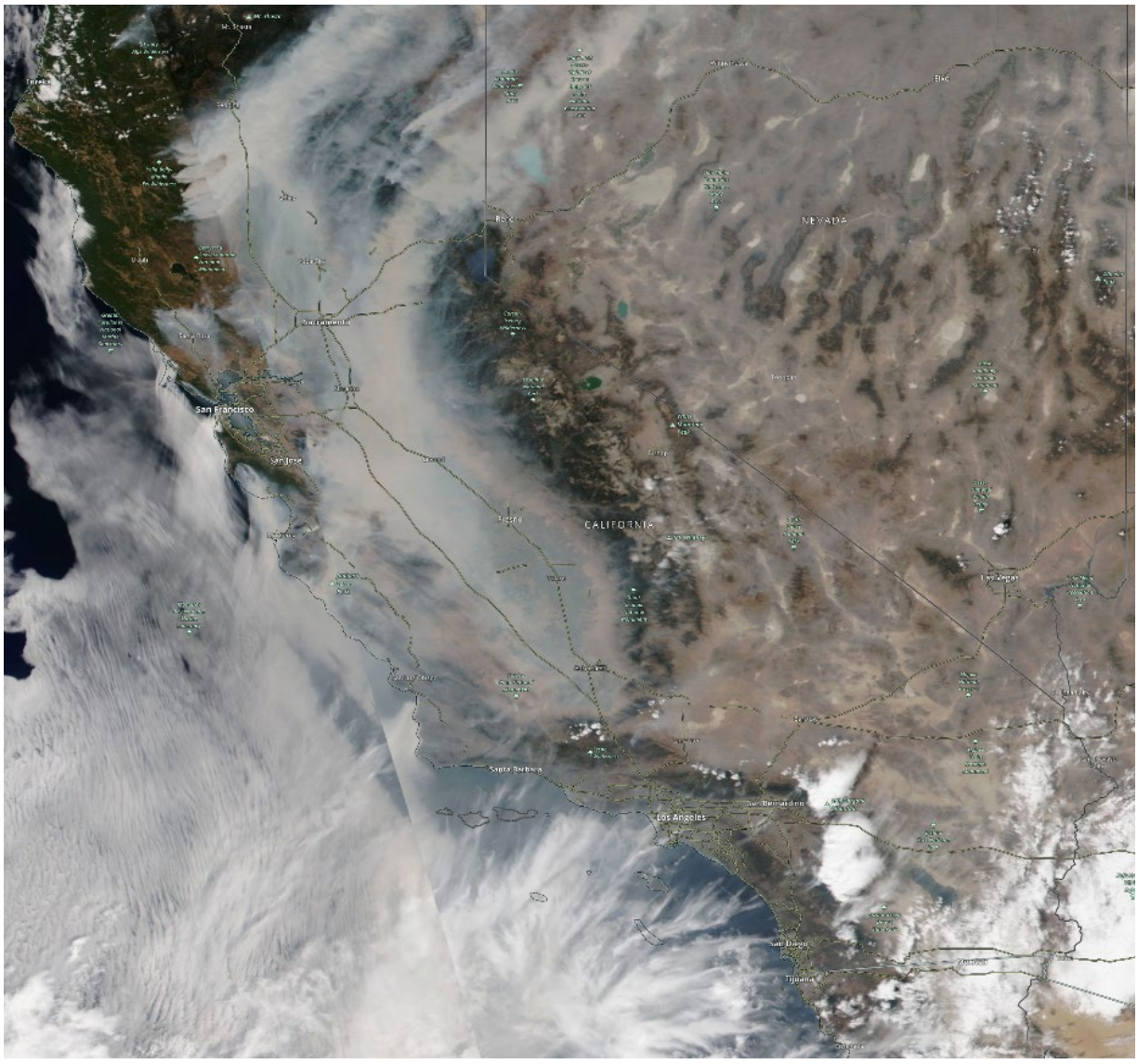
AFD	Area Forecast Discussion
AOD	Aerosol Optical Depth
APCD	Air Pollution Control District
AQMD	Air Quality Management District
AQS ID	U.S. EPA Air Quality System Identification
CAA	Clean Air Act
CalFire	California Department of Forestry and Fire Protection
CARB	California Air Resources Board
CFR	Code of Federal Regulations
CMAQ	Community Multiscale Air Quality
CMAS	Community Modeling and Analysis System
CO	Carbon Monoxide
DV	Design Value
EER	Exceptional Events Rule
F	Fahrenheit
FEMA	Federal Emergency Management Agency
FR	Federal Register
HMS	(NOAA) Hazard and Mapping System
HYSPLIT	Hybrid Single Particle Lagrangian Integrated Trajectory
LOX	NWS Los Angeles/Oxnard Forecast Office
m	meters
mb	millibars
MODIS	Moderate Resolution Imaging Spectroradiometer
mph	miles per hour
NAAPS	Navy Aerosol Analysis and Prediction System
NAAQS	National Ambient Air Quality Standard(s)
NASA	National Aeronautics and Space Administration
NCAR	National Center for Atmospheric Research

NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOx	Oxides of Nitrogen
NPP	National Polar-orbiting Partnership
NWS	National Weather Service
O_3	Ozone
PM	Particulate Matter
PM_1	Particulate Matter less than or equal to 1.0 microns in aerodynamic diameter
PM_{10}	Particulate Matter less than or equal to 10 microns in aerodynamic diameter
$PM_{2.5}$	Particulate Matter less than or equal to 2.5 microns in aerodynamic diameter
POC	Parameter Occurrence Code
ppm	parts per million
PQAO	Primary Quality Assurance Organization
PST	Pacific Standard Time
Q/D	Emissions divided by Distance
ROG	Reactive Organic Gas, used interchangeably with Volatile Organic Compound (VOC) in this report
SIP	State Implementation Plan
SMOKE	Sparse Matrix Operator Kernel Emissions
SPECIATE	U.S. EPA repository of organic gas and particulate matter speciation emission source profiles
UNC	University of North Carolina
U.S. EPA	United States Environmental Protection Agency
UTC	Coordinated Universal Time
VOC	Volatile Organic Compound
WRCC	Western Regional Climate Center

I. Overview/Introduction

During the summer and fall of 2020, extreme fuel conditions in California created an extreme fire season. Almost all of California was affected (Figure I-1), with smoke and haze lingering for weeks. As expected, numerous monitoring sites recorded elevated particulate matter (PM) concentration levels, with many days above the National Ambient Air Quality Standards (NAAQS) for both $PM_{2.5}$ and PM_{10}. Ozone concentrations were also impacted, with levels above and beyond that normally seen during the summer high ozone season.

Figure I-1: NOAA-20 VIIRS Corrected Reflectance (True Color) - August 21, 2020[1]



[1] *NASA Worldview*, accessed 11/3/21

A. NAAQS and Attainment Status

To protect public health and the environment, U.S. Environmental Protection Agency (U.S. EPA) has set a NAAQS (or standard) for ozone (O_3) that specifies the maximum allowed concentration to be present in outdoor ambient air. The ozone standard, first being set in 1979, has been periodically reviewed and revised, resulting in stricter standards set at lower and lower concentrations. Areas designated not to meet these standards are considered nonattainment areas. An 8-hour ozone standard was initially promulgated in 1997, and further revised in 2008, and 2015 as noted in Table I-1. Due to its high population, urban density, and unique geography, California is home to a significant number of ozone nonattainment areas.

Table I-1: 8-Hour Ozone NAAQS

Final Rule/Decision	Level (ppm – parts per million)
1997	0.08
2008	0.075
2015	0.070

The Eastern Portion of San Luis Obispo County was designated as a nonattainment area for the 2015 Ozone NAAQS. The entirety of Ventura County was designated as a nonattainment area for the 2008 Ozone NAAQS. The impacted sites and upcoming regulatory determinations are indicated in Table I-2.

Table I-2: Ozone nonattainment areas in Southern California with upcoming regulatory determinations

Nonattainment Area	Ozone NAAQS	Classification	Regulatory Determination	Impacted Site	AQS ID
San Luis Obispo (Eastern Portion)	2015	Marginal	Attainment	Red Hills	06-079-8005
Ventura County	2008	Serious	Attainment	Simi Valley	06-111-2002

B. Clean Air Act and Exceptional Event Rule Requirements

The Clean Air Act (CAA)[2] defines an exceptional event as:

1. The event affected air quality;
2. The event was not reasonably controllable or preventable;
3. The event was caused by human activity that is unlikely to recur at a particular location or was a natural event; and
4. There exists a clear causal relationship between the specific event and the monitored exceedance.

On October 3, 2016, the EPA finalized revisions to the "Treatment of Data Influenced by Exceptional Events",[3] also known as the Exceptional Events Rule (EER). These regulations govern exclusion of event-influenced air quality data from certain regulatory determinations of the U.S. EPA Administrator under the CAA Regulatory determinations applicable under the revised EER which are:

- An action to designate or redesignate an area as attainment, unclassifiable/attainment, nonattainment, or unclassifiable for a particular NAAQS;
- The assignment or re-assignment of a classification category to a nonattainment area;
- A determination regarding whether a nonattainment area has attained a NAAQS by its CAA deadline, including a "clean data determination";
- A determination that an area has data for the specific NAAQS that qualify the area for an attainment date extension under the CAA provisions;
- A finding of SIP inadequacy leading to a SIP call; and
- Other actions on a case-by-case basis.

U.S. EPA regulations[4] state that exceptional events demonstrations must address and include the following elements:

1. A narrative conceptual model;
2. A demonstration that the event was both not reasonably controllable and not reasonably preventable;
3. A demonstration that the event was a human activity unlikely to recur at a particular location or was a natural event;
4. A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance; and
5. Analyses comparing the event-influenced concentration(s) to concentrations at the same monitoring site at other times to support that there exists a clear causal relationship between the event and monitored exceedance or violation.

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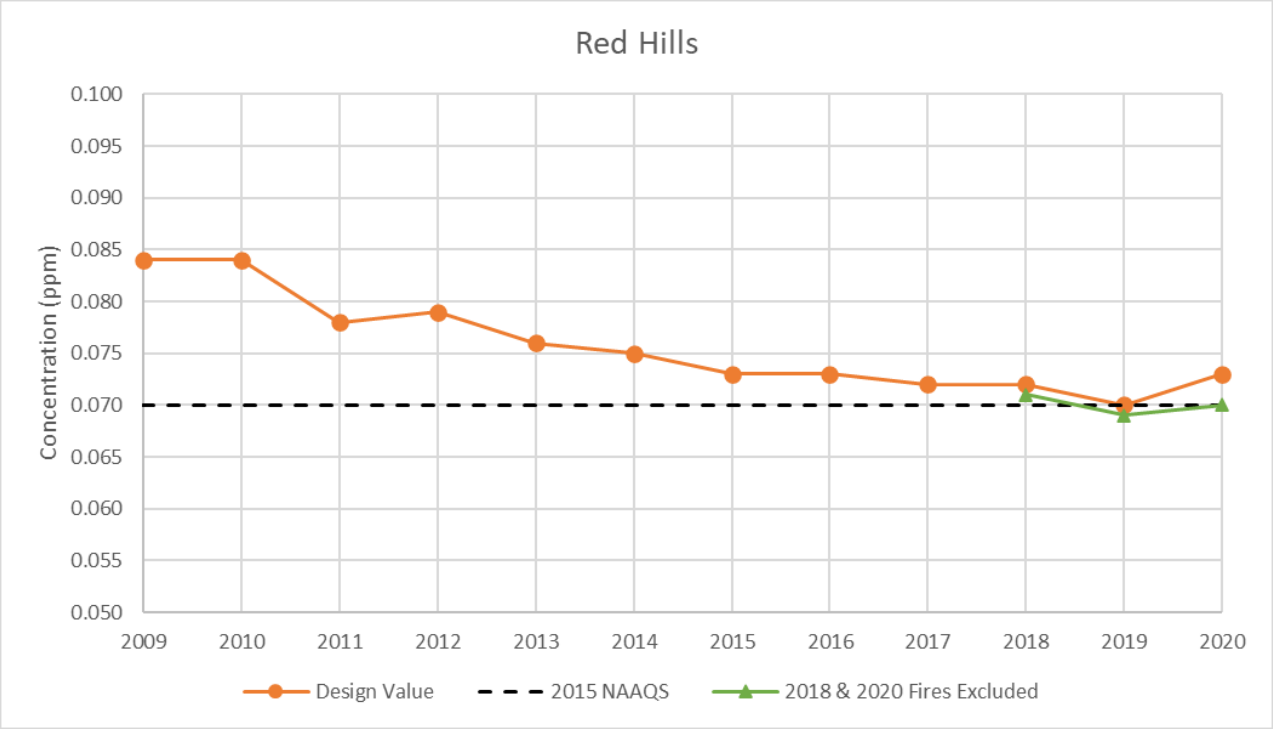
[2] CAA Section 319(b)
[3] 81 FR 68216
[4] 40 CFR 50.14(c)(3)(iv)

C. Actions Requested

Although a significant number of ozone nonattainment areas were impacted by the historic 2020 wildfires, not all areas have upcoming regulatory determinations applicable under the revised EER. The California Air Resources Board (CARB) is submitting this Exceptional Event demonstration to U.S. EPA for days in the summer and fall of 2020 that impacted the entirety of the ozone nonattainment areas of Ventura County and the Eastern Portion of San Luis Obispo County. In accordance with the U.S. EPA interpretation of the Exceptional Event Rule only the dates necessary to reach attainment are submitted in this demonstration, although other days could also qualify. The submitted days, along with impacted days in 2018 addressed in a separate demonstration document,[5] will affect the upcoming attainment year determinations for the pertinent 2008 and 2015 ozone NAAQS for areas which have otherwise met the level of the standards (Figure I-2, Table I-3). The specific exceedances of the standards requested for concurrence at monitors in Ventura County and the Eastern Portion of San Luis Obispo County are listed in Table I-4.

Figure I-2: 8-hour Ozone Design Values at Red Hills and Simi Valley



[5] *https://ww2.arb.ca.gov/our-work/programs/state-and-federal-area-designations/exceptional-events*

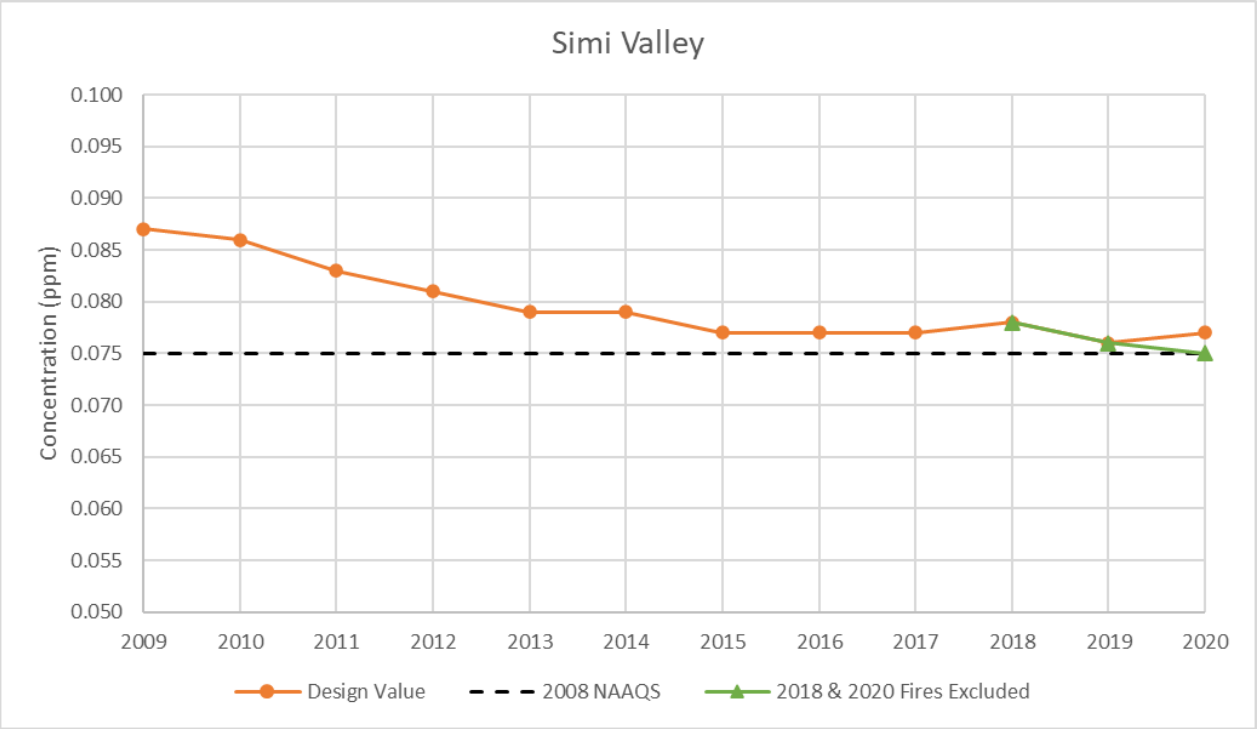


Table I-3: 8-hour Ozone Design Values with and without U.S. EPA Concurrence (2018 and 2020 Events)

Design Value without Concurrence of 2018 nor 2020 Demonstrations

Site	2018	2019	2020
Red Hills	0.072	0.070	0.073
Simi Valley*	0.078	0.076	0.077

Design Values with Concurrence of both 2018 and 2020 Demonstrations

Site	2018	2019	2020
Red Hills	0.071	0.069	0.070
Simi Valley*	0.078	0.076	0.075

* 8-hour design value for 2008 (0.075 ppm) NAAQS

Table I-4: Summary of 2020 8-Hour Ozone Exceedances Influenced by Wildland Fires

Air District	Monitoring Site	AQS ID	POC	Date	8-Hour Concentration (ppm)
San Luis Obispo	Red Hills	06-079-8005	1	8/20/2020	0.076
San Luis Obispo	Red Hills	06-079-8005	1	8/21/2020	0.106
San Luis Obispo	Red Hills	06-079-8005	1	9/30/2020[6]	0.075
San Luis Obispo	Red Hills	06-079-8005	1	10/1/2020	0.081
San Luis Obispo	Red Hills	06-079-8005	1	10/2/2020	0.081
Ventura	Simi Valley	06-111-2002	1	8/18/2020	0.086
Ventura	Simi Valley	06-111-2002	1	8/21/2020	0.082
Ventura	Simi Valley	06-111-2002	1	10/2/2020	0.086
Ventura	Simi Valley	06-111-2002	1	10/3/2020	0.095
Ventura	Simi Valley	06-111-2002	1	10/4/2020	0.080

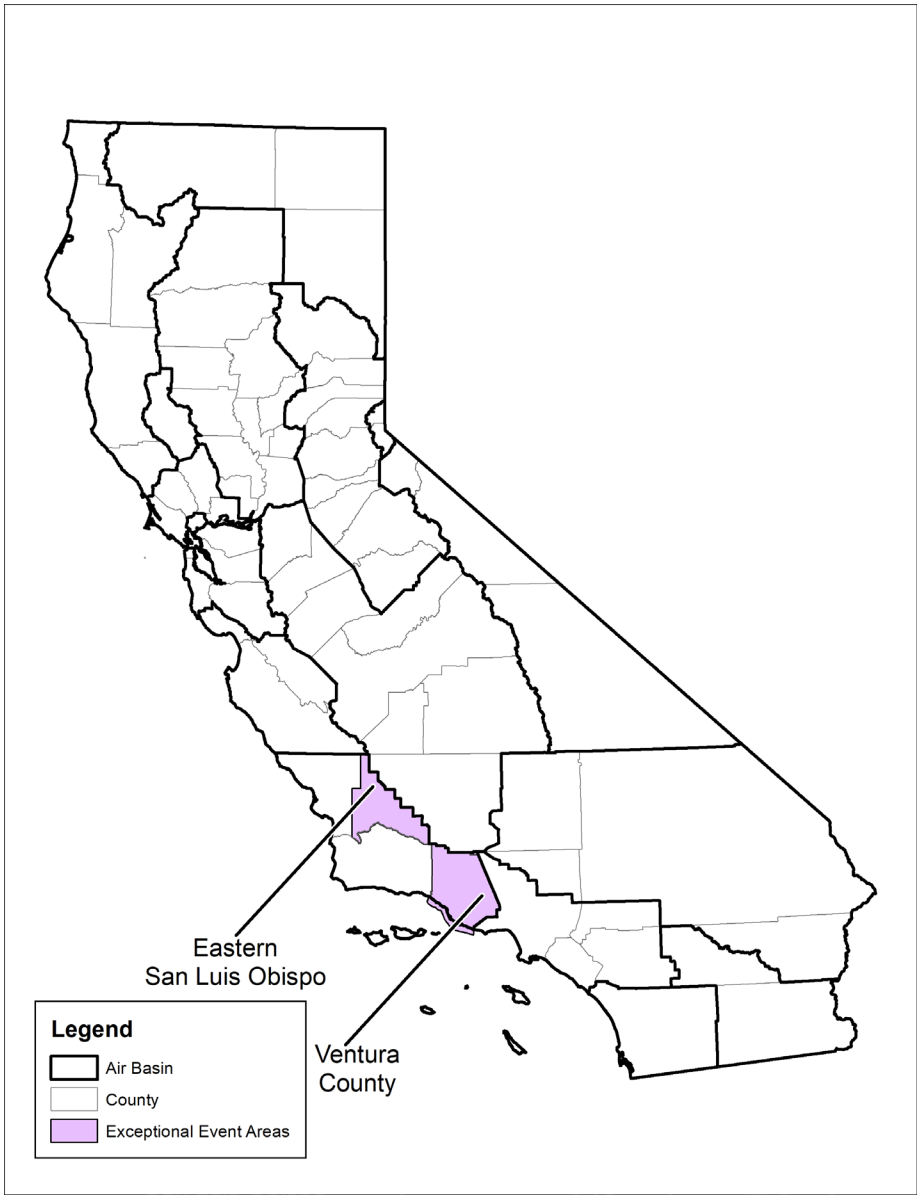
[6] Requested event hours further discussed in Subsection 1 of the Characteristics of Non-Event Ozone Formation Section in the Narrative Conceptual Model Chapter

II. Background

California is divided geographically into air basins to manage the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The State is currently divided into 15 air basins, and further subdivided into 35 local air pollution control districts (APCD(s) or district(s)) or air quality management districts (AQMD(s) or district(s)).

Almost the entire State of California was impacted by wildfires from August to September of 2020. It is estimated that over 95 percent of the population of the State experienced one or more days impacted by smoke from these fires.

Figure II-1: Map of nonattainment areas with exceptional events addressed in this document



A. Regional Descriptions

This demonstration covers nonattainment areas in one of these air basins, the South-Central Coast Air Basin.

1. San Luis Obispo County

The San Luis Obispo County APCD is the local air district for San Luis Obispo County. The county is situated on the south-central portion of the coastal region (Figure II-1). The nonattainment area is located in the eastern portion of the county. The Red Hills monitoring site is located at an altitude of 2,300 feet above sea level in a rural, agricultural area in San Luis Obispo County. The area is part of the Red Hills range in the California Coastal Range. The closest populated areas are Shandon, a small town (population of approximately 1,300) located ten miles west, and the larger town of Paso Robles, located an additional 15 miles further west, has a population of approximately 32,000.

Evaluation of meteorological data helps to assess the fate and transport of emissions contributing to ozone concentrations and to identify areas potentially contributing to the monitored violations. Evaluation is necessary in order to determine how meteorological conditions, including, but not limited to, weather, transport patterns, and stagnation conditions, could affect the fate and transport of ozone and precursor emissions from sources in the area.

The climate of San Luis Obispo County is generally Mediterranean, with warm, dry summers and relatively damp winters. Coastal mild temperatures dominate throughout the year due to the marine influence of the Pacific Ocean. Coastal maximum summer temperatures average about 70°F with minimum winter temperatures averaging in the low 30s. Further inland, areas experience a much wider range of temperatures with valleys often experiencing maximum summer temperatures in the high 90s and minimum winter temperatures in the low 20s.

The eastern portion of San Luis Obispo, as recorded at the Paso Robles Municipal Airport,[7] experiences mild winters and warm summers, with most precipitation falling from November to March (Table II-1). The average annual precipitation is 12.53 inches (1948-2012 climate normals).

Table II-1: Monthly Mean Temperature and Precipitation (1948-2012)[7]

Month	Mean Maximum Temperature (°F)	Mean Minimum Temperature (°F)	Mean Temperature (°F)	Mean Precipitation (inches)
January	59.6	34.2	46.9	2.73
February	62.8	37.2	50	2.46

[7] WRCC, *Cooperative Climatological Data Summaries*, last accessed 7/29/21

Month	Mean Maximum Temperature (°F)	Mean Minimum Temperature (°F)	Mean Temperature (°F)	Mean Precipitation (inches)
March	66.3	38.9	52.6	2.17
April	72.7	40.8	56.7	0.91
May	80.3	45.5	62.9	0.26
June	87.7	50.1	68.9	0.02
July	93.8	53.7	73.7	0.02
August	93.5	53.2	73.4	0.04
September	89.1	50.4	69.8	0.21
October	79.9	44.3	62.1	0.52
November	67.8	37.6	52.7	1.19
December	59.9	33.3	56.6	2.01

The region is largely dominated by a persistent high-pressure area residing over the eastern Pacific Ocean. From May through September, this high pressure often enhances the strength of onshore and offshore winds. During spring and early summer, fog and low clouds often form in the marine layer along the coast, while surface heating in the interior valleys dissipates the marine layer and fog as it moves inland. From November through April the high pressure typically shifts southward, allowing for storms to move across the county which brings 90% of annual precipitation.

In spring and summer months, the high pressure is typically strongest and drives onshore winds from the northwest during the day, with weak drainage flows providing a light easterly land breeze at night. At times during the summer, the strong high-pressure influence will cause a subsidence inversion across the area, providing a strong lid to the surface boundary layer typically below 2,500 feet above sea level, trapping pollutants at the surface.

In the fall, high pressure influence weakens and provides for weaker onshore winds and a shallower marine layer allowing for an occasional weak offshore flow. This back-and-forth pattern, in addition to a diurnal onshore/offshore wind pattern that is common along the coast, sometimes leads to a multiple-day buildup of pollutants over the ocean that are carried back onshore. Strong inversions can also form in the fall, further trapping pollutants near the surface and leading to elevated ozone concentrations. Santa Ana winds can also form in the area lasting several days, which may transport more polluted air from the east and southeast into the county. Further, when the Santa Ana wind event ends, stagnant

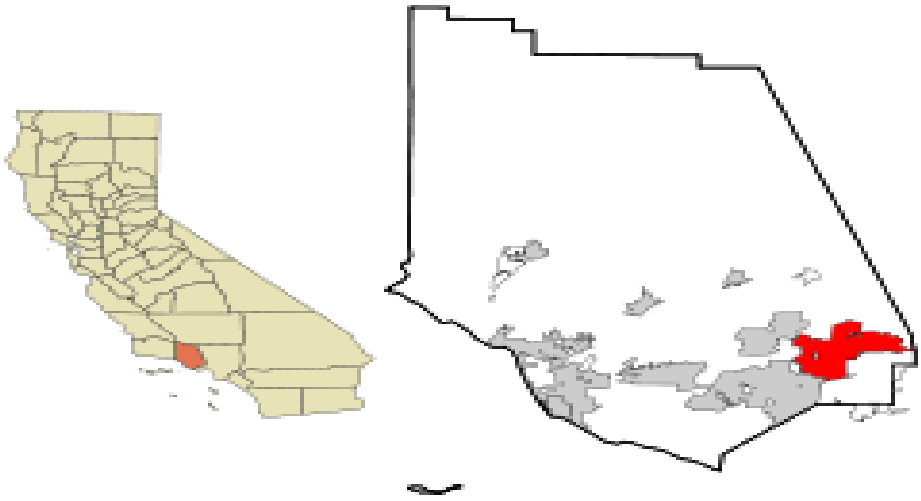
conditions and a buildup of pollutants may occur and lead to high pollutant levels in San Luis Obispo County.[8]

2. Ventura County

The Ventura County APCD is the local air district for Ventura County. The county is located in the southern portion of the South-Central Coast Air Basin (Figure II-1). Simi Valley is in Ventura County, California, in the southeast portion of the county (Figure II-2), neighboring the South Coast Air Basin. Simi Valley is a synclinal valley, in an enclosed or hidden valley surrounded by mountains and hills (Figure II-3). It is connected to the San Fernando Valley to the east by the Santa Susana Pass and the 118 (Ronald Reagan) freeway, and in the west the narrows of the Arroyo Simi and the Reagan Freeway connect to Moorpark and Ventura, California. The 2021 population of Ventura County was 841,734 with 125,963 (approximately 15%) living in Simi Valley. Simi Valley is the 47th largest city in California and the 222nd largest city in the United States.

Simi Valley sits at an elevation of 768 feet above sea level and is surrounded by mountain ranges. To the north and east are the Santa Susana Mountains that peak at 3,747 feet. To the south are the Simi Hills Mountains that peak at 2,403 feet. The narrows of Arroyo Simi is a creek that runs westward, crossing Simi Valley from east to west, before entering the city of Moorpark.

Figure II-2: Ventura County, California and Simi Valley, California

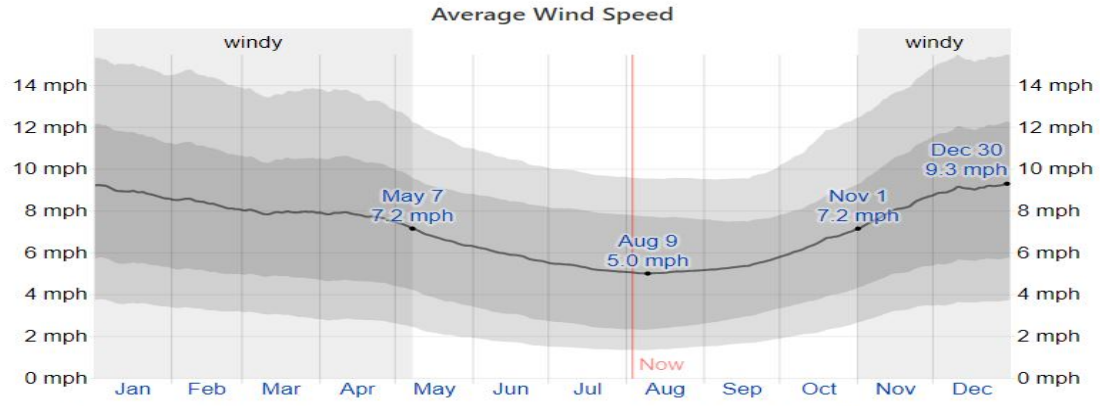


[8] 2001 Clean Air Plan for San Luis Obispo County. *https://www.slocleanair.org/rules-regulations/clean-air-plan.php*

Figure II-3: Aerial View of Simi Valley

The average hourly wind speed in Simi Valley experiences significant seasonal variation over the course of the year. The windier part of the year lasts for 6.2 months, from November 1 to May 7, with average wind speeds of more than 7.2 miles per hour. The windiest day of the year is December 30, with an average hourly wind speed of 9.3 miles per hour. The calmer time of year lasts for 5.8 months, from May 7 to November 1. The calmest day of the year is in August, with an average hourly wind speed around 5.0 miles per hour (Figure II-4).

Figure II-4: Average of Mean Hourly Wind Speeds at Simi Valley[9]



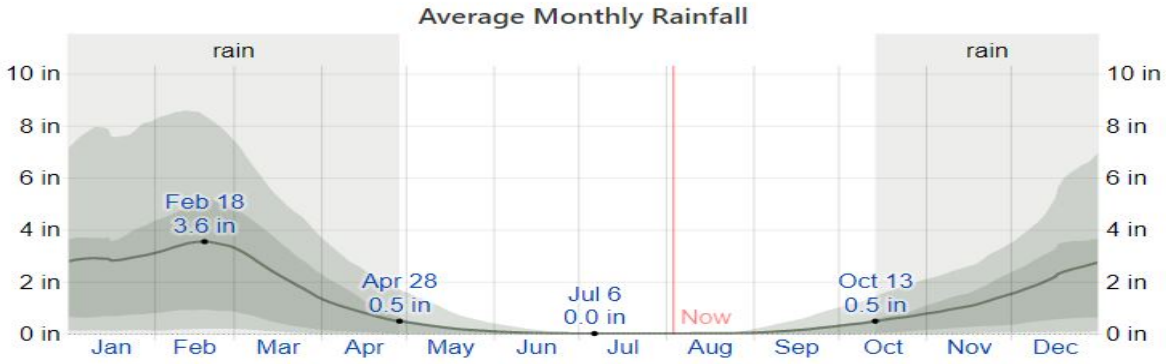
The average of mean hourly wind speeds (dark gray line), with 25th to 75th and 10th to 90th percentile bands.

Simi Valley receives precipitation, on average, 35 days per year. Simi Valley averages 17 inches of rain per year, mostly between November and March (Figure II-5). The US average is 38 inches of rain per year. Simi Valley averages 0 inches of snow per year. The US average is

[9] Weather Spark – Climate and Average Weather Year Round in Simi Valley, *https://weatherspark.com/y/1731/Average-Weather-in-Simi-Valley-California-United-States-Year-Round*, last accessed 12/1/21

28 inches of snow per year. On average, there are 277 sunny days per year in Simi Valley. The US average is 205 sunny days.

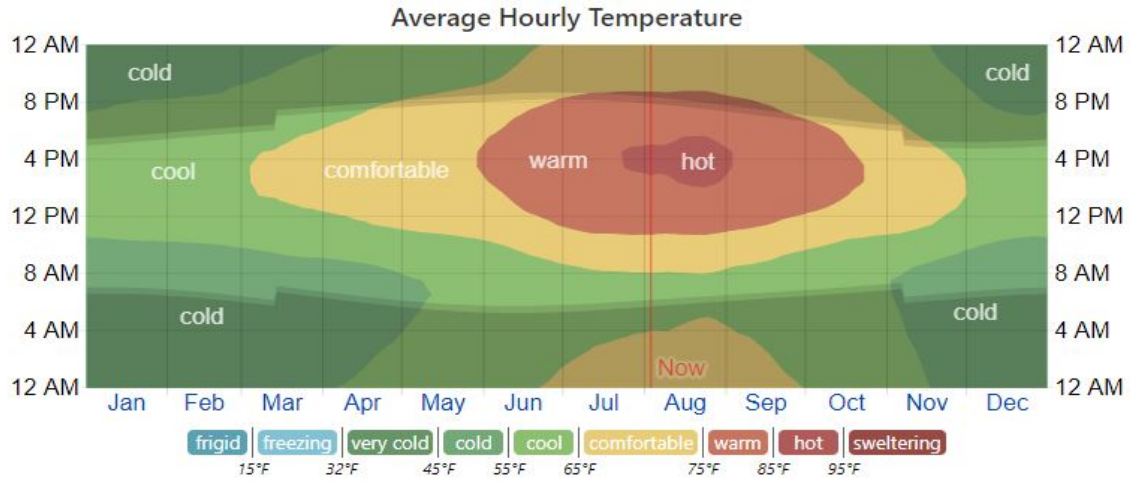
Figure II-5: Average Rainfall at Simi Valley[10]



The average rainfall (solid line) accumulated over the course of a sliding 31-day period centered on the day in question, with 25th to 75th and 10th to 90th percentile bands. The thin dotted line is the corresponding average liquid-equivalent snowfall.

Figure II-6, below, shows a compact characterization of the entire year of hourly average temperatures. The horizontal axis is the day of the year, the vertical axis is the hour of the day, and the color is the average temperature for that hour and day.

Figure II-6: Average Hourly Temperature at Simi Valley[10]



The average hourly temperature, color coded into bands. The shaded overlays indicate night and civil twilight.

[10] Weather Spark – Climate and Average Weather Year Round in Simi Valley, *https://weatherspark.com/y/1731/Average-Weather-in-Simi-Valley-California-United-States-Year-Round*, last accessed 12/1/21

Ventura County experiences different air pollution seasons. Wintertime generally produces low ozone, while summertime generally produces elevated ozone. The region usually experiences offshore winds in late fall and early spring, typically referred to as a Santa Ana event. These winds, with the lower amount of sunshine, inhibit ozone formation, while increasing PM_{10} concentrations. In winter, low-pressure troughs brings the region most of the rainfall, and with increased atmospheric lift and lack of sunshine, this combines to also inhibit ozone formation. In summer, the region usually experiences high-pressure ridges, which brings the area stronger inversions and lack of air movement, combined with increased sunshine, results in elevated ozone.

All areas of Ventura County currently attain the NAAQS for all pollutants except Simi Valley, which is nonattainment for the 2008 8-Hour Ozone NAAQS along with the more stringent 2015 8-Hour Ozone NAAQS. Control strategies since the 1970's targeting area and mobile sources have greatly reduced emissions and improved air quality in the County.

B. Overview of Monitoring Network

The CARB Primary Quality Assurance Organization (PQAO) is comprised of 32 of the 35 air districts in California. The three remaining districts, the Bay Area AQMD, San Diego County APCD, and South Coast AQMD, represent their own PQAOs.

California's ambient air monitoring network includes over 250 sites and more than 700 monitors, making it one of the most extensive in the world. Many regions in California are characterized by complex terrain, variable meteorological conditions, and diverse emission sources. A large monitoring network is critical for assessing the State's progress in meeting clean air objectives, understanding spatial and temporal variation in air pollutants, and evaluating pollutant exposure. Monitors are operated by CARB, local air districts, and other entities including the National Park Service, private contractors, and tribal authorities.

In the South Central Coast Air Basin, comprising of the counties San Luis Obispo, Santa Barbara, and Ventura, there are two nonattainment areas covered by this demonstration (Figure II-7, Table II-2), the Eastern Portion of San Luis Obispo County and the entirety of Ventura County. There are two ozone monitoring sites in the Eastern Portion of San Luis Obispo County nonattainment area: Red Hills (denoted as #1) and Carrizo Plains (#5). Red Hills is the design value site for the area. Five ozone monitoring sites are in the Ventura County nonattainment area: Ojai (#20), Piru (#22), Simi Valley (#25), El Rio (#26), and Thousand Oaks (#27). Simi Valley is the design value site for Ventura County.

Figure II-7: Ozone Monitoring in South Central Coast Air Basin

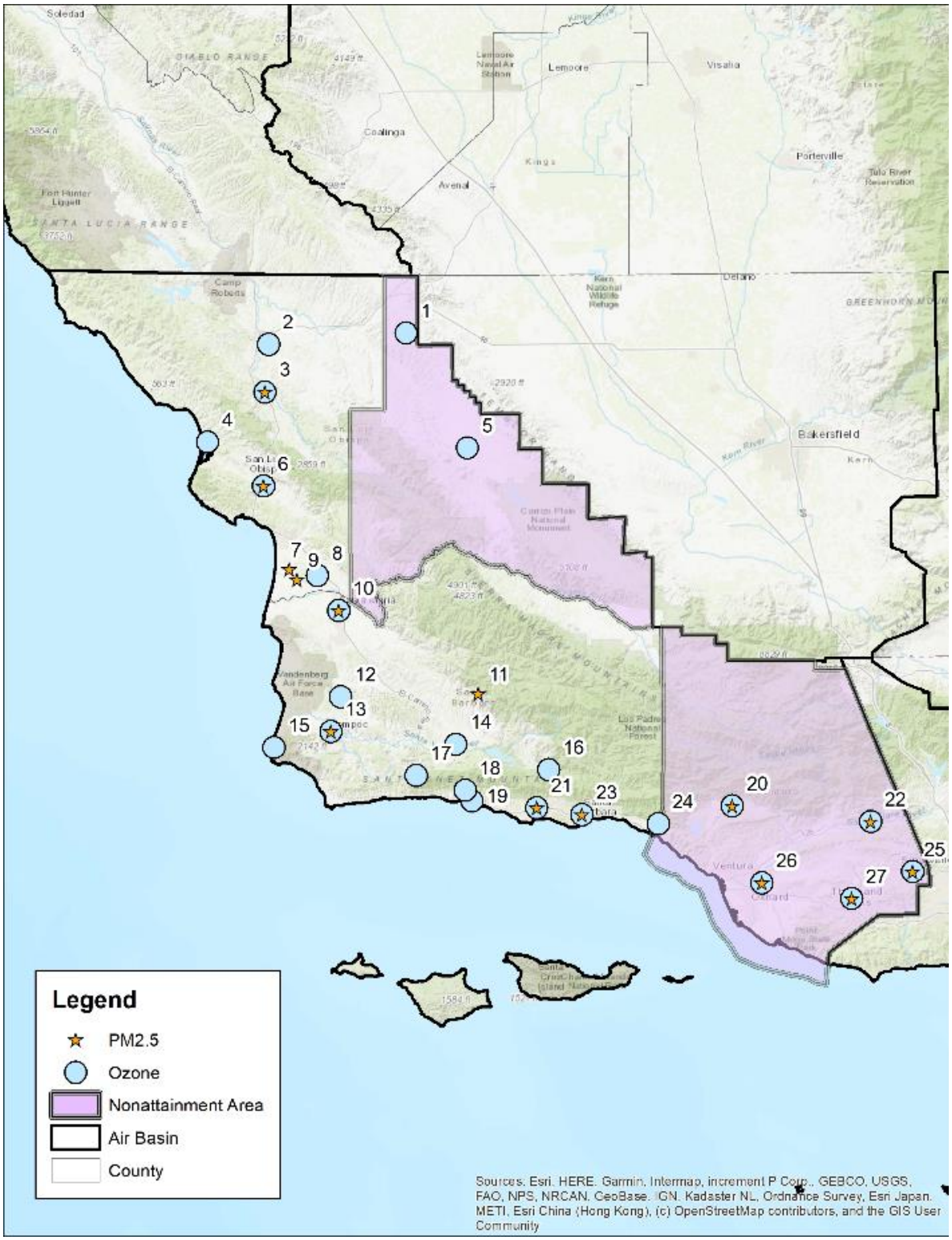


Table II-2: Monitoring Sites in South Central Coast Air Basin

Number	Monitoring Site	Ozone	$PM_{2.5}$	PM_{10}	NO_2	SO_2	CO	Total Hydrocarbons	$PM_{2.5}$ Speciation	Meteorology
1	Red Hills	X								X
2	Paso Robles	X		X						X
3	Atascadero	X	X	X	X					X
4	Morro Bay	X								X
5	Carrizo Plains School	X								X
6	San Luis Obispo - Higuera	X	X	X						X
7	Arroyo Grande		X	X						X
8	Nipomo-Regional Park	X		X	X					X
9	Nipomo-Guadalupe		X	X		X				X
10	Santa Maria	X	X	X	X		X			X
11	San Rafael Wilderness		X	X					X	
12	Lompoc HS&P	X			X	X		X		X
13	Lompoc S H Street	X	X	X	X	X	X			X
14	Santa Ynez-Airport	X								
15	Vandenberg AFB	X		X	X	X	X	X		X

Number	Monitoring Site	Ozone	$PM_{2.5}$	PM_{10}	NO_2	SO_2	CO	Total Hydrocarbons	$PM_{2.5}$ Speciation	Meteorology
16	Paradise Road-Los Padres	X			X					X
17	Gaviota GTC Site B	X			X					X
18	Las Flores Canyon #1	X		X	X	X	X	X		X
19	El Capitan Beach	X		X	X	X		X		X
20	Ojai	X	X							X
21	Goleta-Fairview	X	X	X						X
22	Piru - Pacific	X	X							X
23	Santa Barbara 700 East Canon	X	X	X						X
24	Carpinteria	X			X					X
25	Simi Valley-Cochran	X	X	X	X					X
26	El Rio-Rio Mesa	X	X	X	X					X
27	Thousand Oaks	X	X							X

The ambient air monitoring networks in San Luis Obispo County and Ventura County meet the minimum monitoring requirements for all criteria pollutants pursuant to Title 40, Part 58 of the Code of Federal Regulations (CFR), Appendix D. The monitoring networks are reviewed annually to fulfill the requirements of 40 CFR 58.10 to ensure the network meets the monitoring objectives defined in 40 CFR 58, Appendix D. Data was collected, and quality assured as per 40 CFR 58 and submitted to the Air Quality System (AQS).

The San Luis Obispo County APCD also operated a $PM_{2.5}$ Purple Air sensor (SCPR20_Red Hills) at the Red Hills site. The sensor does not fulfill CFR monitoring requirements but can be utilized in more generalized comparison analyses. Primary data for channels A and B were averaged by hour for values of PM2.5_CF1_μg/m3 to calculate a single concentration.

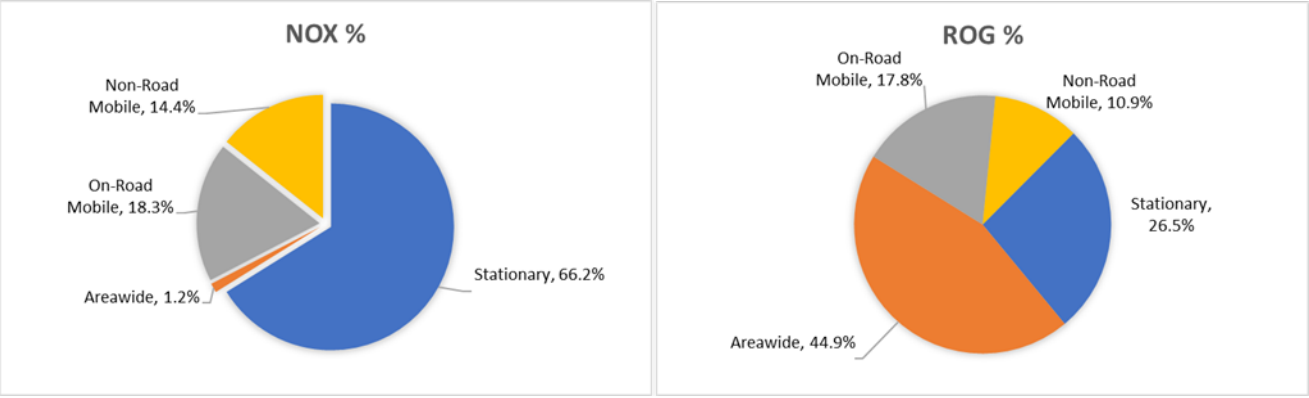
C. Characteristics of Non-Event Ozone Formation

Ground-level ozone is formed by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (ROG or VOC) in the presence of heat and sunlight. A more detailed discussion for each of the areas is provided below.

1. Eastern Portion of San Luis Obispo County (Red Hills)

Eastern Portion of San Luis Obispo County emissions estimates are shown in Figure II-8. The Stationary and Areawide source categories are the largest sources of anthropogenic (human caused) NO_x and ROG emissions in the Eastern Portion of San Luis Obispo County, respectively.

Figure II-8: Eastern Portion of San Luis Obispo County Anthropogenic Daily Summer 2020 NO_x and ROG Emissions Estimates[11]



The highest ozone values occur during the ozone season of May through November, with exceedances during the remainder of the year extremely rare. Ozone concentrations are

[11] CEPAM: Version 1.03 East San Luis Obispo Ozone Nonattainment Area. *http://outapp.arb.ca.gov/cefs/2019ozsip/fcemssumcat_sip19slooz103.php*

typically low overnight, peaking in the afternoon, with 95 percent of values well below 0.070 ppm (Figure II-9). The 1-hour ozone concentrations for the event days (Figure II-10) indicate that ozone concentrations were above the 95 percentile and diverged from the normal diurnal pattern. Daily calibration checks frequently occurred in the fourth hour during the 2015–2017 year period, then were shifted to the second hour during the 2018-2020 year period. The resulting percentiles were consistent enough with surrounding hours to include all hours in the calculation of percentiles.

Figure II-9: Typical May-November 1-Hour Ozone Diurnal Pattern at Red Hills (2015-2019)

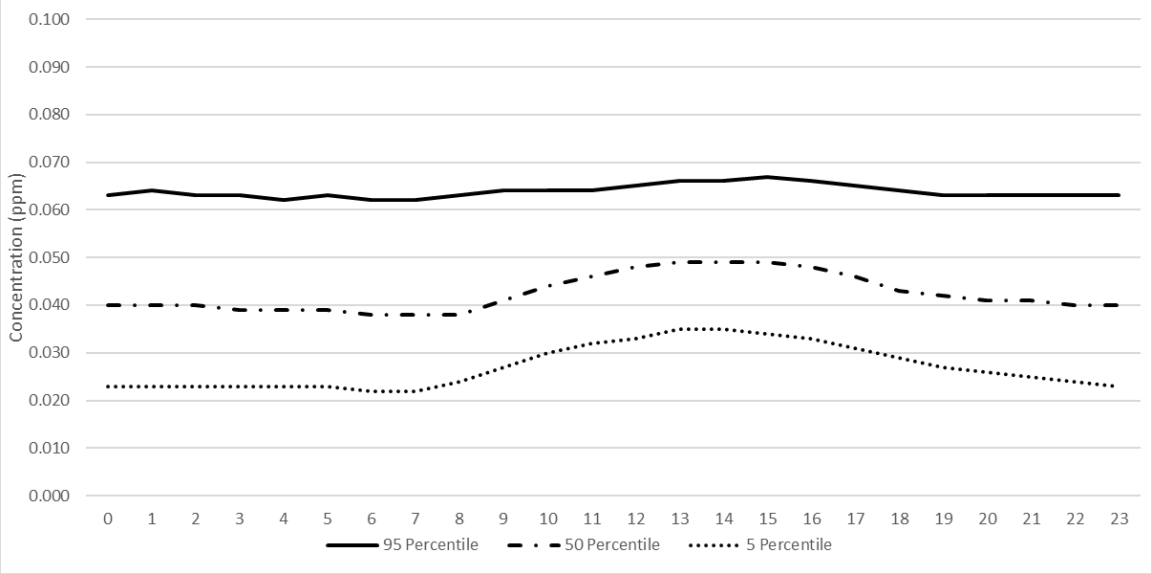
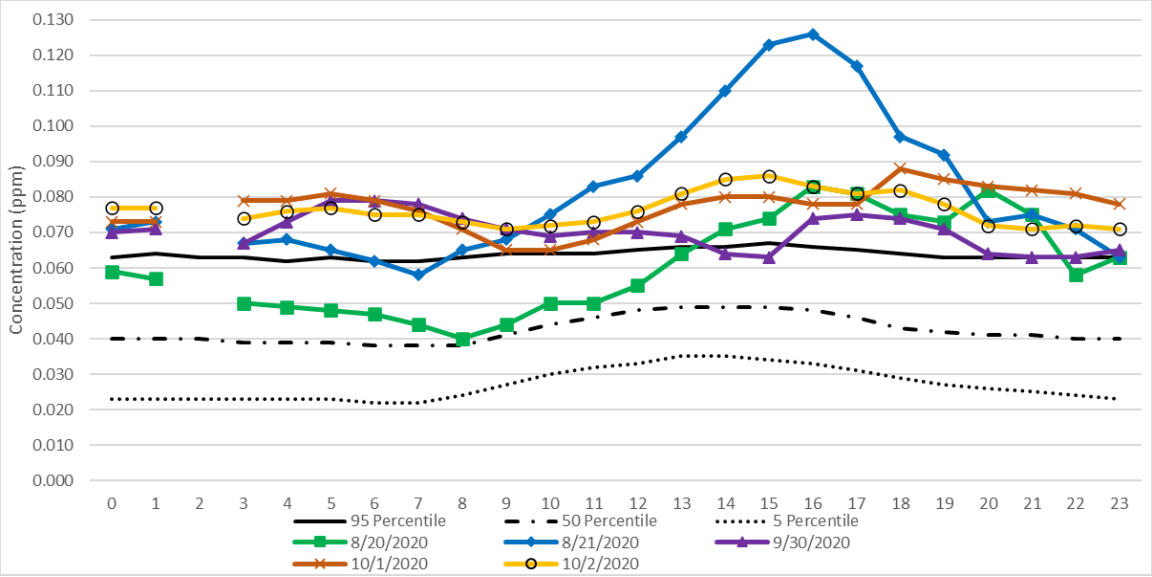


Figure II-10: 1-Hour Ozone Concentrations during Event Days compared to May-November 2015-2019 Percentiles at Red Hills

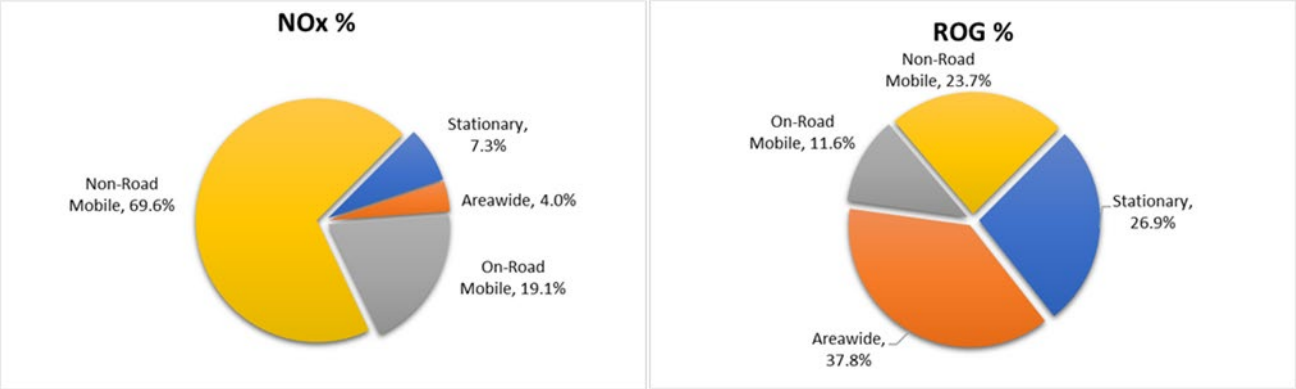


The Red Hills site calibration check time was changed by the District to 2 a.m. beginning May 3, 2018.

2. Ventura County (Simi Valley)

Ventura County emissions estimates are shown in Figure II-11. The Non-Road Mobile and Areawide source categories are the largest sources of anthropogenic (human caused) NO_x and ROG emissions in Ventura County, respectively.

Figure II-11: Ventura County Anthropogenic Daily Summer 2020 NO_x and ROG Emissions Estimates[12]



Thanks to the aggressive emission control strategy in effect, ozone precursor emissions in Ventura County have decreased significantly over the years, registering 15.9% reduction for NOx and 13.5% reduction for ROG emissions, since 2012.

Based on historic, non-event ozone monitoring data for the previous 5 years, below are the characteristics of ozone levels throughout the year in Simi Valley.

- January through March: Generally lowest ozone concentrations during the year because of cooler temperatures, shorter days, and unsettled weather patterns.
- April through June: Transitional period between spring and summer when elevated 8-hour ozone concentrations are unusual but can occur at times when meteorological conditions are favorable for ozone formation, especially when a Pacific ridge of high pressure settles in the area.
- June through August: Typically, highest ozone concentrations caused by a ridge of high pressure over the southwestern United States influencing the area. Smoke from an early wildfire season can impact ozone concentrations as well.
- September through October: Ozone concentrations typically begin to decrease as temperatures and solar radiation decrease. Santa Ana wind events (offshore winds) begin to dominate the region, which leads to elevated ozone levels with the return of onshore winds (post Santa Ana's).

[12] CEPAM: Version 1.03 East San Luis Obispo Ozone Nonattainment Area. *http://outapp.arb.ca.gov/cefs/2019ozsip/fcemssumcat_2019sip103.php*

- November through December: Ozone concentrations are typically low during these months because of cooler temperatures, shorter days, and unsettled weather patterns.

The highest ozone values at Simi Valley occur during the ozone season from April through October, with exceedances during the remainder of the year extremely rare. Ozone concentrations at Simi Valley typically peak midday (Figure II-12) and are lowest in the mid-morning. Daily calibration checks frequently occurred in the overnight hours during 2015-2019, so data for hour 1 was excluded from the calculation of percentiles. 1-hour ozone concentrations for the event days (Figure II-13) indicate that ozone concentrations were significantly above the 95 percentile during peak hours.

Figure II-12: Typical April-October 1-Hour Ozone Diurnal Pattern at Simi Valley (2015-2019)

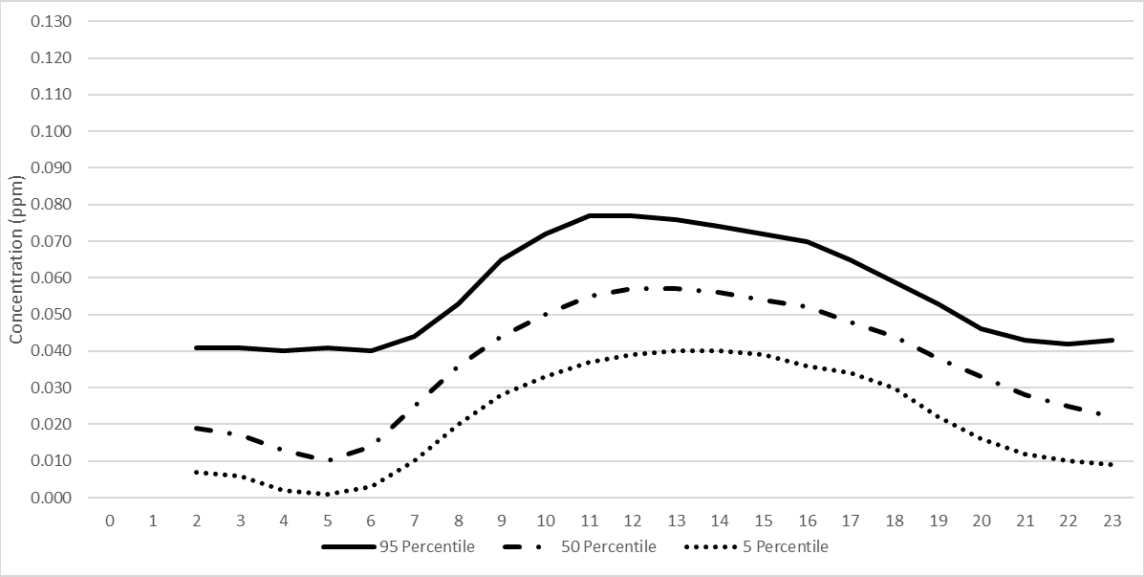
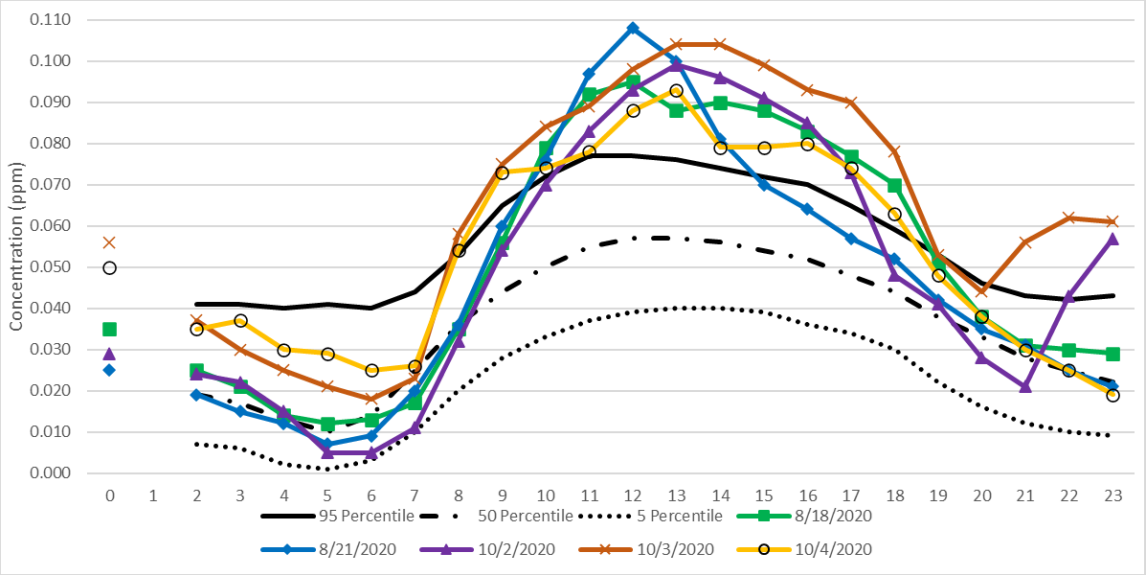


Figure II-13: 1-Hour Ozone Concentrations during Event Days compared to May-November 2015-2019 Percentiles at Simi Valley



D. Characteristics of Event Ozone Formation

Although wildfires occur in California every year, the number of wildfires and the amount of acreage burned has increased substantially, from a 5-year average of less than 5,000 fires burning 200,000 acres as of 2017,[13] to the prior record 7,948 incidents and 1,975,086 acres burned in 2018,[14] to the new record 9,917 incidents and 4,257,863 acres burned in 2020.[15] The impact of these wildfires on air quality has been dramatic. Smoke from large fires has caused high concentrations of PM and ozone, especially in the western United States.[16] Wildfires generate large amount of ozone precursors including NOx and ROG which can contribute to elevated ozone levels in California. However, there are large variations in the amount of emissions (depending on the fuel type and combustion temperature), plume heights, smoke density, and meteorological conditions during different wildfires, and all these factors can significantly impact subsequent ozone production.[17] In addition, the amount of ozone within a smoke plume also varies with distance from the fire.[18] Due to the titration by NO from fire emissions and the blocking of sunlight by PM emissions, which hinders photochemical reactions, ozone concentrations near active fires are sometimes even lower relative to baseline concentrations. As the ozone precursors transport downwind along with the other air pollutants such as PM, ozone is produced within the smoke plume which could

[13] CalFire, *2017 Statistics and Events (5 year average)*, last accessed 8/20/21. *https://www.fire.ca.gov/stats-events/*
[14] CalFire, 2018 Incident Archive, last accessed 11/17/21. *https://www.fire.ca.gov/incidents/2018/*
[15] CalFire, 2020 Statistics and Events, last accessed 11/17/21. *https://www.fire.ca.gov/stats-events/*
[16] Gong et al., 2017; Laing and Jaffe, 2019; Mass and Ovens, 2019; Jaffe et al., 2020
[17] Jaffe and Wigder, 2012; Faloona et al., 2020
[18] Faloona et al., 2020

result in ozone exceedances at the surface in downwind areas. Research studies found that distant wildfires can raise ground-level ozone concentrations to unhealthy levels even at large distances from the fire location.[19]

[19] Pfister et al., 2008

III. Narrative Conceptual Model

The Narrative Conceptual Model describes the events causing the exceedances or violations seen at the monitor and includes a discussion of how the events led to concentrations above the NAAQS during August 18 to 21 and September 30 to October 4 of 2020.

A. Wildfire Information

2020 was another extreme year for wildfires, with numerous wildfires active during the time of the exceedances discussed in this demonstration (Figure III-1, Table III-1); although not all wildfires impacted each monitor on any given day. Hot and dry conditions at the surface combined with mid-level moisture resulted in elevated instability during parts of August and early September. The ensuing thunderstorms ignited multiple wildfires, resulting in smoke that accumulated throughout California. The accumulating smoke layers made identification of the impact of individual wildfires difficult. The majority of these fires, and all of the megafires, occurred on wildland or in the urban/wildland interface.

Figure III-1: Impacted Monitors and Active Major Wildfires, August 18-October 4, 2020

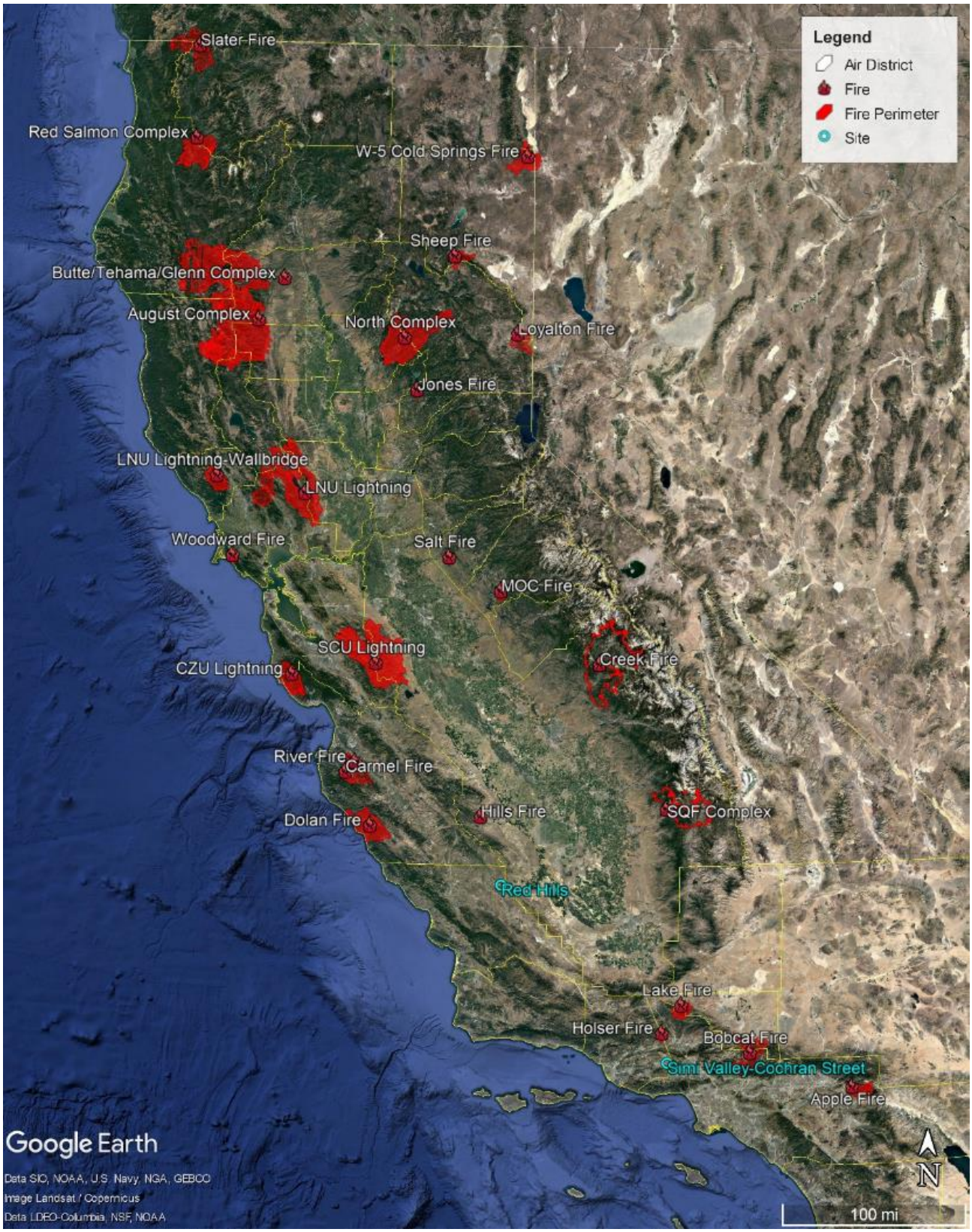


Table III-1: Major wildfires active during August 18-October 4, 2020 events[20,21,22]

Fire	Source	Start Date	Containment	Latitude	Longitude	Total Acres
Red Salmon Complex	Lightning	7/27/2020	11/23/2020	41.16800	-123.40700	144,698
Lake Fire	Lightning	8/12/2020	9/28/2020	34.67900	-118.45200	31,089
Hills Fire	Lightning	8/15/2020	8/24/2020	36.09876	-120.42734	2,121
CZU Lightning Complex (Including Warnella Fire)	Lightning	8/16/2020	9/22/2020	37.17162	-122.22275	86,509
August Complex (includes Doe Fire)	Lightning	8/16/2020	11/11/2020	39.77600	-122.67300	1,032,648
River Fire	Lightning	8/16/2020	9/4/2020	36.60239	-121.62161	48,088
LNU Lightning Complex (includes Hennessey, Gamble, 15-10, Spanish, Markley, 13-4, 11-16, Walbridge)	Lightning	8/17/2020	10/2/2020	38.48193	-122.14864	363,220
Holser Fire	Investigating	8/17/2020	9/6/2020	34.43876	-118.75897	3,000
North Complex Fire	Lightning	8/18/2020	12/3/2020	39.69072	-121.22718	318,935
Salt Fire	Investigating	8/18/2020	8/24/2020	38.02792	-120.76326	1,789
Woodward Fire	Investigating	8/18/2020	10/2/2020	38.01809	-122.83670	4,929
Carmel Fire	Vehicle	8/18/2020	9/4/2020	36.44630	-121.68181	6,905
SCU Lightning Complex	Lightning	8/18/2020	10/1/2020	37.43944	-121.30435	396,624
Dolan Fire	Unknown	8/19/2020	12/31/2020	36.12300	-121.60200	124,924

[20] CalFire 2020 Fire Siege. Accessed 11/17/2021.
https://www.fire.ca.gov/media/hsviuuv3/cal-fire-2020-fire-siege.pdf
Rogue River-Siskiyou National Forest, accessed 6/7/2021.
https://www.fs.usda.gov/detail/rogue-siskiyou/news-events/?cid=FSEPRD604472
[21] CalFire 2020 Wildfire Incident Archive. Accessed 11/4/2020. *https://www.fire.ca.gov/incidents/2020/*
[22] InciWeb – Incident Information System. Accessed 11/4/2020. *https://inciweb.nwcg.gov/accessible-view/*

Fire	Source	Start Date	Containment	Latitude	Longitude	Total Acres
SQF Complex Fire (Includes Castle Fire and Shotgun Fire)	Lightning	8/19/2020	1/6/2021	36.25500	-118.49700	174,178
Creek Fire	Investigating	9/4/2020	12/24/2020	37.19147	-119.26118	379,895
Bobcat Fire	Investigating	9/6/2020	11/8/2020	39.24465	-117.96484	115,796

The August Complex[23] fire started as 38 separate fires, most of which were small (Figure III-2 and Table III-2). The four main fires were the Doe, Tatham, Glade and Hull fires, which merged by August 30. The fires began from lightning strikes on August 16 and 17, 2020 and actively burned in Mendocino, Shasta-Trinity, and Six Rivers National Forests. The fires burned 1,032,648 acres, 935 structures, and caused one death before full containment on November 15, 2020. The August Complex fire is the largest fire complex in recorded California history[24].

The Butte/Tehama/Glenn Lightning Complex[25] fire included the Elkhorn and Hopkins fires and began on August 19, 2020 due to lighting and actively burned in Tehama and Glenn counties. By September 9, the Elkhorn and Hopkins fires had merged with the August Complex, forming the North Zone of the August Complex, and dropping the Butte/Tehama/Glenn Fire from 66,959 acres to 19,069 acres. The Butte/Tehama/Glenn Lightning Complex was fully contained on October 9, 2020.

[23]August Complex, accessed 10/11/2021. *https://inciweb.nwcg.gov/incident/6983/*
[24]Top 20 Largest California Wildfires, accessed 10/11/2021. *https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf*
[25] Butte/Tehama/Glenn Lightning Complex. *https://data.statesmanjournal.com/fires/ca-fire/f6aba342-3b28-460b-a88a-96ccbdcb3c14/buttetehamaglenn-lightning-complex-tehamaglenn-zone/*

Figure III-2: August Complex Fire Perimeter Map

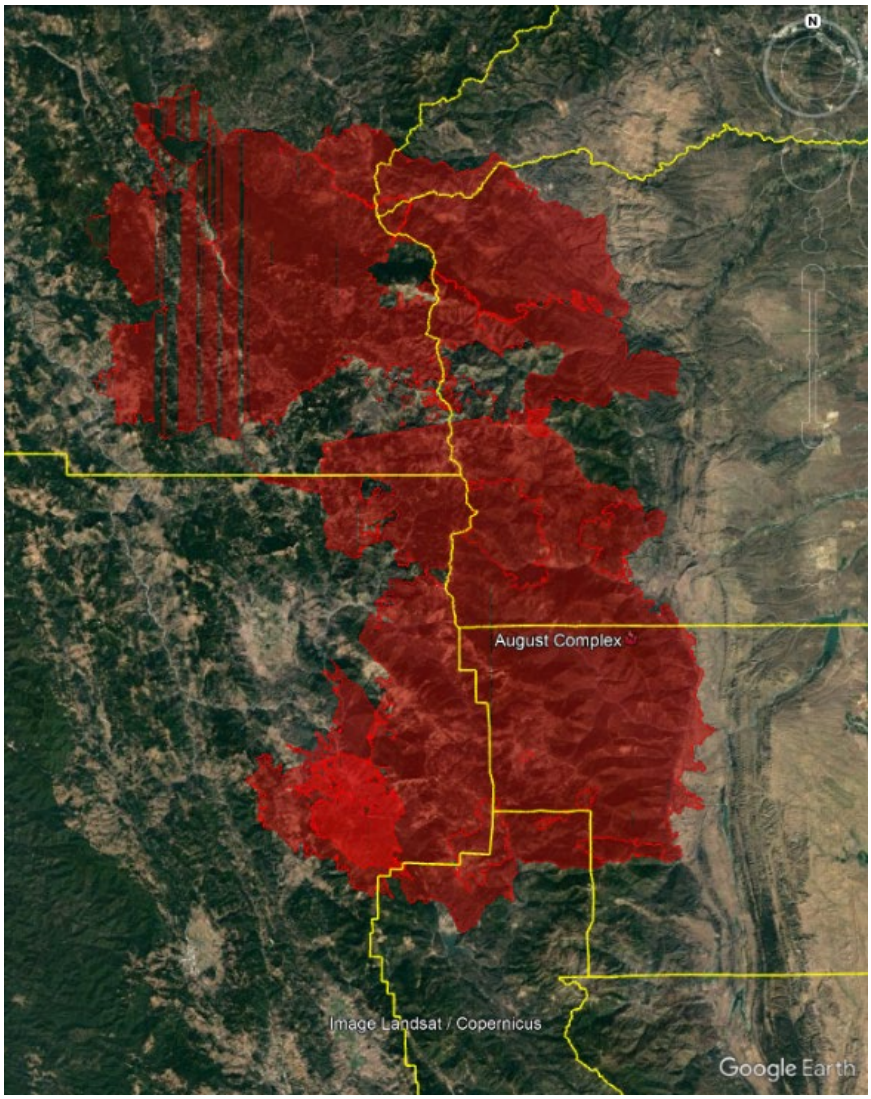


Table III-2: August Complex Fire Daily Acreage[26]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/16/2020	N/A	N/A	Date of Origin
8/20/2020	117,365	117,365	6%
8/21/2020	26,298	143,663	6%

[26] August Complex Fire – Archived inciweb.nwcg.gov pages. Accessed 10/25/2021. *https://web.archive.org/web/20201011180835/https://inciweb.nwcg.gov/incident/6983*

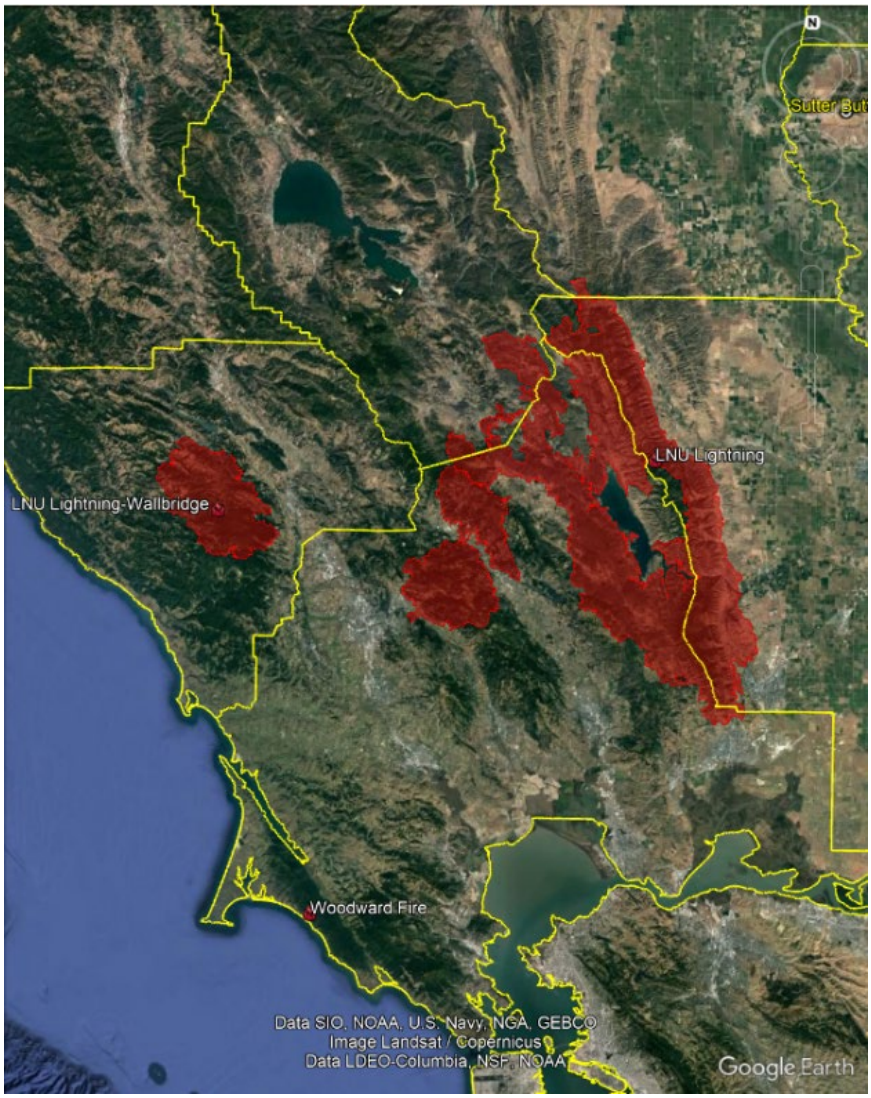
Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/23/2020	16,342	160,005	11%
8/25/2020	21,046	181,051	11%
8/26/2020	19,414	200,465	17%
8/29/2020	15,123	215,588	18%
9/1/2020	27,353	242,941	20%
9/2/2020	18,263	261,204	20%
9/3/2020	25,902	287,106	23%
9/4/2020	11,523	298,629	23%
9/5/2020	7,044	305,673	23%
9/6/2020	19,499	325,172	24%
9/8/2020	31,140	356,312	24%
9/10/2020	114,873	471,185	24%
9/11/2021	20,054	491,239	25%
9/12/2020	383,820	875,059	25%
9/13/2020	2,418	877,477	28%
9/15/2020	-82,676*	794,801	30%
9/16/2020	23,151	817,952	30%
9/18/2020	6,166	824,118	30%
9/20/2020	12,753	836,871	34%
9/21/2020	9,861	846,732	34%
9/22/2020	166	846,898	38%

Date	Fire Growth (Acres)	Total Acres	Percent Contained
9/26/2020	23,302	870,200	43%
9/29/2020	67,844	938,044	43%
10/1/2020	17,469	955,513	51%
10/2/2020	15,050	970,563	51%
10/3/2020	8,823	979,386	51%
10/5/2020	24,001	1,003,387	58%
10/7/2020	5,203	1,008,590	60%
10/9/2020	12,886	1,021,476	65%
10/10/2020	2,616	1,024,092	67%
10/11/2020	4,437	1,028,529	74%
10/13/2020	508	1,029,037	76%
10/14/2020	73	1,029,110	77%
10/17/2020	3,154	1,032,264	82%
10/21/2020	0	1,032,264	91%
10/25/2020	384	1,032,648	93%
11/5/2020	0	1,032,648	96%
11/12/2020	0	1,032,648	100%

* Fire acreage estimate was adjusted by reporting agency.

The LNU Lightning Complex[27] fire (Figure III-3 and Table III-3) started as many small separate fires. The main fires were the Hennessey fire, which merged with the Gamble Green, Markley, Spanish, and Morgan fires burning 305,651 acres, as well as the Walbridge, and Meyers fires. These fires began due to lightning on August 16 and 17, 2020 and actively burned in six counties: Solano, Napa, Sonoma, Yolo, Lake, and Colusa. The fires burned on the hills surrounding several large cities including Napa, Fairfield, and Vacaville and burned 363,220 acres, 1,491 structures, and lead to six confirmed fatalities before full containment on October 2, 2020. The LNU lighting complex is the 6th largest California wildfire in recorded history[28].

Figure III-3: LNU Lightning Complex Fire Perimeter Map



[27] Solano County 2020 LN Lightning Complex Fire. Accessed 10/11/2021. *https://www.solanocounty.com/depts/rm/lnu_fire_cleanup_n_rebuilding/default.asp*

[28] *https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf*

Table III-3: LNU Lightning Complex Fire Daily Acreage[29]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/17/2020	N/A	N/A	Date of Origin
8/21/2020	302,388	302,388	0%
8/22/2020	22,740	325,128	15%
8/23/2020	22,502	347,630	15%
8/24/2020	4,187	351,817	21%
8/26/2020	5,229	357,046	33%
8/27/2020	11,822	368,868	33%
8/28/2020	2,381	371,249	35%
8/29/2020	2,075	373,324	41%
8/30/2020	1,885	375,209	56%
8/31/2020	0	375,209	66%
9/2/2020	0	375,209	78%
9/3/2020	0	375,209	81%
9/4/2020	0	375,209	87%
9/5/2020	0	375,209	89%
9/7/2020	0	375,209	91%
9/8/2020	0	375,209	91%
9/9/2020	-11,989*	363,220	93%

[29]LNU Complex Fire – Archived fire.ca.gov pages. Accessed 10/25/2021. *https://web.archive.org/web/20200824125845/https://www.fire.ca.gov/incidents/2020/8/17/lnu-lightning-complex-includes-hennessey-gamble-15-10-spanish-markley-13-4-11-16-walbridge/*

Date	Fire Growth (Acres)	Total Acres	Percent Contained
9/10/2020	0	363,220	95%
9/12/2020	0	363,220	96%
9/14/2020	0	363,220	97%
9/16/2020	0	363,220	98%
9/30/2020	0	363,220	98%
10/2/2020	0	363,220	100%

* Fire acreage estimate was adjusted by reporting agency.

CZU Lightning Complex[30] fire (Figure III-4 and Table III-4) started as many small fires including the Warnella fire and three fires that would become the northern edge of the CZU complex. The Northern edge fires merged, a few days after they began, due to changing wind patterns and quickly grew to over 40,000 acres. These fires began due to a lightning strike on August 16, 2020 and actively burned in Butano and Big Basin Redwoods state parks in San Mateo and Santa Cruz counties. The fires burned 86,509 acres, destroyed 1,490 structures, damaged an additional 140 structures, and lead to one confirmed fatality before being fully contained on September 22, 2020.

[30] CZU Lightning Complex (Including Warnella Fire). *https://www.fire.ca.gov/incidents/2020/8/16/czu-lightning-complex-including-warnella-fire/*

Figure III-4: CZU Lightning Complex Fire Perimeter Map

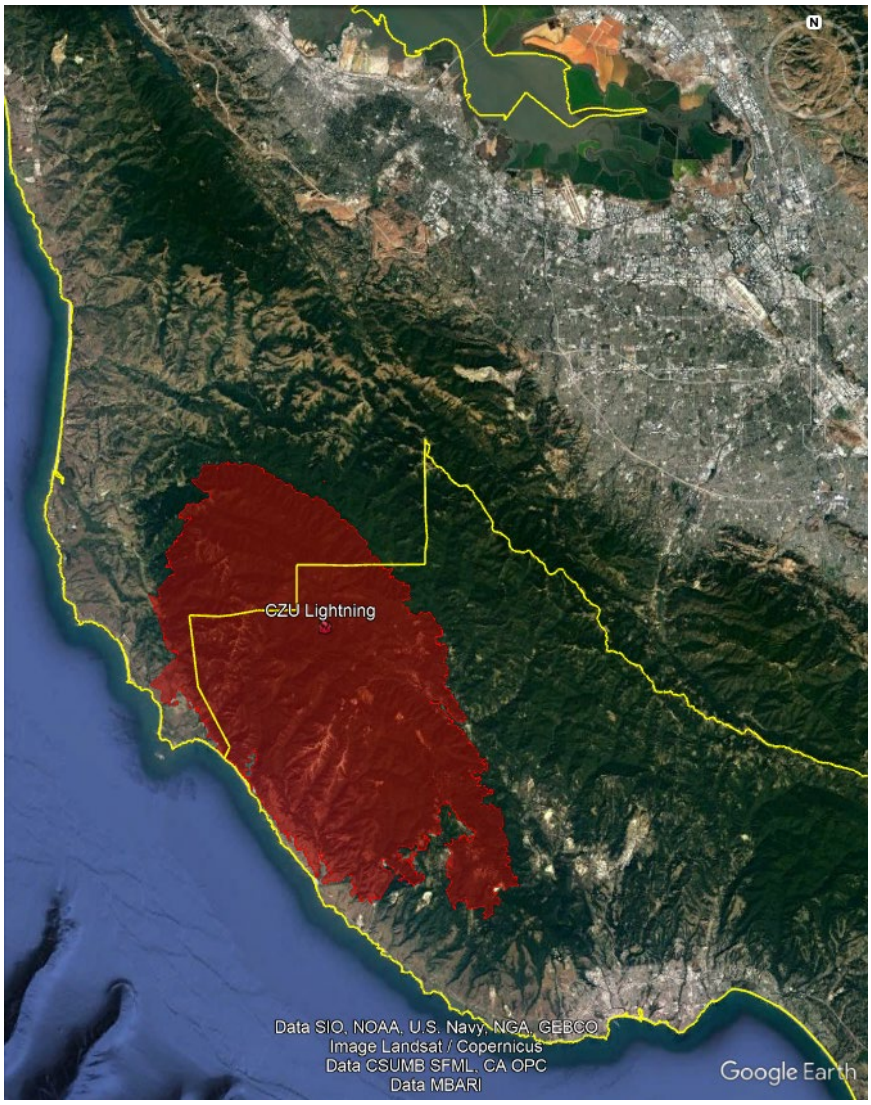


Table III-4: CZU Lightning Complex Fire Daily Acreage[31]

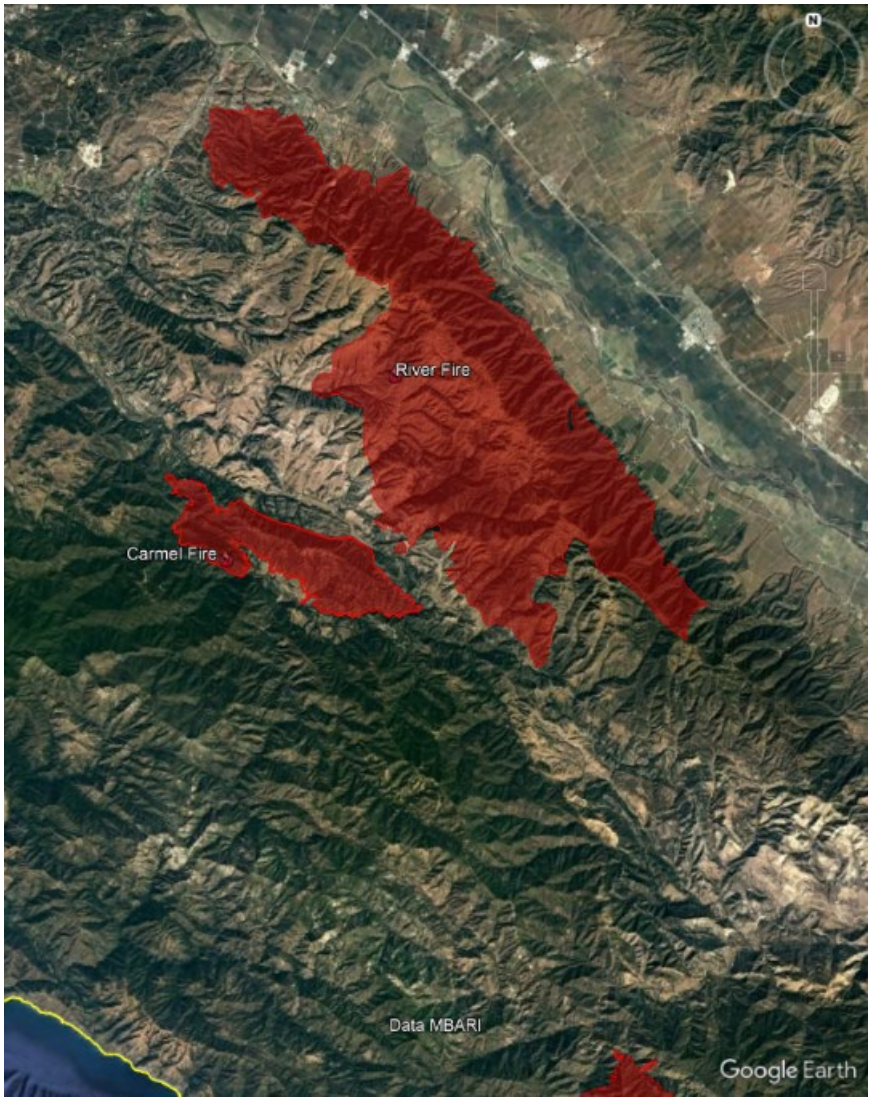
Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/16/2020	N/A	N/A	Date of Origin
8/25/2020	78,869	78,869	17%

[31] CZU Lightning Complex Fire – Archived fire.ca.gov pages. Accessed 10/25/2021. *https://web.archive.org/web/20200830105017/https://www.fire.ca.gov/incidents/2020/8/16/czu-lightning-complex-including-warnella-fire/*

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/26/2020	2,268	81,137	21%
8/27/2020	342	81,479	24%
8/28/2020	1,654	83,133	27%
8/29/2020	1,205	84,338	33%
8/30/2020	302	84,640	35%
9/1/2020	578	85,218	43%
9/2/2020	249	85,467	46%
9/3/2020	635	86,102	51%
9/4/2020	407	86,509	58%
9/6/2020	0	86,509	68%
9/7/2020	0	86,509	80%
9/10/2020	0	86,509	84%
9/13/2020	0	86,509	87%
9/14/2020	0	86,509	89%
9/15/2020	0	86,509	93%
9/16/2020	0	86,509	95%
9/17/2020	0	86,509	97%
9/19/2020	0	86,509	98%
9/20/2020	0	86,509	99%
9/22/2020	3,000	89,509	100%

River Fire[32] (Figure III-5 and Table III-5) began due to a lightning strike on August 16, 2020 and actively burned in a wildland urban interface zone within Monterey County. The fire burned 48,088 acres, destroyed 30 structures, and damaged 13 before full containment on September 4, 2020.

Figure III-5: River Fire Perimeter Map



[32] River Fire. *https://www.fire.ca.gov/incidents/2020/8/16/river-fire/*

Table III-5: River Fire Daily Acreage[33]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/16/2020	N/A	N/A	Date of Origin
8/17/2020	3,793	3,793	10%
8/20/2020	29,860	33,653	7%
8/21/2020	8,930	42,583	12%
8/22/2020	5,190	47,773	15%
8/23/2020	651	48,424	20%
8/25/2020	0	48,424	33%
8/26/2020	0	48,424	58%
8/28/2020	308	48,732	66%
8/29/2020	0	48,732	73%
8/30/2020	-644*	48,088	87%
8/31/2020	0	48,088	96%
9/2/2020	0	48,088	98%
9/4/2020	0	48,088	100%

* Fire acreage estimate was adjusted by reporting agency.

Carmel Fire[34] (Figure III-6 and Table III-6) began on August 18, 2020 due to a vehicle malfunction and actively burned in a wildland urban interface zone within Monterey County. The fire burned 6,905 acres, destroyed 73 structures, and damaged 7 before full containment on September 4, 2020.

[33] River Fire – Archived fire.ca.gov pages. Accessed 10/25/2021. *https://web.archive.org/web/20200818121429/https://www.fire.ca.gov/incidents/2020/8/16/river-fire/*
[34] Carmel Fire. *https://www.fire.ca.gov/incidents/2020/8/18/carmel-fire/*

Figure III-6: Carmel Fire Perimeter Map

Table III-6: Carmel Fire Daily Acreage[35]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/18/2020	N/A	N/A	Date of Origin
8/21/2020	4,732	4,732	0%
8/22/2020	1,963	6,695	7%

[35] Carmel Fire – Archived fire.ca.gov pages. Accessed 10/25/2021. *https://web.archive.org/web/20200822035015/https://www.fire.ca.gov/incidents/2020/8/18/carmel-fire/*

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/23/2020	0	6,695	15%
8/25/2020	0	6,695	30%
8/26/2020	0	6,695	55%
8/28/2020	72	6,767	71%
8/29/2020	0	6,767	81%
8/30/2020	138	6,905	86%
8/31/2020	0	6,905	98%
9/2/2020	0	6,905	98%
9/4/2020	0	6,905	100%

SCU Lightning Complex[36] (Figure III-7 and Table III-7) began as the Deer, Canyon, and Santa Clara fires, by August 26 the Deer fire was fully contained and the Canyon and Santa Clara fires merged. These fires began from lightning strikes on August 18, 2020 and actively burned in the Diablo mountain range in Santa Clara, Alameda, Contra Costa, San Joaquín, and Stanislaus counties. The fires burned 396,624 acres, destroyed 222 structures, and damaged 26 before full containment on October 1, 2020. The SCU Lighting complex is the 4th largest California wildfire in recorded history[37].

[36] SCU Lightning Complex. *https://www.fire.ca.gov/incidents/2020/8/18/scu-lightning-complex/*
[37] *https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf*

Figure III-7: SCU Lightning Complex Fire Perimeter Map

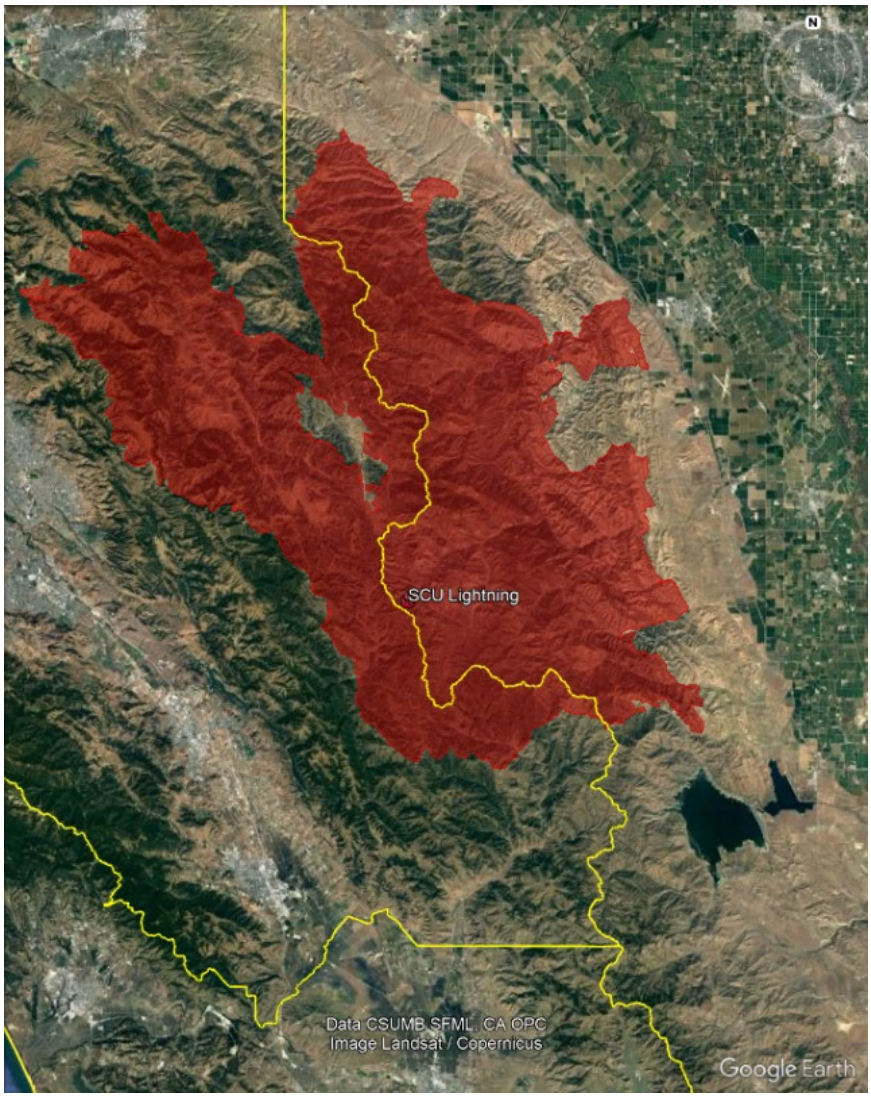


Table III-7: SCU Lightning Complex Fire Daily Acreage[38]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/18/2020	N/A	N/A	Date of Origin
8/20/2020	137,475	137,475	5%
8/21/2020	92,493	229,968	10%

[38] SCU Lightning Complex Fire – Archived fire.ca.gov pages. Accessed 10/25/2021. *https://web.archive.org/web/20200821013706/https://www.fire.ca.gov/incidents/2020/8/18/scu-lightning-complex/*

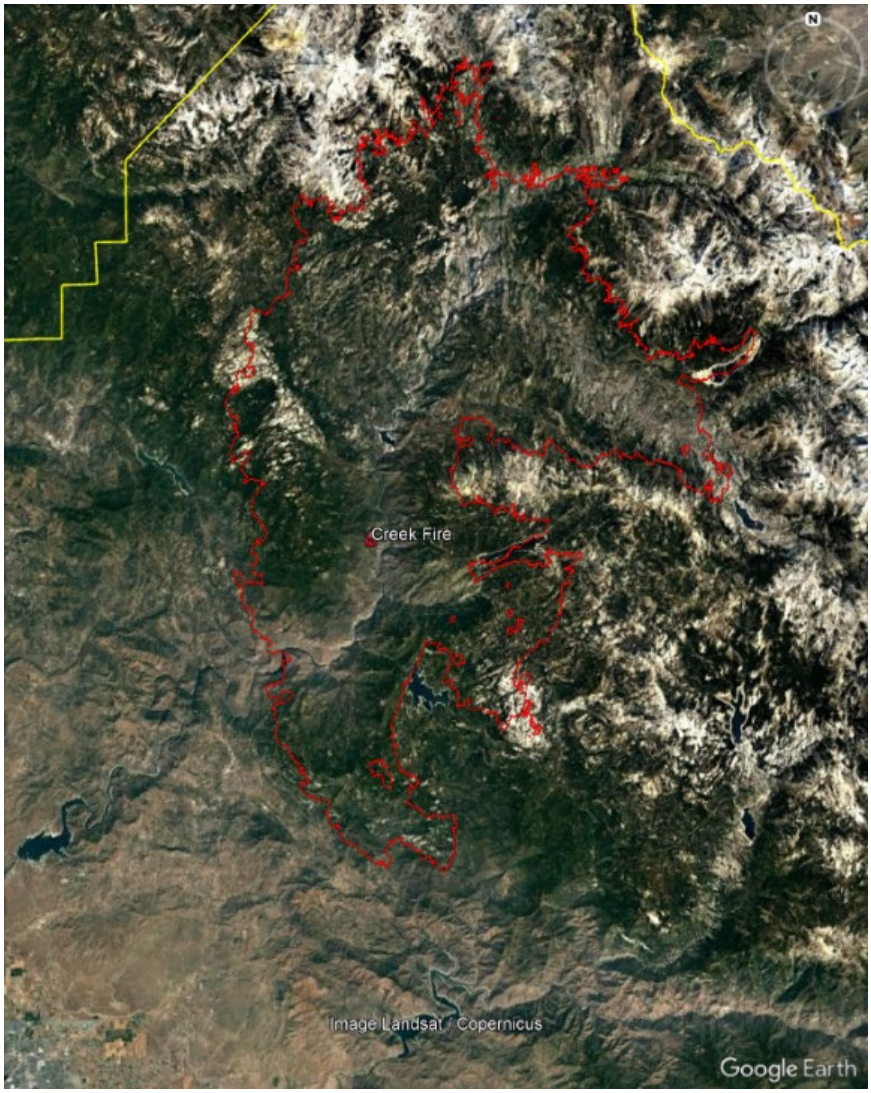
Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/22/2020	110,000	339,968	10%
8/23/2020	3,997	343,965	10%
8/25/2020	16,090	360,055	15%
8/26/2020	5,716	365,771	20%
8/27/2020	3,700	369,471	35%
8/28/2020	5,000	374,471	40%
8/29/2020	2,000	376,471	45%
8/30/2020	1,000	377,471	50%
9/1/2020	12,686	390,157	70%
9/2/2020	1,421	391,578	72%
9/3/2020	0	391,578	78%
9/4/2020	5,046	396,624	84%
9/5/2020	0	396,624	88%
9/7/2020	0	396,624	93%
9/8/2020	0	396,624	95%
9/10/2020	0	396,624	97%
9/11/2020	0	396,624	98%
10/1/2020	0	396,624	100%

Creek Fire[39] (Figure III-8 and Table III-8) began on September 4, 2020 with the source currently under investigation. Within the first four days of starting the Creek Fire grew

[39] Creek Fire. *https://inciweb.nwcg.gov/incident/7147/*

anywhere between 20,000 to 50,000 acres due to the strong winds in the area. The fire activity burned in the Sierra National Forest in Fresno and Madera counties, burning 379,895 acres and destroying 853 structures, including many homes in Big Creek, before full containment on December 24, 2020. The creek fire is the 5th largest California wildfire and the 2nd largest single California wildfire in recorded history[40].

Figure III-8: Creek Fire Perimeter Map



[40] *https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf*

Table III-8: Creek Fire Daily Acreage[41]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
9/4/2020	N/A	N/A	Date of Origin
9/5/2020	36,000	36,000	0%
9/7/2020	42,790	78,790	0%
9/8/2020	65,139	143,929	0%
9/10/2020	31,964	175,893	0%
9/11/2020	0	175,893	6%
9/12/2020	20,774	196,667	6%
9/13/2020	5,241	201,908	8%
9/14/2020	10,836	212,744	10%
9/15/2020	7,281	220,025	18%
9/17/2020	24,731	244,756	18%
9/18/2020	3,500	248,256	20%
9/21/2020	32,169	280,425	30%
9/22/2020	3,299	283,724	30%
9/24/2020	7,702	291,426	34%
9/25/2020	0	291,426	36%
9/26/2020	746	292,172	39%
9/27/2020	10,698	302,870	39%

[41]Creek Fire – Archived inciweb.nwcg.gov pages. Accessed 10/25/2021. *https://web.archive.org/web/20200908190210/https://inciweb.nwcg.gov/incident/7147/https://web.archive.org/web/20200908190210/https://inciweb.nwcg.gov/incident/7147/*

Date	Fire Growth (Acres)	Total Acres	Percent Contained
9/28/2020	1,770	304,640	39%
9/29/2020	600	305,240	44%
10/1/2020	3,793	309,033	44%
10/2/2020	3,030	312,063	45%
10/3/2020	1,597	313,660	49%
10/5/2020	8,429	322,089	48%
10/6/2020	4,617	326,706	49%
10/9/2020	5,260	331,966	49%
10/11/2020	1,914	333,880	55%
10/12/2020	-530*	333,350	55%
10/13/2020	4,305	337,655	55%
10/16/2020	6,387	344,042	60%
10/17/2020	2,435	346,477	60%
10/18/2020	1,608	348,085	60%
10/19/2020	2,246	350,331	61%
10/20/2020	2,008	352,339	61%
10/21/2020	0	352,339	61%
10/26/2020	17,023	369,362	63%
10/29/2020	10,209	379,571	70%
10/30/2020	0	379,571	70%
10/31/2020	431	380,002	70%

Date	Fire Growth (Acres)	Total Acres	Percent Contained
11/2/2020	661	380,663	70%
11/4/2020	-1,933*	378,730	70%
11/6/2020	986	379,716	70%
11/8/2020	13	379,729	70%
11/17/2020	166	379,895	78%
11/23/2020	0	379,895	95%
12/3/2020	0	379,895	96%
12/24/2020	0	379,895	100%

* Fire acreage estimate was adjusted by reporting agency.

North Complex Fire[42] (Figure III-9 and Table III-9) began during a lightning strike on August 17, 2020 and actively burned in Plumas National Forest in Plumas, Butte, and Yuba counties. By September 5, 2020 all the individual fires had been contained except for the Claremont and Bear fires. These two fires merged on September 5, 2020 and due to strong winds rapidly grew spreading to the Southwest and leveling the towns of Berry Creek and Feather Falls. The fires burned 318,935 acres, damaging or destroying 2,352 structures, and causing 15 fatalities before full containment on December 3, 2020. The North Complex Fire is the 7th largest California wildfire in recorded history[43].

[42] North Complex Fire. *https://inciweb.nwcg.gov/incident/6997/*
[43] *https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf*

Figure III-9: North Complex Fire Perimeter Map

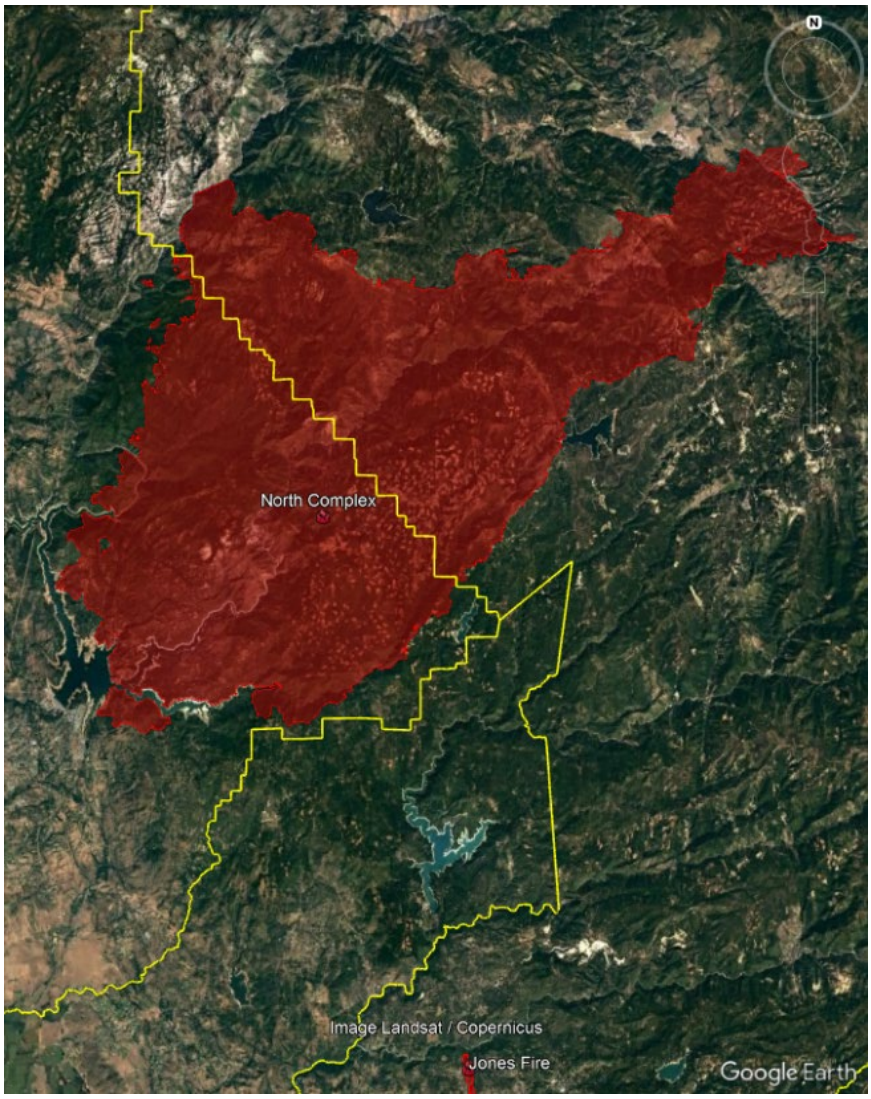


Table III-9: North Complex Fire Daily Acreage[44]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/17/2020	N/A	N/A	Date of Origin
8/27/2020	54,993	54,993	21%
9/9/2020	95,147	150,140	24%

[44] North Complex Fire – Archived inciweb.nwcg.gov pages. Accessed 10/25/2021. *https://web.archive.org/web/20200828141537/https://inciweb.nwcg.gov/incident/6997/*

Date	Fire Growth (Acres)	Total Acres	Percent Contained
9/10/2020	94,063	244,203	23%
9/12/2020	8,110	252,313	21%
9/13/2020	6,489	258,802	26%
9/14/2020	5,572	264,374	38%
9/15/2020	4,984	269,358	32%
9/16/2020	3,977	273,335	36%
9/17/2020	7,440	280,775	36%
9/19/2020	9,176	289,951	58%
9/21/2020	3,892	293,843	64%
9/22/2020	5,880	299,723	74%
9/23/2020	2,029	301,752	78%
9/26/2020	3,129	304,881	78%
9/29/2020	4,114	308,995	76%
10/1/2020	5,954	314,949	79%
10/2/2020	2,510	317,459	79%
10/3/2020	0	317,459	83%
10/5/202	1,265	318,724	86%
10/9/2020	206	318,930	90%
10/11/2020	0	318,930	91%
10/12/2020	0	318,930	94%
10/14/2020	0	318,930	94%

Date	Fire Growth (Acres)	Total Acres	Percent Contained
10/16/2020	0	318,930	94%
10/18/2020	0	318,930	94%
10/19/2020	0	318,930	95%
10/29/2020	5	318,935	96%
11/25/2020	0	318,935	98%
12/4/2020	0	318,935	100%

Woodward Fire[45] (Figure III-10 and Table III-10) began during a lightning strike on August 17, 2020 and was initially named the 4-5 Fire and on August 18, 2020 a second fire initially named the 4-6 Fire was found nearby, these were later renamed to the Woodward Fire[46]. These fires quickly grew due to winds and actively burned in the Point Reyes National Seashore. The fires burned 4,929 before full containment on October 1, 2020.

[45] Woodward Fire. *https://inciweb.nwcg.gov/incident/maps/7062/*
[46] National Park Service. Point Reyes – National Seashore California. *https://www.nps.gov/pore/learn/management/firemanagement_woodwardfire.htm*

Figure III-10: Woodward Fire Perimeter Map

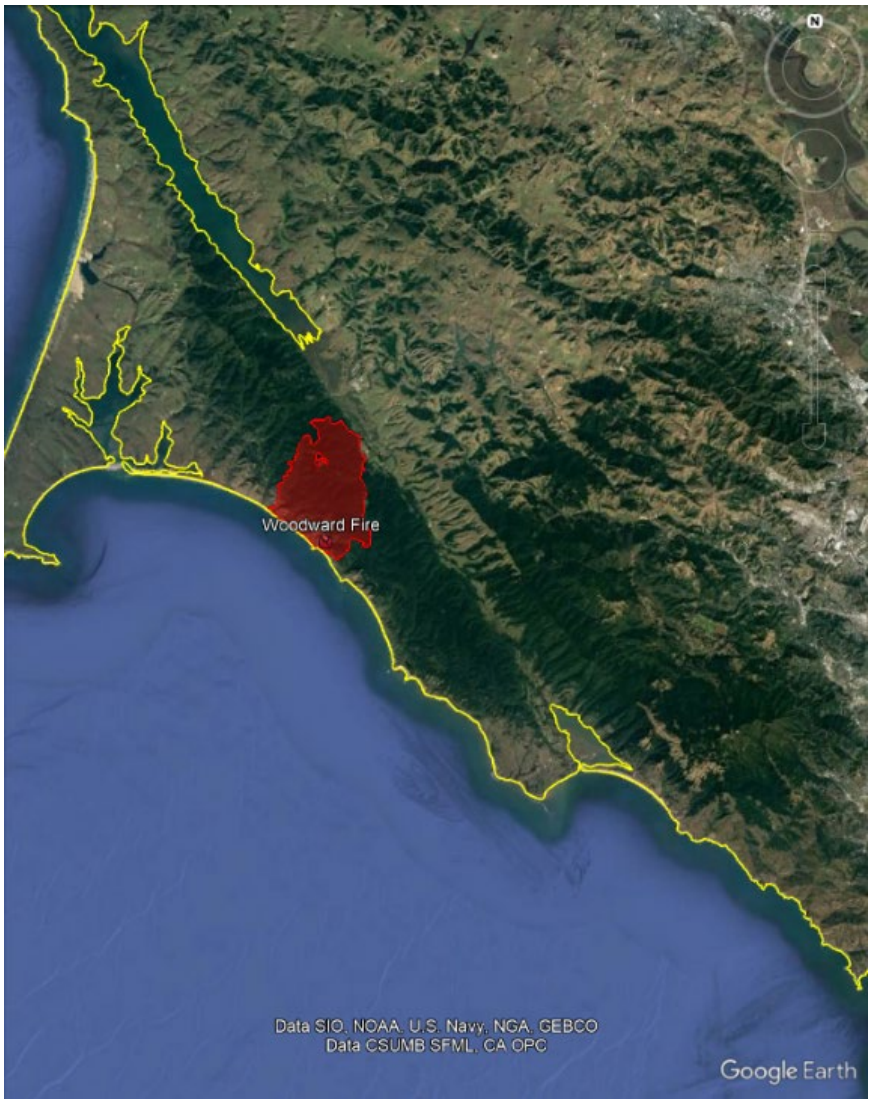


Table III-10: Woodward Fire Daily Acreage[47]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/18/2020	N/A	N/A	Date of Origin
8/23/2020	2,487	2,487	5%
8/26/2020	373	2,860	8%

[47] Woodward Fire – Archived inciweb.nwcg.gov pages. Accessed 10/25/2021. *https://web.archive.org/web/20201003104531/https://inciweb.nwcg.gov/incident/7062/*

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/31/2020	1,605	4,465	25%
9/6/2020	348	4,813	93%
9/10/2020	92	4,905	95%
9/12/2020	5	4,910	95%
9/14/2020	0	4,910	95%
9/15/2020	0	4,910	95%
9/16/2020	19	4,929	96%
9/18/2020	0	4,929	97%
9/25/2020	0	4,929	97%
10/2/2020	0	4,929	100%

SQF Complex Fire[48] (Figure III-11and Table III-11) began as the Castle and Shotgun fires during a lightning strike on August 19, 2020. The Castle fire actively burned in Sequoia National Forest and Giant Sequoia National Monument, Inyo National Forest, Sequoia National Park, lands managed by the Bureau of Land Management, State, County, and private lands with the Shotgun fire actively burning in the Golden Trout Wilderness and Sequoia National Forest. The fires burned 174,178 acres and destroyed 228 structures before full containment on January 5, 2021.

[48] SQF Complex Fire. *https://inciweb.nwcg.gov/incident/7048/*

Figure III-11: SQF Complex Fire Perimeter Map

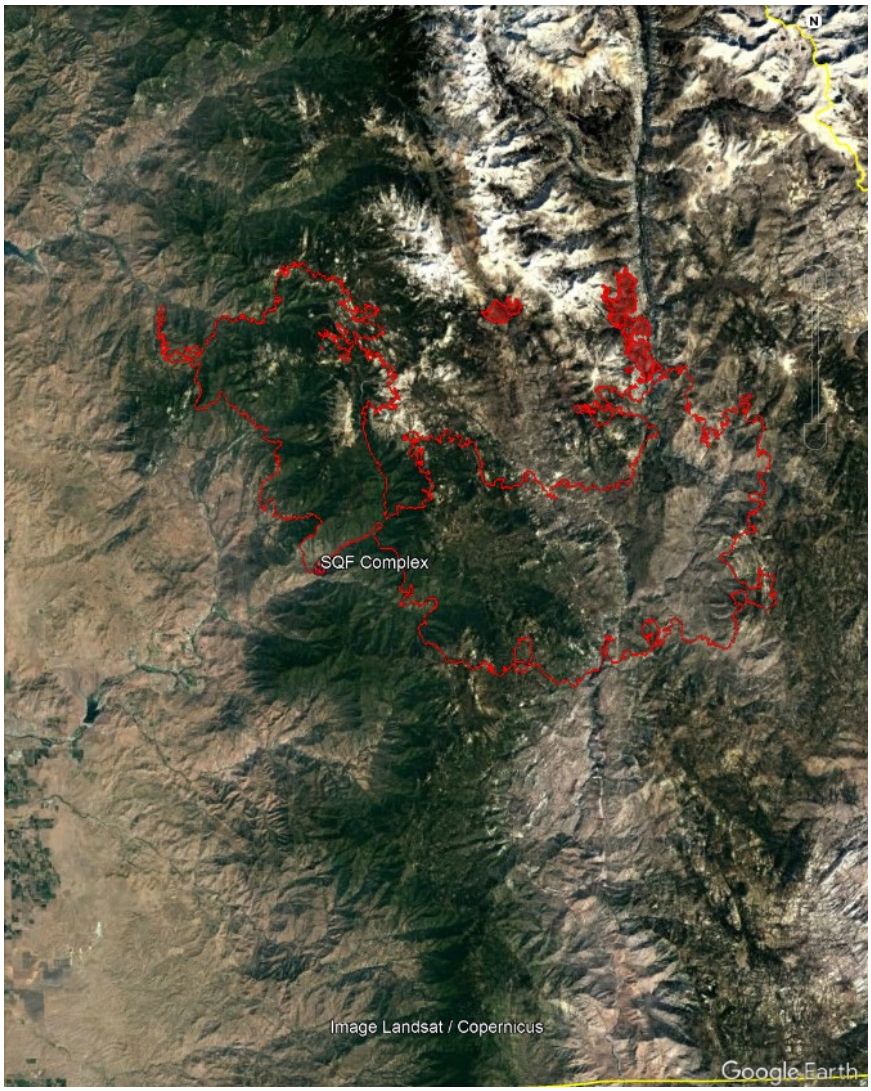


Table III-11: SQF Complex Fire Daily Acreage[49]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/19/2020	N/A	N/A	Date of Origin
8/24/2020	12,000	12,000	0%
8/27/2020	8,979	20,979	0%

[49] SQF Complex Fire – Archived inciweb.nwcg.gov pages. Accessed 10/25/2021. *https://web.archive.org/web/20211011183538/https://inciweb.nwcg.gov/incident/7048/*

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/31/2020	16,749	37,728	0%
9/2/2020	4,846	42,574	1%
9/6/2020	13,387	55,961	7%
9/8/2020	6,926	62,887	7%
9/10/2020	4,642	67,529	12%
9/11/2020	564	68,093	12%
9/13/2020	6,211	74,304	12%
9/14/2020	16,541	90,845	12%
9/15/2020	16,256	107,101	12%
9/16/2020	7,219	114,320	12%
9/17/2020	8,515	122,835	12%
9/19/2020	10,653	133,488	12%
9/20/2020	2,314	135,802	18%
9/21/2020	1,706	137,508	33%
9/22/2020	4,092	141,600	33%
9/23/2020	3,226	144,826	35%
9/25/2020	4,024	148,850	39%
9/29/2020	1,950	150,800	58%
9/30/2020	636	151,436	61%
10/2/2020	1,790	153,226	61%
10/3/2020	3,209	156,435	60%

Date	Fire Growth (Acres)	Total Acres	Percent Contained
10/5/2020	1,623	158,058	65%
10/6/2020	887	158,945	65%
10/9/2020	6,048	164,993	65%
10/11/2020	2,853	167,846	65%
10/12/2020	-367*	167,479	70%
10/16/2020	434	167,913	70%
10/20/2020	682	168,595	73%
10/21/2020	378	168,973	75%
10/25/2020	715	169,688	75%
10/28/2020	344	170,032	75%
10/31/2020	133	170,165	80%
11/16/2020	4,013	174,178	83%
11/19/2020	0	174,178	90%
12/1/2020	0	174,178	90%
1/5/2021	0	174,178	100%

* Fire acreage estimate was adjusted by reporting agency.

Hills Fire[50] (Figure III-12 and Table III-12) began on August 15, 2020 during a lightning strike. The fire actively burned in the wildland urban interface zone within Fresno County, approximately 30 miles north of the Red Hills monitor. The Hills fire burned 2,121 acres and caused one fatality before being fully contained on August 24, 2020.

[50] Cal Fire – Hills Fire. *https://www.fire.ca.gov/incidents/2020/8/15/hills-fire/*

Figure III-12: Hills Fire Perimeter Map

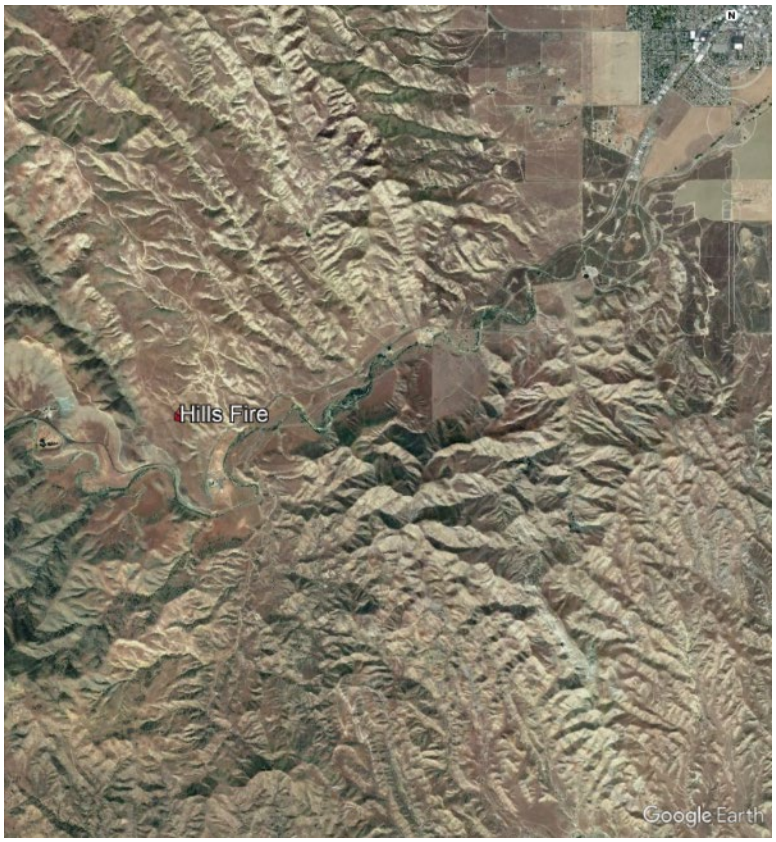


Table III-12: Hills Fire Daily Acreage[51]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/15/2020	N/A	N/A	Date of Origin
8/20/2020	1,900	1,900	45%
8/21/2020	0	1,900	60%
8/22/2020	221	2,121	90%
8/23/2020	0	2,121	96%
8/24/2020	0	2,121	100%

[51] Hills Fire – Archived fire.ca.gov pages. Accessed 10/29/2021.
https://web.archive.org/web/20200821041111/https://www.fire.ca.gov/incidents/2020/8/15/hills-fire/

Holser Fire[52] (Figure III-13 and Table III-13) began on August 17, 2020 as a bush fire with the source of the fire still unknown. The fire actively burned in Piru Canyon in Ventura County, approximately 12 miles north of the Simi Valley monitor, and burned 3,000 acres before being fully contained on September 9, 2020.

Figure III-13: Holser Fire Perimeter Map

Table III-13: Holser Fire Daily Acreage[53,54,55]

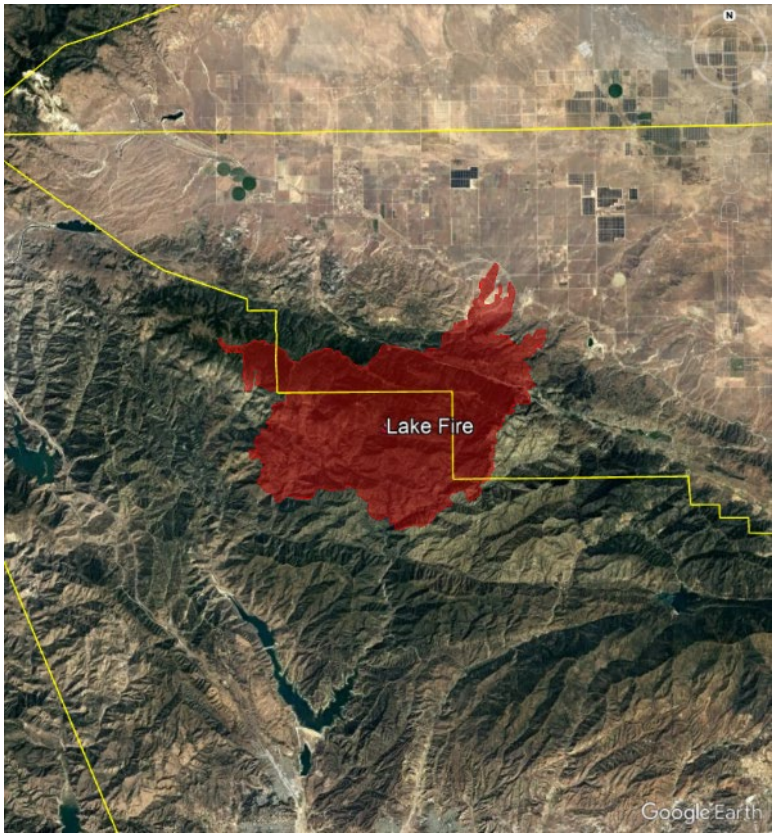
Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/17/2020	1,100	1,100	Date of Origin
8/18/2020	1,900	3,000	20%

[52] Cal Fire – Holser Fire. *https://www.fire.ca.gov/incidents/2020/8/17/holser-fire/*
[53] Holser Fire – Archived fire.ca.gov pages. Accessed 10/29/2021. *https://web.archive.org/web/20200822034714/https://www.fire.ca.gov/incidents/2020/8/17/holser-fire/*
[54] Twitter. Wildfire Today – Holser Fire. Accessed 10/29/2021. *https://twitter.com/wildfiretoday/status/1295549671797067777*
[55] VC Star – Holser Fire. Accessed 10/29/2021. *https://www.vcstar.com/story/news/2020/08/17/brush-fire-kicks-off-piru-canyon/3386086001/*

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/21/2020	0	3,000	80%
9/6/2020	0	3,000	100%

Lake Fire[56] (Figure III-14 and Table III-14) began on August 12, 2020 during a lightning strike. The fire actively burned in the Angeles National Forest in Los Angeles County. The Lake Fire burned 31,089 acres, destroyed 33 structures, damaged 6 structures, and destroyed 21 outbuildings before being fully contained on September 29, 2020.

Figure III-14: Lake Fire Perimeter Map



[56] Cal Fire – Lake Fire. *https://fire.ca.gov/incidents/2020/8/12/lake-fire/*

Table III-14: Lake Fire Daily Acreage[57]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/12/2020	N/A	N/A	Date of Origin
8/16/2020	17,862	17,862	12%
8/17/2020	664	18,526	31%
8/18/2020	3,613	22,139	38%
8/19/2020	4,074	26,213	38%
8/20/2020	1,628	27,841	52%
8/21/2020	1,524	29,365	52%
8/23/2020	1,724	31,089	58%
8/25/2020	0	31,089	65%
8/26/2020	0	31,089	70%
8/28/2020	0	31,089	70%
8/29/2020	0	31,089	82%
8/30/2020	0	31,089	87%
8/31/2020	0	31,089	90%
9/6/2020	0	31,089	95%
9/12/2020	0	31,089	96%
9/29/2020	0	31,089	100%

[57] Lake Fire – Archived fire.ca.gov pages. Accessed 10/29/2021. *https://web.archive.org/web/20200816213814/https://www.fire.ca.gov/incidents/2020/8/12/lake-fire/*

Bobcat Fire[58] (Figure III-15 and Table III-15) began on September 6, 2020 with the source of the fire still unknown. The fire actively burned chaparral, brush, and timber near Cogswell Dam in Angeles National Forest in Los Angeles County. The Bobcat Fire burned 115,796 acres, destroyed 171 structures before being last updated at 92% contained on October 19, 2020.

Figure III-15: Bobcat Fire Perimeter Map

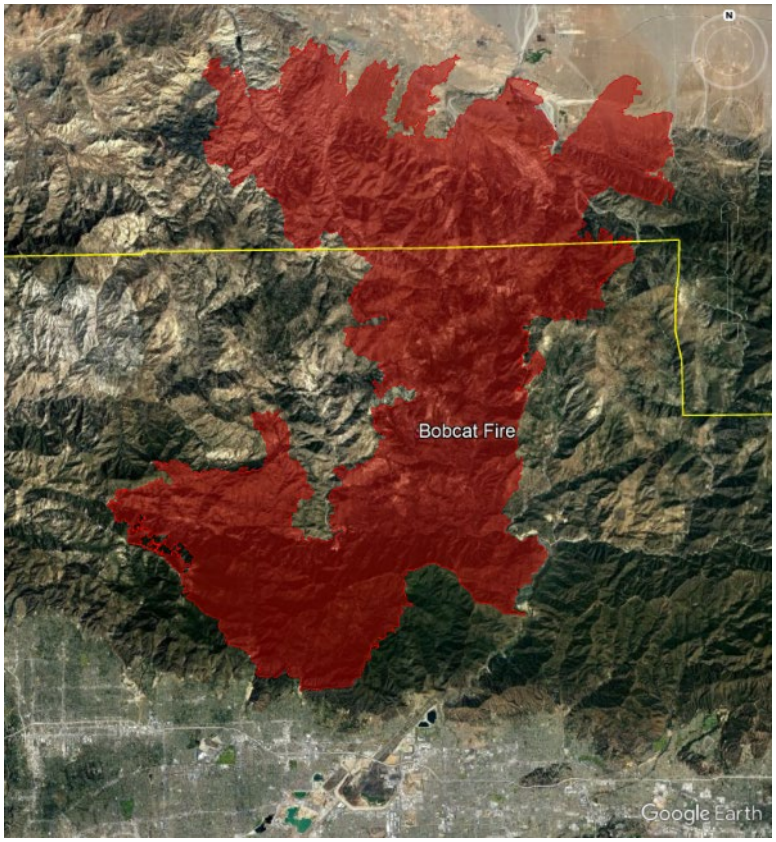


Table III-15: Bobcat Fire Daily Acreage[59]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
9/6/2020	1,800	1,800	Date of Origin
9/7/2020	3,071	4,871	0%
9/9/2020	14,925	19,796	0%

[58] Inciweb – Bobcat Fire. *https://inciweb.nwcg.gov/incident/7152/*
[59] Bobcat Fire – Archived inciweb.nwcg.gov pages. Accessed 10/29/2021. *https://web.archive.org/web/20200915184544/https://inciweb.nwcg.gov/incident/7152/*

Date	Fire Growth (Acres)	Total Acres	Percent Contained
9/11/2020	6,572	26,368	6%
9/12/2020	2,877	29,245	6%
9/13/2020	4,067	33,312	6%
9/15/2020	7,919	41,231	3%
9/16/2020	3,162	44,393	3%
9/17/2020	11,224	55,617	9%
9/18/2020	17,140	72,757	15%
9/19/2020	21,085	93,842	15%
9/21/2020	11,503	105,345	15%
9/22/2020	6,708	112,053	17%
9/23/2020	1,680	113,733	39%
9/24/2020	253	113,986	50%
9/25/2020	0	113,986	55%
9/27/2020	117	114,103	65%
9/28/2020	97	114,200	62%
9/29/2020	2	114,202	62%
9/30/2020	236	114,438	63%
10/1/2020	463	114,901	75%
10/2/2020	0	114,901	79%
10/3/2020	62	114,963	84%
10/5/2020	795	115,758	88%

Date	Fire Growth (Acres)	Total Acres	Percent Contained
10/10/2020	38	115,796	90%
10/11/2020	0	115,796	92%
10/13/2020	0	115,796	92%
10/15/2020	0	115,796	92%
10/19/2020	0	115,796	92%

Dolan Fire[60] (Figure III-16 and Table III-16) began on August 19, 2020 with the source of the fire still unknown. The fire actively burned in state parks and animal sanctuaries in Monterey County and burned 124,924 acres before being fully contained on December 31, 2020.

[60] Dolan Fire. *https://inciweb.nwcg.gov/incident/7018/*

Figure III-16: Dolan Fire Perimeter Map

Table III-16: Dolan Fire Daily Acreage[61]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/18/2020	N/A	N/A	Date of Origin
8/21/2020	8,500	8,500	0%
8/24/2020	11,591	20,091	10%

[61] Dolan Fire – Archived inciweb.nwcg.gov pages. Accessed 10/25/2021. *https://web.archive.org/web/20200822103236/https://inciweb.nwcg.gov/incident/7018/*

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/27/2020	1,770	21,861	20%
9/8/2020	51,228	73,089	40%
9/9/2020	20,945	94,034	26%
9/10/2020	17,348	111,382	26%
9/12/2020	4,058	115,440	30%
9/13/2020	1,802	117,242	40%
9/14/2020	1,223	118,465	40%
9/15/2020	1,023	119,488	40%
9/16/2020	2,690	122,178	40%
9/18/2020	5,546	127,724	45%
9/19/2020	326	128,050	46%
9/20/2020	211	128,261	46%
9/21/2020	155	128,416	46%
9/22/2020	1	128,417	44%
9/23/2020	0	128,417	46%
9/24/2020	0	128,417	46%
9/26/2020	0	128,417	57%
9/28/2020	0	128,417	71%
10/1/2020	-3,493*	124,924	90%
10/2/2020	0	124,924	90%
10/5/2020	0	124,924	91%

Date	Fire Growth (Acres)	Total Acres	Percent Contained
10/9/2020	0	124,924	98%
10/11/2020	0	124,924	98%
10/13/2020	0	124,924	98%
10/16/2020	0	124,924	98%
10/20/2020	0	124,924	98%
10/29/2020	0	124,924	98%
11/2/2020	0	124,924	98%
11/15/2020	0	124,924	98%
12/3/2020	0	124,924	98%
12/28/2020	0	124,924	98%
12/31/2020	0	124,924	100%

* Fire acreage estimate was adjusted by reporting agency.

Salt Fire[62] (Figure III-17 and Table III-17) began on August 18, 2020 due to a source that is under investigation and actively burned near the Salt Springs Valley Reservoir in a wildland urban interface zone within Calaveras County. The fire burned 1,789 acres before full containment on August 24, 2020.

[62] Salt Fire. *https://www.fire.ca.gov/incidents/2020/8/18/salt-fire/*

Figure III-17: Salt Fire Perimeter Map

Table III-17: Salt Fire Daily Acreage[63]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/18/2020	N/A	N/A	Date of Origin
8/22/2020	1,789	1,789	85%
8/24/2020	0	1,789	100%

[63] Salt Fire – Archived inciweb.nwcg.gov pages. Accessed 10/25/2021. *https://www.fire.ca.gov/incidents/2020/8/18/salt-fire/*

Red Salmon Complex[64] (Figure III-18 and Table III-18) began during a lightning strike on July 27, 2020 and was comprised of the Red and Salmon fires. These fires actively burned in Six Rivers National Forest, Shasta Trinity National Forest, Klamath National Forest, and Hoopa Valley Reservation. The fires burned 144,698 acres before full containment on November 17, 2020.

Figure III-18: Red Salmon Complex Perimeter Map

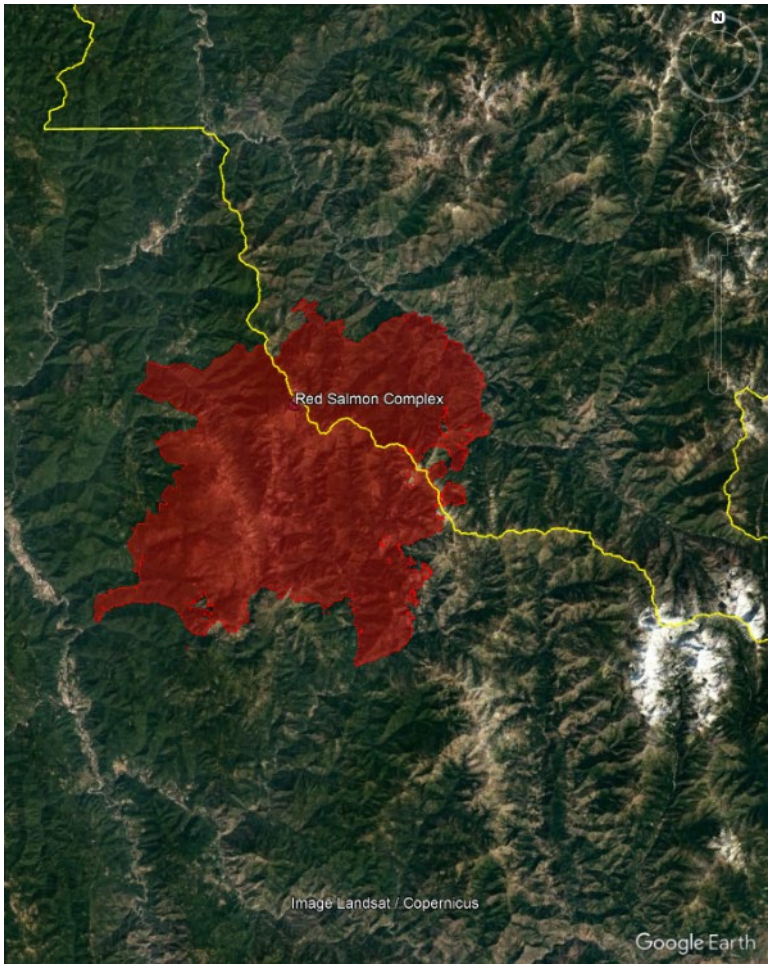


Table III-18: Red Salmon Complex Daily Acreage[65]

Date	Fire Growth (Acres)	Total Acres	Percent Contained
7/27/2020	N/A	N/A	Date of Origin

[64] Red Salmon Complex - *https://inciweb.nwcg.gov/incident/6891/*
[65] Red Salmon Complex Fire – Archived inciweb.nwcg.gov pages. Accessed 11/03/2021. *https://web.archive.org/web/20201127115513/https://inciweb.nwcg.gov/incident/6891*

Date	Fire Growth (Acres)	Total Acres	Percent Contained
8/1/2020	1,643	1,643	0%
8/2/2020	233	1,876	0%
8/4/2020	1,439	3,315	0%
8/7/2020	1,302	4,617	12%
8/18/2020	10,880	15,497	38%
8/26/2020	6,087	21,584	42%
8/31/2020	2,911	24,495	42%
9/6/2020	14,654	39,149	19%
9/10/2020	37,847	76,996	19%
9/11/2020	6,624	83,620	18%
9/13/2020	4,162	87,782	16%
9/14/2020	3,890	91,672	16%
9/15/2020	3,465	95,137	18%
9/16/2020	73	95,210	18%
9/19/2020	10,216	105,426	20%
9/21/2020	-839*	104,587	20%
9/22/2020	80	104,667	29%
9/24/2020	3,498	108,165	27%
9/26/2020	1,948	110,113	31%
9/29/2020	10,123	120,236	31%
10/2/2020	8,955	129,191	31%

Date	Fire Growth (Acres)	Total Acres	Percent Contained
10/6/2020	4,572	133,763	34%
10/9/2020	6,202	139,965	35%
10/11/2020	1,304	141,269	40%
10/13/2020	551	141,820	60%
10/15/2020	567	142,387	62%
10/26/2020	1,348	143,735	78%
10/28/2020	188	143,923	78%
10/30/2020	394	144,317	78%
11/2/2020	157	144,474	78%
11/23/2020	224	144,698	100%

* Fire acreage estimate was adjusted by reporting agency.

These fires occurred in areas that meet the definition of wildland which is "an area in which human activity and development is essentially non-existent, except for roads, railroads, power lines, and similar transportation facilities. Structures, if any, are widely scattered." Wildlands can include forestland, shrubland, grassland, and wetlands and includes lands that are predominantly wildland, such as land in the wildland-urban interface, as specified in the preamble of the Exceptional Events Rule.[66] Figure III-19 and Figure III-20 indicate these areas with the fire perimeters outlined in red.

[66] 81 FR 68248

Figure III-19: California Land Ownership Map with 2020 Wildfire Boundaries (Red)

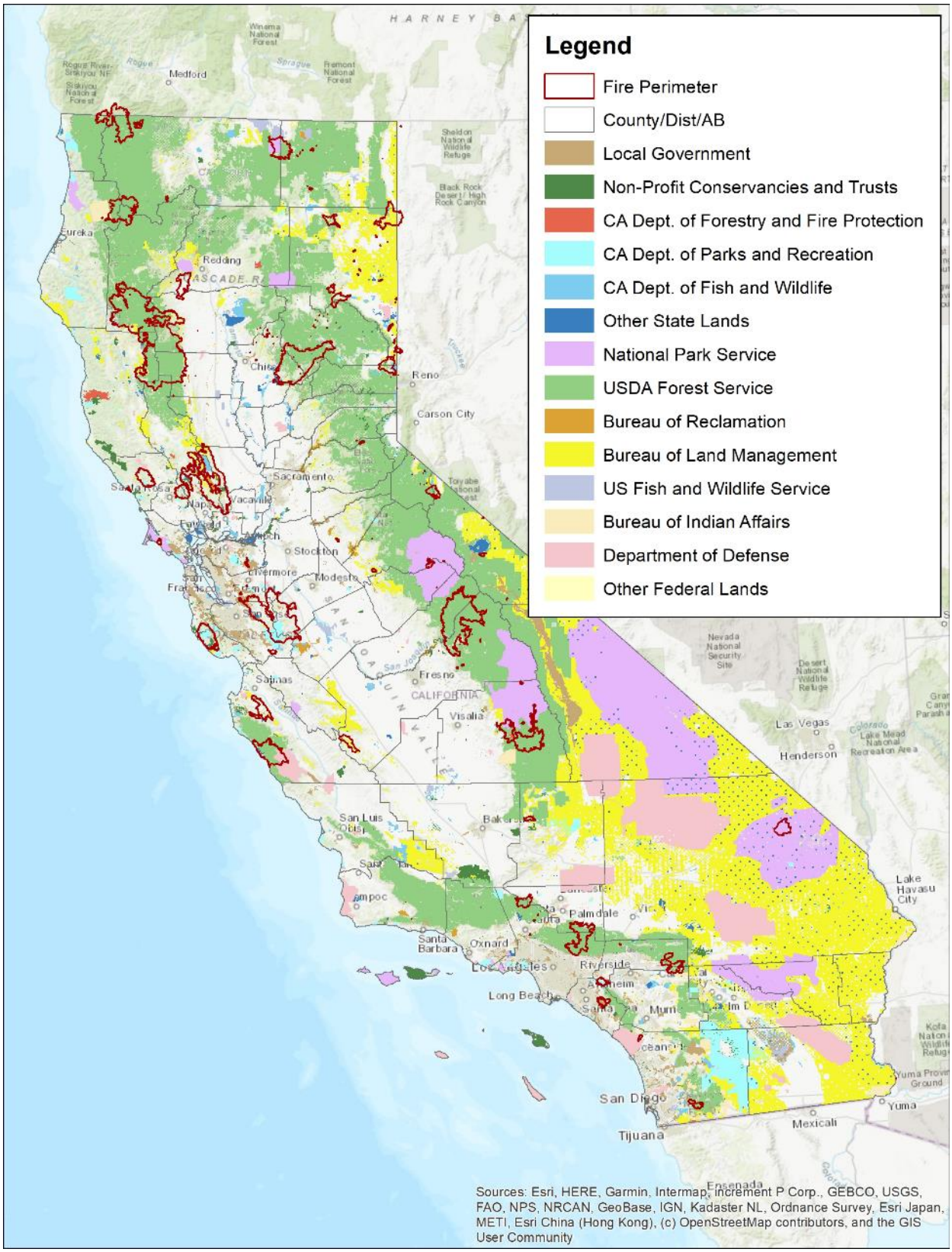
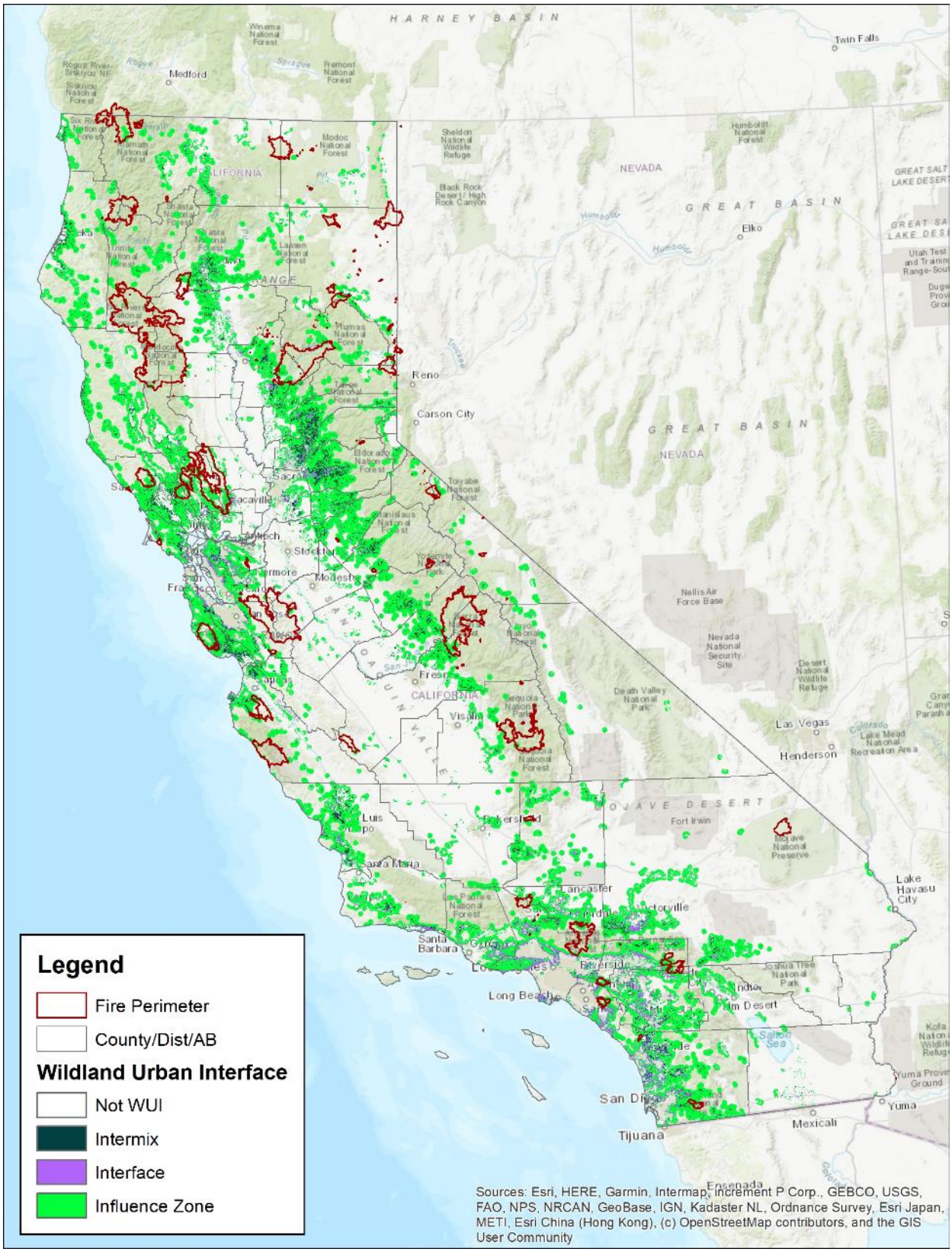


Figure III-20: Wildland-Urban Interface Map with 2020 Wildfire Boundaries (Red)



B. Summary of Event

A series of large wildfires were ignited across California from mid-August to early October 2020. The majority of these fires occurred in the northern and central portions of the State, including the August Complex, which burned 1,032,648 acres and resulted in one fatality; the SCU Lightning Complex, which burned 396,624 acres; and the North Complex Fire, which burned 318,935 acres and resulted in fifteen fatalities. On August 22, 2020, a national disaster was first declared for the State of California,[67] due to the extensive wildfires burning there.[68]

The following section provides evidence of the impact of these exceptional events on the Red Hills and Simi Valley ozone monitors from August 18 to August 21, and September 30 to October 4, 2020. Presented as phases of the event, the evidence shows the source wildfires that collectively contributed emissions impacting these sites in the South Central Coast Air Basin.

NOAA's HYSPLIT[69] model was used to determine simple back-trajectories showing the path that an air parcel took for a specified period of time (here, 36 hours), starting at each monitor at times of peak concentrations on each day. Three height levels (red: 100 meters (m); blue: 500m; green: 1000m) were used to indicate transport near the surface and in the upper atmosphere.

The HYSPLIT model was also used to indicate how emissions from the wildfires were transported toward the monitor (forward trajectory). Trajectories in this section are shown from the fire(s) estimated to have the highest contribution. The trajectories were initiated from each major fire at 12z (04PST). These model runs provide insight into the most likely center path a parcel of air (and smoke) from each fire would take in the 36 hours after the 12z start time. This provides a simplified understanding of smoke transport from a fire across the region, connecting these wildfires with smoke seen in satellite imagery, and indicating potential correlations at a site through analysis of parcel transport timing and backwards trajectories when they overlap. These forward trajectories, overlaid on satellite images from the SUOMI NPP / VIIRS[70] platform using Google Earth, provide a visual analysis of the smoke emitting from the fires and impacting the monitors.

Google Earth was used as a platform to combine the HYSPLIT back-trajectories and the NOAA Hazard and Mapping System (HMS) Fire and Smoke Product[71] smoke layers and fire locations. The back-trajectories for each monitor shown in the following sections traced back from the time of the maximum ozone concentration in the exceeding 8-hour period. Since different monitors will have maximum concentrations at different times, a table of the monitoring sites presented in the back-trajectory figures is included, indicating in both PST

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[67] 85 FR 53428, *Presidential Declaration of a Major Disaster for the State of California*, dated 8/22/20
[68] FEMA, *California Wildfires and High Winds, DR-4558-CA*. *https://www.fema.gov/disaster/4558*
[69] HYbrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT)
[70] NASA Worldview, *https://worldview.earthdata.nasa.gov/*. *Last accessed 11/16/21*
[71] NOAA Satellite Smoke Text Product, *https://www.ssd.noaa.gov/PS/FIRE/smoke.html*. *Last accessed 11/17/21*

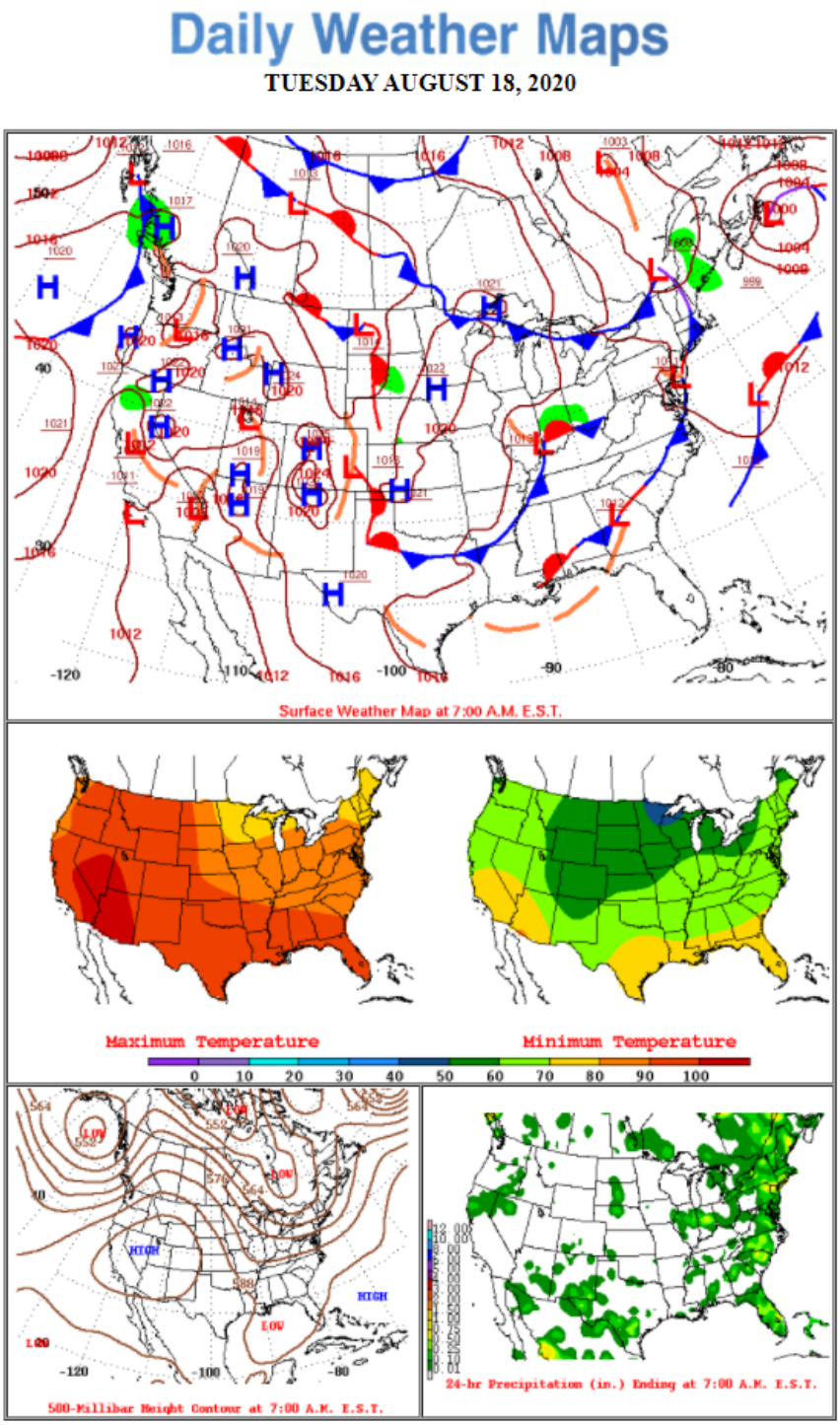
and UTC, the hours each trajectory began. Back-trajectories from the hour of the maximum ozone concentration in the exceeding 8-hour period for all exceptional event dates that are requested in this document are included in Appendix D.

The HYSPLIT trajectory model results, as well as Suomi satellite layers from the NASA Worldview application, and HMS smoke plume analyses, show impacts from multiple California wildfires dispersed throughout the northern and central portions of the State. Although the model results can show potential influence from specific fires, they do not always show the cumulative effect of continuing wildfire emissions that impacted California from August to early November.

1. August 18-21, 2020

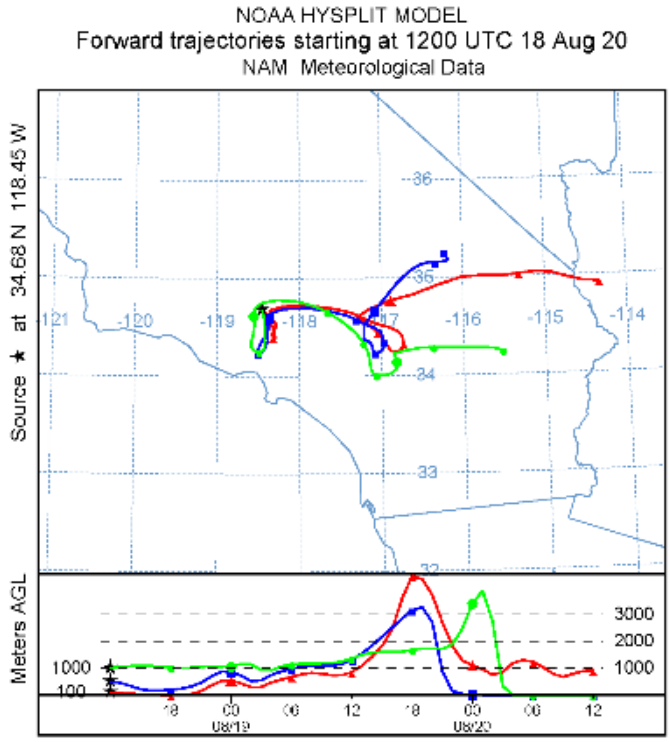
Strong 500 mb high pressure centered over the Great Basin area of Nevada and Utah and southwestern United States (Figure III-21) provided for very hot temperatures across California, including the inland portions of San Luis Obispo County and Ventura County. Some monsoonal moisture moved into interior California with strong atmospheric dynamics favorable for convection, generated thunderstorms that initiated several wildfires in very dry vegetation during August 16-18. These wildfires rapidly spread and grew due to strong winds and low surface humidity across much of the region, causing increased smoke coverage and thickness while impacting surface locations across the State. Upper-level low pressure off the coast of Canada slowly pushes into the northwestern United States with a series of weak troughs moving onshore. This gradually erodes high pressure influence in the northwest United States but leaves southern California hot with above normal temperatures. Near Simi Valley, the Holser Fire (started August 12) and Lake Fire (started August 17) both rapidly grew in size by over 3,000 acres each during the evening August 17 through August 18, eschewing smoke in and near Ventura County and impacting Simi Valley on August 18. The Lake Fire contributed to smoke at Simi Valley when the wind shifted during morning August 18 and brought smoke southward from the Lake Fire, which mixed down into the valley during early August 18, as indicated by trajectory Figure III-22.

Figure III-21: Meteorological conditions on August 18, 2020[72]



[72] National Centers for Environmental Prediction, *https://www.wpc.ncep.noaa.gov/dailywxmap/index.html*

Figure III-22: Lake Fire HYSPLIT Forward Trajectory Beginning August 18/1200 UTC (18/0400 PST)



On August 17, dense wildfire smoke from the Holser Fire filled the Santa Clara River Valley and blew southward between Oxnard and Thousand Oaks, clearing to the east of Port Hueneme with likely a thin layer aloft over a shallow marine layer in Port Hueneme/Oxnard. Then, during the morning, winds shift onshore with a typical westerly breeze in August at Simi Valley (Figure III-23) bringing wildfire smoke and ozone precursors into the Simi Valley area during the late morning and afternoon hours, as advised by the Ventura County APCD Air Quality Alert for August 18, 2020 (Appendix B) and supported by the $PM_{2.5}$ diurnal graph Figure IV-25, indicating $PM_{2.5}$ concentrations increased to 95 Percentile values during morning hours contrary to the normal morning pattern. Under typical non-smoke influenced conditions, $PM_{2.5}$ would decrease as the mixing layer height increases and the onshore breeze brings in cleaner coastal air while clearing out trapped polluted air from the valley. The satellite image in Figure III-24 (image time around 1030am PST) shows the satellite detection of the Holser and Lake fires and the wildfire smoke from the Holser and to be visibly thinner/lighter in the Oxnard/Port Hueneme area and denser smoke remained to the east of Oxnard into the Simi Valley basin, supporting that the smoke did not reach Port Hueneme on August 18. Dense smoke plume from the Lake Fire is also visible, spreading across portions of the area and contributing to the smoke impacting Simi Valley on August 18.

Figure III-23: Simi Valley Hourly Windroses (mph) for August 2018, 2019, and 2020 along with August 18, 2020

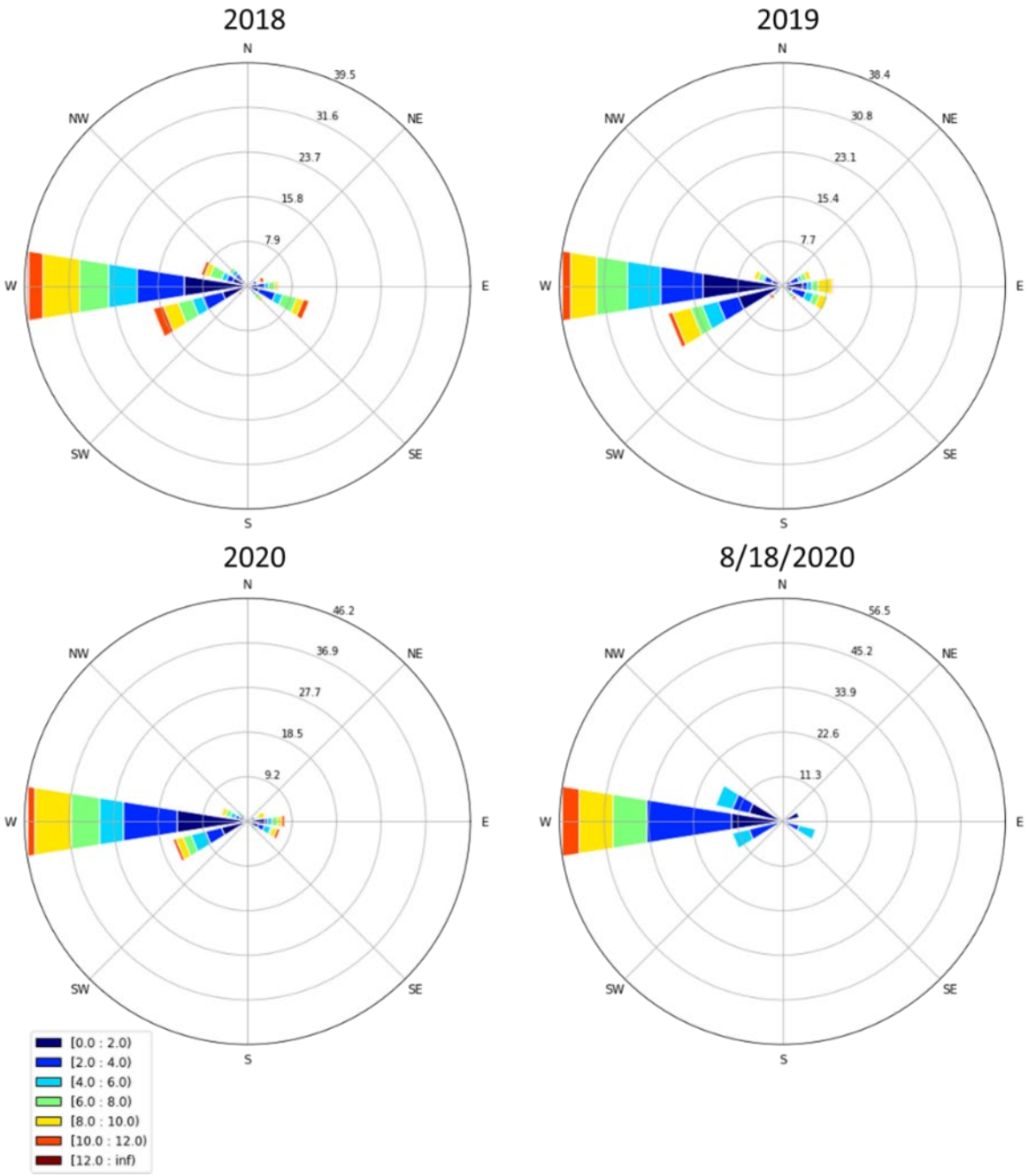
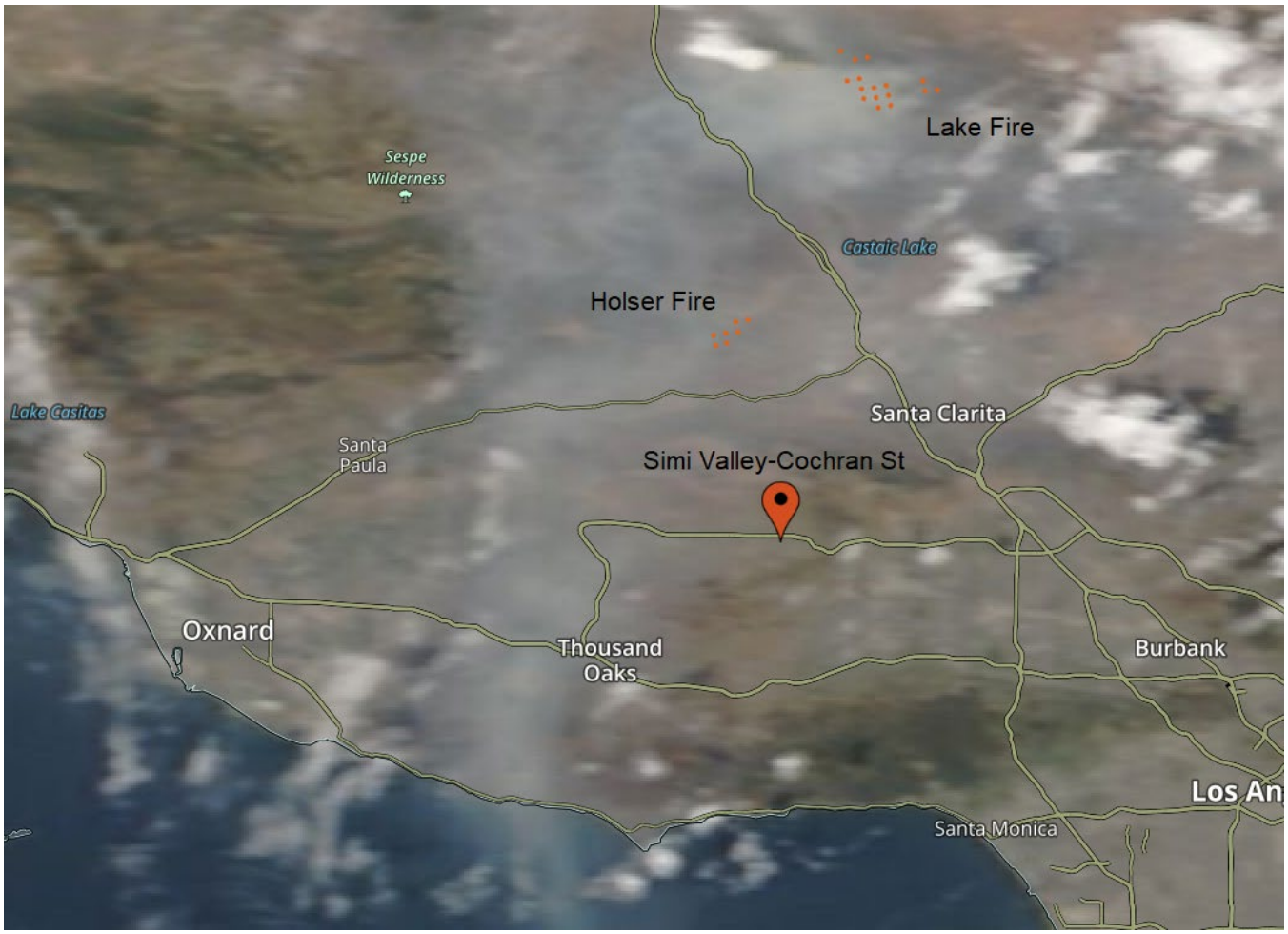


Figure III-24: Terra MODIS Satellite Image with Fire Detection on August 18, 2020[73]



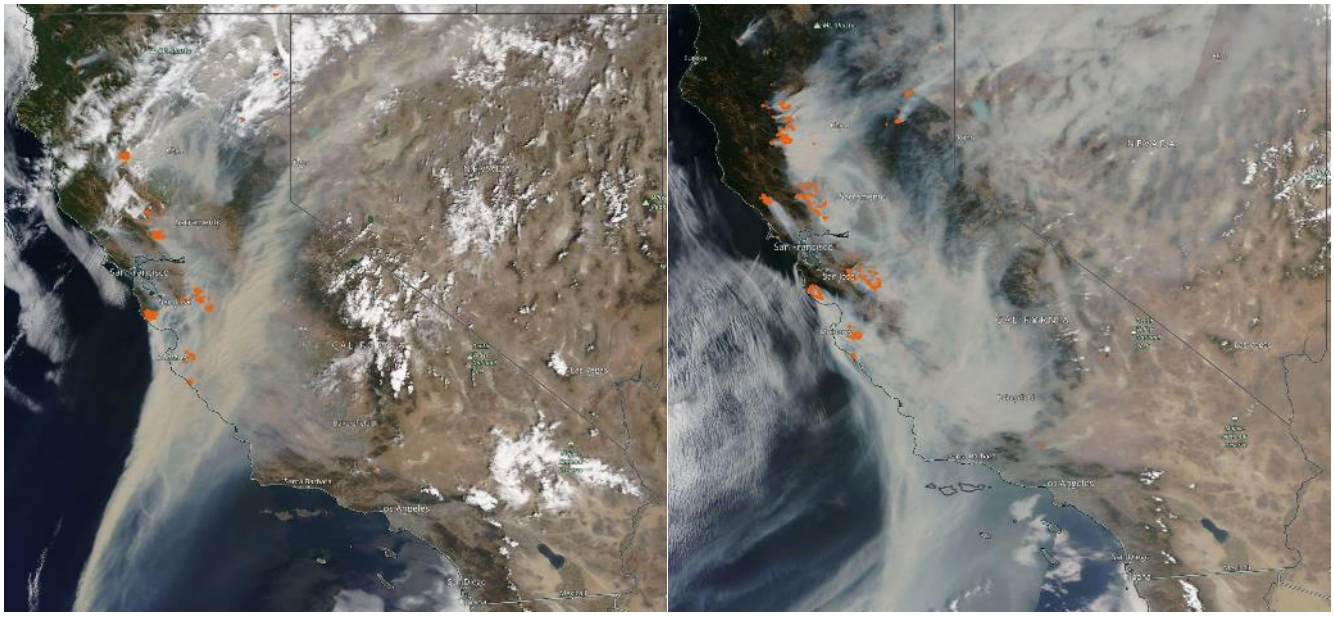
Numerous new wildfires were initiated by thunderstorms, which combined to form the August, LNU, SCU, CZU, and North Complexes, as well as several individual fires. Dense smoke from these very active wildfires spread across the Sacramento Valley, surged southward along the coast, and covered the San Joaquin Valley during August 18-20 (Figure III-25). Areas under dense smoke found reduced daytime solar heating, leading to slightly lower daytime high temperatures as was advised by the National Weather Service. This decreased solar heating should have decreased ozone production at the ground under normal circumstances; however, these wildfires produced significant ozone precursor emissions that enhanced ozone generation and led to elevated ozone concentrations at the surface where dispersion and downwind transport were favorable.

Abundant wildfire smoke and associated emissions was prevalent across San Luis Obispo and Ventura Counties during August 20-21, with ample ozone and ozone precursors being transported to the Red Hills and Simi Valley areas. Ozone and precursors were mixed down to the surface and significantly increased ozone concentrations causing exceedances of the

[73] *NASA Worldview*, accessed 11/16/21

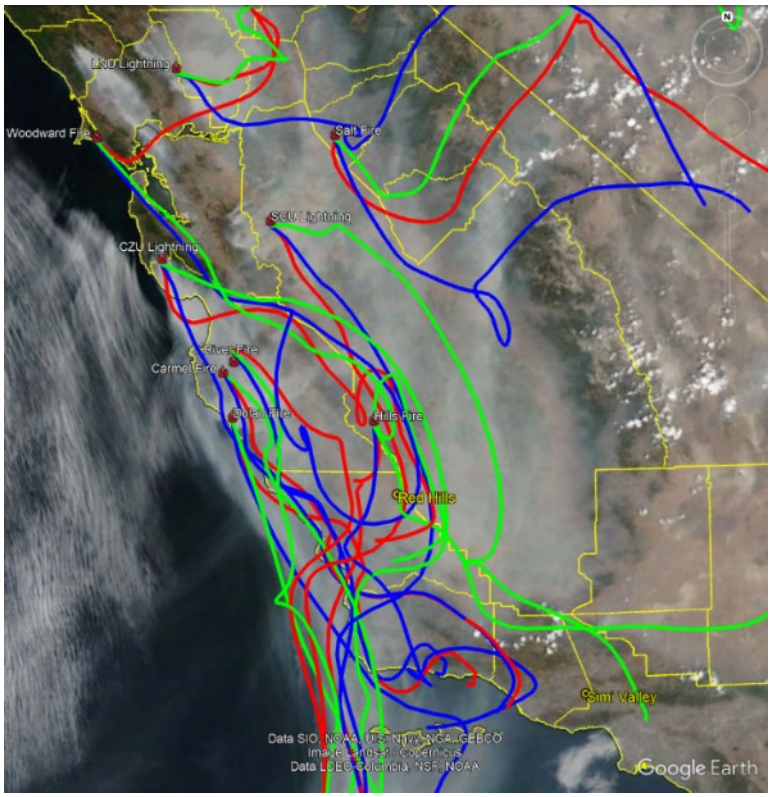
NAAQS, contrary to the cooling effect that normally occurs from the reduction of sunlight with dense smoke. This led to the greatest recorded 8-hour ozone concentration reading at Red Hills on August 21, 2020 of 0.106 ppm, exceeding the prior record of 0.097 ppm on July 8, 2008.

Figure III-25: Terra MODIS Satellite Images for August 19 (left) and August 20 (right)[74]



[74] *NASA Worldview*, accessed 11/16/21

Figure III-26: Forward trajectories 12z (4am PST) from fires (Suomi satellite image, August 20, 2020)



Thick smoke covered most of Northern and Central California, as shown in Figure III-26 above as well as the HMS smoke layers in Figure III-27 below. Back-trajectories, beginning at the time of the maximum concentrations for the exceeding 8-hour period for each site on August 21, are overlaid on this smoke layer. The surface trajectories (red, 100m), as well as those higher in the atmosphere and more indicative of transport (blue, 500m; green, 1000m), were influenced by the wildfire emissions. Table III-19 indicates the time of the start of the back-trajectory for each site.

Figure III-27: August 21, 2020 Back trajectories from exceeding monitors at time of maximum ozone concentration with HMS smoke layers

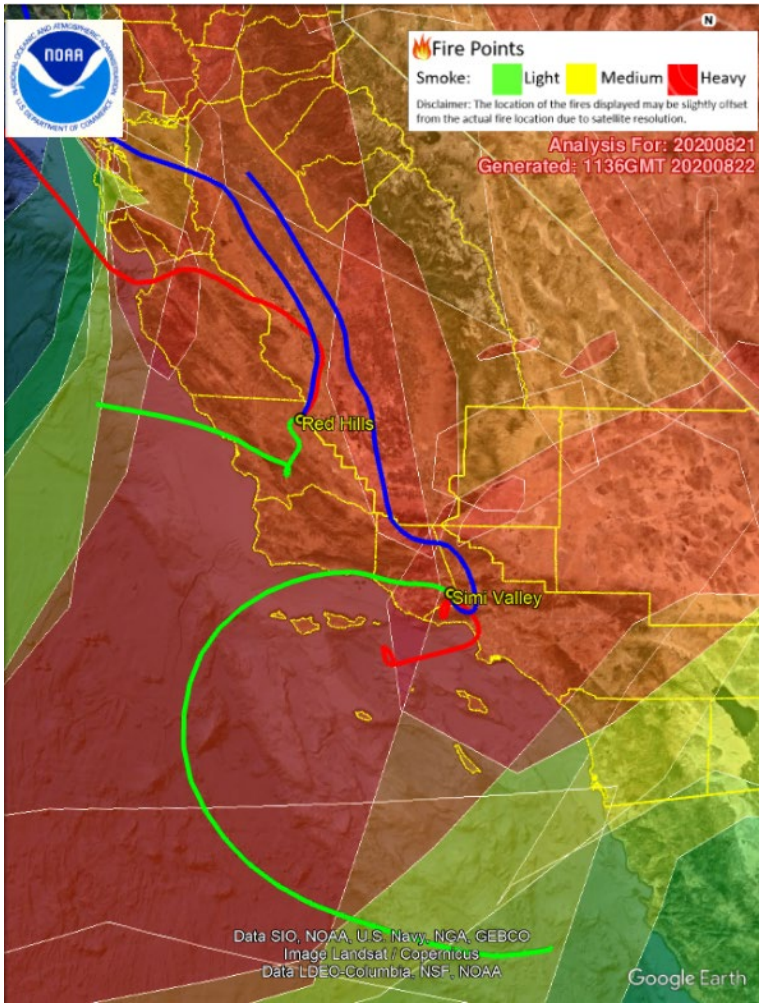


Table III-19: Exceeding Sites and Times of Maximum Ozone Concentrations for August 21

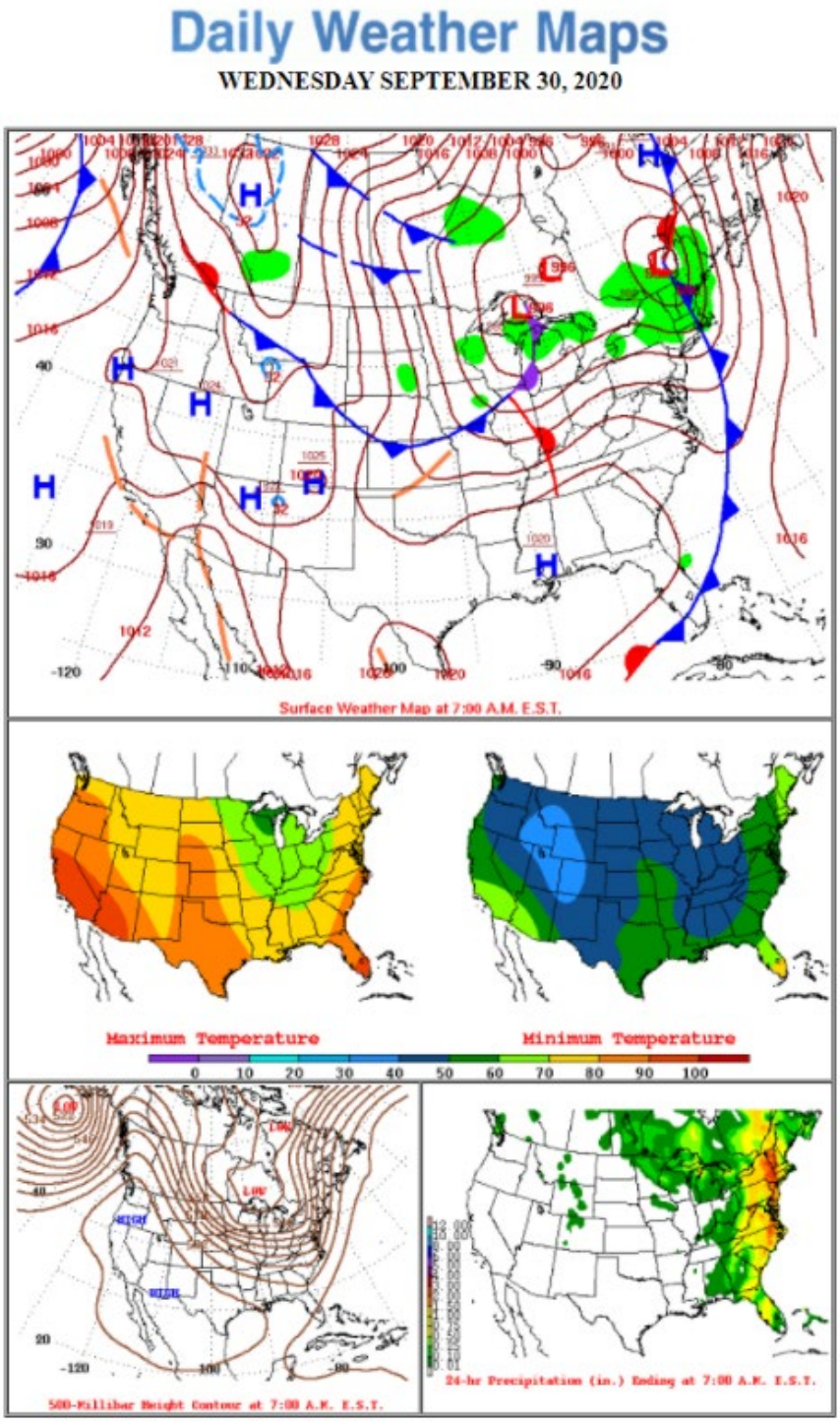
Site	Date (PST)	Max Hour (PST)	Date (UTC)	Max Hour (UTC)
Red Hills	8/21/2020	16	8/22/2020	00
Simi Valley	8/21/2020	12	8/21/2020	20

Late August 21 into August 23, the remnants of Hurricane Genevieve moved northward into the region bringing some moisture and increased instability. Even more importantly, high pressure aloft slowly weakens allowing winds to shift to a southeasterly monsoonal flow. The southeasterly flow brought in cleaner air and transported smoke back northward away from the South Central Coast Air Basin. Wildfire smoke had cleared from Simi Valley by August 23, and was significantly reduced at Red Hills by August 24.

2. **September 30-October 4, 2020**

Strong 500mb high pressure influence extended from Mexico to the Canadian border, which provided for hot and dry surface conditions across much of the western United States, including California, as shown in Figure III-28. These weather conditions promoted high ozone concentrations which were further elevated by transported smoke emissions with associated ozone and precursors from multiple wildfires across the state. During late September, conditions were also favorable for Santa Ana winds which stimulated the spread of any nearby wildfires, further increased wildfire emissions, and broadly spread wildfire smoke across California. The National Weather Service advised of wildfire smoke and haze which impacted the forecast area, including Red Hills and Simi Valley, during this period (NWS Area Forecast Discussions in Appendix C). Along the south-central California coastline, a weak prevailing offshore/onshore diurnal pattern set up and provided for light offshore breezes that pulled air from the San Joaquin Valley and South Coast through Ventura County with warm overnight temperatures during the night. Then during the day, light onshore breezes brought this air back onshore causing a buildup of pollutants near the coast.

Figure III-28: Meteorological conditions on September 30, 2020[75]



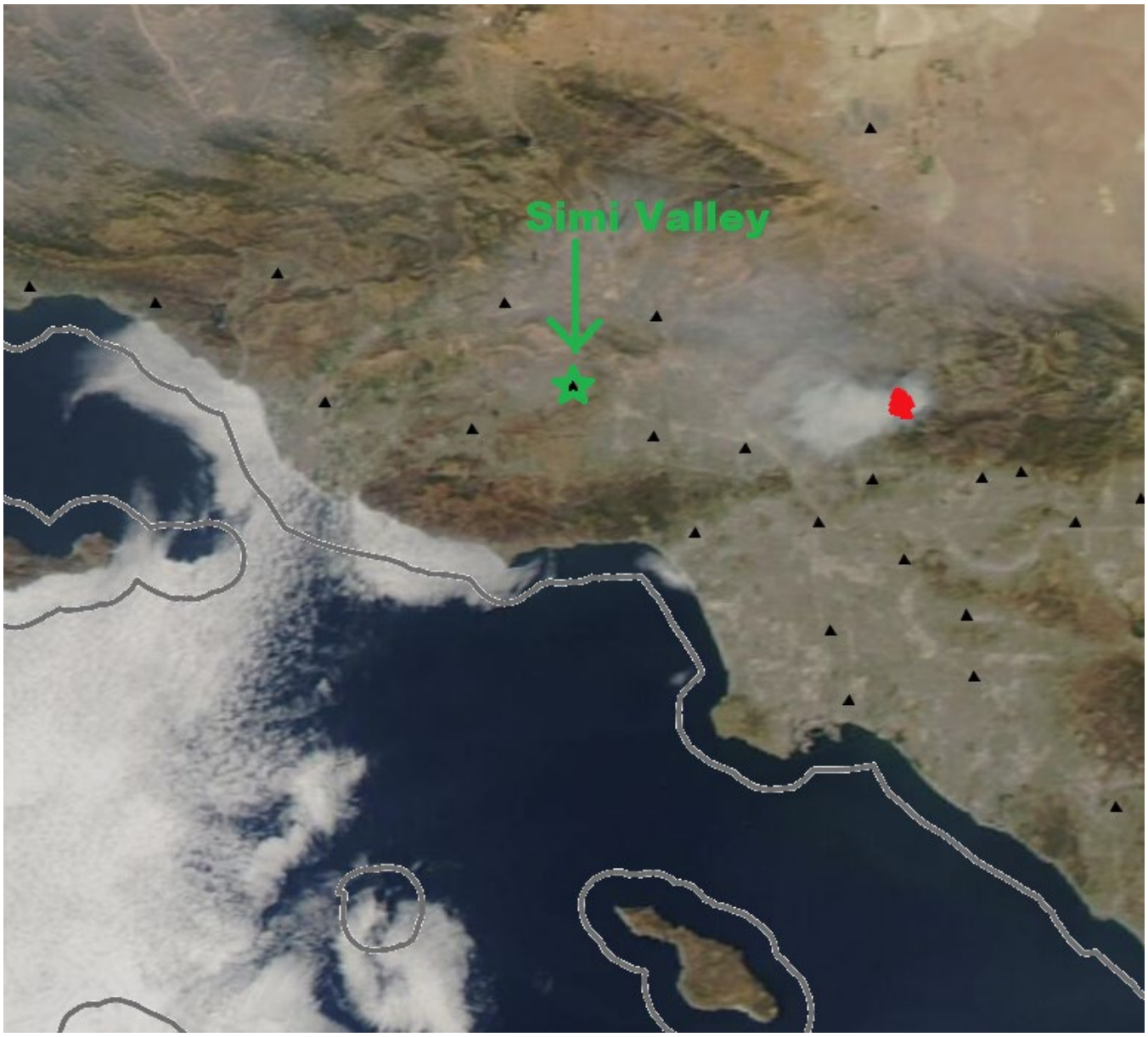
[75] National Centers for Environmental Prediction, *https://www.wpc.ncep.noaa.gov/dailywxmap/index.html*

Heavier smoke moved into the Red Hills area during the afternoon September 30 as indicated by Red Hills (Figure IV-17) and nearby Atascadero (Figure IV-22) diurnal $PM_{2.5}$ charts. Smoke was transported from northern California for much of the day before surface winds shifted northeast and easterly in the evening, which brought smoke from SQF Complex and Creek fires. This shift in winds and transport caused ozone concentrations to increase during late September 30 into early morning October 1 and led to the unusual overnight exceedance of September 30 at 2300 PST as seen in the diurnal ozone profiles (Figure IV-5 and Figure IV-6). Hot, dry weather with heavy smoke persisted across the area on October 1 and October 2 with transport continuing from both northern California wildfires and southern Sierra Mountain range fires, leading to extremely elevated ozone concentrations throughout these days. Slowly weakening high pressure allows for temperatures to cool slightly (though still hot) on October 3. Additionally, little to no fresh smoke is transported from the southern Sierra Nevada mountains, allowing for ozone concentrations at Red Hills to decrease below exceptional event rule requirement for regulatory impact, though still exceeding NAAQS due to wildfire smoke enhancement.

Meanwhile at Simi Valley on October 1 and October 2, light wildfire smoke is transported by low-level (approximately 900mb or around 3,200 feet above sea level) flow from far southern San Joaquin Valley over the Santa Susana Mountains and entrained into the valley as well as from offshore into the Simi Valley by the diurnal land/sea breeze as the onshore breeze reached the Simi Valley-Cochran Street site each afternoon. Diurnal $PM_{2.5}$ charts show elevated concentrations throughout October 2, rapidly climbing overnight and remaining high with forecasted conditions leading to a wildfire smoke and ozone Air Quality Alert by Ventura County APCD for October 3-5 as detailed in Appendix B, further supporting that wildfire smoke and associated ozone precursors had reached the ground and was expected to elevate ozone concentrations.

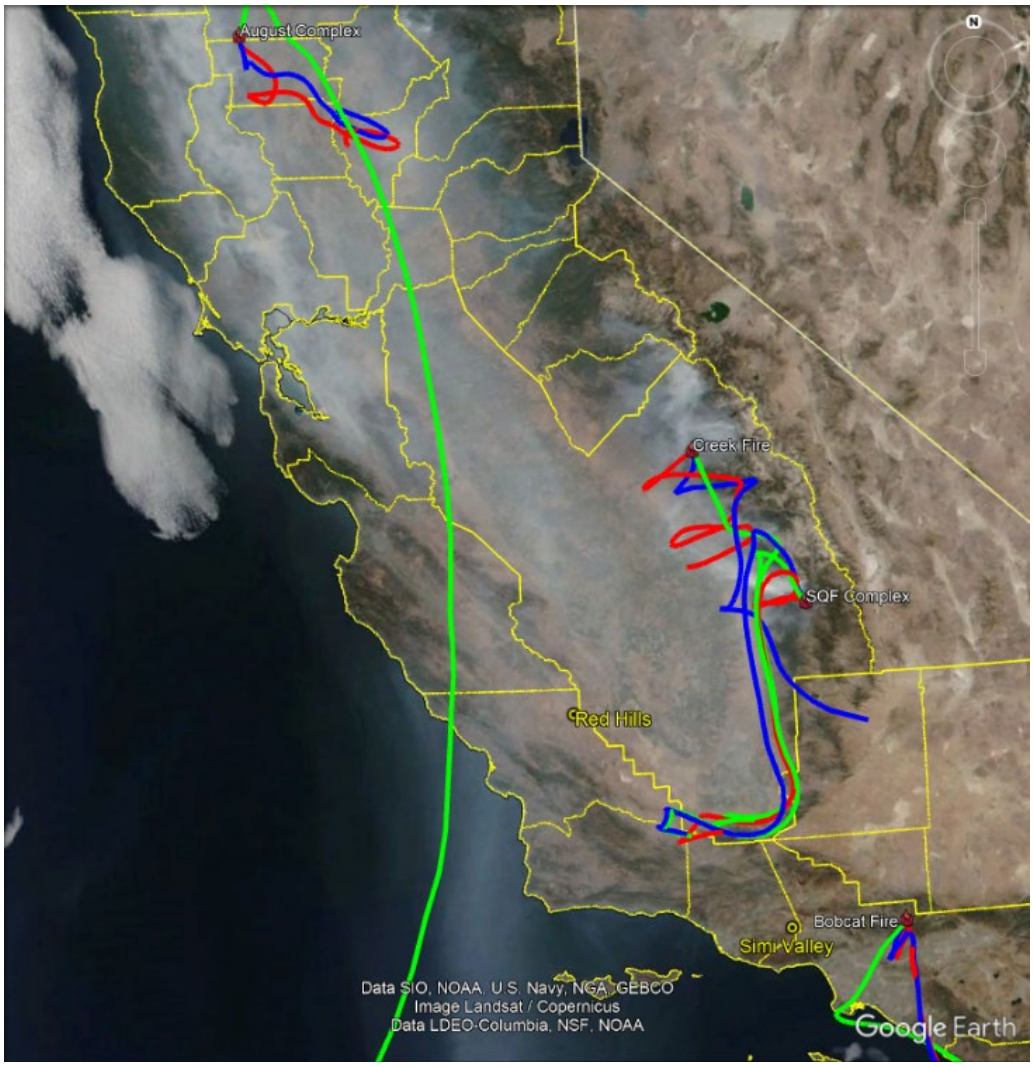
October 3, high pressure aloft and at the surface began weakening, causing temperatures to cool slightly, winds to shift northeasterly, and a slight weakening of the offshore breeze gradient. However, the diurnal pattern at the surface at Simi Valley persisted with wildfire smoke and associated ozone precursors continuing to be transported into the valley and built up. During October 3 into October 4, the Bobcat Fire flares up with heavy wildfire smoke and emissions blown westward toward Simi Valley as seen in Figure III-29.

Figure III-29: MODIS Aqua Satellite Image on October 3, 2020



As upper-level 500mb high pressure influence continues to weaken and a weak surface trough moves near Los Angeles, winds shift to onshore westerly flow bringing cleaner, much less smoky air into central California on October 4, clearing out most wildfire smoke from San Luis Obispo County. During October 5, scattered mid to high level clouds from Tropical Storm Marie move over the area, reducing sunlight and ozone formation potential, alongside minimal smoke emissions produced by the Bobcat Fire and a cleaner onshore marine breeze which significantly cleared out the smoke that had been impacting Simi Valley, which all led to less elevated ozone levels.

Figure III-30: Forward trajectories 12z (4am PST) from fires (Suomi satellite image, October 2, 2020)



The areas of smoke filled in the entirety of the San Joaquin Valley and covers the Southern California Coast Ranges reaching Ventura County and reaching both Red Hills and Simi Valley on October 2. The 36-hour forward trajectories in Figure III-30 are from major contributing wildfires to show the 12z HYSPLIT modeled path of wildfire smoke overlayed on the satellite image for that day.

The 36-hour back-trajectories for October 2 in Figure III-31 indicate that the surface trajectories (red, 100m), as well as those indicative of transport (blue, 500m; green, 1000m), were influenced by the wildfire emissions. All sites showed back-trajectories that transected heavy smoke before impacting the monitors. Table III-20 indicates the time of the start of the back-trajectory for each site.

Figure III-31: October 2, 2020 Back trajectories from exceeding monitors at time of maximum ozone concentration with HMS smoke layers

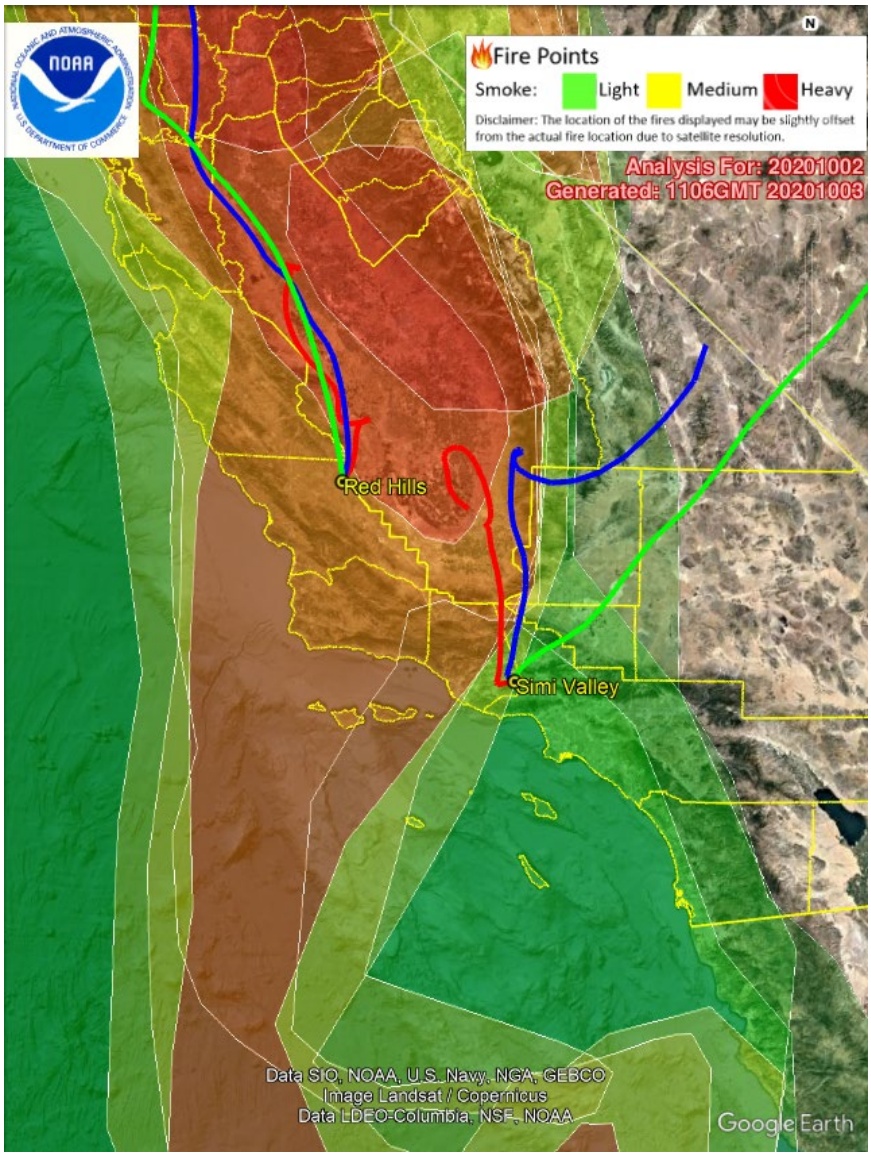


Table III-20: Exceeding Sites and Times of Maximum Ozone Concentrations for October 2

Site	Date (PST)	Max Hour (PST)	Date (UTC)	Max Hour (UTC)
Red Hills	10/2/2020	15	10/2/2020	23
Simi Valley	10/2/2020	13	10/2/2020	21

C. Event Related Concentrations and Long Term Trends

1. San Luis Obispo County (Red Hills)

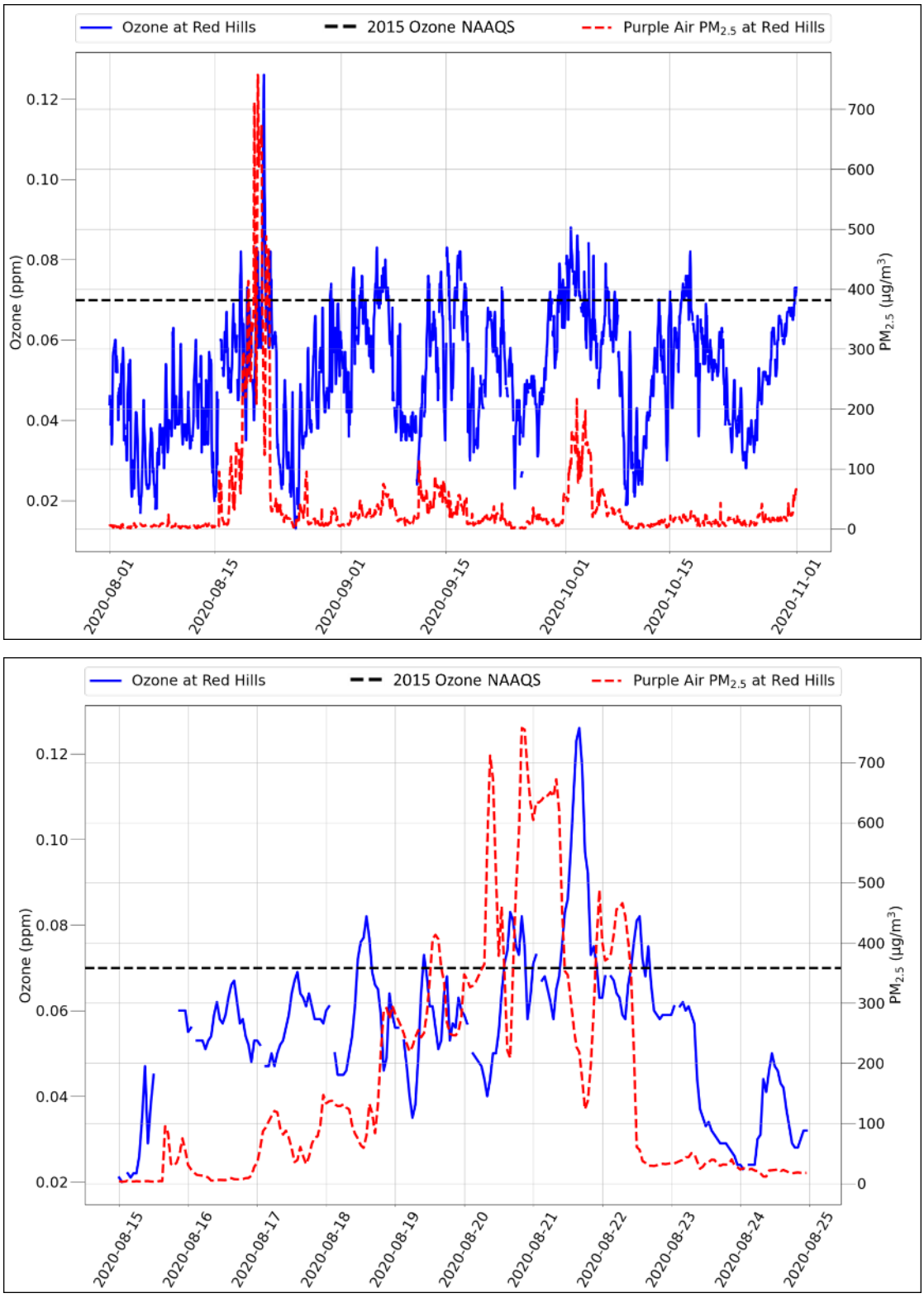
Multiple wildfires impacted the Red Hills site on multiple days, with winds transporting wildfire smoke and ozone precursors and resulting in elevated ozone concentrations. Elevated $PM_{2.5}$ concentrations recorded at Red Hills and associated timing support the presence of wildfire smoke in the town of Red Hills.

Figure III-32 shows the ozone and $PM_{2.5}$ concentration encompassing August, September, and October (top), a zoomed in range of August 15 to August 25 (center) and a zoomed in range of September 27 to October 5, 2020 (bottom) using purple air $PM_{2.5}$ data at the Red Hills site, which includes the requested exceptional events listed in Table I-4. The purple air data shown is the average of sensor A and B. The timing of relative $PM_{2.5}$ elevated concentrations show strong connections with ozone increases and prolonged elevated concentrations.

Figure III-33 shows the ozone and $PM_{2.5}$ concentration encompassing August, September, and October (top), a zoomed in range of August 15 to August 25 (center) and a zoomed in range of September 27 to October 5, 2020 (bottom) using regulatory $PM_{2.5}$ data at Atascadero – Lift Station #5, which includes the requested exceptional events listed in Table I-4. Red Hills is approximate 35 miles east of Atascadero and 871 ft higher in elevation. Considering transport of $PM_{2.5}$ from Atascadero to Red Hills, Figure III-33 show strong connections with ozone increases and prolonged elevated concentrations. Both Figure III-32 and Figure III-33 show a consistent relationship between high $PM_{2.5}$ and elevated ozone values, for all the event periods, which is supportive of a strong influence by wildfire smoke.

The Red Hills monitor showed a maximum 8-hour ozone concentration of 0.075 ppm on September 30, 2020. This maximum 8-hour period began at the 2300 hour and continued to 0700 on October 1. While CARB's request includes September 30 as an ozone exceptional event day, based primarily on the 8-hour period beginning at the 2300 hour, impacts by smoke and ozone contributions from wildfires were seen earlier in the day, including a significant increase in $PM_{2.5}$ concentrations at Red Hills beginning at 1500 hours. Therefore, pertaining to the exceedance at Red Hills on September 30, CARB would agree with U.S. EPA on concurrence of the request for exclusion of limited hours during the hours 1500-2300 on September 30, as well as the requested hours on October 1 as being supported in this demonstration. This will result in September 30 having an attaining 0.070 ppm maximum 8-hour ozone average and provide for attainment of the 2015 ozone NAAQS, after U.S. EPA's concurrence on the other requested 2018 and 2020 exceptional event dates.

Figure III-32: 1-hour Ozone and 1-hour $PM_{2.5}$ Concentrations using Purple Air $PM_{2.5}$ data at Red Hills



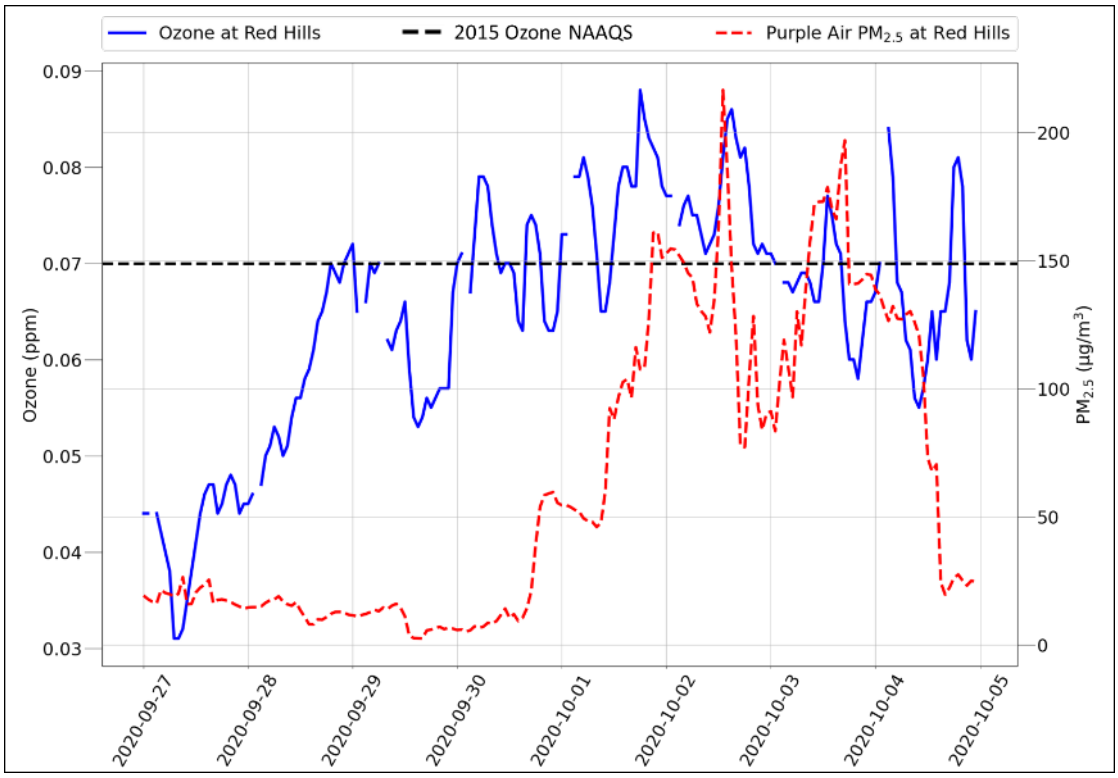
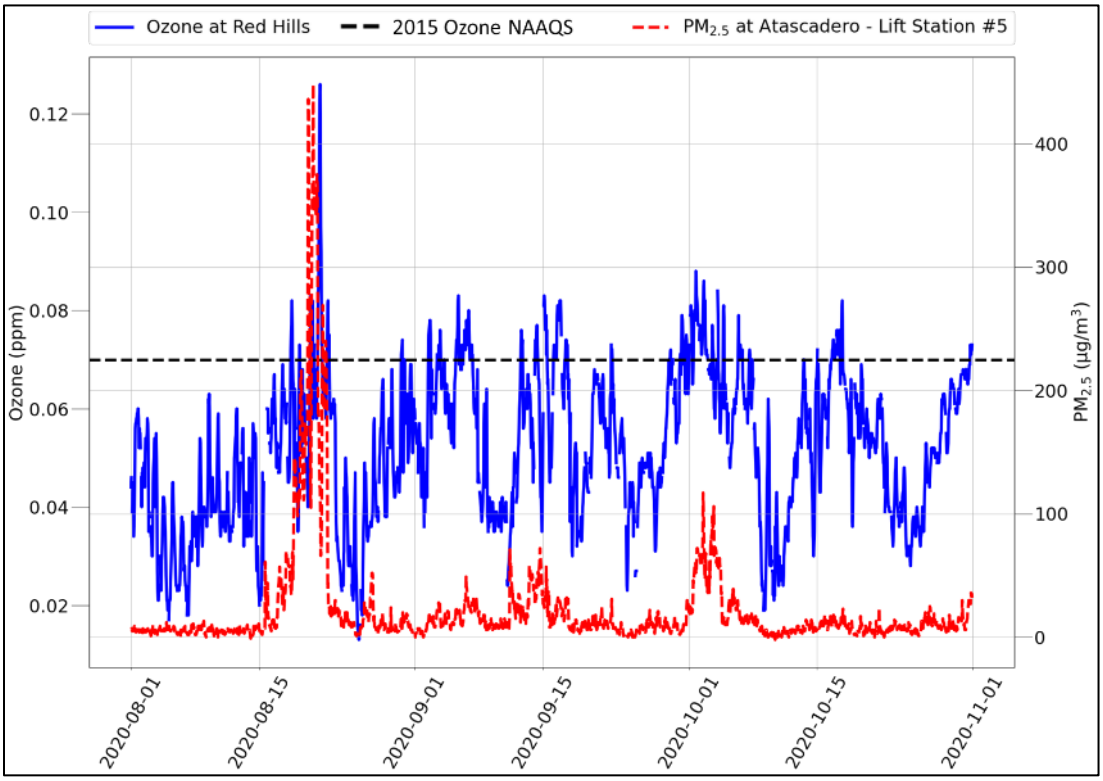
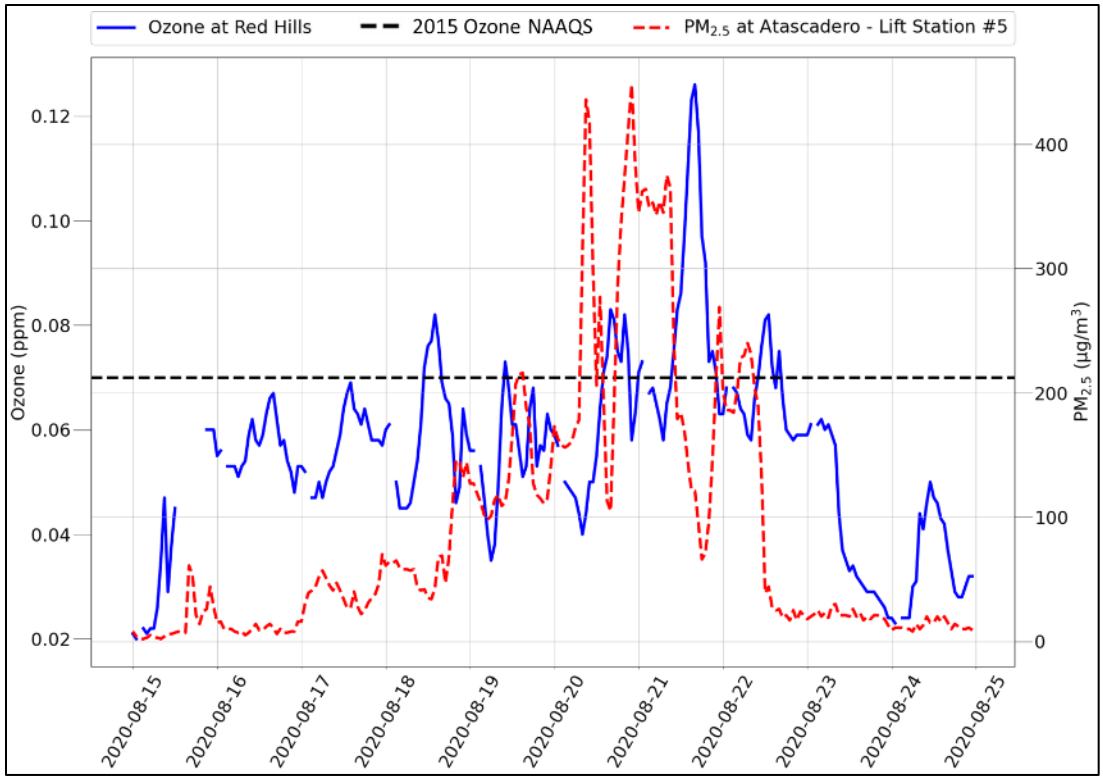
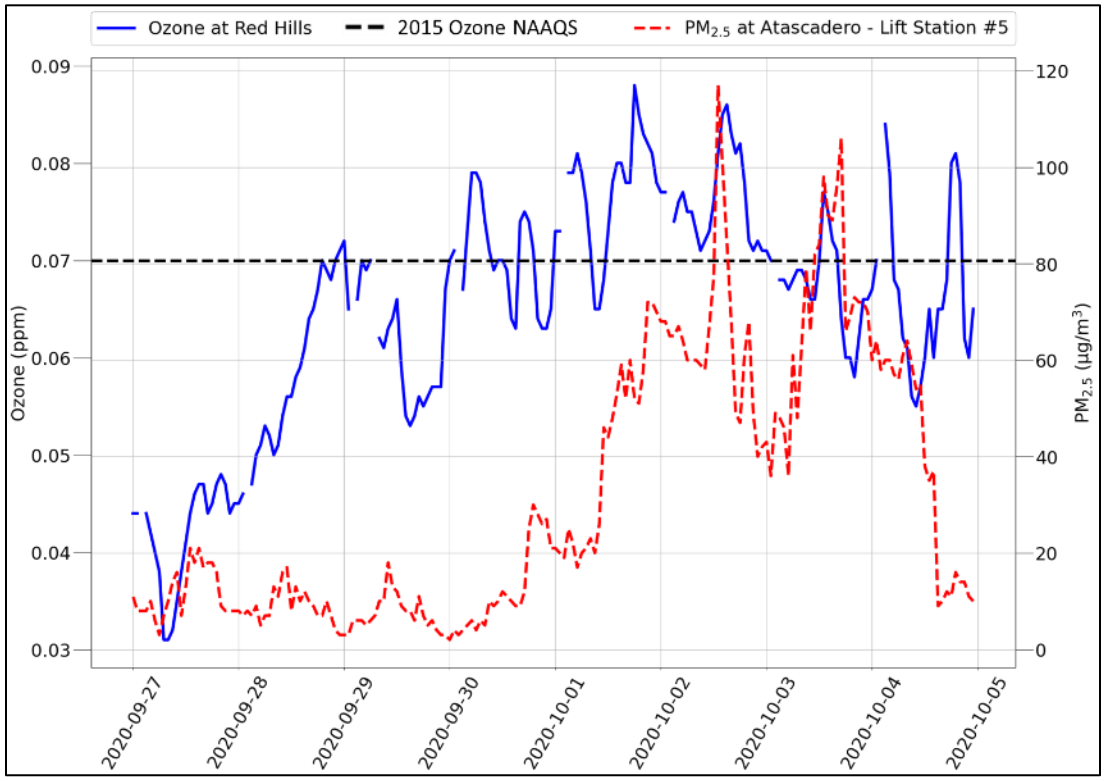


Figure III-33: 1-hour Ozone and 1-hour $PM_{2.5}$ Concentrations using Regulatory $PM_{2.5}$ data at Atascadero – Lift Station #5




Ozone at Red Hills
2015 Ozone NAAQS
PM2.5 at Atascadero - Lift Station #5
Ozone (ppm)
PM2.5 (µg/m³)
0.12
0.10
0.08
0.06
0.04
0.02
400
300
200
100
0
2020-08-15
2020-08-16
2020-08-17
2020-08-18
2020-08-19
2020-08-20
2020-08-21
2020-08-22
2020-08-23
2020-08-24
2020-08-25


Ozone at Red Hills
2015 Ozone NAAQS
PM2.5 at Atascadero - Lift Station #5
Ozone (ppm)
PM2.5 (µg/m³)
0.09
0.08
0.07
0.06
0.05
0.04
0.03
120
100
80
60
40
20
0
2020-09-27
2020-09-28
2020-09-29
2020-09-30
2020-10-01
2020-10-02
2020-10-03
2020-10-04
2020-10-05

Recent trends show a general decrease in 8-hour ozone design values at the Red Hills monitoring site as shown in Figure III-34 while the annual 4th highs (Figure III-35) have also shown a gradual decrease during the past twelve years. The trend fit for design values is very strong. The 2020 design value and 4th high did not follow this trend, staying above the standard. Concurrence of the requested exceptional event dates would bring the area into attainment of the 2015 ozone standard based on the adjusted 2020 design value, as anticipated with the historical trend line.

Figure III-34: 8-hour Ozone Design Values with Trend at Red Hills

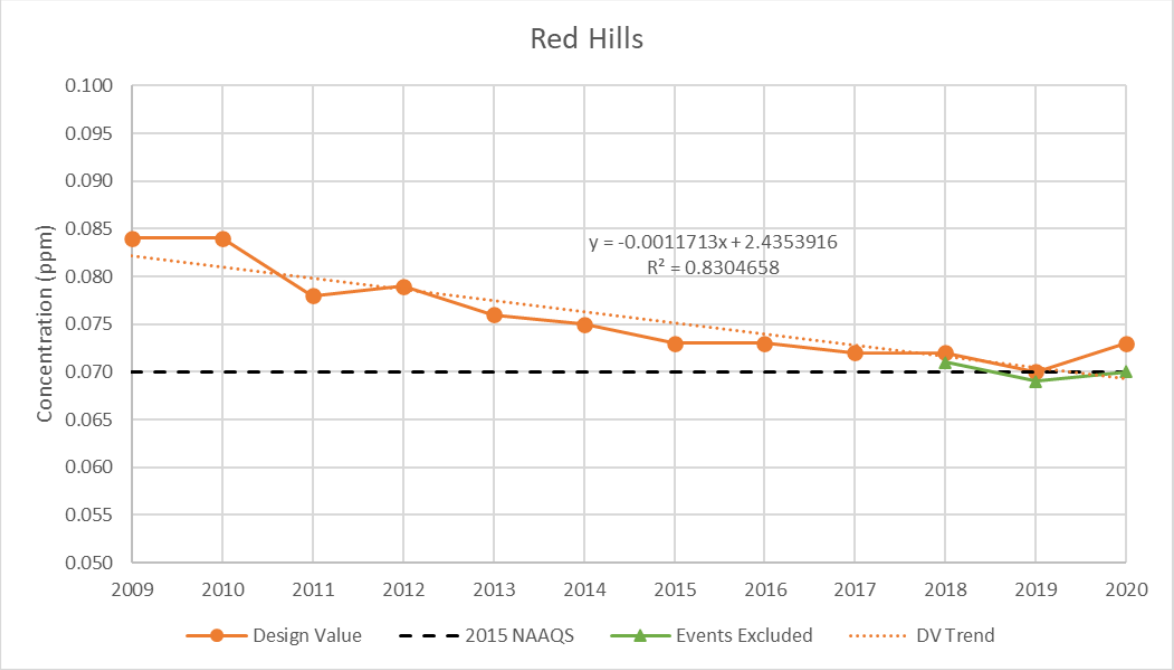
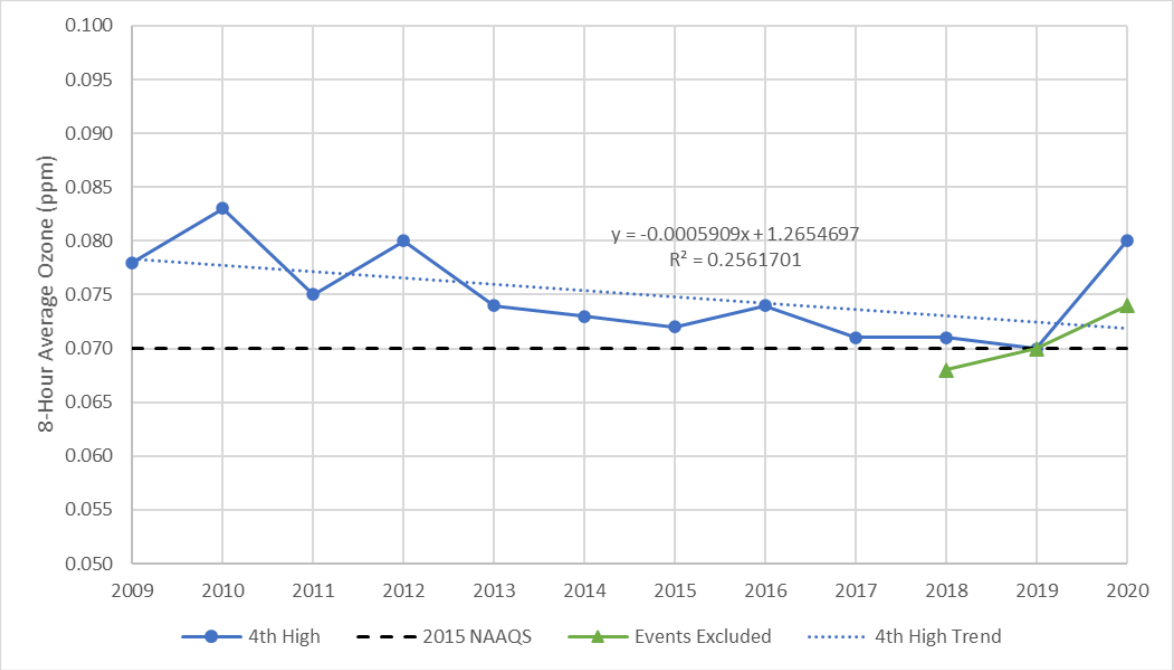


Figure III-35: Annual 4th High 8-Hour Average Ozone with Trend at Red Hills

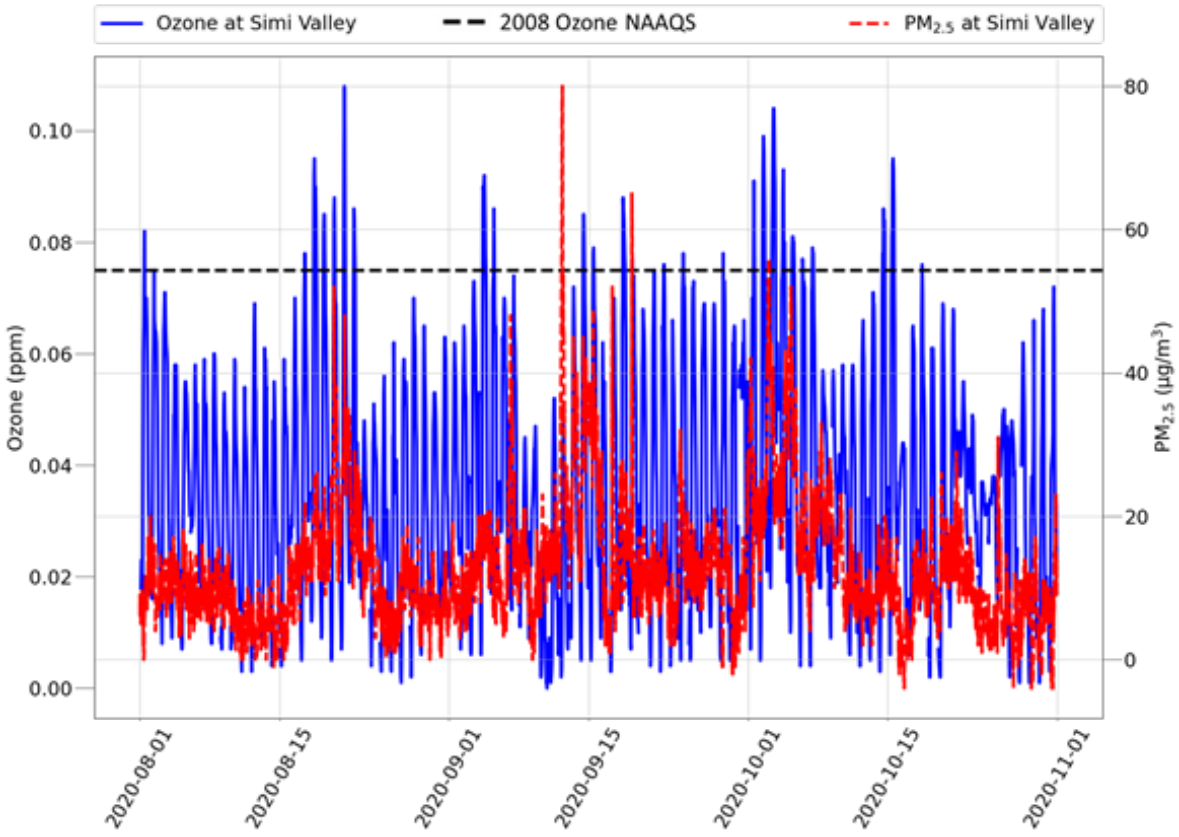


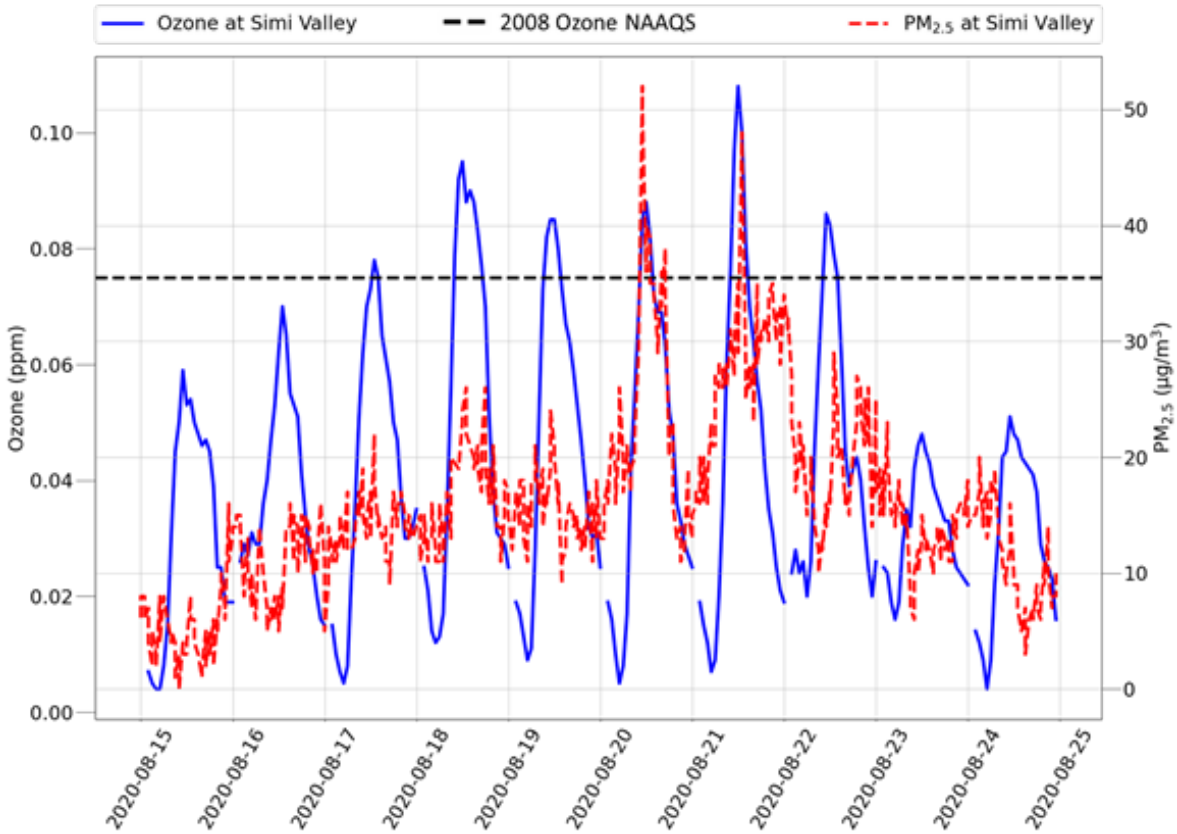
2. Ventura County (Simi Valley)

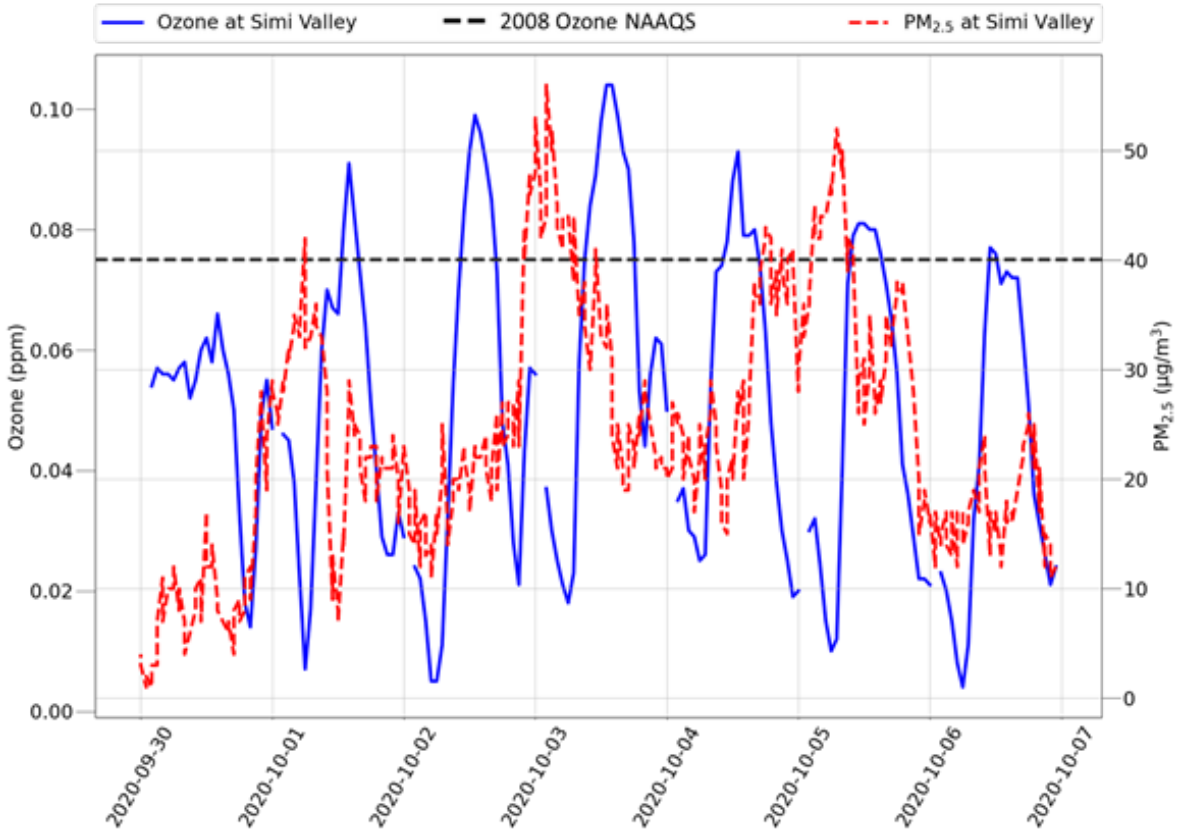
Multiple wildfires impacted the City of Simi Valley during the periods of concern, where winds generally transported wildfire smoke and ozone precursors from the Lake, Holser, CZU Lightning Complex, River, LNU Lightning Complex, Salt, Woodward, Carmel, SCU Lightning Complex, Dolan, Bobcat, SQF Complex, and Creek wildfires in California. These wildfire emissions caused elevated ozone concentrations at the Simi Valley monitoring site. Additionally, the smoke from the August Complex, Butte/Tehama/Glenn Complex, Red Salmon, North Complex, and Jones fires from northern California may have been transported to the area and contributed to ozone concentrations during some days. Elevated $PM_{2.5}$ purple air sensor concentrations at the Red Hills monitor site and nearby $PM_{2.5}$ concentrations at the Atascadero monitor site and associated timing support the presence of wildfire smoke in the City of Simi Valley.

Figure III-36 shows the ozone and $PM_{2.5}$ concentration encompassing August, September, and October (top), a zoomed in range of August 15 to August 25 (center) and a zoomed in range of September 30 to October 7, 2020 (bottom), which includes the requested exceptional events listed in Table I-4. The timing of relative $PM_{2.5}$ elevated concentrations show strong connections with ozone increases and prolonged elevated concentrations. All the event periods show a consistent relationship between high $PM_{2.5}$ and elevated ozone values which is supportive of a strong influence by wildfire smoke.

Figure III-36: 1-hour Ozone and 1-hour $PM_{2.5}$ Concentrations




Ozone at Simi Valley
2008 Ozone NAAQS
PM2.5 at Simi Valley
Ozone (ppm)
PM2.5 (µg/m³)
0.00
0.02
0.04
0.06
0.08
0.10
0
10
20
30
40
50
2020-08-15
2020-08-16
2020-08-17
2020-08-18
2020-08-19
2020-08-20
2020-08-21
2020-08-22
2020-08-23
2020-08-24
2020-08-25


Ozone at Simi Valley
2008 Ozone NAAQS
PM2.5 at Simi Valley
Ozone (ppm)
PM2.5 (µg/m³)
0.00
0.02
0.04
0.06
0.08
0.10
0
10
20
30
40
50
2020-09-30
2020-10-01
2020-10-02
2020-10-03
2020-10-04
2020-10-05
2020-10-06
2020-10-07

Recent trends show a general decrease in 8-hour ozone design values at the Simi Valley monitoring site as shown in Figure III-37 while the annual 4th highs (Figure III-38) have shown a downwards trend during the past twelve years. The trend fit for design values is very strong. The 2020 8-hour ozone design value did not follow this trend, being above the standard. Concurrence of the requested exceptional event dates would bring the area into attainment of the 2008 ozone standard based on the adjusted 2020 8-hour ozone design value, as anticipated with the historical trend line.

Figure III-37: 8-hour Ozone Design Values with Trend at Simi Valley

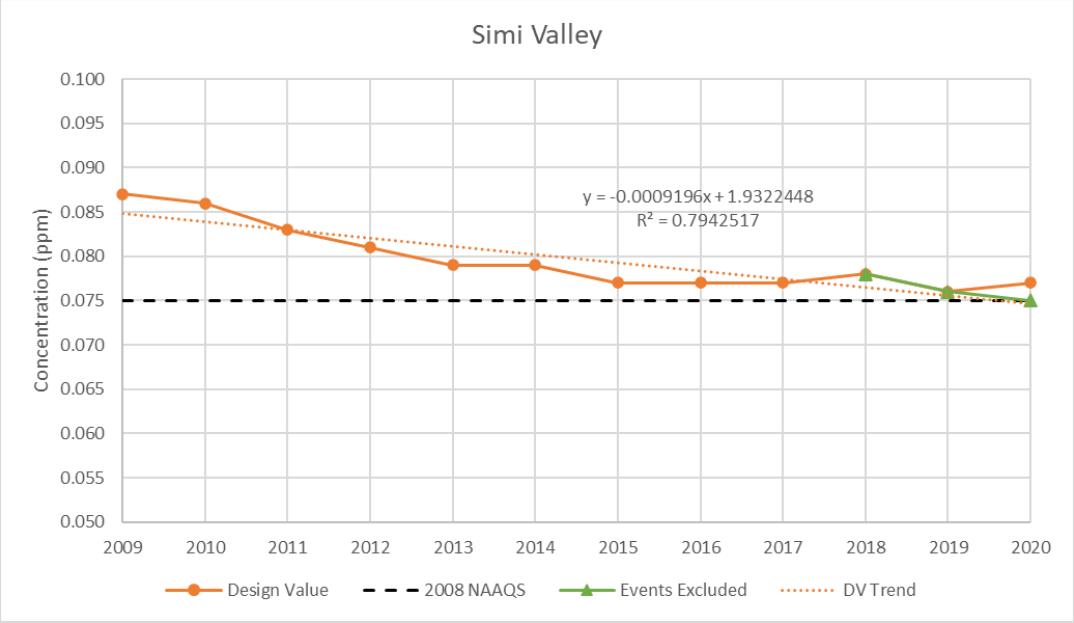
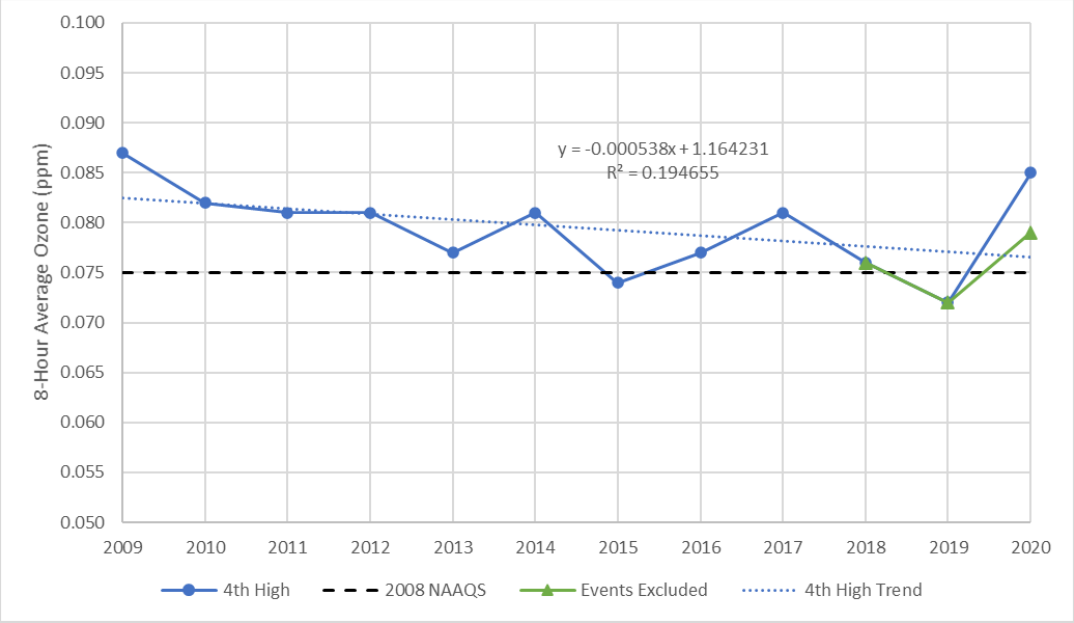


Figure III-38: Annual 4th High 8-Hour Average Ozone with Trend at Simi Valley



D. Meteorological Conditions

Table III-21: Averages and Standard Deviations (SD) of Daily Maximum Temperatures and Wind Speeds at Red Hills Monitoring Site on Exceptional Event Days (8/15-8/24 and 9/27-10/4), Normal (Non-Event) Days, and All Days in August, September, and October 2020

Red Hills Monitoring Site	Temperatures (°F)		Wind Speed (mph)	
	Average	SD	Average	SD
August EE Days	91.92	5.39	18.61	3.75
August Normal Days	86.75	5.28	18.89	3.91
August All	88.42	5.84	18.80	3.86
September EE Days	87.08	4.38	19.47	3.57
September Normal Days	84.03	6.55	15.99	3.04
September All	84.43	6.39	16.46	3.33
October EE Days	88.29	1.45	17.47	0.54
October Normal Days	74.37	7.98	15.96	4.92
October All	76.16	8.80	16.15	4.62

Table III-22: Averages and Standard Deviations (SD) of Daily Maximum Temperatures Wind Speeds at Simi Valley Monitoring Site on Exceptional Event Period (8/15-8/24 and 9/30-10/6), Normal (Non-Event) Days, and All Days in August, September, and October 2020

Simi Valley Monitoring Site	Temperatures (°F)		Wind Speed (mph)	
	Average	SD	Average	SD
August EE Days	95.97	5.19	10.40	1.17
August Normal Days	86.27	6.71	10.29	0.63
August All	89.40	7.73	10.33	0.84
September EE Days	103.82	0.00	11.63	0.00
September Normal Days	89.88	8.09	9.74	1.90
September All	90.34	8.34	9.81	1.89
October EE Days	96.50	4.04	9.73	0.53
October Normal Days	80.74	10.20	10.07	2.78
October All	83.79	11.22	10.00	2.51

Table III-21 and Table III-22 listed the averages and standard deviations of the daily maximum temperatures and wind speeds on the exception event periods, normal (non-event) days, and all days in August, September, and October 2020 at each monitoring site. Table III-21 covers the event periods of August 15 to August 24 and September 27 to October 4 for the Red Hills monitoring site. Table III-22 covers the event periods of August 15 to August 24 and September 30 to October 6 for the Simi Valley monitoring site. Details of the meteorological conditions on each exceptional event day are discussed in the following sections.

1. Red Hills / E. San Luis Obispo County

Table III-23: Maximum Daily Values of Ozone, Temperature, and Wind Speed on Exceptional Event and Surrounding Days, 8/15-8/24/2020, at Red Hills Monitoring Site

Date	8/15	8/16	8/17	8/18	8/19	8/20*	8/21*	8/22	8/23	8/24
1hr Ozone (ppm)	0.059	0.070	0.078	0.095	0.085	0.088	0.108	0.086	0.048	0.051
8hr Ozone (ppm)	0.057	0.061	0.064	0.073	0.060	0.076	0.106	0.073	0.041	0.044
Temperature (°F)	91.9	98.1	98.2	99.0	95.0	90.1	90.7	88.0	81.7	86.5
Wind Speed (mph)	11.6	19.5	16.4	20.0	18.2	14.8	17.6	19.9	22.1	26.0

* Denotes Exceptional Event Dates Requested for Data Exclusion

Table III-24: Maximum Daily Values of Ozone, Temperature, and Wind Speed on Exceptional Event and Surrounding Days, 9/27-10/4/2020, at Red Hills Monitoring Site

Date	9/27	9/28	9/29	9/30*	10/1*	10/2*	10/3	10/4
1hr Ozone (ppm)	0.077	0.084	0.072	0.079	0.073	0.077	0.071	0.071
8hr Ozone (ppm)	0.048	0.069	0.072	0.075	0.081	0.081	0.071	0.070
Temperature (°F)	80.4	86.4	92.3	89.2	90.1	89.2	86.5	87.3
Wind Speed (mph)	18.6	24.1	14.3	20.9	17.4	17.4	16.8	18.3

* Denotes Exceptional Event Dates Requested for Data Exclusion

Table III-23 shows the daily values for the event period of August 15 to August 24, 2020. Maximum temperatures were generally in the 90s throughout most of the event with a few days dropping into the high 80s. Maximum daily resultant wind speeds were generally turbulent with ranging from 11-26 mph. Maximum ozone concentration varied significantly with a range of 60 ppb and 65 ppb for the 1-hour and 8-hour ozone, respectively. Maximum temperatures during the requested event days August 20 to 21 were notably lower than during August 16 to 19, but 8-hour ozone concentrations were higher. Comparing August 21 with August 17, ozone concentrations were much higher with lower temps and higher wind speed on August 21 which is contrary to expectations during normal ozone exceedance days.

Table III-24 shows the daily values for the event period of September 27 to October 4, 2020. Maximum temperatures were generally in the 80s throughout the event, with a few days in the 90s. Maximum daily resultant wind speeds were generally turbulent with ranging from 14-24 mph. Maximum ozone concentration varied moderately with a range of 13 ppb and

33 ppb for the 1-hour and 8-hour ozone, respectively. Comparing October 1 and 2 with September 29, ozone concentrations were higher with lower temps and higher wind speeds on October 1 and 2 which is contrary to expectations during normal ozone exceedance days.

The weather data supports that ozone directly related to wildfire smoke from the wildfires in California affected the Red Hills monitor and increased ozone concentrations. Unusual weather, other than the transport of ozone and related wildfire smoke, was not a factor contributing to the exceptional event.

2. Simi Valley / Ventura County

Table III-25: Maximum Daily Values of Ozone, Temperature, and Wind Speed on Exceptional Event and Surrounding Days, 8/15-8/24/2020, at Simi Valley Monitoring Site

Date	8/15	8/16	8/17	8/18*	8/19	8/20	8/21*	8/22	8/23	8/24
1hr Ozone (ppm)	0.060	0.067	0.069	0.082	0.073	0.083	0.126	0.082	0.062	0.050
8hr Ozone (ppm)	0.050	0.057	0.067	0.086	0.076	0.074	0.082	0.070	0.041	0.045
Temperature (°F)	102.6	96.8	93.6	103.8	97.9	97.0	97.0	95.5	90.9	84.7
Wind Speed (mph)	10.3	13.0	9.8	10.5	10.1	9.4	8.5	11.2	11.4	9.8

* Denotes Exceptional Event Dates Requested for Data Exclusion

Table III-26: Maximum Daily Values of Ozone, Temperature, and Wind Speed on Exceptional Event and Surrounding Days, 9/30-10/6/2020, at Simi Valley Monitoring Site

Date	9/30	10/1	10/2*	10/3*	10/4*	10/5	10/6
1hr Ozone (ppm)	0.066	0.091	0.099	0.104	0.093	0.081	0.077
8hr Ozone (ppm)	0.058	0.074	0.086	0.095	0.080	0.077	0.070
Temperature (°F)	103.8	104.0	98.4	95.9	95.9	93.7	91.0
Wind Speed (mph)	11.6	10.5	9.6	8.9	9.4	9.6	10.3

* Denotes Exceptional Event Dates Requested for Data Exclusion

Table III-25 shows the daily values for the event period of August 15 to August 24, 2020. Maximum temperatures were generally in the 90s throughout most of the event with August 15 being over 100°F and temperatures cooling off into the 80s on August 24, 2020. Maximum daily resultant wind speeds were generally light to moderate with ranging from 8-13 mph. Maximum ozone concentration varied significantly with a range of 76 ppb and

45 ppb for the 1-hour and 8-hour ozone, respectively. Comparing August 21 with August 15, ozone concentrations were much higher while temperature was lower and wind speed slightly lower on August 21, indicating the day was likely complicated but unlikely to lead to such an extreme ozone concentration under normal conditions. Comparing August 18 with August 15, ozone concentrations were much higher while the high temperature was slightly warmer and exhibited similar wind speeds during August 18 which would be expected to lead to higher ozone concentrations but probably not as high as was measured.

Table III-26 shows the daily values for the event period of September 30 to October 6, 2020. Maximum temperatures were generally in the 90s throughout the event, with September 30 and October 1 being over 100°F. Maximum daily resultant wind speeds were generally light to moderate with ranging from 8-11 mph. Maximum ozone concentration varied significantly with a range of 38 ppb and 37 ppb for the 1-hour and 8-hour averaged ozone, respectively. Comparing October 2 through 4 with preceding days September 30 and October 1, maximum temperatures decrease with relatively small decrease in wind speeds which would not be expected to lead to such high ozone concentrations.

The weather data, for both event periods, supports that ozone directly related to wildfire smoke from the wildfires in California affected the Simi Valley monitor and increased ozone concentrations. Unusual weather, other than the transport of ozone and related wildfire smoke, was not a factor contributing to the exceptional event.

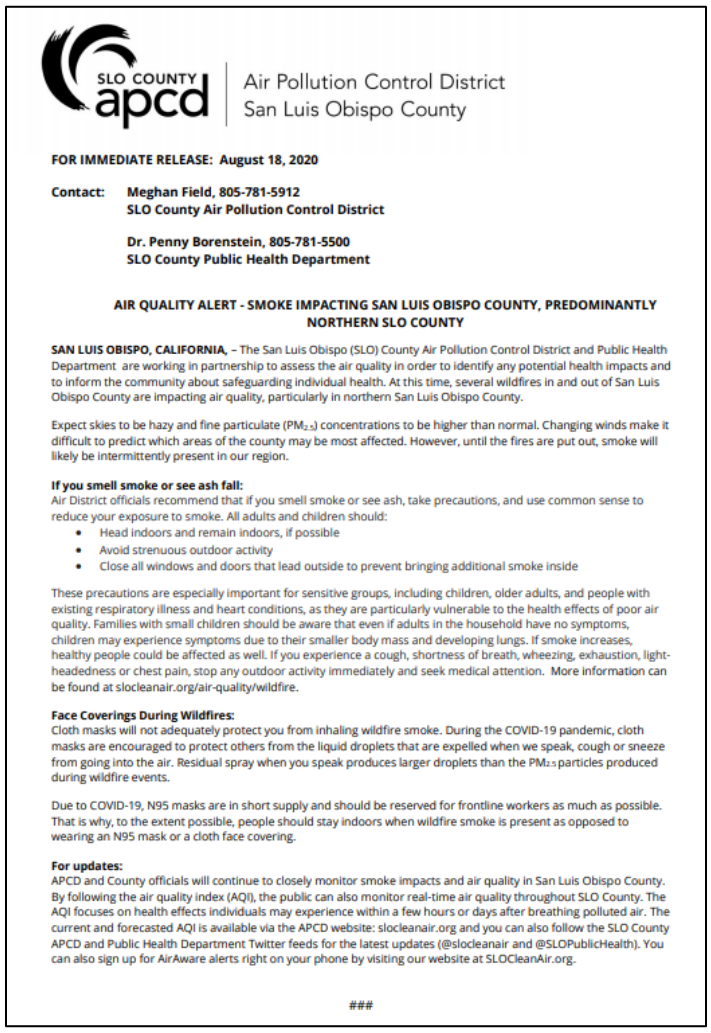
E. Air Quality/Health Advisories

Air quality alerts and advisories were issued by both affected districts.

The San Luis Obispo County APCD maintains a website with information on the impacts of wildfire smoke and how fires are affecting the county. Residents are encouraged to sign up for their AirAware-Mobile Alerts program. Health advisories were issued by the San Luis Obispo County APCD for San Luis Obispo County and distributed by the district through the district website,[76] county public health agency website,[77] National Weather Service Air Quality Alerts, and the district's Twitter feed.[78]

[76] *San Luis Obispo County APCD*, last accessed 7/29/21
[77] San Luis Obispo County, *Department of Public Health*, last accessed 7/29/21
[78] San Luis Obispo County APCD Twitter Feed, @SLOCleanAir, last accessed 7/29/21

Figure III-39: Example of San Luis Obispo County APCD Air Quality Alert – August 18, 2020



SLO COUNTY apcd | Air Pollution Control District
San Luis Obispo County

FOR IMMEDIATE RELEASE: August 18, 2020

Contact: **Meghan Field, 805-781-5912**
SLO County Air Pollution Control District

Dr. Penny Borenstein, 805-781-5500
SLO County Public Health Department

AIR QUALITY ALERT - SMOKE IMPACTING SAN LUIS OBISPO COUNTY, PREDOMINANTLY NORTHERN SLO COUNTY

SAN LUIS OBISPO, CALIFORNIA, – The San Luis Obispo (SLO) County Air Pollution Control District and Public Health Department are working in partnership to assess the air quality in order to identify any potential health impacts and to inform the community about safeguarding individual health. At this time, several wildfires in and out of San Luis Obispo County are impacting air quality, particularly in northern San Luis Obispo County.

Expect skies to be hazy and fine particulate ($PM_{2.5}$) concentrations to be higher than normal. Changing winds make it difficult to predict which areas of the county may be most affected. However, until the fires are put out, smoke will likely be intermittently present in our region.

If you smell smoke or see ash fall:
Air District officials recommend that if you smell smoke or see ash, take precautions, and use common sense to reduce your exposure to smoke. All adults and children should:

- Head indoors and remain indoors, if possible
- Avoid strenuous outdoor activity
- Close all windows and doors that lead outside to prevent bringing additional smoke inside

These precautions are especially important for sensitive groups, including children, older adults, and people with existing respiratory illness and heart conditions, as they are particularly vulnerable to the health effects of poor air quality. Families with small children should be aware that even if adults in the household have no symptoms, children may experience symptoms due to their smaller body mass and developing lungs. If smoke increases, healthy people could be affected as well. If you experience a cough, shortness of breath, wheezing, exhaustion, light-headedness or chest pain, stop any outdoor activity immediately and seek medical attention. More information can be found at slocleanair.org/air-quality/wildfire.

Face Coverings During Wildfires:
Cloth masks will not adequately protect you from inhaling wildfire smoke. During the COVID-19 pandemic, cloth masks are encouraged to protect others from the liquid droplets that are expelled when we speak, cough or sneeze from going into the air. Residual spray when you speak produces larger droplets than the $PM_{2.5}$ particles produced during wildfire events.

Due to COVID-19, N95 masks are in short supply and should be reserved for frontline workers as much as possible. That is why, to the extent possible, people should stay indoors when wildfire smoke is present as opposed to wearing an N95 mask or a cloth face covering.

For updates:
APCD and County officials will continue to closely monitor smoke impacts and air quality in San Luis Obispo County. By following the air quality index (AQI), the public can also monitor real-time air quality throughout SLO County. The AQI focuses on health effects individuals may experience within a few hours or days after breathing polluted air. The current and forecasted AQI is available via the APCD website: slocleanair.org and you can also follow the SLO County APCD and Public Health Department Twitter feeds for the latest updates (@slocleanair and @SLOPublicHealth). You can also sign up for AirAware alerts right on your phone by visiting our website at SLOCleanAir.org.

###

Advisories for this prolonged event were first issued on August 18, 2020, with an Air Quality Alert jointly issued with the San Luis Obispo Public Health Department. This advisory informed the public of the ongoing impact of wildfire smoke on much of the district and was distributed on the district website and through local news media and social media outlets. Additional advisories and alerts were released on August 21 and throughout September, with the last issued in early October. Copies of these advisories are included in Appendix B.

The Ventura County APCD website includes information on the impacts of wildfire smoke and how fires are affecting the county. The District participates in the Air Quality Flag Program through AirNow. Residents can register for a Daily Air Quality Report, as well as access information on the main website and keep informed through the District's Twitter account. The district has also instituted the Farmworker Wildfire Smoke Alert Text System, in partnership with the County Executive Office, the Agricultural Commissioner, and the Central Coast Alliance United for a Sustainable Economy (CAUSE), to specifically alert farmworkers

and their employers when the AQI reaches unhealthy levels.[79] This new system was instituted in July 2021.

Air Quality Alerts for smoke impacts from the Holser Fire were issued by the Ventura County APCD for August 18-19, August 21-24 (Figure III-40), and October 3-5 and distributed by the district through the district website,[80] National Weather Service Air Quality Alerts, and the district's Twitter feed.[81] Copies of these advisories are included in Appendix B.

Figure III-40: Example of Ventura County APCD Air Quality Alert – August 21, 2020

VCAPCD Air Quality Alert for Wildfire Smoke
for Friday thru Monday, August 21-24, 2020

Ventura County APCD is issuing an Air Quality Alert for wildfire smoke throughout Ventura County due to the smoke from numerous fires burning in California; predominantly in Northern California.

The smoke from these fires is currently sitting north and west of Ventura and is now entering and encompassing all of Ventura County. During these conditions, the air quality can be unhealthful.

This air quality alert will expire Monday, August 24, 2020 at 8AM PDT.

Please keep in mind that wildfire smoke concentrations can vary hour by hour and change frequently. Forecast AQI colors are meant to be as representative as possible for the 24-hr day. At times, air quality is likely to be better or worse than is indicated for the full day.

Air quality should be considered unhealthy in areas directly impacted by smoke. If you are in an area directly impacted by smoke, please exercise extreme caution and avoid vigorous outdoor or indoor exertion. People with respiratory or heart disease, the elderly, and children should remain indoors. Run your air conditioner if you have one. Keep the filter clean and fresh air intake closed. Close all windows and doors that lead outside to prevent bringing additional smoke inside. If this is not an option or it becomes extremely hot inside, please seek alternate shelter.

For additional information, call the Ventura County Air Pollution Control District at 805.662.6960 (Monday-Friday), visit vcapcd.org, or follow VCAPCD on Twitter (@vcapcd) for the latest air quality updates. Thank you.

[79] Ventura County APCD, *Wildfire Smoke Text Alert System for Farmworkers*, last accessed 9/22/21
[80] *San Luis Obispo County APCD*, last accessed 11/8/21
[81] San Luis Obispo County APCD Twitter Feed, @SLOCleanAir, last accessed 11/6/21

F. Media Coverage

Media coverage of the wildfires that occurred throughout the State in 2020 was extensive. Subsequent coverage included the impacts of smoke in communities throughout the districts discussed in this document. Two examples are given here, one from local news media and one from a Twitter post from an affected district. Other examples can be found in Appendix F.

Figure III-41: Example of News Media Coverage - San Luis Obispo Tribune, August 20, 2020

Figure III-42: Example of Social Media Coverage - Ventura County Fire PIO, August 18, 2020

IV. Clear Causal Relationship

This section addresses the "clear causal relationship" criterion as per U.S. EPA's exceptional events guidance by providing 1) a comparison of the ozone data requested for exclusion with historical concentrations at the air quality monitor, 2) demonstrating that the wildfire's emissions were transported to the monitor, 3) show the emissions from the wildfire influenced the monitored concentrations, and in some cases 4) quantifying the contribution of the wildfire's emissions to the monitored ozone exceedance or violation.

For wildfire ozone events, U.S. EPA has defined a tiered approach that apply to the "clear causal relationship" criterion based on key factors and is intended to lessen the evidence required for more obvious and/or extreme events. These tiers require analyses to establish the existence of wildfire emissions, transport to the exceeding monitor, and impact at the monitor. Each tier is to be taken in order and are summarized below. Specific information that is presented to satisfy these criteria can be found in the individual tier sections.

- Tier 1: Exceedances are clearly higher than non-event related concentrations and have occurred from a fire in close proximity to the exceeding monitor during a time or place of historically low ozone concentrations;
- Tier 2: This tier is used when impacts do not qualify for Tier 1 analysis, but exceedances are higher than non-event related exceedances although may not be "clearly" higher, and large fire emissions relative to the distance of the fire to the monitor indicate a clear causal relationship; and
- Tier 3: This tier encompasses wildfires or impacts that are more complex and do not qualify for Tier 1 or Tier 2 analysis, but additional analyses submitted as part of a weight-of-evidence showing can establish a clear causal relationship.

This demonstration meets the purpose of U.S. EPA's published guidance and provides the evidence needed to concur on all requested exceptional event dates in 2020.

A. Tier 1 Key Factor Analysis

This section provides the documentation requested for a Tier 1 analysis per the *Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations.*[82] The Tier 1 analysis is for wildfires that clearly influence monitored ozone exceedances or violations when they occur in an area that typically experiences lower ozone concentrations. This includes establishing the seasonality and/or distinctive level of the monitored ozone concentration as well as providing evidence that the wildfire emissions were transported to the monitors. Analyses presented in this document include 2015-2020 8-hour maximums (Figure IV-1) to show seasonality and non-event related concentrations, proximity of wildfires (Section B of the Narrative Conceptual Model chapter), and transport

[82] U.S. EPA, *Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations*, p. 13, last accessed 7/26/21.

of emissions from wildfires to the exceeding monitors (Section B of the Narrative Conceptual Model chapter and Section C of this chapter).

The key factor for Tier 1 requires establishing the seasonality and/or distinctive level of the monitored ozone concentration. The event-related exceedance occurs during a time of year that typically has no exceedances or is clearly distinguishable (at least 0.005 ppm higher) from non-event exceedances. Additionally, ozone impacts should be accompanied by clear evidence that the wildfire's emissions were transported to the location of the monitor.

Figure IV-1 and Figure IV-2 show that the exceedances occurred during the time of year where ozone concentrations tend to be higher for both monitoring sites, and that most of these exceedances are not clearly distinguishable from non-event exceedances as defined by guidance.

The Red Hills (Eastern part of San Luis Obispo) exceedance on August 21, 2020 of 0.106 ppm was the greatest concentration during 2015-2020 and was 20 ppb higher than the second greatest concentration on July 28, 2016 of 0.086 ppm, qualifying for a Tier 1 analysis. This exceedance will be discussed further, and evidence provided as part of the Tier 2 analyses necessary for other exceptional event dates at Red Hills.

The Simi Valley (Ventura County) exceedance on October 3, 2020 of 0.095 ppm was the greatest concentration during 2015-2020 but was only 1 ppb higher than the second greatest concentration on July 8, 2017 of 0.094 ppm, which does not qualify for a Tier 1 analysis. The remainder of the exceedances were high for the season at Red Hills and Simi Valley, they do not qualify for a Tier 1 analysis.

Figure IV-1: Red Hills 8-Hour Daily Ozone Maximums by Day of the Year for 2015-2020

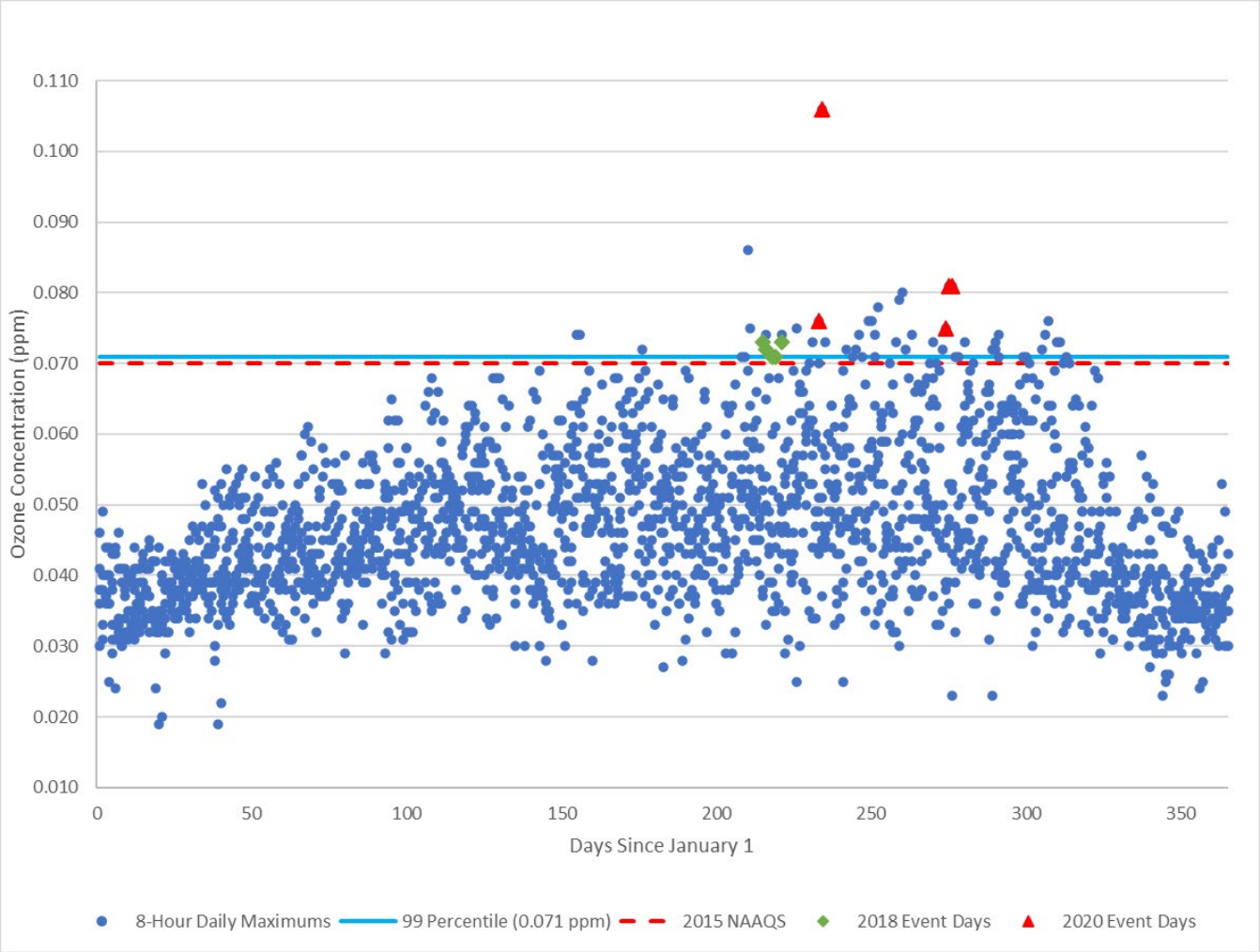
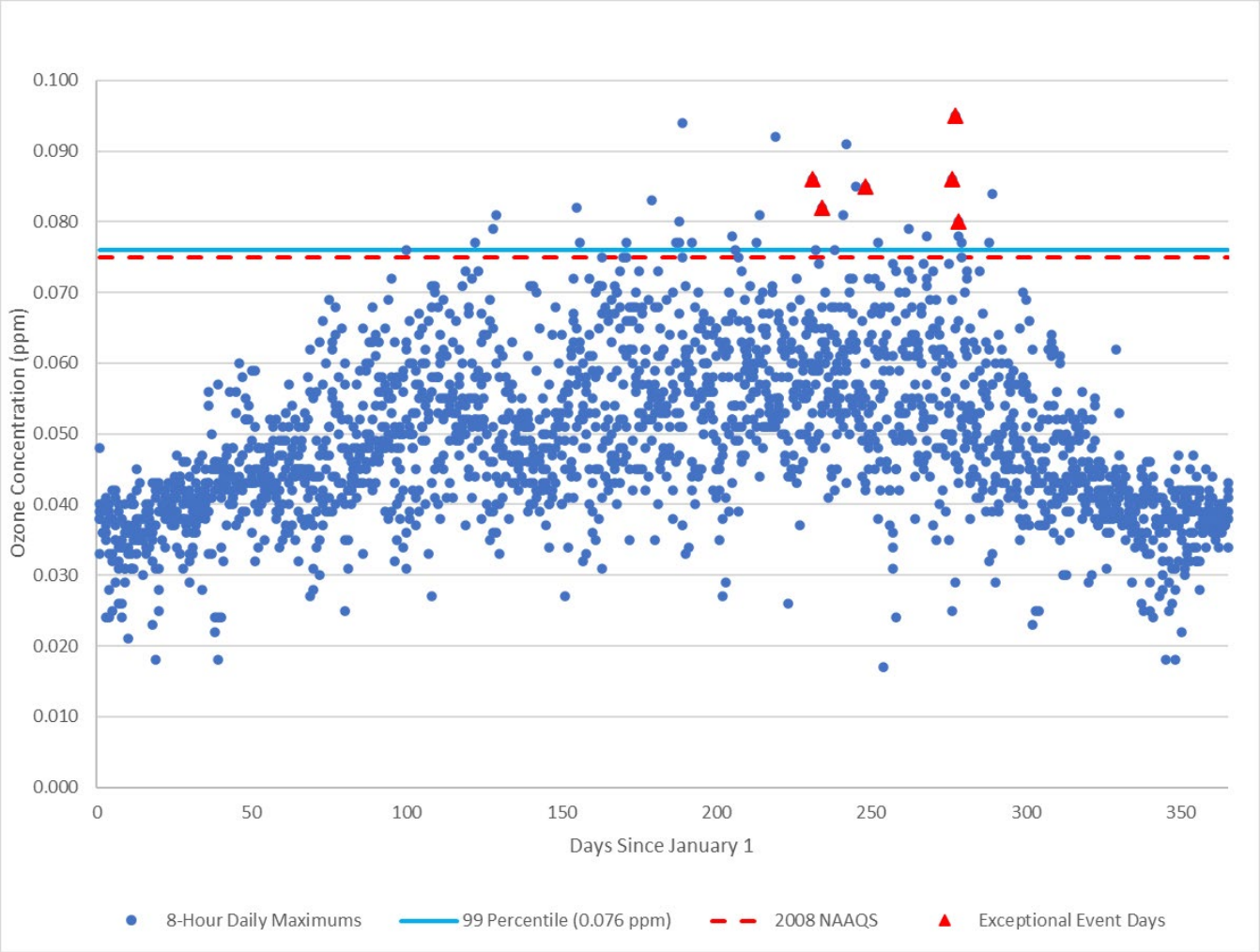


Figure IV-2: Simi Valley 8-Hour Daily Ozone Maximums by Day of the Year for 2015-2020



As most exceedances do not qualify for Tier 1, additional evidence that the wildfire emissions were transported to the monitors is needed for further Tier 2 analyses. Transport evidence is provided in Section B of the Narrative Conceptual Model chapter and Section C of this chapter as part of the Tier 3 – Weight of Evidence.

B. Tier 2 Key Factor Analysis

This section provides the documentation requested for a Tier 2 analysis, where ozone concentrations are not clearly higher than non-event related concentrations nor do they occur outside of the area's normal ozone season, in effect not meeting Tier 1 requirements. Tier 2 requires a demonstration that the impacts of the wildfire event on ozone are higher than a non-event related concentration and that fire emissions compared to the fire's distance from the monitor indicate a clear causal relationship. Analyses include those indicated in Section A of this chapter for Tier 1 as well as Q/D estimations, a more detailed comparison of the event-related ozone concentrations with non-event-related high ozone

concentrations, and evidence that the emissions affected the monitor. The following sections provide the documentation requested for a Tier 2 analysis per U.S. EPA guidance.[83]

> Key Factor #1 - Fire emissions and distance of fire(s) to affected monitoring site location(s), and
>
> Key Factor #2 - Comparison of the event-related ozone concentrations with non-event related high ozone concentrations.

Evidence that the fire emissions impacted the exceeding monitor are also required. This evidence is provided with satellite evidence of smoke at the monitor (Narrative Conceptual Model chapter and Section C of this chapter), graphs of $PM_{2.5}$ concentrations nearby and in the same airshed (Section C of this chapter), and $PM_{2.5}$ speciation data near the wildfires impacting the monitor (Section C of this chapter), and differences in spatial and temporal patterns (Section C of this chapter).

1. Key Factor #1 (Q/D)

Key factor 1 requires determining the fire emissions (Q) and the distance (D) between the wildfires to the affected monitor. CARB staff worked with U.S. EPA staff, and provided shapefiles delineating perimeters, start dates, and end dates of all California wildfires in 2020 retrieved from the National Interagency Fire Center. U.S. EPA modeled the wildfires and emissions, produced emissions estimates for the fires for each date, and calculated the summed aggregate of emissions divided by the distance (Q/D) for each day for each monitoring site.

a) Wildland Fire Emissions

Wildland fire emissions inside and outside the United States are estimated with the Fire Inventory from NCAR[84] for 2020. Daily emissions estimates for each wildland fire are processed for input to photochemical models using the Sparse Matrix Operator Kernel Emissions[85] (SMOKE). SMOKE is used to apply a fire type-specific diurnal profile and allocates total emissions of NOx, ROG, and $PM_{2.5}$ to specific model species needed for chemical mechanisms. Speciation profiles are based on those available in the SPECIATE[86] database.

b) Q/D Estimation

One approach to provide screening level information about wildland fire emissions' impact on ozone levels is to sum NO_X and ROG emissions for each fire and divide by distance between the fire and location of interest. Q/D is calculated using wildland fire emissions input files for the Community Multiscale Air Quality (CMAQ) modeling system. Wildland fire emissions input files for CMAQ have hourly emissions for each modeled species provided in

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[83] Ibid, p. 15
[84] Wiedinmyer et al., 2011
[85] UNC, Institute for the Environment, CMAS, *Sparse Matrix Operator Kernel Emissions (SMOKE) Modeling System*, last accessed 7/29/21
[86] U.S. EPA, Air Emissions Modeling, *SPECIATE*, last accessed 7/29/21

files for specific days. Each day of the year has a different CMAQ input file for wildland fire emissions. Each emissions release point on the wildland fire CMAQ input file has daily total emissions of NO, NO_2, and ROG species summed. A set of gridded receptors is developed that often matches a commonly used model domain like the 12 km contiguous U.S. domain or 4 km California domain. The distance from each wildland fire is then calculated to each gridded receptor. This process is repeated for each fire on each day specific emissions input file. The Q/D for each fire in each grid cell is kept and then summed over all fires for that day to derive a daily Q/D at each receptor location from all fires for that day. The CMAQ input files do not have names associated with each of the wildland fire emissions release points so tracking fire specific emissions with this process is not possible. It does however provide a conservative estimate of wildland fire impacts since all fires are aggregated and it is possible to window the emissions so that only a subset of the emissions input file emission release points are used as part of the Q/D calculation (e.g., a box covering just the Pacific Northwest region).

c) Q/D Method Discussion and Results

The summed aggregate Q/D approach agreed upon by CARB and U.S. EPA staff differs from the published guidance, as the guidance weighted aggregate approach can lead to days where calculations for multiple fires impacting a site can lead to aggregate Q/D values that are less than an individual fire's calculated Q/D. A summed aggregate Q/D approach is one where emissions from wildfires are divided by the distance to a monitoring site, then summed together without any weighting for days when supported by indications of transport. This is a more accurate indication of when multiple wildfires impact a site.

Further improving upon the summed aggregate Q/D approach, an "Effective Q/D" was calculated to account for periods where multiple days of wildfire smoke buildup impacts the monitoring site, with a cap of three days (present day + two preceding days) in an attempt to account for emission dispersion at the site limiting perceived impact of older emissions – but could actually be longer if emissions are trapped during prolonged specialized conditions such as smoke transported downslope into a bowl valley while meteorological conditions minimize ventilation of the region for multiple days. This Effective Q/D is calculated at the site for each day leading up to and including the days of the event for screening.

For the purpose of this analysis, the "Daily Q/D" is defined as the summed aggregate emissions of California based wildfires divided by each wildfire's centroid distance to the monitoring site. The Effective Q/D is the calculated adjustment of Q/D accounting for multiple days of emissions buildup at the location, allowing for better approximation for screening emissions impacts at a site.

As seen in Table IV-1, the Effective Q/D value for Red Hills was elevated for the dates of August 20 and 21, 2020 being requested for exclusion and these dates exceeded the required Q/D criteria threshold value of 100; qualifying under the requirements for Tier 2 – Key factor #1. The remaining dates September 30, October 1 and 2, 2020 maintained high Effective Q/D in the range of 40 to 60 with enhanced wildfire influence impacts at the site but did not exceed the required Q/D criteria value of 100, and thus do not qualify under the requirements for Tier 2 – Key factor #1.

Table IV-1: Estimated Q/D at Red Hills

Date	Exclusion Request	Daily Q/D	Dates Included	Effective Q/D	Rationale
8/18/2020		34.199	8/18	34.199	Light smoke across the southwest San Joaquin Valley with transport indicated from nearby Hills Fire and August Complex, River, LNU Lightning Complex, North Complex, Woodward, Carmel, and SCU Lightning Complex fires.
8/19/2020		52.192	8/18-8/19	86.391	Heavy smoke flows southward into the area with transport indicated from nearby Hills Fire and LNU Lightning Complex, Woodward, and SCU Lightning Complex fires.
8/20/2020	Yes	31.672	8/18-8/20	118.063	Moderate to heavy smoke persists across the region with transport indicated from nearby Hills Fire, CZU Lightning Complex, River, LNU Lightning Complex, Carmel, and SCU Lightning Complex fires.
8/21/2020	Yes	19.665	8/19-8/21	103.529	Moderate smoke continues across the area with abundant smoke transported from the north from nearby Hills Fire, CZU Lightning Complex, River, LNU Lightning Complex, Woodward, Carmel, SCU Lightning Complex fires.
8/22/2020		18.939	8/20-8/22	70.276	Heavy smoke across the area with smoke transported from nearby Hills Fire, LNU Lightning Complex, and SCU Lightning Complex fires.
8/23/2020		15.486	8/22	18.939	Initially moderate residual smoke remains in the morning, weather system moves into the area bringing in clouds and stronger ventilation. Cleaner air transported from along the coast clears out smoke.
9/28/2020		24.174	9/28	24.174	Smoke increases across the San Joaquin Valley with transport from the SQF Complex and Creek fires.
9/29/2020		22.387	9/29	22.387	Light smoke in the area with most smoke kept east/north along the Sierra mountains and limited transport from the SQF Complex and Creek fires.

Date	Exclusion Request	Daily Q/D	Dates Included	Effective Q/D	Rationale
9/30/2020	Yes	19.683	9/29-9/30	42.07	Light to moderate smoke in the area with heavier smoke kept east/north along the Sierra mountains. Transport generally from the north for most of the day from LNU Lightning Complex, August Complex, and North Complex fires. Late evening 9/30 into 10/1 surface winds shift to out of the northeast/east transporting additional smoke from SQF Complex and Creek fires leading to increasing ozone values during early morning 10/1 which contribute to the exceedance 9/30 2300 PST.
10/1/2020	Yes	17.546	9/29-10/1	59.616	Moderate to heavy smoke persists in the area with transport from LNU Lightning Complex, August Complex, North Complex, SQF Complex, and Creek fires.
10/2/2020	Yes	18.708	9/30-10/2	55.937	Moderate to heavy smoke continues across the area with residual smoke from SQF Complex and Creek fires. New transport indicated from LNU Lightning Complex, August Complex, and North Complex fires.
10/3/2020		13.378	10/2-10/3	32.086	Moderate smoke across the area with transport from August Complex, and North Complex fires. Smoke from SQF Complex and Creek fires appear to remain in eastern San Joaquin Valley along the Sierra mountains.
10/4/2020		16.775	10/4	16.775	Light smoke clearing out with visibly cleaner air from the Sacramento/San Francisco Bay area. Transport indicated from August Complex and North Complex (little smoke production) but smoke appears to clear out from much of the coastal mountain range and northwestern San Joaquin Valley.

In Table IV-2, the Effective Q/D value at Simi Valley (Ventura County) was elevated for all dates being requested for exclusion but did not exceed the required Q/D criteria value of 100. No requested dates qualify under the requirements for Tier 2 – Key factor #1.

Table IV-2: Estimated Q/D at Simi Valley

Date	Exclusion Request	Daily Q/D	Dates Included	Effective Q/D	Rationale
8/17/2020		9.2239	8/17	9.2239	Light smoke per HMS Smoke product across the area. Transport indicated from Lake Fire and new nearby Holser Fire, started around 2pm covering 1200 acres by end of day.
8/18/2020	Yes	22.344	8/17-8/18	31.5679	Moderate to heavy smoke in the area with transport from Lake Fire and nearby Holser Fire, which grew to 3000 acres by 930am. Long range transport also indicated from SCU Lightning Complex, LNU Lightning Complex, and August Complex fires.
8/19/2020		32.384	8/18-8/19	54.728	Light to moderate smoke with transport from Lake, Holser, SCU Lightning complex, and LNU Lightning Complex.
8/20/2020		21.309	8/19-8/20	53.693	Moderate smoke blows into the area with transport from Lake, Holser, SCU Lightning Complex, and LNU Lightning Complex.
8/21/2020	Yes	13.6	8/19-8/21	67.293	Moderate smoke in the area as heavy smoke from central and northern California is blown into southern California. Transport indicated from Holser, Lake, CZU Lightning Complex, River, LNU Lightning Complex, Salt, Woodward, Carmel, SCU Lightning Complex, and Dolan fires.
8/22/2020		12.605		0	Light smoke clears out as cleaner marine air is transported in from the Pacific Ocean.
9/30/2020		14.519	9/30	14.519	Light smoke across the area. Transport indicated from SQF Complex, and Creek fires.
10/1/2020		13.581	10/1	13.581	Light smoke across the area. Transport indicated from possibly Bobcat fire. During afternoon and evening, near surface (100m & 500m trajectories) shift to transport from SQF Complex and Creek fires.
10/2/2020	Yes	14.535	10/1-10/2	28.116	Light smoke continues in the area. Transport indicated from SQF Complex, and Creek fires

Date	Exclusion Request	Daily Q/D	Dates Included	Effective Q/D	Rationale
10/3/2020	Yes	10.916	10/2-10/3	25.451	Residual light smoke in the area with moderate to heavy smoke from Bobcat fire directly blowing westward toward site in MODIS imagery. Trajectories indicate transport also from SQF Complex, and Creek fires.
10/4/2020	Yes	12.267	10/2-10/4	37.718	Light to moderate smoke persists across the area. Transport indicated from Bobcat, SQF Complex and Creek fires.
10/5/2020		9.6882	10/4	9.6882	Initial light smoke appears to clear out during the day. Scattered clouds aloft. Early morning transport indicated from SQF Complex but surface transport brings in cleaner marine air during day while Bobcat fire appears to produce minimal emissions.

2. Key Factor #2 (Event vs Non-Event Ozone Concentrations)

Key factor #2 in a Tier 2 demonstration requires a comparison of the event related ozone concentration with non-event related high ozone concentrations. Statistical analyses of the exceedances must either demonstrate that exceedance concentrations are in the 99th percentile of the 5-year distribution of ozone monitoring data, or one of the 4 highest ozone concentrations within the year.

Due to the large number of dates impacted by the multiple large wildfires burning historically large amount of acreage producing massive amounts of emissions, CARB believes it reasonable to include all dates whereby wildfire emissions caused exceedances of the appropriate ozone NAAQS up to the adjusted 4th high, as noted in the tables below. Dates that are impacted by exceptional events should not count against the tally of "the 4 highest ozone concentrations within the year" as they were exceedances caused by contributions from wildfire emissions. This list also does not preclude the non-exceptional event requested dates from future consideration as wildfire related exceptional events, only that they are not being demonstrated as such as part of this exceptional events demonstration.

The 99th percentile value for the 5-year (2015-2019) distribution of ozone monitoring data at Red Hills is 0.071 ppm. For further comparison, the 99.9th percentile value for the 5-year distribution at Red Hills was calculated to be 0.075 ppm, illustrating the extremeness of the requested event dates in 2020. All dates being requested for exclusion due to wildfire exceptional events are in the top 8 concentrations in 2020 and in the 99th percentile or higher for concentrations during the prior 5-year distribution of data as shown below in Table IV-3. After accounting for the exceptional event dates being requested the adjusted 4th high is

0.074 ppm, below all requested exceptional event dates. All requested dates qualify under the requirements for Tier 2 – Key factor #2.

Table IV-3: Top 10 max daily 8-hour ozone concentrations in 2020 at Red Hills

Date	8-hr Ozone	2020 Rank	5-year Percentile	Event?
8/21/2020	0.106	1	99%	EE
10/1/2020	0.081	2	99%	EE
10/2/2020	0.081	3	99%	EE
9/16/2020	0.080	4	99%	
8/20/2020	0.076	5	99%	EE
9/5/2020	0.076	6	99%	
9/6/2020	0.076	7	99%	
9/30/2020	0.075	8	99%	EE
9/2/2020	0.074	9	99%	Adjusted 4th high
10/17/2020	0.074	10	99%	

The 99th percentile value for the 5-year (2015-2019) distribution of ozone monitoring data at Simi Valley is 0.076 ppm. For further comparison, the 99.5th percentile value for the 5-year distribution at Red Hills was calculated to be 0.078 ppm, supporting the extremeness of the requested event dates in 2020. All dates being requested for exclusion due to wildfire exceptional events are in the top 8 concentrations in 2020 and in the 99th percentile or higher for concentrations during the prior 5-year distribution of data as shown below in Table IV-4. After accounting for the exceptional event dates being requested the adjusted 4th high is 0.079 ppm, below all requested exceptional event dates. All requested dates qualify under the requirements for Tier 2 – Key factor #2.

Table IV-4: Top 10 max daily 8-hour ozone concentrations in 2020 at Simi Valley

Date	8-hr Ozone	2020 Rank	5-year Percentile	Event?
10/3/2020	0.095	1	99%	EE
8/18/2020	0.086	2	99%	EE

Date	8-hr Ozone	2020 Rank	5-year Percentile	Event?
10/2/2020	0.086	3	99%	EE
9/4/2020	0.085	4	99%	
10/15/2020	0.084	5	99%	
8/21/2020	0.082	6	99%	EE
5/8/2020	0.081	7	99%	
10/4/2020	0.080	8	99%	EE
5/7/2020	0.079	9	99%	Adjusted 4th high
9/18/2020	0.079	10	99%	

C. Tier 3 – Weight of Evidence

The following sections provide additional evidence as required to support a Tier 3 analysis per U.S. EPA guidance[87] where the requested dates do not qualify for either a Tier 1 or a Tier 2 analysis. All dates requested for exclusion will be included in this Tier 3 analysis, even though August 21, 2020 for Red Hills qualifies for Tier 1 and August 20, 2020 for Red Hills qualifies for Tier 2. The Tier 3 analysis utilizes a more complicated "weight of evidence" approach with additional complex analyses to show a clear causal relationship between wildfire emissions and the ozone concentrations at a site. Additional required elements in a Tier 3 analysis must provide:

1. Evidence that the emissions from the wildfire affected the exceeding monitor.

This requirement is met through evidence shown in Sections B and C of the Narrative Conceptual Model chapter and Section C of this chapter, and particularly in the evidence of an ozone/$PM_{2.5}$ correlation (Figure III-32 and Figure III-36), unusual ozone diurnal patterns seen in many of the Figure IV-3 to Figure IV-13, and unusual $PM_{2.5}$ patterns seen in many of the Figure IV-15 to Figure IV-29. Social media reports of smoke in the vicinity can also be found in Appendix F.

2. Evidence that the emissions were transported to the monitor.

This requirement is met through evidence given in the Narrative Conceptual Model chapter and this chapter using both backward trajectory analysis from the monitor as well as forward

[87] U.S. EPA, *Final Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations*, p.25, last accessed 7/29/21

trajectory modeling from individual wildfires, satellite imagery and HMS satellite-derived smoke layers, NAAPS modeled aerosol optical depth, and meteorological analyses.

3. Additional evidence that the emissions caused the exceedance by reaching the ground and affecting the monitors.

This requirement is met through the analysis of $PM_{2.5}$, black carbon, NAAPS modeled smoke surface concentration, and NWS Area Forecast Discussions in the following section as well as media reports of smoke at ground level.

1. 1-Hour Ozone (Diurnal Comparison)

The following figures compare the daily diurnal pattern for each exceedance day with the hourly diurnal percentiles for ozone from 2015-2019. For the Red Hills site, data is missing for the 0200 PST hour due to running daily quality check routines during the 0200-0300 PST hour and the seasonal ozone season is defined as May through November. For the Simi Valley site, data is missing for the 0100 PST hour due to running daily quality check routines during the 0100-0200 PST hour and the seasonal ozone season is defined as April through October. Calculations of the 8-hour averages for the 2015 NAAQS are limited to the starting hours between 0700-2300 (hours 0000-0600 are excluded) while the 2008 NAAQS includes all starting hours of the day. These figures show that during many of the days for each site the pattern was unusual compared to the percentiles of each site's typical diurnal pattern with unusually timed peaks or spikes. Some days were extremely high throughout the day due to the ongoing presence of wildfire emissions with ozone precursors and ozone impacting these sites. These diurnal ozone figures support that the ozone exceedance days were unusual compared to historical patterns and act as supporting evidence that wildfire emissions directly impacted ozone concentrations at each site.

a) Red Hills

Figure IV-3: Percentiles for seasonal 1-hour ozone for 2015-2019 compared with 8/20/2020

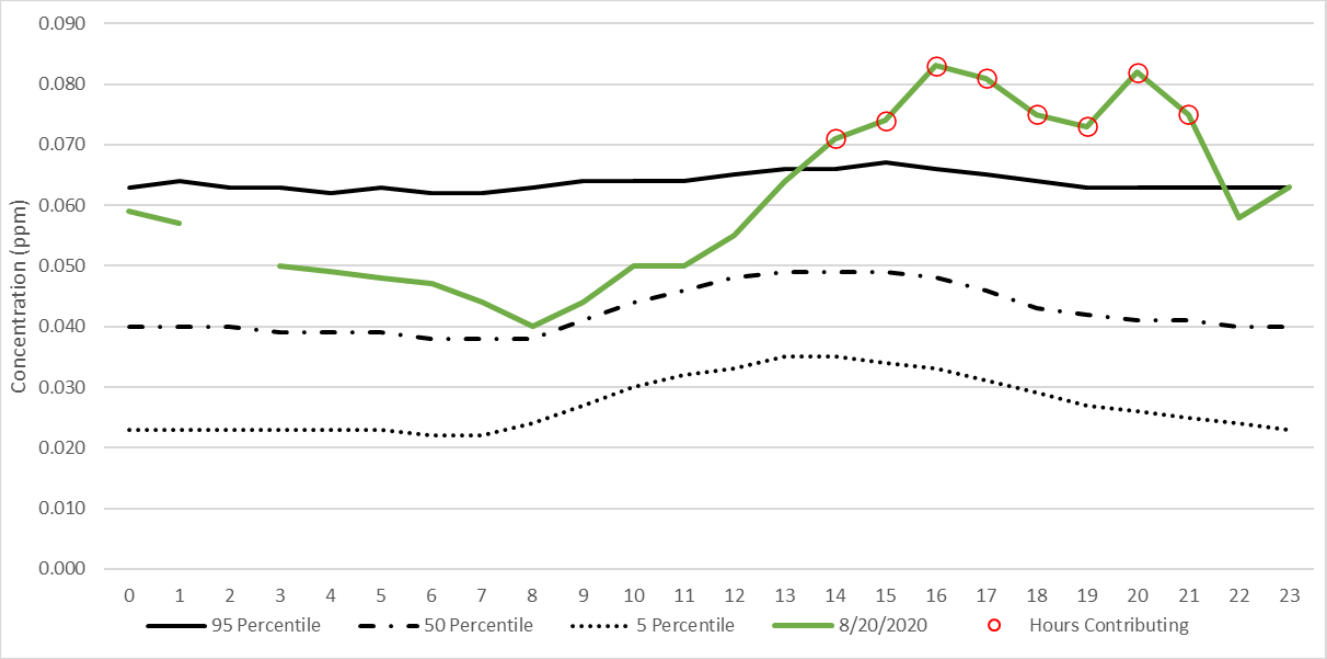


Figure IV-4: Percentiles for seasonal 1-hour ozone for 2015-2019 compared with 8/21/2020

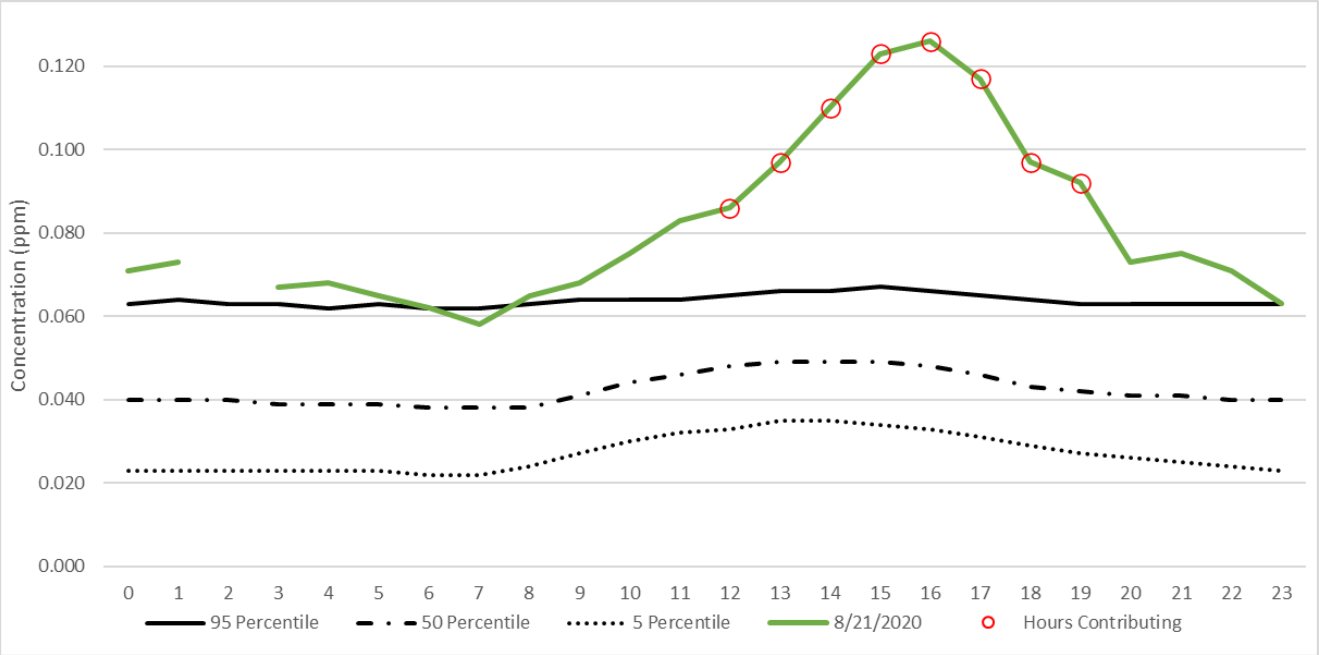


Figure IV-5: Percentiles for seasonal 1-hour ozone for 2015-2019 compared with 9/30/2020[88]

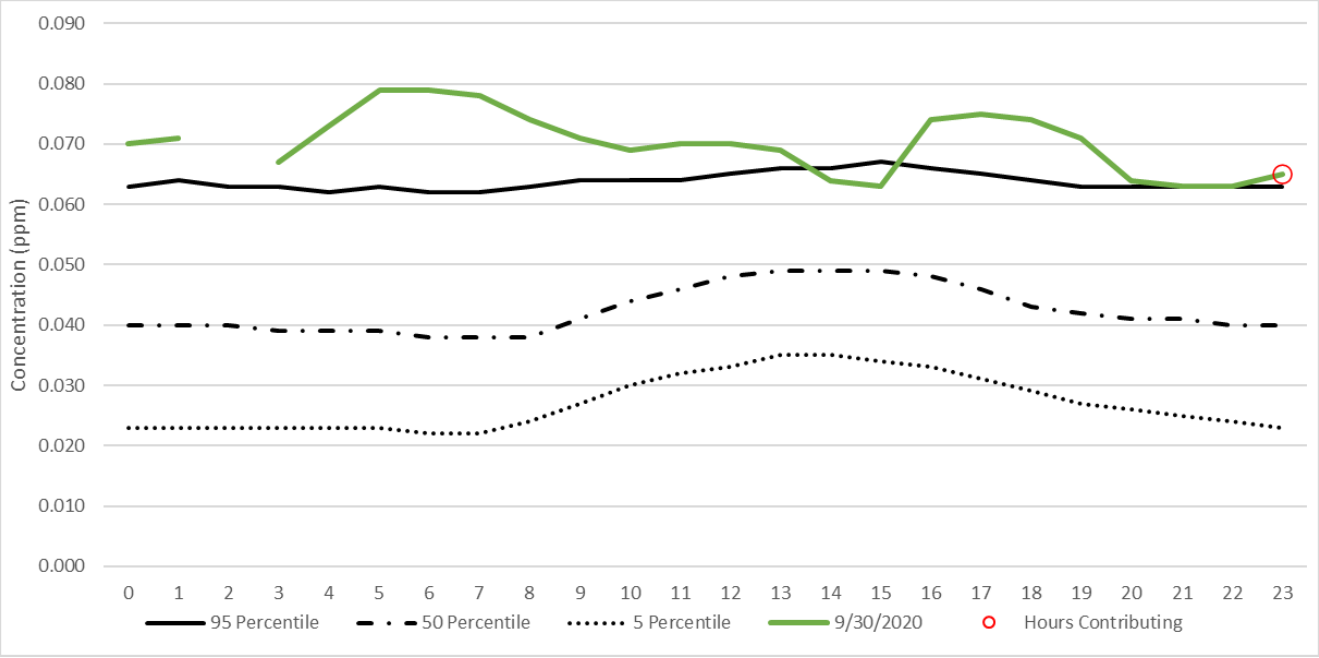
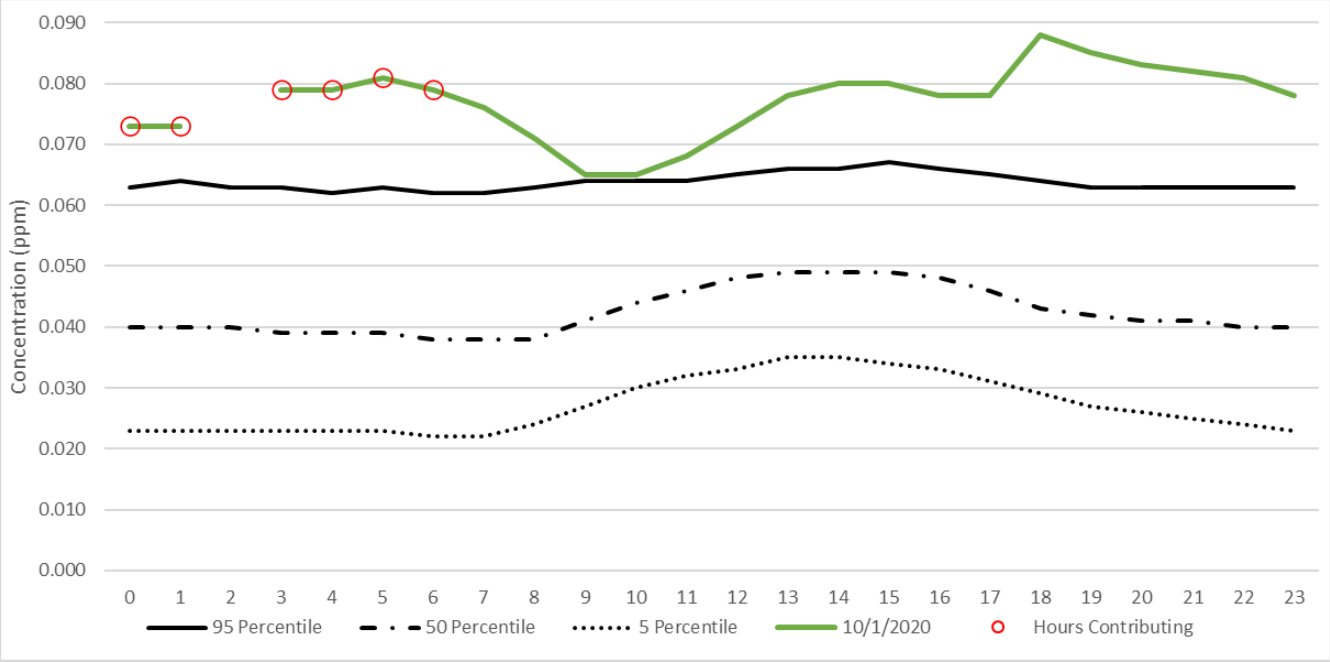


Figure IV-6: Percentiles for seasonal 1-hour ozone for 2015-2019 compared with 10/1/2020 for the exceedance day on 9/30/2020



[88] 2015 NAAQS does not include 8-hour averages starting between hours 0000-0600 and thus these hours cannot result in an exceedance at this site on September 30, 2020.

Figure IV-7: Percentiles for seasonal 1-hour ozone for 2015-2019 compared with 10/1/2020

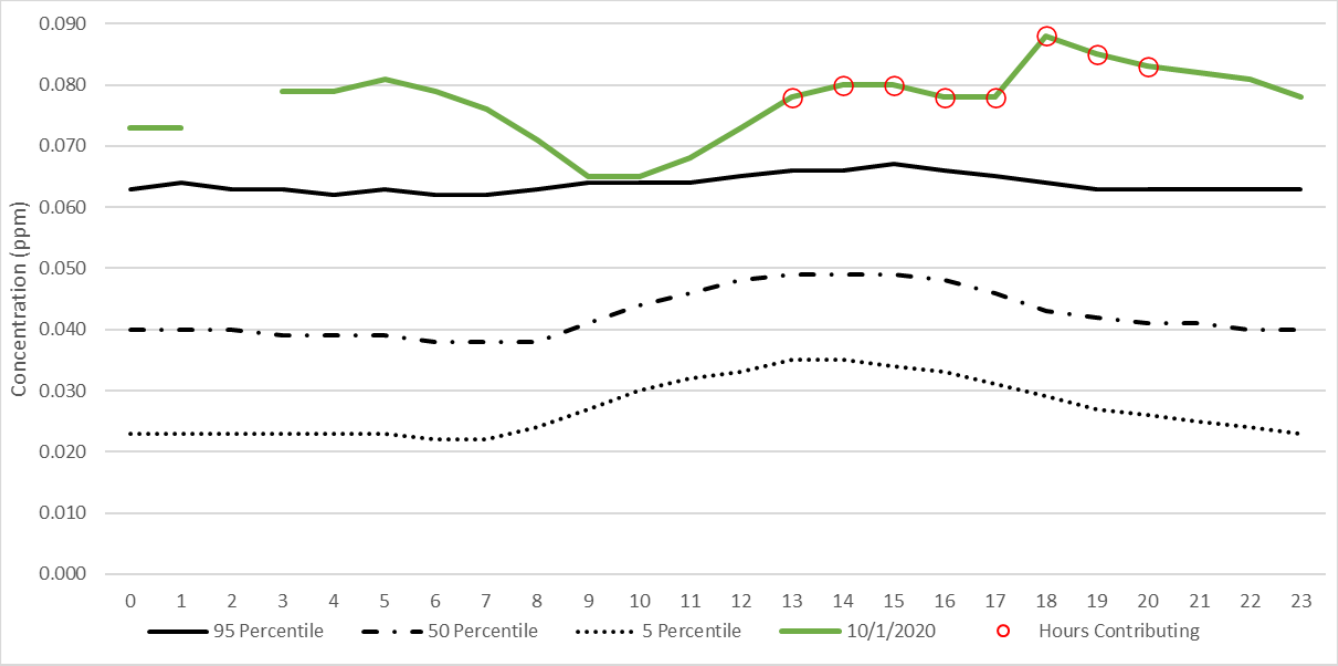
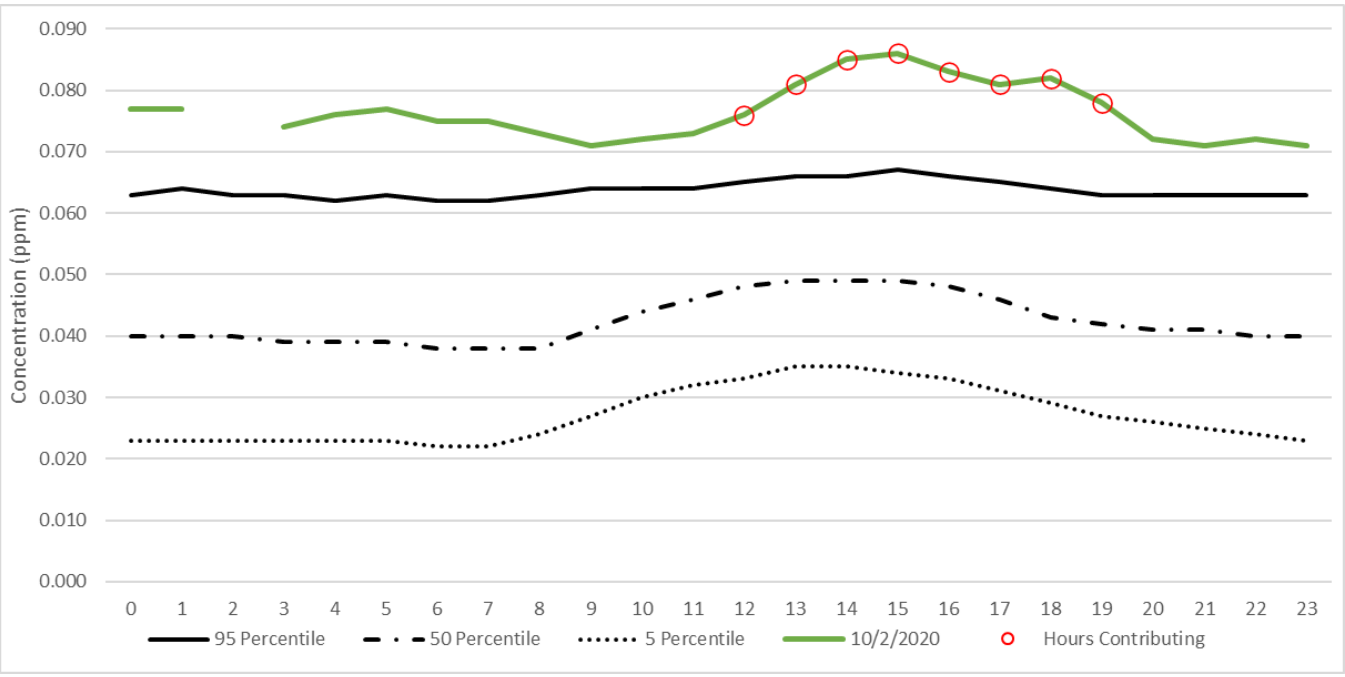


Figure IV-8: Percentiles for seasonal 1-hour ozone for 2015-2019 compared with 10/2/2020



b) Simi Valley

Figure IV-9: Percentiles for seasonal 1-hour ozone for 2015-2019 compared with 8/18/2020

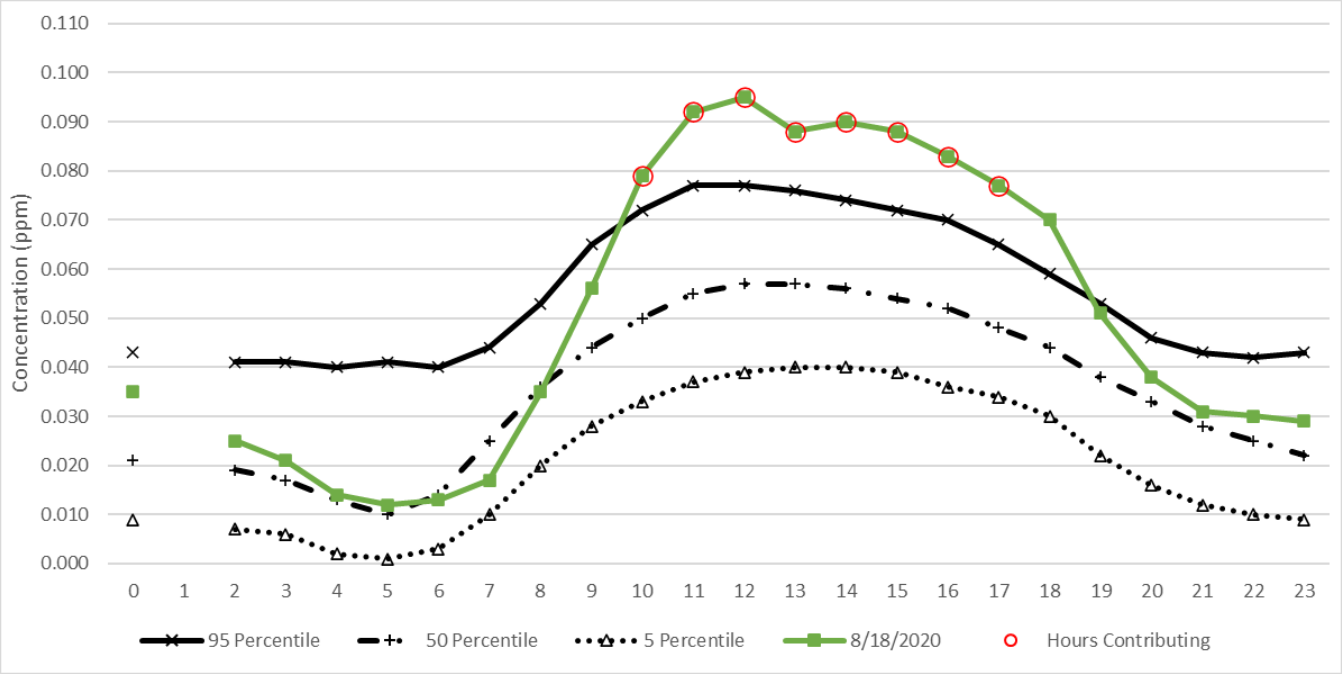


Figure IV-10: Percentiles for seasonal 1-hour ozone for 2015-2019 compared with 8/21/2020

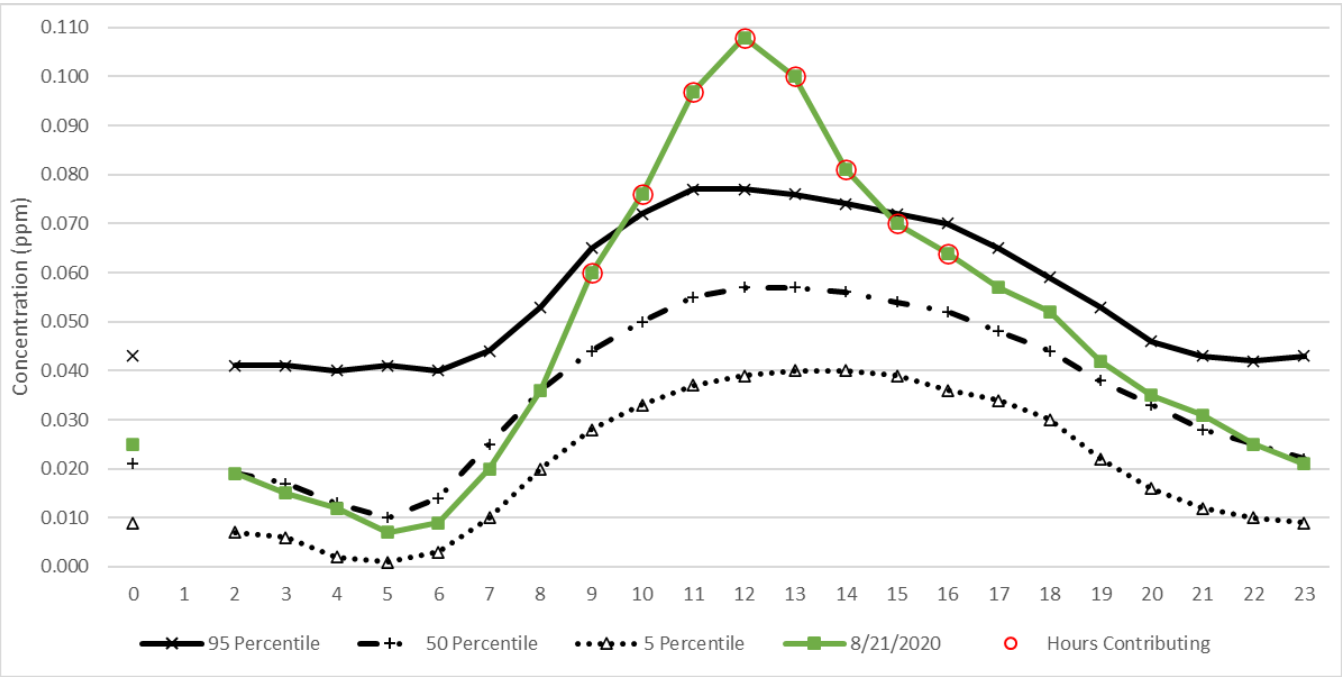


Figure IV-11: Percentiles for seasonal 1-hour ozone for 2015-2019 compared with 10/2/2020

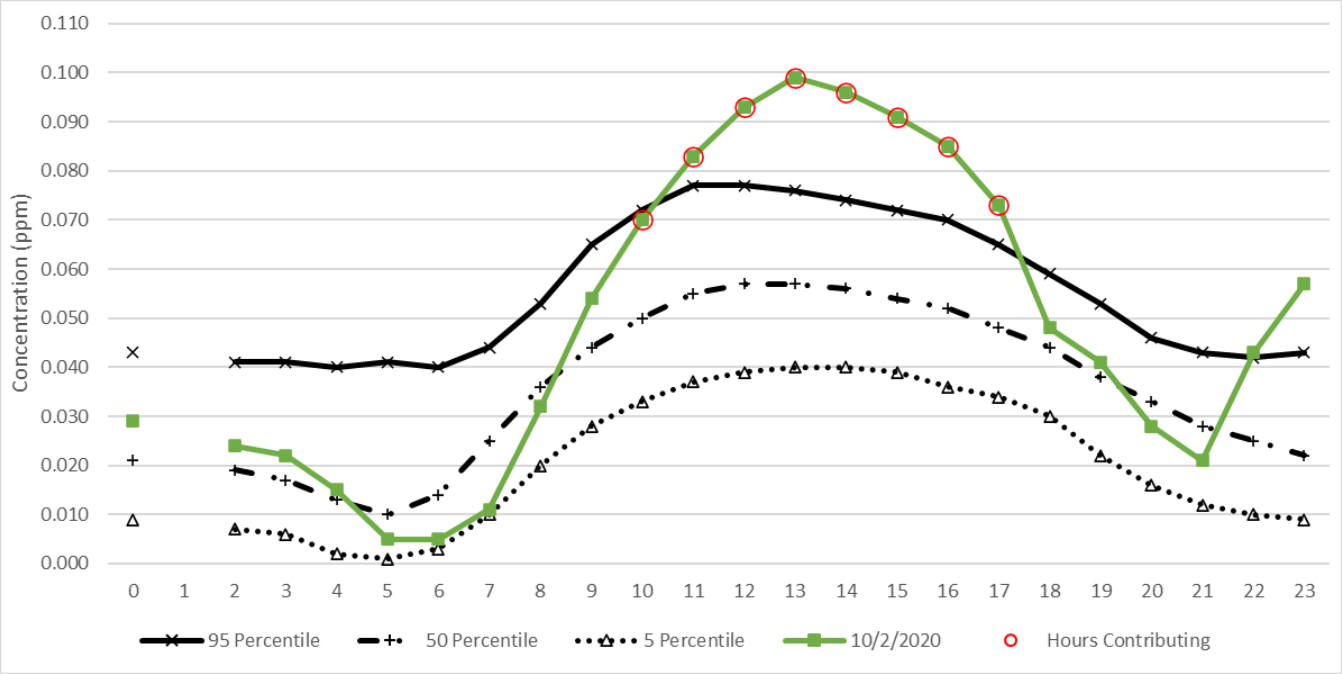


Figure IV-12: Percentiles for seasonal 1-hour ozone for 2015-2019 compared with 10/3/2020

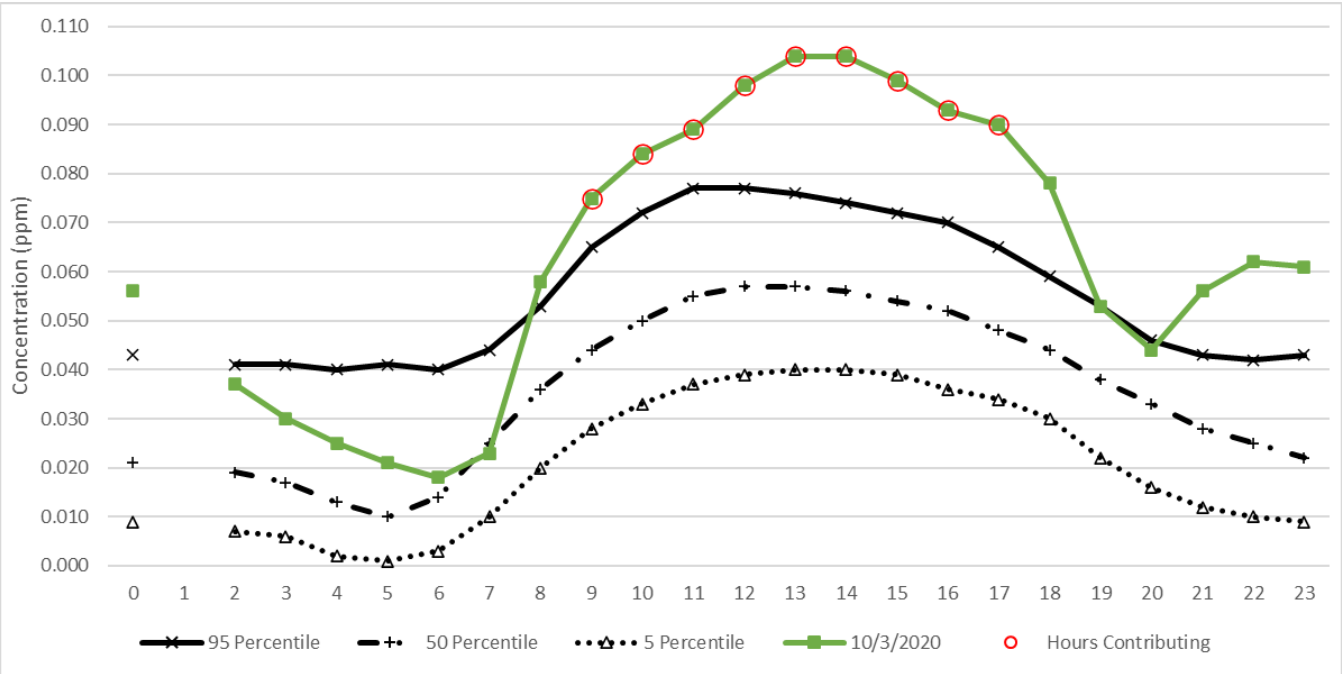
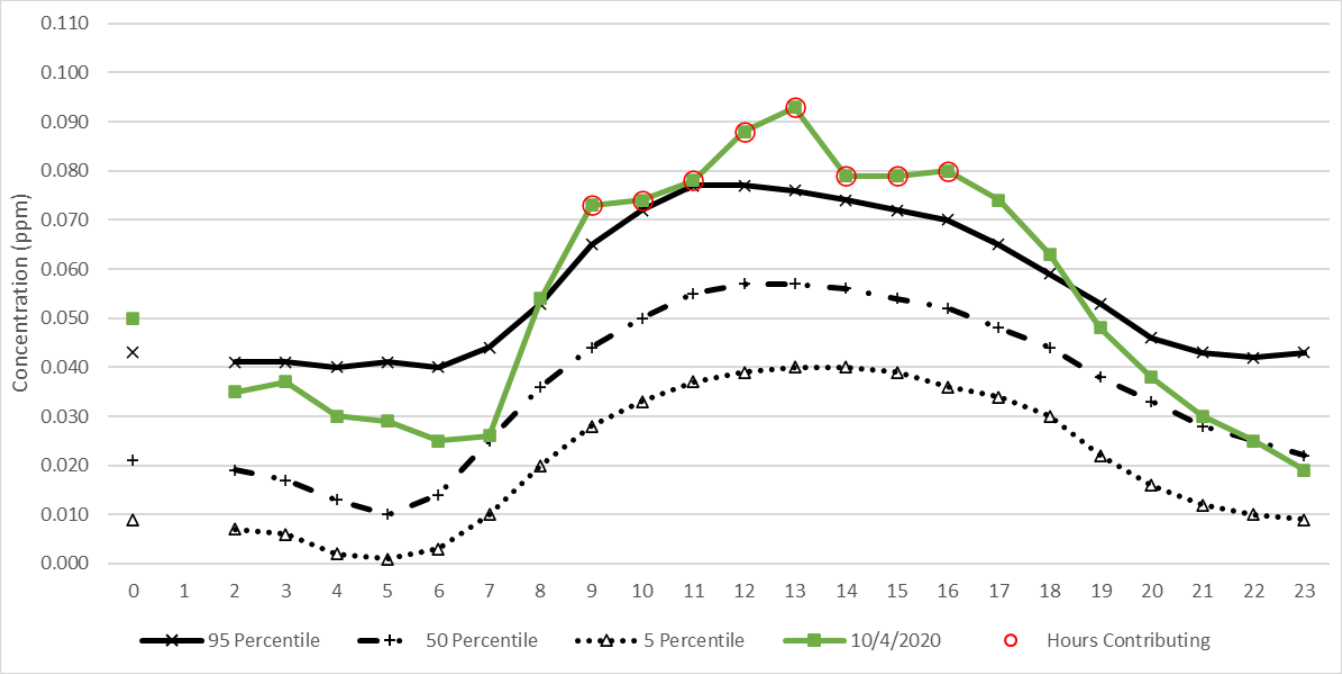


Figure IV-13: Percentiles for seasonal 1-hour ozone for 2015-2019 compared with 10/4/2020



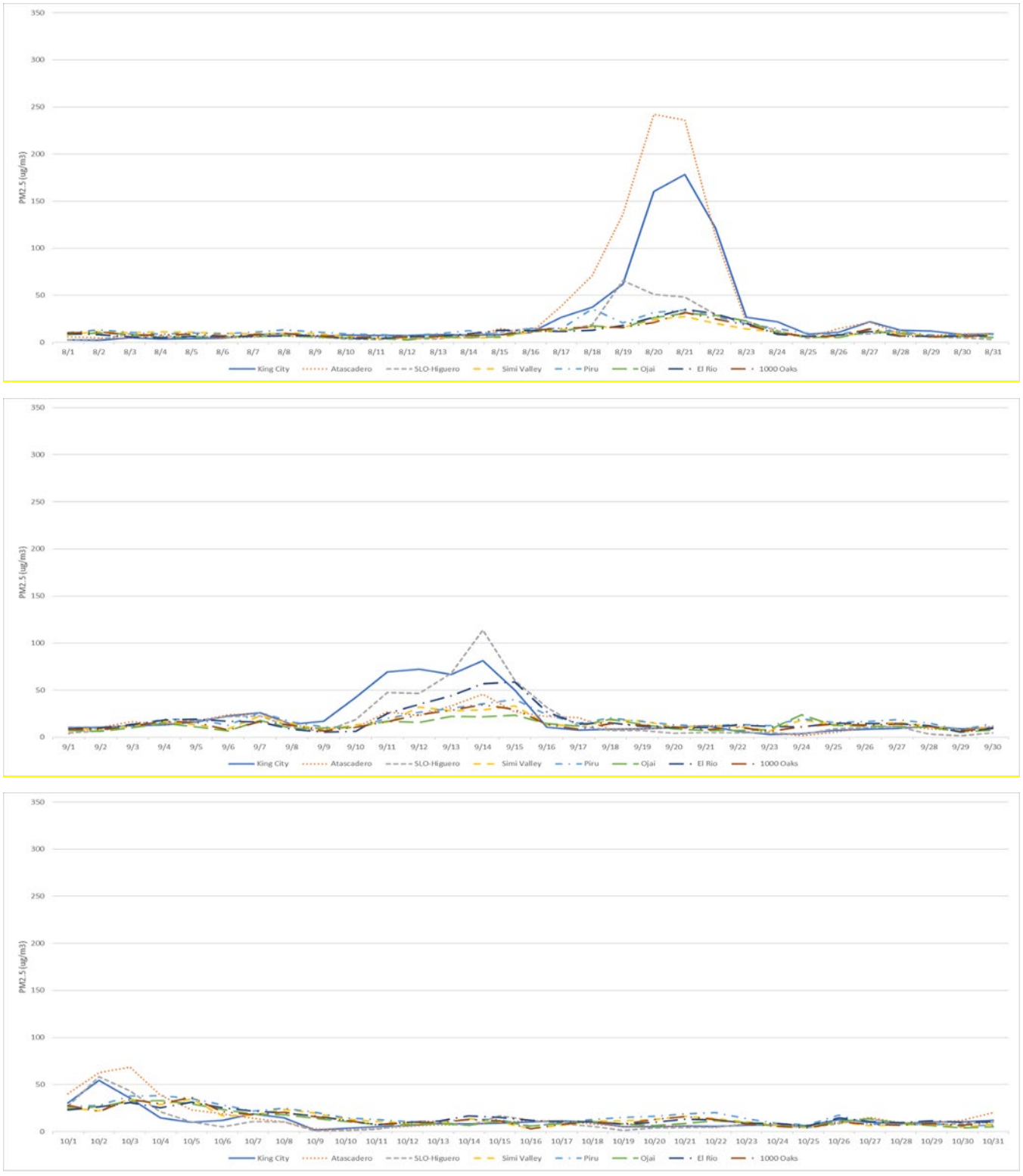
2. $PM_{2.5}$

Evidence of ground-level impacts of smoke on the monitor can also be indicated through analysis of particulate matter, as well as other speciated components.

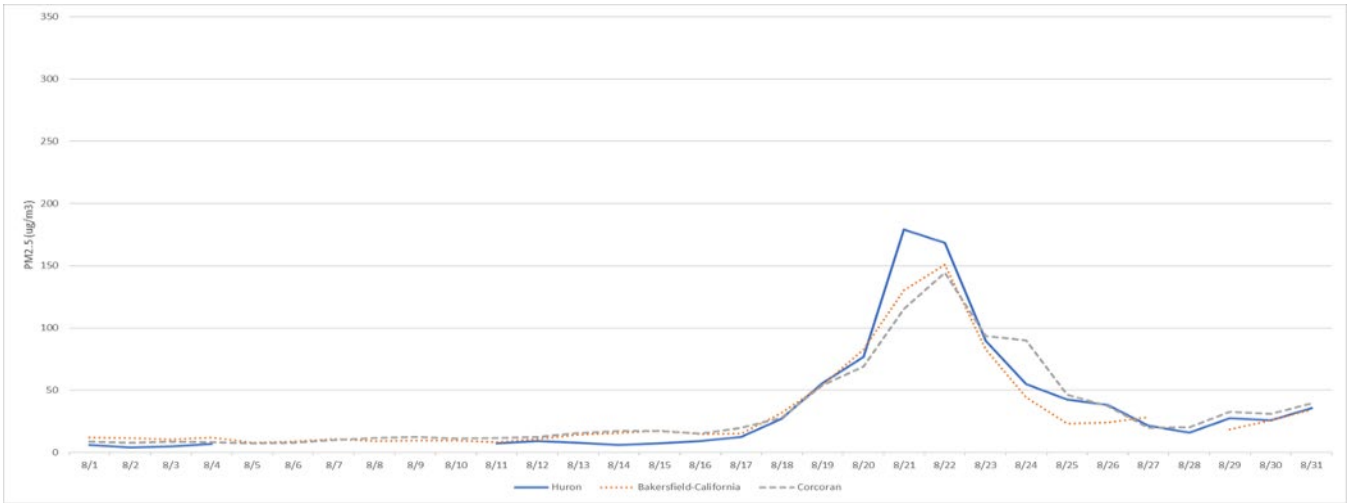
The following figures show elevated $PM_{2.5}$ concentrations at multiple sites along California's central coast and on the western side of the San Joaquin Valley during the time of the exceptional event, which was a direct result of smoke and emissions from the wildfires in northern and central California. This supports that the wildfire smoke and emissions were widespread across the region and directly impacted monitors at the surface during the period.

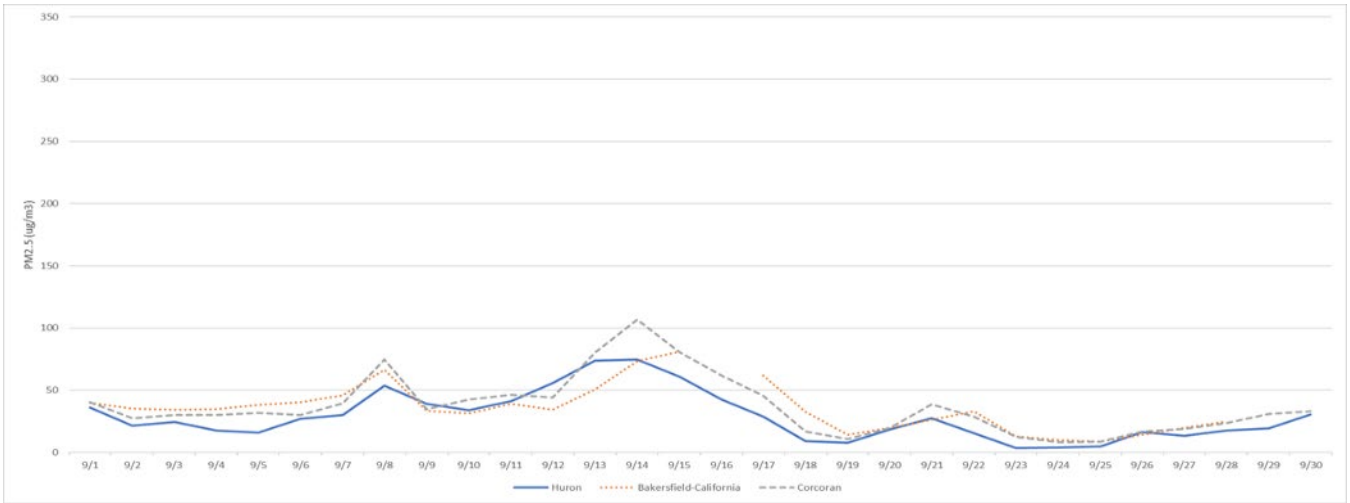
Figure IV-14: Daily $PM_{2.5}$ at selected sites in and near the South Central Coast Air Basin

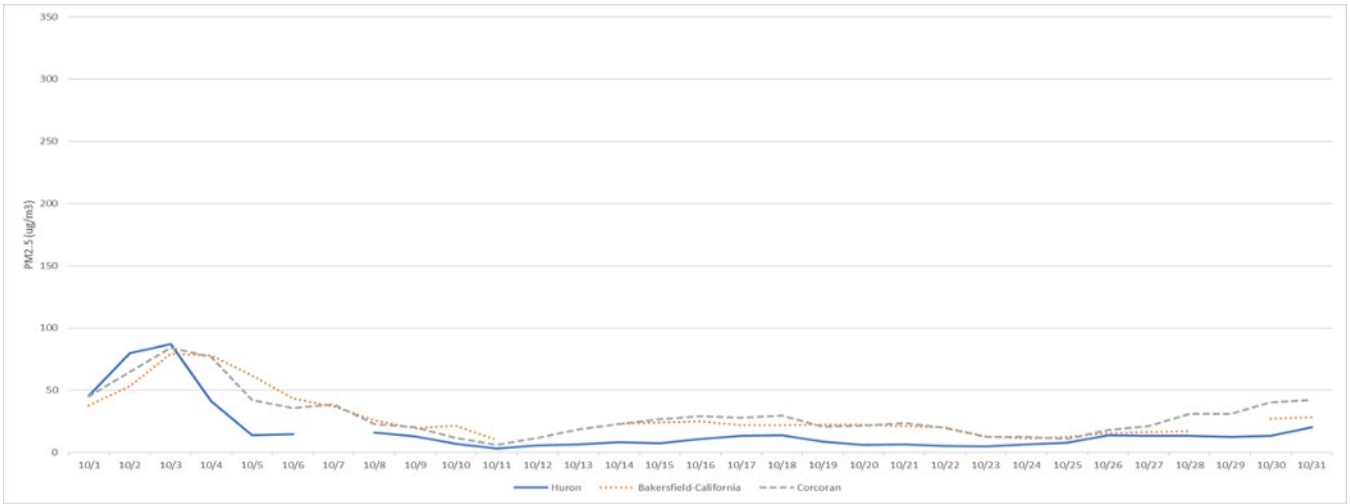
North and South Central Coast Air Basins during August, September, and October



San Joaquin Valley during August, September, and October







a) 1-Hour $PM_{2.5}$ (Diurnal Comparison)

The following figures compare the daily diurnal pattern for each exceedance day with the hourly diurnal percentiles for $PM_{2.5}$ from 2015-2019. These figures show that during many of the days for each site the pattern was unusual compared to the percentiles of each site's typical diurnal pattern with unusually timed peaks or spikes. These diurnal $PM_{2.5}$ figures show that the $PM_{2.5}$ was unusual on the ozone exceedance days, compared to historical patterns, and act as supporting evidence that wildfire emissions directly impacted ozone concentrations at each site on these days.

(1) Red Hills

The Purple Air $PM_{2.5}$ sensor at Red Hills was established in 2018 by the San Luis Obispo APCD and located with the Red Hills ozone monitor. $PM_{2.5}$ data available for the Red Hills site was limited in 2018, with no data available during September and October 2018. The purple air data shown is the average of sensor A and B.

Figure IV-15: Percentiles for seasonal 1-hour $PM_{2.5}$ for August 2018-2019 compared with 8/20/2020 using Purple Air data at Red Hills

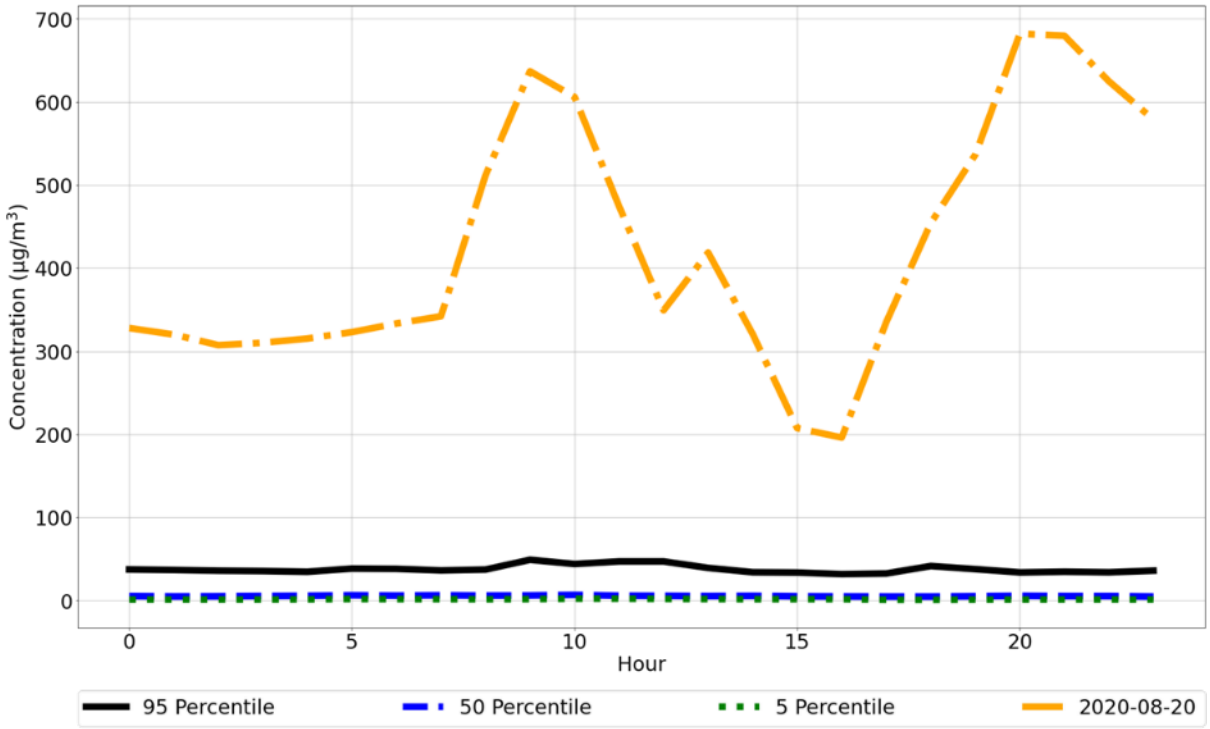


Figure IV-16: Percentiles for seasonal 1-hour $PM_{2.5}$ for August 2018-2019 compared with 8/21/2020 using Purple Air data at Red Hills

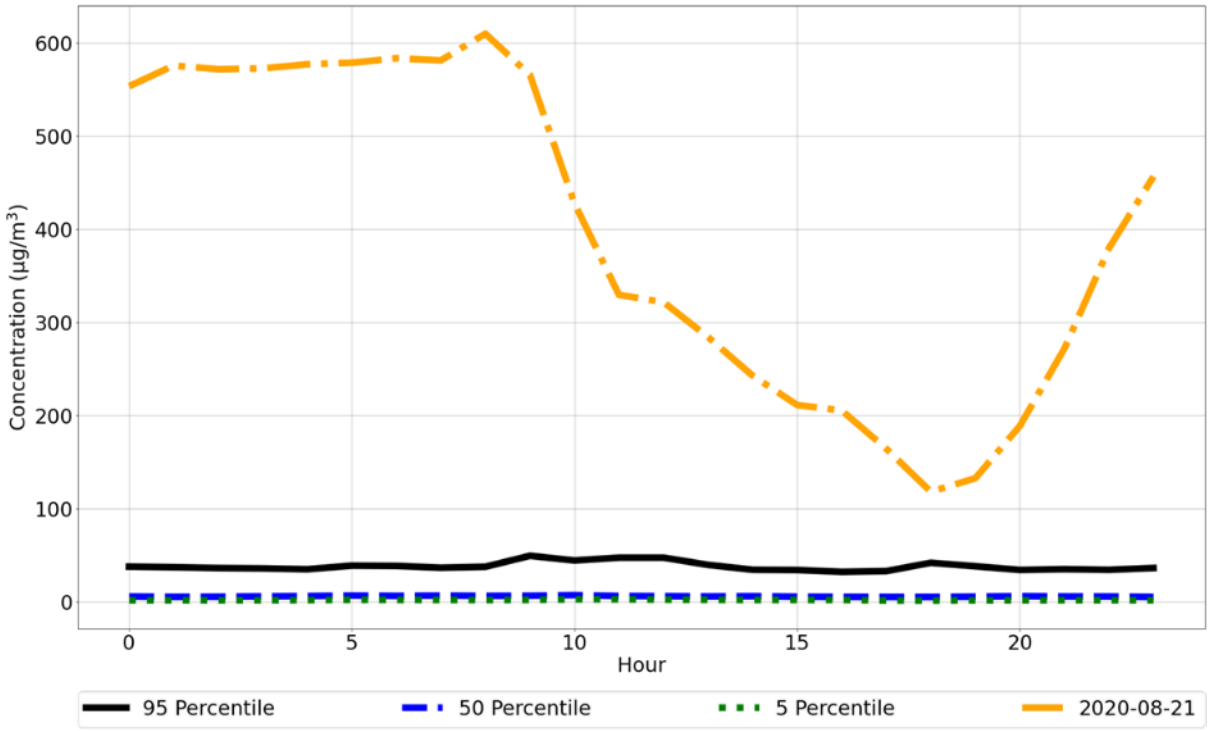


Figure IV-17: Percentiles for seasonal 1-hour $PM_{2.5}$ for September 2019 compared with 9/30/2020 using Purple Air data at Red Hills

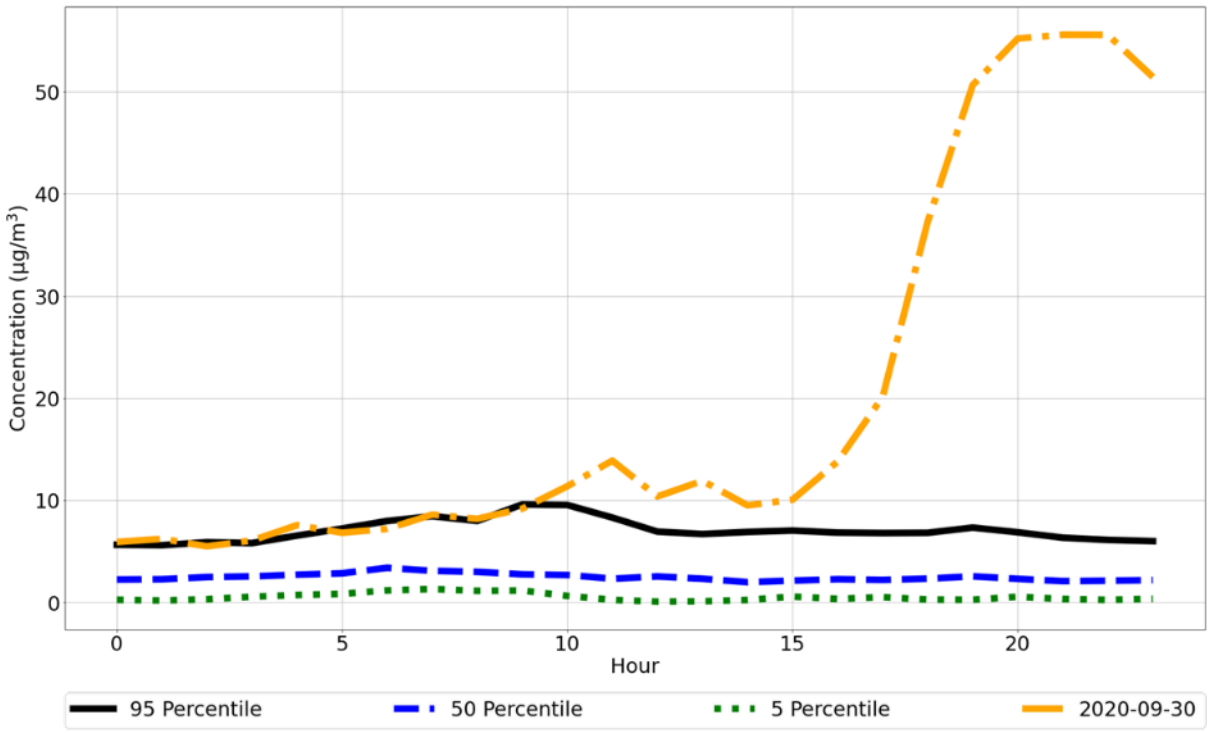


Figure IV-18: Percentiles for seasonal 1-hour $PM_{2.5}$ for October 2019 compared with 10/1/2020 using Purple Air data at Red Hills

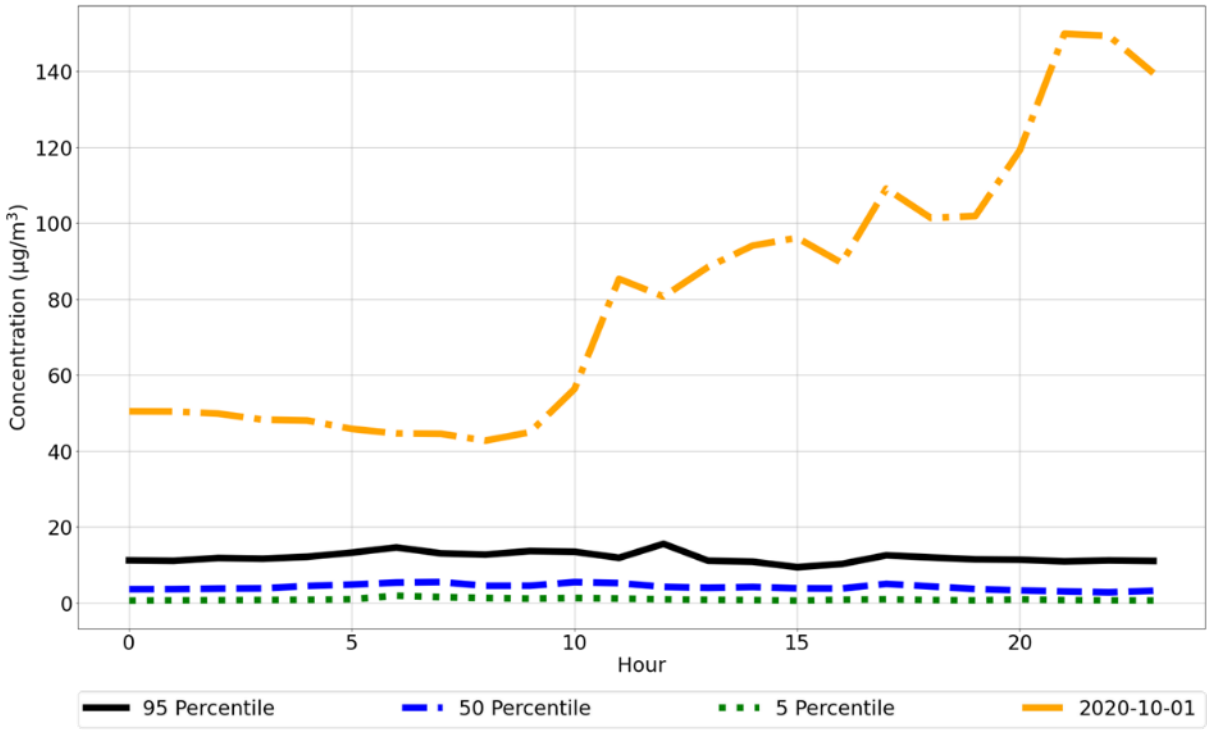


Figure IV-19: Percentiles for seasonal 1-hour $PM_{2.5}$ for October 2019 compared with 10/2/2020 using Purple Air data at Red Hills

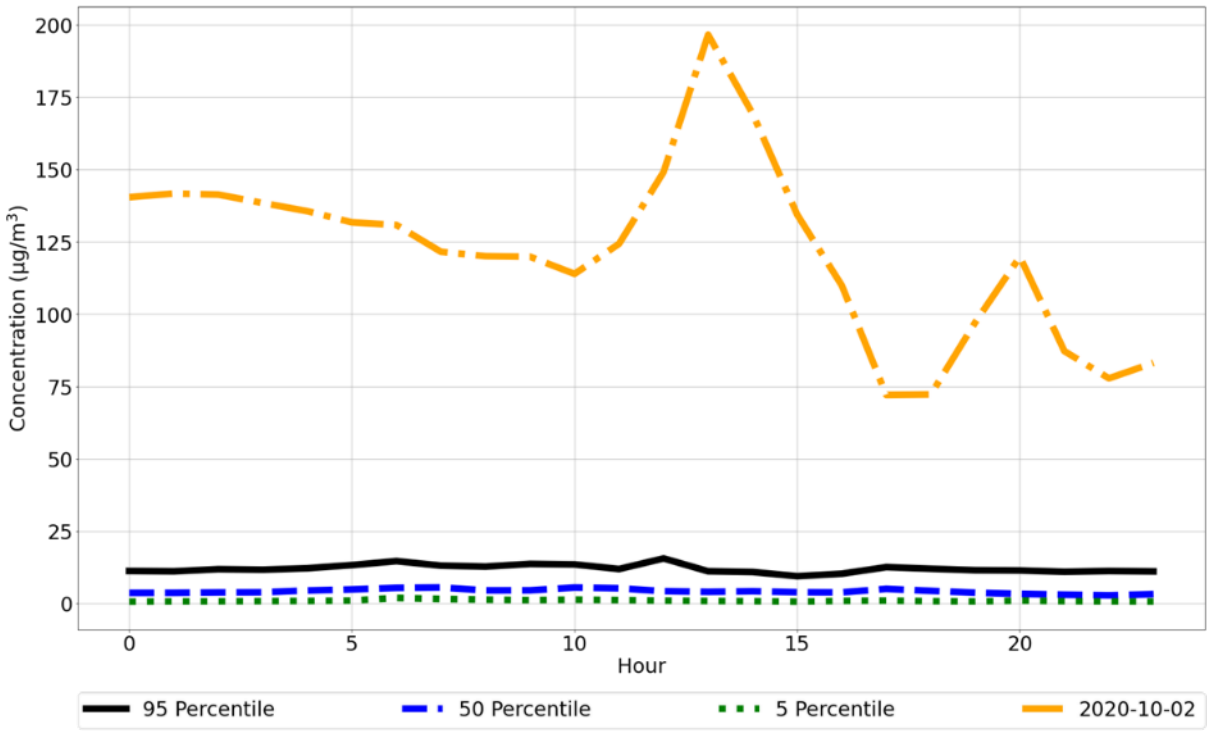


Figure IV-20: Percentiles for seasonal 1-hour $PM_{2.5}$ for August 2015-2019 compared with 8/20/2020 using Regulatory $PM_{2.5}$ data at Atascadero – Lift Station #5

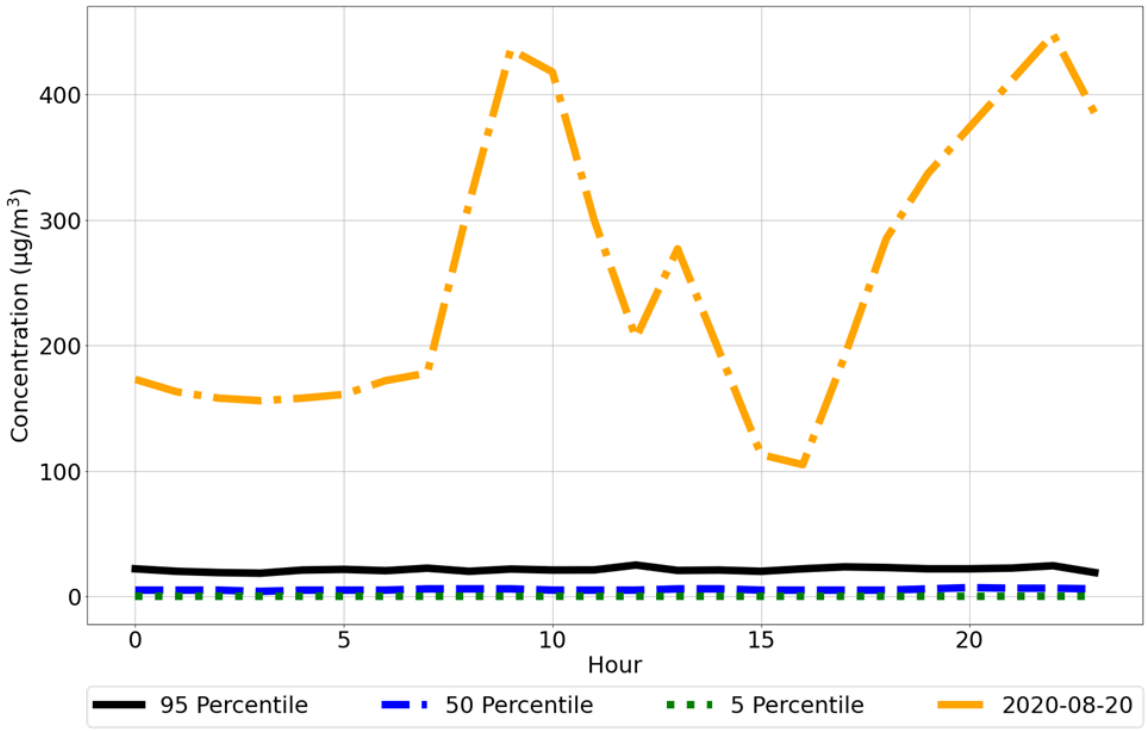


Figure IV-21: Percentiles for seasonal 1-hour $PM_{2.5}$ for August 2015-2019 compared with 8/21/2020 using Regulatory $PM_{2.5}$ data at Atascadero – Lift Station #5

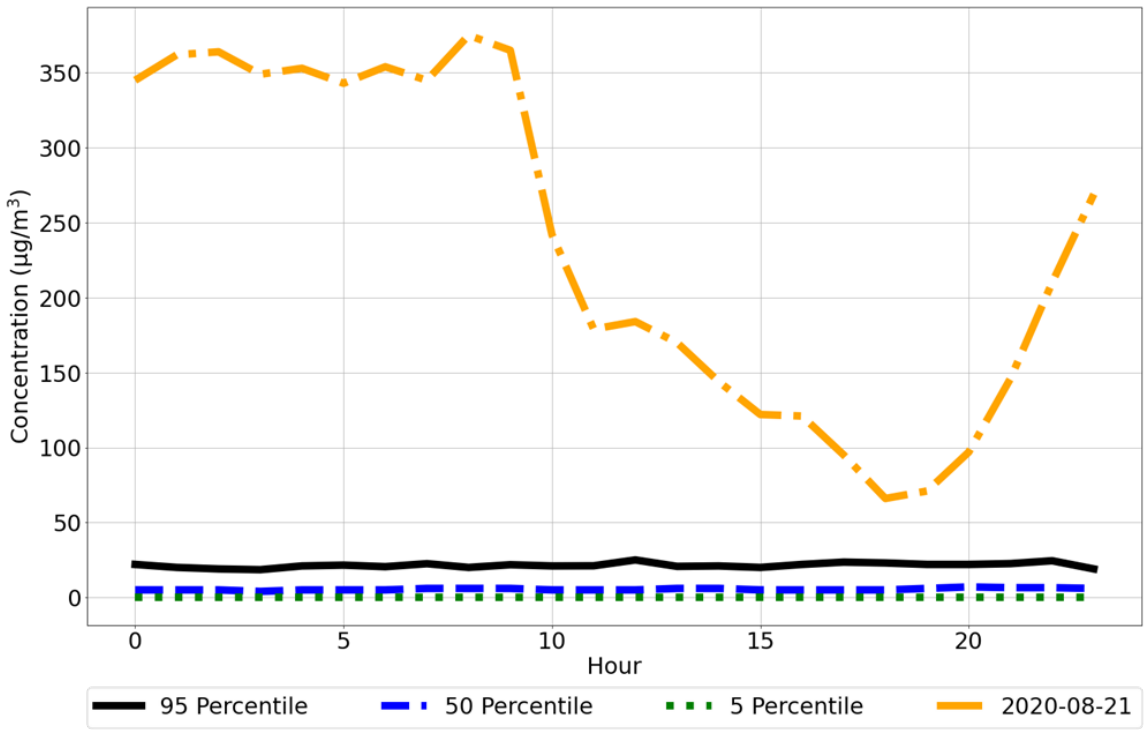


Figure IV-22: Percentiles for seasonal 1-hour $PM_{2.5}$ for September 2015-2019 compared with 9/30/2020 using Regulatory $PM_{2.5}$ data at Atascadero – Lift Station #5

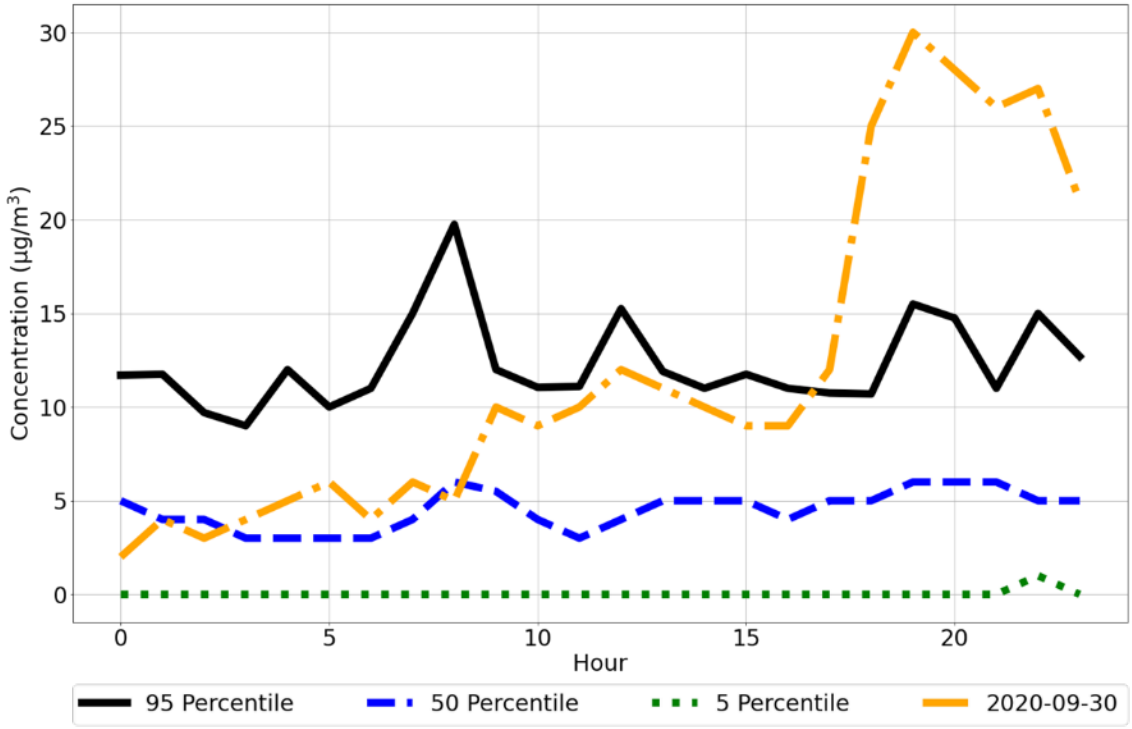


Figure IV-23: Percentiles for seasonal 1-hour $PM_{2.5}$ for October 2015-2019 compared with 10/1/2020 using Regulatory $PM_{2.5}$ data at Atascadero – Lift Station #5

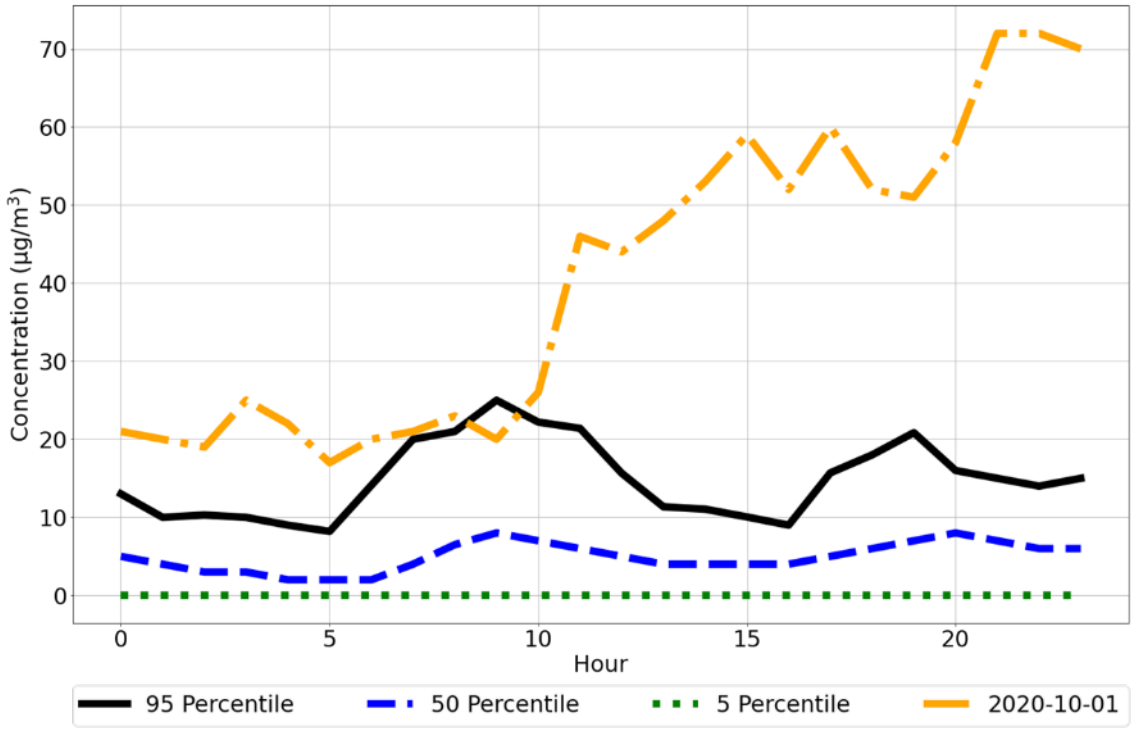
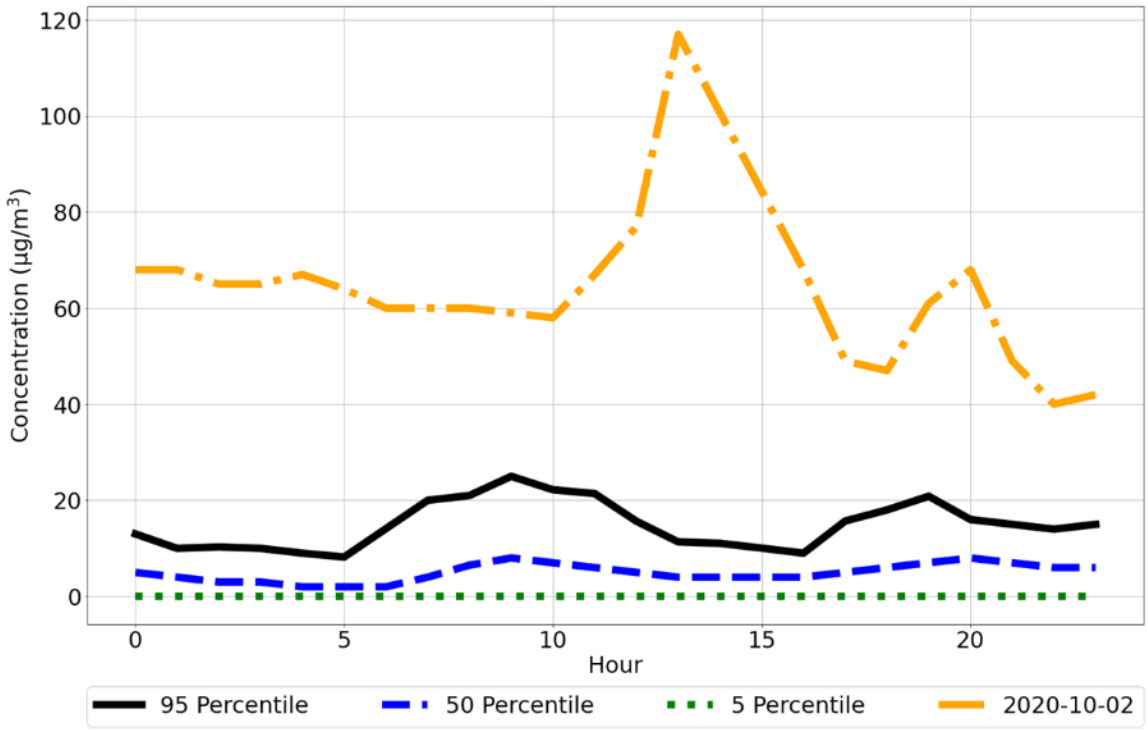


Figure IV-24: Percentiles for seasonal 1-hour $PM_{2.5}$ for October 2015-2019 compared with 10/2/2020 using Regulatory $PM_{2.5}$ data at Atascadero – Lift Station #5



(2) Simi Valley

Figure IV-25: Percentiles for seasonal 1-hour $PM_{2.5}$ for August 2015-2019 compared with 8/18/2020 using Regulatory $PM_{2.5}$ data at Simi Valley

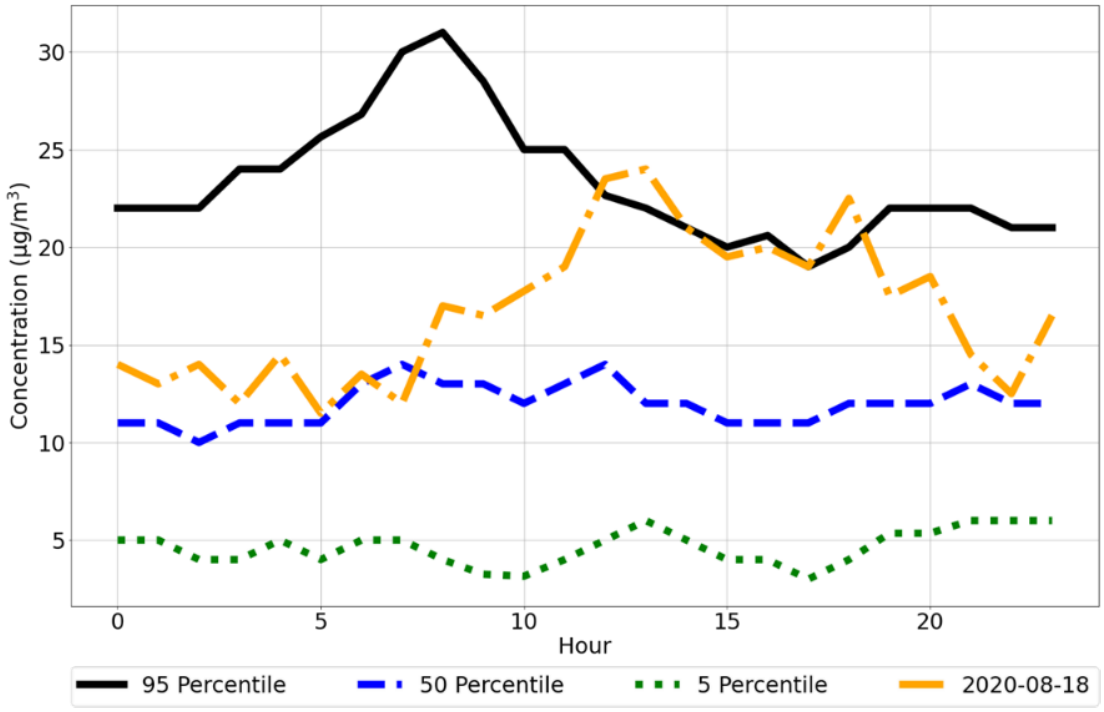


Figure IV-26: Percentiles for seasonal 1-hour $PM_{2.5}$ for August 2015-2019 compared with 8/21/2020 using Regulatory $PM_{2.5}$ data at Simi Valley

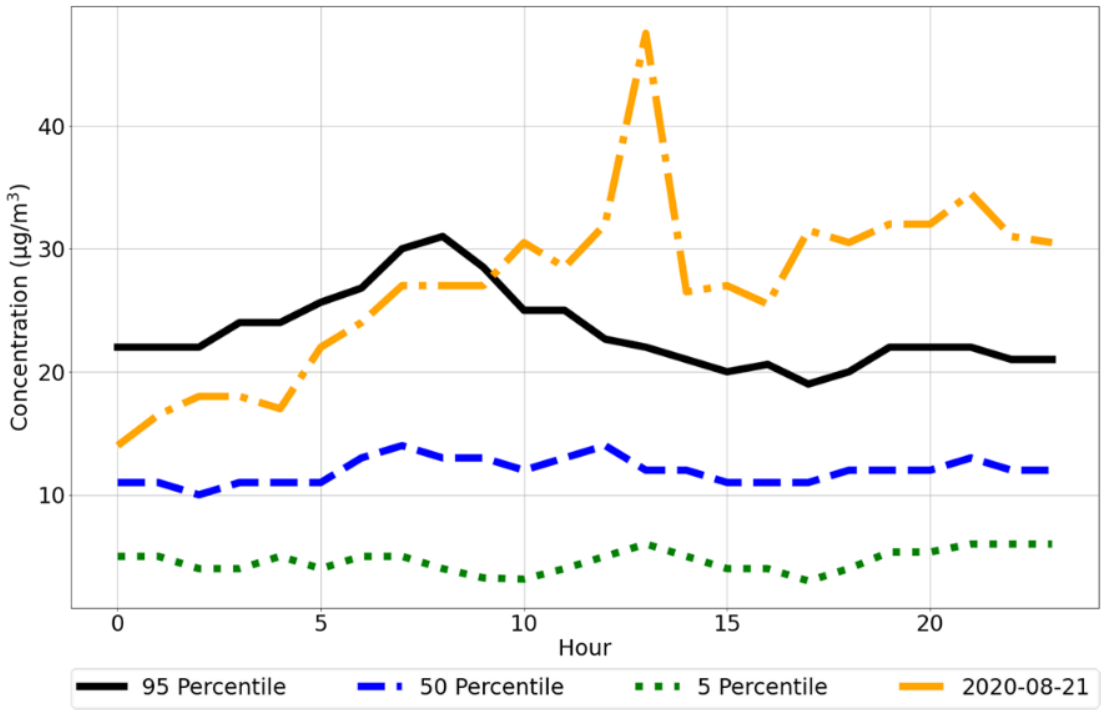


Figure IV-27: Percentiles for seasonal 1-hour $PM_{2.5}$ for October 2015-2019 compared with 10/2/2020 using Regulatory $PM_{2.5}$ data at Simi Valley

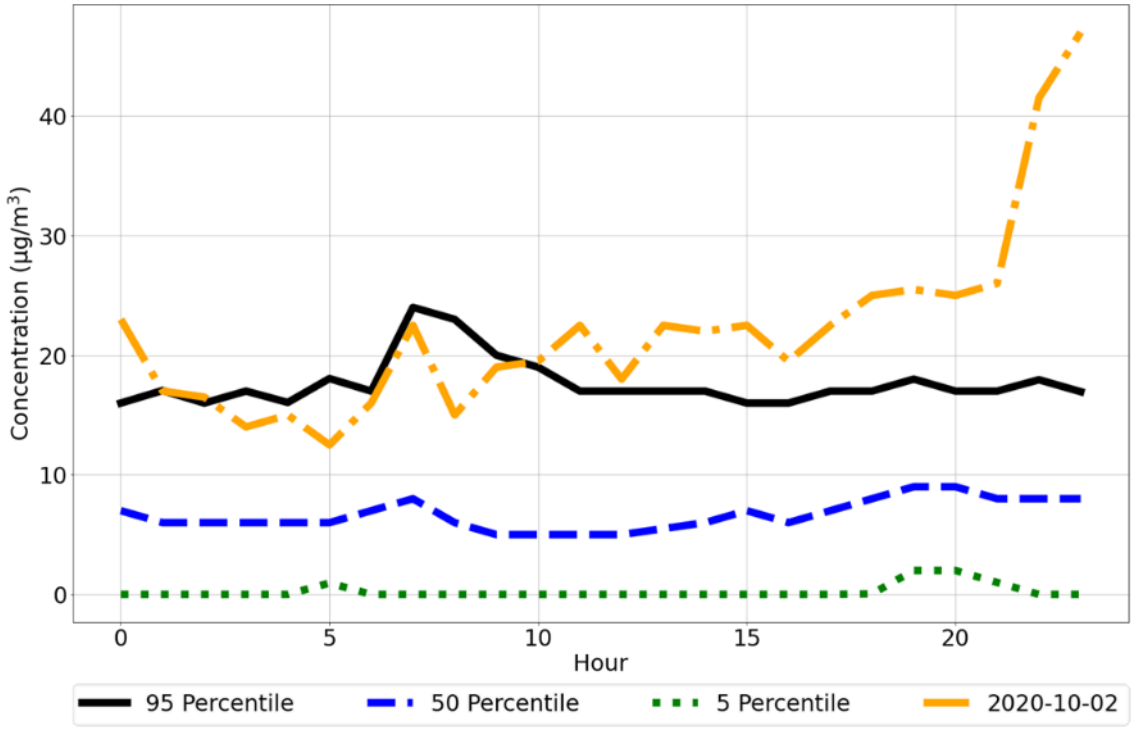


Figure IV-28: Percentiles for seasonal 1-hour $PM_{2.5}$ for October 2015-2019 compared with 10/3/2020 using Regulatory $PM_{2.5}$ data at Simi Valley

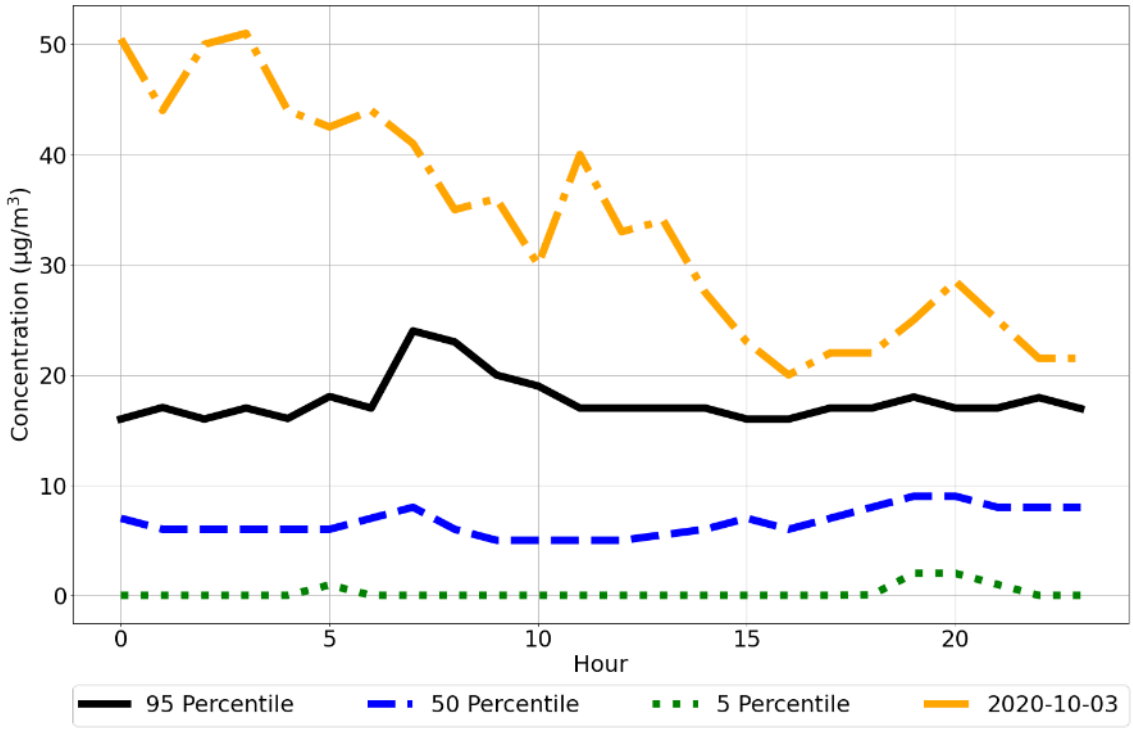
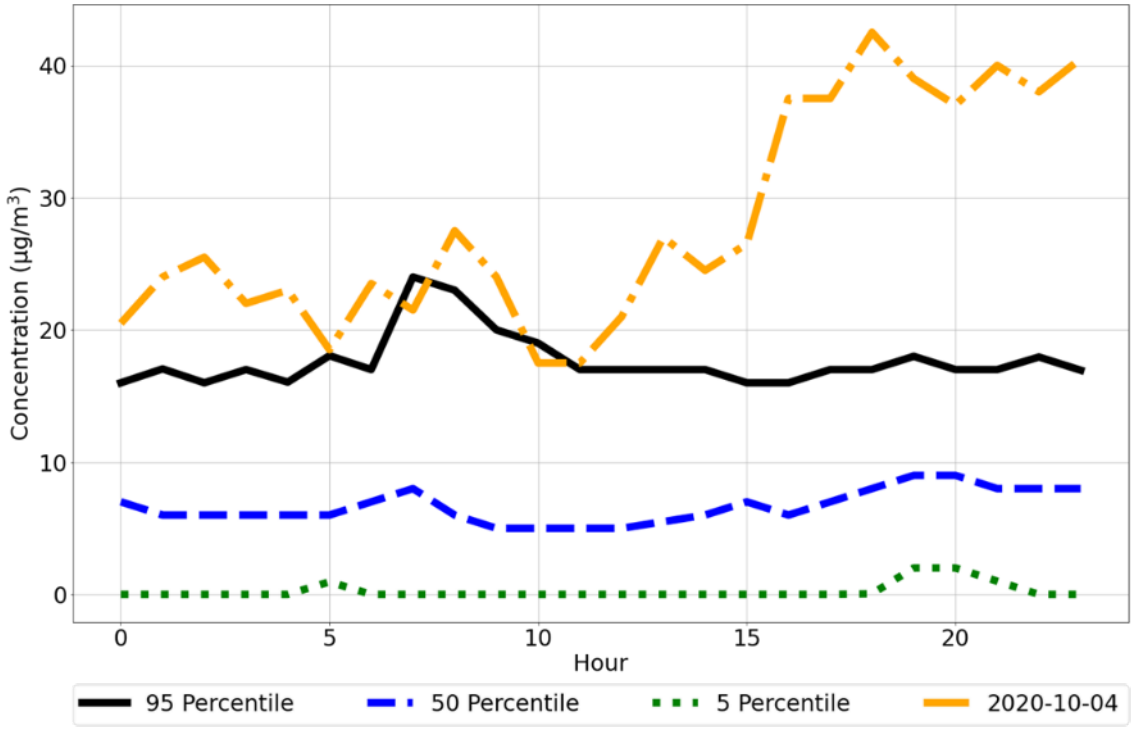


Figure IV-29: Percentiles for seasonal 1-hour $PM_{2.5}$ for October 2015-2019 compared with 10/4/2020 using Regulatory $PM_{2.5}$ data at Simi Valley



3. Biomass Burning and Other Air Quality Indicators

Levoglucosan, Mannosan, and Galactosan, organic compounds produced during biomass combustion, are commonly used as woodsmoke tracers. Unfortunately, there are no speciation sites in the South Central Coast Air Basin and no known data available from nearby sites in surrounding air basins during the event days.

4. Black Carbon

Fires that burn at relatively low temperatures and smolder in moist fuels are the most likely to produce black carbon and other toxic pollutants because they tend to burn less completely than hotter fires burning through dry fuels. Wildfire smoke plumes tend to have very high concentrations of black carbon.

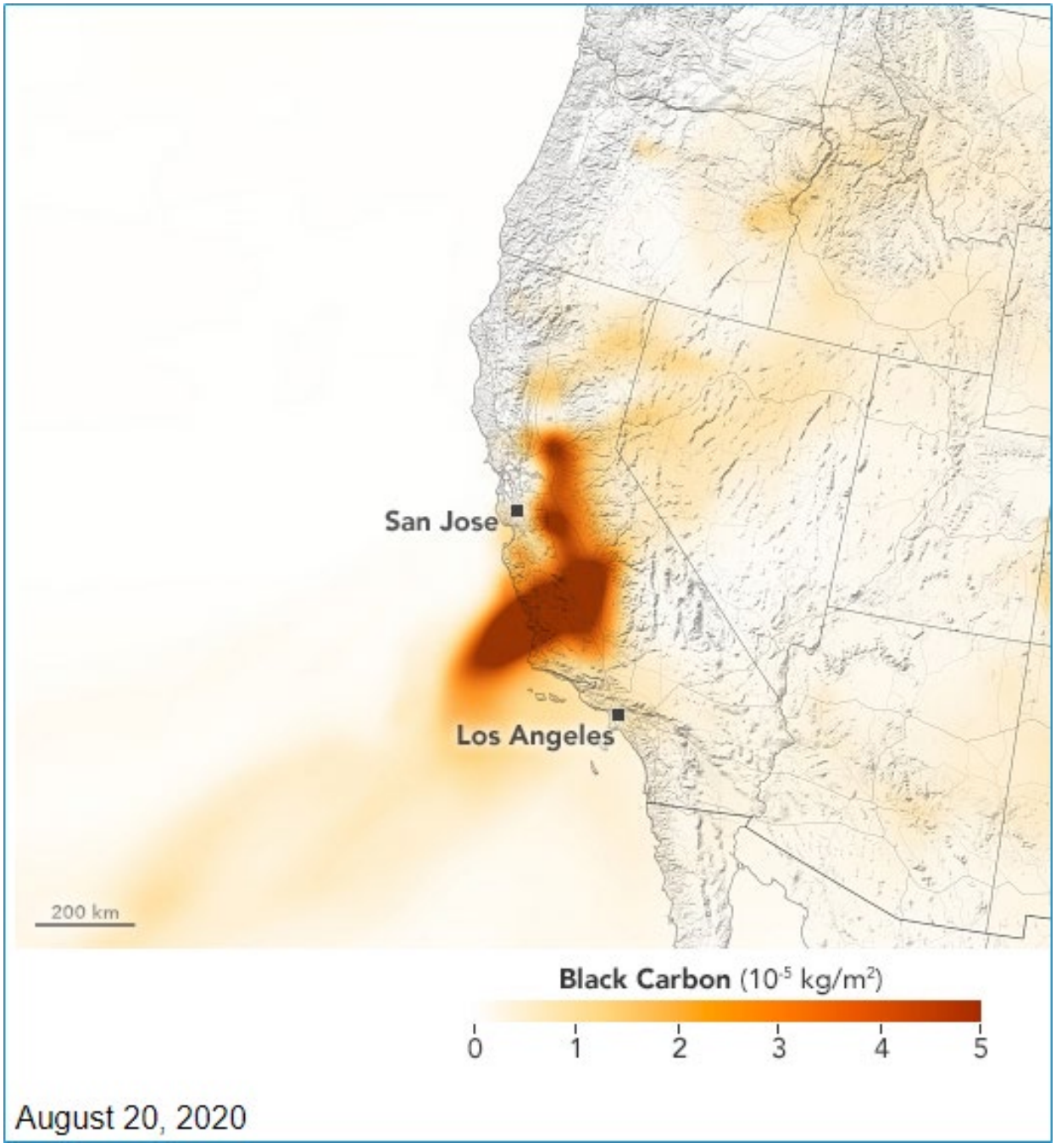
a) Satellite Modeling

The map below (Figure IV-30) indicates plumes of black carbon associated with the CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, North Complex, Dolan Fire, and other, smaller, wildfires. The map shows black carbon data from the GEOS-5 forward processing model, which assimilates information from several sources[89]. Wildfires are a major source of black carbon emissions in California, far surpassing

[89] NASA, Earth Observatory, *Wildfire Smoke Shrouds the U.S. West, Plumes Tower Over California*. (August 20, 2020), retrieved September 27, 2021

vehicle emissions, wood stoves, industrial emissions, agricultural fires, and other sources of the pollutant[90] .

Figure IV-30: August 20, 2020 Smoke Plumes Tower Over California

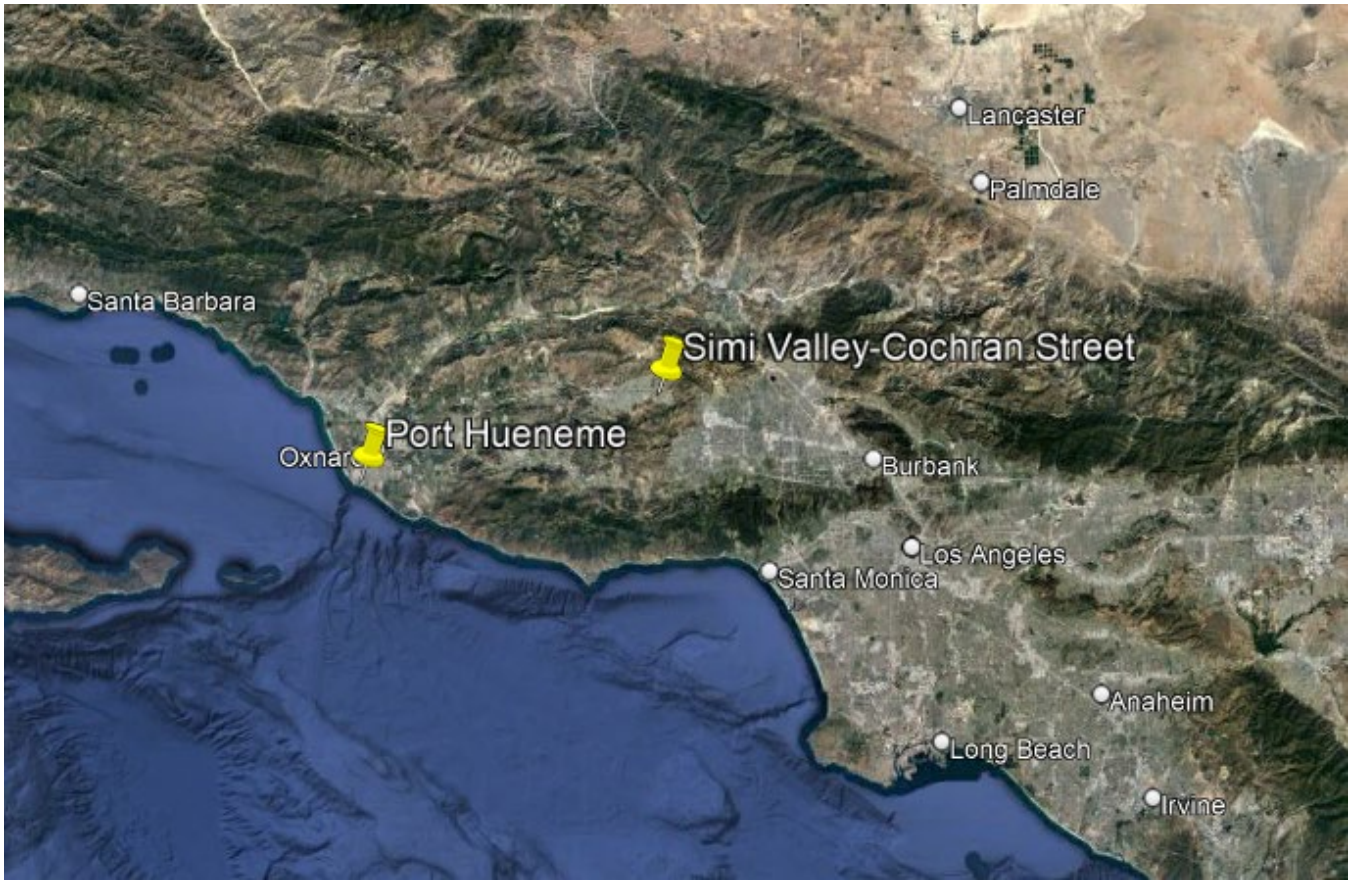


[90] Proposed Short-Lived Climate Pollutant Reduction Strategy (April 2016, page 49) *https://ww2.arb.ca.gov/sites/default/files/2021-01/ProposedStrategy-April2016.pdf*

b) Non-Regulatory Monitoring

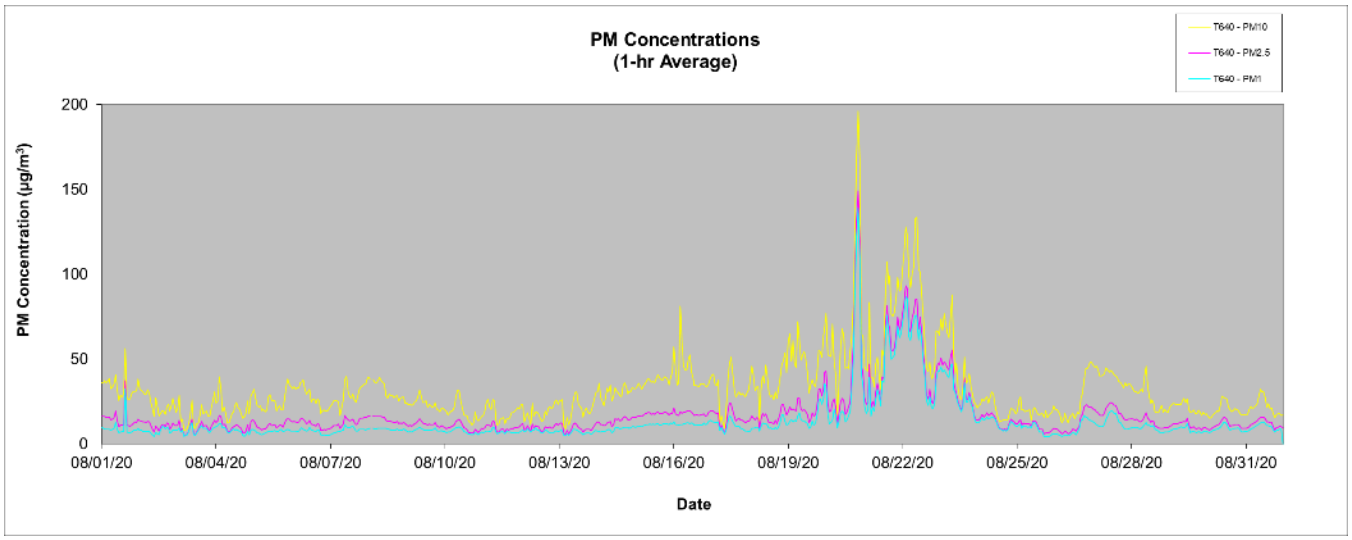
PM and black carbon monitoring atop Art Haycox Elementary School in Oxnard, located approximately a mile due east of the Port of Hueneme and approximately 30 miles west-southwest of the Simi Valley monitoring site (Figure IV-31), is maintained by the Port of Hueneme. A Teledyne API Model T640 was utilized to monitor PM_1, $PM_{2.5}$, and PM_{10} alongside a Magee Scientific Aethalometer Model AE33 for source apportionment with data provided for the black carbon channel and UV wood smoke channels.

Figure IV-31: Map of Port Hueneme and Simi Valley-Cochran Street Site



PM and black carbon concentrations at Port Hueneme in Figure IV-32 were elevated during the August 20-23 timeframe, strongly indicating the presence of wildfire smoke reaching the surface. During October 2020, PM was elevated with black carbon enhancement of the UV channel which indicated likely wildfire smoke impacts occurred during October 1-6 as shown in Figure IV-33. This data from Port of Hueneme indicated wildfire smoke reached the surface in the area near Simi Valley during the widespread smoke impacted dates, supporting that wildfire smoke and associated ozone precursors also impacted the Simi Valley monitor which led to exceedances on August 21, and October 2-4. This data did not indicate wildfire smoke to have impacted Port Hueneme during August 18, but this exceedance was driven by two smaller fires across a small regional scale and was discussed in detail in Section B of the Narrative Conceptual Model.

Figure IV-32: PM and Black Carbon at Port Hueneme during August 2020



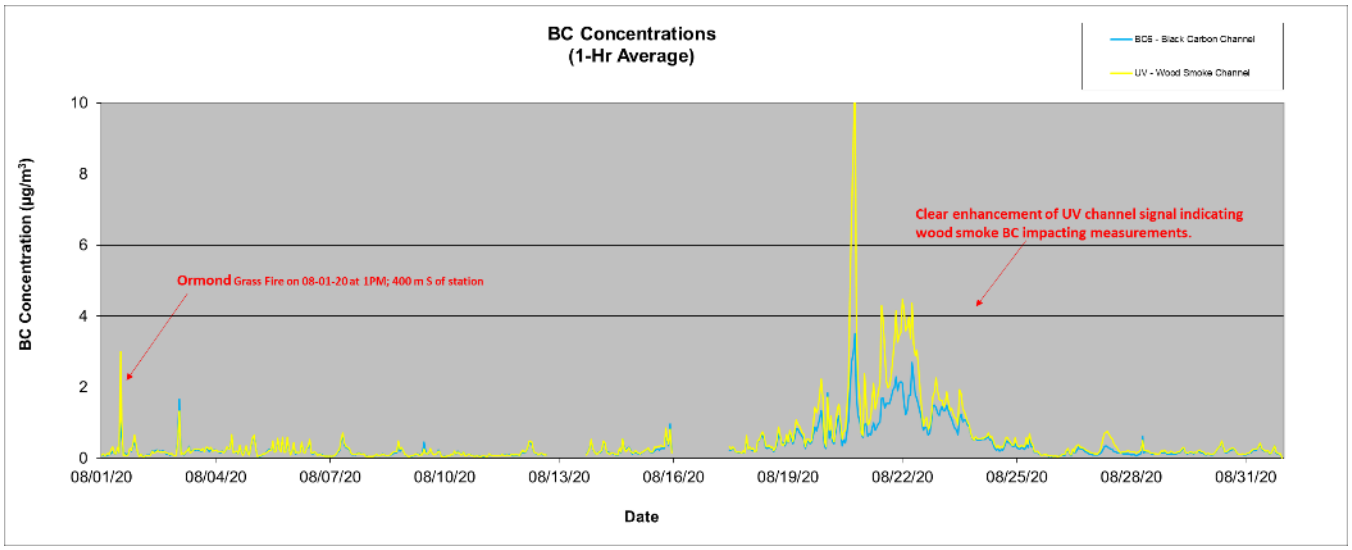
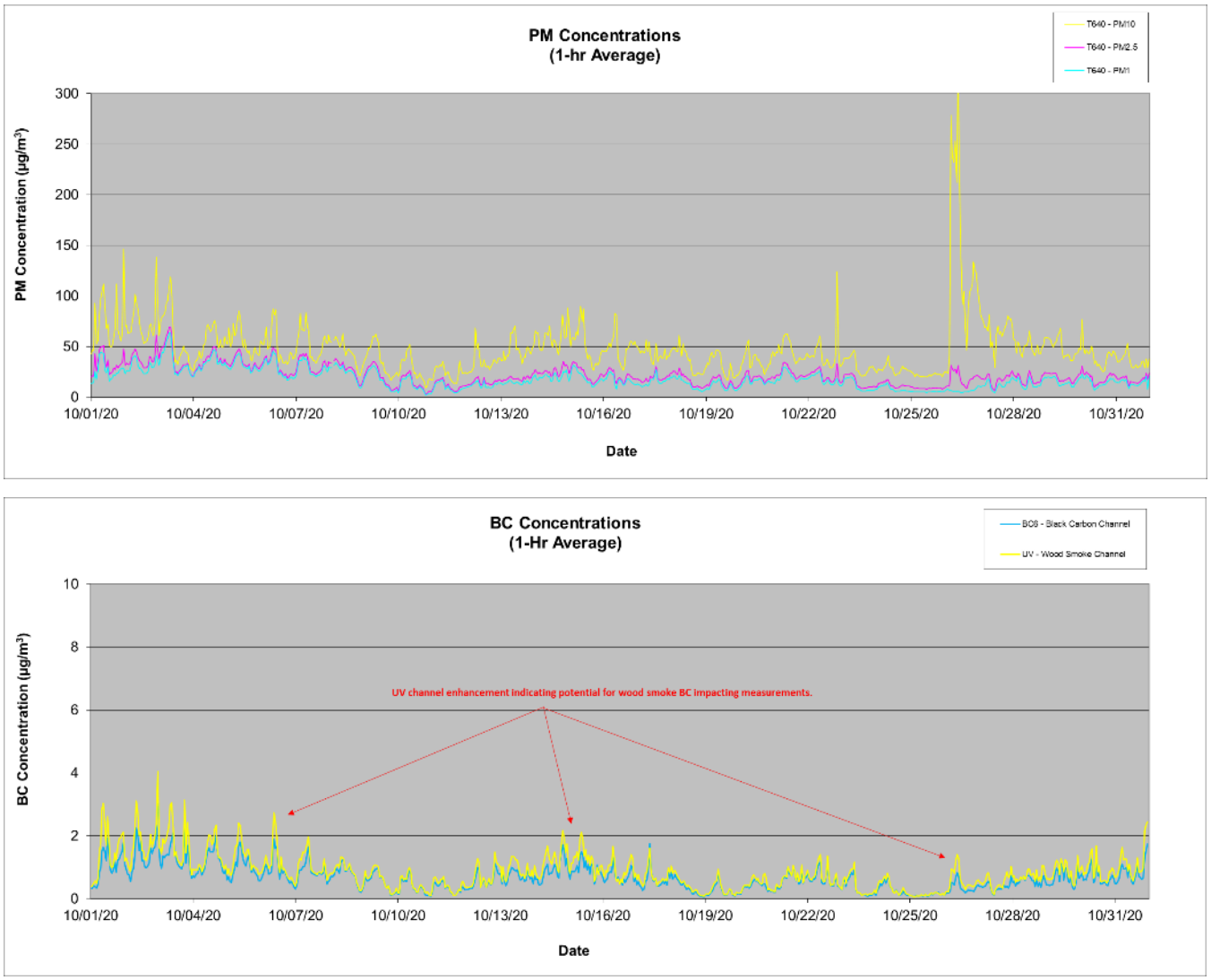


Figure IV-33: PM and Black Carbon at Port Hueneme during October 2020



5. Additional Supporting Ground-Level Evidence

a) Area Forecast Discussions

In the days prior to the smoke impacts in southern California, Area Forecast Discussions issued by the National Weather Service (NWS) Los Angeles/Oxnard (LOX) office focused on high temperatures and the potential for thunderstorms. On August 17, the AFD only mentioned the pyrocumulous plumes from the Lake and Ranch2 Fires. Smoke impacts were not noted until August 18 with an initial mention of impacts for flight regulations at the San Luis Obispo Airport (KSBP). Later, LOX noted the presence of a thick layer of smoke from the

fires over Monterey County covering San Luis Obispo and Santa Barbara Counties.[91] AFDs from that point, though October, frequently noted the presence of smoke and the impacts on air quality, temperature forecasting, and aviation. Air Quality Alerts were issued by LOX for both San Luis Obispo County and Ventura County (Appendix C).

A sampling of Area Forecast Discussions from the NWS Los Angeles/Oxnard forecast office are included in Appendix C.

Figure IV-34: NWS Area Forecast Discussion – August 20, 2020, 8:03 pm PDT

```
791
FXUS66 KLOX 210303
AFDLOX

Area Forecast Discussion
National Weather Service Los Angeles/Oxnard CA
803 PM PDT Thu Aug 20 2020

.SYNOPSIS...20/802 PM.

Excessively hot conditions will continue through Friday, along with
areas of smoke. Dense fog will affect portions of the coastal
waters. It will cool some this weekend into next week, but
temperatures will remain above normal. Afternoon thunderstorms
will be possible in some mountains and interior valleys, over the
weekend, with a threat of flash flooding in stronger storms.

&&

.SHORT TERM (THU-SUN)...20/800 PM.

***UPDATE***

The main issue for the overnight period is the abundant smoke
streaming over the area from the north, originating from the
wildfires in Monterey County. The smoke has been affecting areas
north of Point Conception for the past couple of days, but now
has moved over Ventura, and to a lesser degree over LA County this
evening. This will have adverse effects on air quality for many
areas, but will also keep daytime high temperatures lower than
they would be otherwise. Tonight's lows are forecast to be a few
degrees cooler than last night, but the smoke may trap some heat
near the surface, offsetting the cooling effect.

Meanwhile, the large upper high remains over the Four Corners
area, and will weaken only slightly on Friday and a bit more into
the weekend. Temperatures will diminish 2-3 degrees compared to
today's highs, but still expect excessive heat over interior
Ventura and LA Counties, with advisory level heat over interior
SBA County and the LA Coast. Expect to see plenty of highs in the
upper 90s to 105 for interior areas, and up to 108 in the AV.

Low clouds off the LA Coast could push onshore a short distance,
tonight, aided by a weak eddy spinning up overnight. But for the
most part, clear/smoky skies are likely across the area tonight
and Friday.
```

b) Satellite Smoke Indications

The smoke that enhanced the ozone reaching the exceeding monitors from mid-August through early November 2020 was primarily from the wildfires in the northern and central portions of the State, along with the River and Dolan Fires in Monterey County, just to the north, the Creek Fire and the SQF Complex on the eastern side of the San Joaquin Valley, and the Apple and Bobcat Fires in the South Coast Air Basin. A smaller fire just 12 miles north of Simi Valley, the Holser Fire, contributed to smoke impacts in mid-August. The

[91] Iowa State University, Mesonet, *Area Forecast Discussions, AFDLOX 2020-08-19 05:25 UTC*, last accessed 11/5/21

combined smoke from these fires increasingly impacted sites throughout California, including monitors in the South Central Coast Air Basin. Several tools are available to look at smoke in the areas that impacted the monitors.

The NOAA Hazard and Mapping System (HMS) Fire and Smoke Product is an analysis of various satellite imagery to map out the scope and even to some extent thickness of smoke layers. These products were extensively utilized in the Narrative Conceptual Model and Clear Causal Relationship chapters of this document.

NOAA Smoke Text Product[92] is a text-based analysis of satellite imagery. These products are used to give an overall view of smoke origins, current locations, and potential transport. Unfortunately, Smoke Text Products were unavailable for the August 2020 events. Relevant Smoke Text Products issued from September 30 through October 4 are in Appendix E, with an example shown here.

Figure IV-35: NOAA Smoke Text Product, October 2, 2020, 1720UTC (0920PST)

Friday, October 2, 2020

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY
THROUGH 1720z October 2, 2020

SMOKE:
United States, Southwest Canada, Pacific Ocean, Atlantic Ocean….
Large wildfires continue to rage in California, Texas, and on the
Colorado/Wyoming border. An area of dense smoke was observed over
Northern California running South to Central California. A large
area of moderate smoke covers most of California, Western Oregon, and
Southern Washington. A second moderate density smoke band is observed in
Northern Idaho running West across Northern Washington, and southwestern
Canada. Light Density smoke covers most of California and Oregon, all
of Washington and Southwestern Canada. In the Central United states a
moderate density area of smoke is observed over Northern Texas, Western
Oklahoma, Eastern Colorado, Northwestern New Mexico, Southern Kansas,
and Southwestern Oklahoma. Lighter Density smoke can be seen in Northern
Texas, most of Oklahoma, Central and Eastern Colorado, Northwestern New
Mexico, Southern Kansas, and Southwestern Oklahoma. A band of moderately
dense smoke is also observed across Northern Florida, Southern Georgia,
Southern Alabama, Southern South Carolina, and Southern North Carolina. An
area of light density smoke is observed in Central Texas, Southern
Louisiana, Southern Mississippi, Northern Florida, Southern Georgia,
Southern Alabama, Southern South Carolina, Southern North Carolina,
extending South into the Gulf of Mexico and East into the Atlantic Ocean.

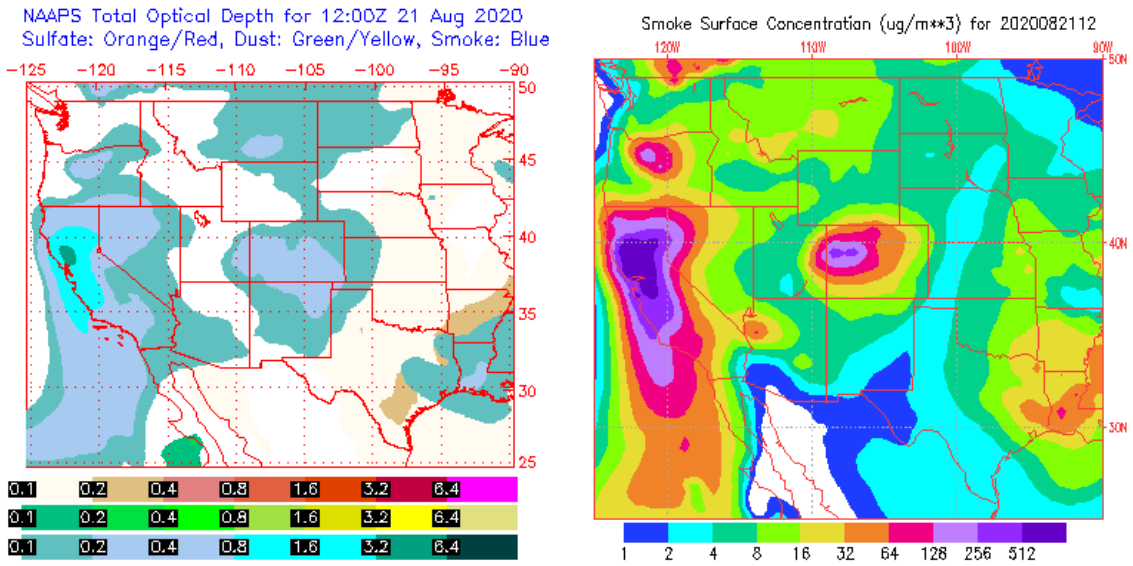
6. NAAPS Global Aerosol Model

The NAAPS (Navy Aerosol Analysis and Prediction System) Global Aerosol Model is used to predict the distribution of tropospheric aerosols using global meteorological fields.[93] The model can provide smoke simulations in near-real-time with up to 120-hour forecasts. Of particular interest are the total optical depth and smoke surface concentration outputs. Aerosol optical depth (AOD) can indicate how much aerosol is in the atmosphere, with higher

[92] NOAA Hazard and Mapping System (HMS), *Fire and Smoke Text Product*, last accessed 11/8/21
[93] Naval Research Laboratory, *Navy Aerosol Analysis and Prediction System (NAAPS) Global Aerosol Model*, last accessed 11/16/21

AOD values corresponding with increasing levels of particulate matter. The model can also give a simulation of AOD further broken down into sulfates, dust, and smoke. In addition, the model can also simulate concentrations of smoke at the surface, with darker colors indicating thicker smoke. Figure IV-36 shows the high smoke AOD levels and smoke surface concentrations at the Red Hills and Simi Valley monitors during August 21. Additional AOD and smoke surface concentration model outputs covering the requested event dates are shown in Appendix E and show the presence of smoke in the eastern San Luis Obispo County and Ventura County areas.

Figure IV-36: Aerosol Optical Depth and Smoke Surface Concentrations, August 21, 2020



7. Conclusion

Beginning in mid-August 2020, smoke from several large wildfires throughout California generated emissions that directly resulted in elevated concentrations at the Simi Valley ozone monitor in the Ventura County ozone nonattainment area and at the Red Hills ozone monitor in the Eastern Portion of San Luis Obispo County nonattainment area. Inspection of $PM_{2.5}$ concentrations, satellite-derived smoke layers, and modeled trajectories indicate pathways for the transport of smoke and associated precursors from the wildfires in California to move downrange and into the surface boundary layer. This supports the transport of smoke, ozone precursors, and generated ozone that mixed down to the surface at the exceeding monitoring sites.

All requested dates for exceptional events were in the 99th percentile of the prior 5-year distribution of 8-hour ozone data and fall in the adjusted top 4 rank for 2020 when excluding the requested exceptional events days. Area forecast discussions, satellite smoke products, black carbon analyses, and NAAPS Global Aerosol Model all indicated periods of wildfire smoke aloft and at the surface during the requested event dates. Daily diurnal comparison graphs show many days with abnormal patterns and unusually timed peaks due to the impacts of wildfire emissions.

The comparisons and analyses provided in the Narrative Conceptual Model and Clear Causal Relationship chapters of this demonstration support our conclusion that the numerous wildfire events affected air quality in such a way that there exists a clear causal relationship between the monitoring exceedances or violations as listed in Table I-4 and thus satisfies the clear causal relationship criteria.

V. Natural Event/Human Activity Unlikely to Recur

The Background and Narrative Conceptual Model chapters of this document provide evidence that the event qualifies as a "Natural Event" as defined in 40 CFR 50.1(k). The fires that impacted the exceeding ozone monitors occurred on wildlands that meet the definition in 40 CFR 50.1(n) and (o). When considering fire cause, "wildfires on wildland initiated by accident or arson are considered natural events, and on a case-by-case basis this treatment for wildfires may bear on the appropriate treatment of accidental and arson-set structural fires.[94]"

U.S. EPA generally considers the emissions of ozone precursors from wildfires on wildland to meet the regulatory definition of a natural event at 40 CFR 50.1(k), and accordingly, CARB has shown that this event is a natural event and may be considered for treatment as an exceptional event.

VI. Not Reasonably Controllable and/or Not Reasonably Preventable

The Background and Narrative Conceptual Model chapters of this document provide evidence the wildfires impacting the ozone monitors at Red Hills in San Luis Obispo County and at Simi Valley in Ventura County were natural events predominantly occurring on wildland in California. CARB is not aware of any evidence clearly demonstrating that prevention or control efforts beyond those actually made would have been reasonable. Therefore, emissions from the wildfires were not reasonably controllable or preventable.

VII. Public Notification

As presented in Sections E and F of the Narrative Conceptual Model chapter, all affected districts maintain public alert systems as well as publicly available information via their websites to keep residents informed of potential wildfire smoke impacts. Examples of the information released to the public is included in Appendix B and Appendix F.

The CARB will hold a 30-day public comment period to solicit public input regarding this demonstration. Notification of the public comment period will be posted on the CARB website and emailed to interested stakeholders. Any comments received, and CARB's responses, will be submitted to U.S. EPA at the end of the 30-day public comment period.

[94] 81 FR 68233, Footnote 35

VIII. Summary/Conclusion

Seven major wildfire complexes (including the August, SCU Lightning, LNU Lightning, and North Complex fires which each exceeded 300,000 acres burned) and ten individual fires (including the Creek, Dolan, and Bobcat wildfires which each exceeded 100,000 acres burned) were the primary focus of these retroactive analyses and discussions but is likely not inclusive of all wildfires that were active and contributed emissions during these events. These massive fires were all active producers of vast amounts of wildfire smoke and emissions, which ultimately consumed over four million acres of wildlands in California during 2020.

During the event timeframe of August 18 to October 4, wildfires were particularly active, producing enormous amounts of wildfire smoke and emissions, including ozone precursors, which blew downwind blanketing vast portions of northern California and often settling into valleys and foothills when conditions allowed. Air quality monitors showed elevated $PM_{2.5}$ throughout the South Central Coast Air Basin and in surrounding regions, indicating smoke impacts at the surface. Black carbon and NAAPS Global Aerosol Model products further identified the wildfires as sources of the emissions impacting surface sites. Elevated ozone concentrations correlated well with the elevated $PM_{2.5}$ concentrations at collocated or nearby monitors (as available) during the event at each of the impacted sites.

This 2020 Southern California Ozone Exceptional Events Demonstration supports the criteria for an exceptional event as detailed in the 2016 Exceptional Events Rule[95] and Wildfire Ozone Guidance.[96] This documentation used the following evidence to demonstrate the exceptional event:

- Ambient air monitoring data
- HYSPLIT forward and backward trajectory analyses
- Satellite imagery and narratives
- Wildfire smoke emissions estimates
- Statistical historical concentration comparisons
- Meteorological conditions
- Air Quality District alerts and advisories
- NOAA and HMS smoke products
- Aerosol modeling

This Exceptional Events Demonstration clearly demonstrates justification for exclusion of data as listed in Table I-4 due to an exceptional event under 40 CFR 50.14(c)(3)(iv). The 2020 Southern California Ozone Exceptional Events Demonstration has provided evidence that:

- Describes the events causing the exceedance and a discussion of how emissions from the event led to the exceedance at each monitor;

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[95] 81 FR 68216

[96] U.S. EPA, *Final Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations*, p.25, last accessed 7/29/21

- Demonstrates a clear causal relationship between the wildfire emissions and the ozone exceedances at each monitor for their respective requested dates;
- Shows that event-influenced concentrations were unusual and above normal historical concentrations;
- Demonstrates the event was neither reasonably controllable nor reasonably preventable; and
- Verifies the event was multiple wildfires, all-natural events or human activity that is unlikely to recur at a particular location, all occurring predominantly on wildlands.

Table VIII-1: Summary of Demonstration Criteria based on EER Requirements

Demonstration Requirement	Reference	Chapter
Narrative conceptual model	40 CFR 5.014(c)(3)(iv)(A)	III
Clear causal relationship	40 CFR 50.14(c)(3)(iv)(B)	III, IV
Historical analysis	40 CFR 50.14(c)(3)(iv)(C)	II, III, IV
Human Activity Unlikely to Recur or Natural Event	40 CFR 50.14(c)(3)(iv)(E)	III, IV, V
Not Reasonably Controllable and Not Reasonably Preventable	40 CFR 50.14(c)(3)(iv)(D)	III, IV, VI

Table VIII-2: Summary of Procedural Criteria Based on EER Requirements

Procedural Requirement	Reference	Chapter
Prompt Public Notification	40 CFR 50.14(c)(1)(i)	III, VII, Appendix B
Initial Notification of Potential Exceptional Event Process	40 CFR 50.14(c)(2)(i)	I, Appendix A
Public opportunity to review and comment on demonstration	40 CFR 50.14(c)(3)(v)]	VII

CARB recommends that U.S. EPA Region 9 concur with the 2020 Southern California Ozone Exceptional Events Demonstration and exclude the requested data from comparison to the NAAQS.

IX. References/Sources

A. References

Faloona, Ian C., et al., 2020. The California Baseline Ozone Transport Study (CABOTS). Bulletin of the American Meteorological Society, 101(4), pp.E427-E445.

Gong, X., A. Kaulfus, U. Nair, and D. A. Jaffe. 2017. Quantifying O_3 impacts in urban areas due to wildfires using a Generalized Additive Model. Environ. Sci. Technol. 51 (22):13216-13223. doi: 10.1021/acs.est.7b03130.

Jaffe, D.A., O'Neill, S.M., Larkin, N.K., Holder, A.L., Peterson, D.L., Halofsky, J.E. and Rappold, A.G., 2020. Wildfire and prescribed burning impacts on air quality in the United States. Journal of the Air & Waste Management Association, 70(6), pp.583-615.

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X. Appendices

A. Initial Notification and Air Quality Data

1. San Luis Obispo County (Red Hills)

a) Ozone Initial Notification Submitted to U.S. EPA on March 15, 2021. EEPID665

EE Initial Notification Summary Information O_3 Template

Submitting Agency: San Luis Obispo APCD
Agency Contact: Gary Arcemont
Date Submitted: 11 March 2021
Applicable NAAQS: 2015 8-Hour Ozone
Affected Regulatory Decision[1]: Attainment Determination for 2015 8-Hour Ozone
(for classification decisions, specify level of the classification with/without EE concurrence)
Area Name/Designation Status: Eastern San Luis Obispo County / Marginal
Design Value Period (list three year period): 2018-2020
(where there are multiple relevant design value periods, summarize separately)

A) See attached spreadsheet titled "Federal Exceptional Event Initial Notification Sheet"

B) Violating Sites Information
(listing of all violating sites in the planning area, regardless of operating agency, and regardless of whether or not they are impacted by EEs)

Site/monitor (AQS ID and POC)	Design Value (without EPA concurrence on any of the events listed in attached spreadsheet)	Design Value (with EPA concurrence on all events listed in attached spreadsheet)
Red Hills (060798005-1)	0.073	0.068

C) Summary of Maximum Design Value (DV) Site Information (Effect of EPA Concurrence on Maximum Design Value Site Determination)
(Two highest values from Table B)

Maximum DV site (AQS ID) **without EPA concurrence** on any of the events listed in attached spreadsheet	Design Value 0.073	Design Value Site **Red Hills 060798005**	Comment
Maximum DV site (AQS ID) **with EPA concurrence** on all events listed in attached spreadsheet	Design Value 0.069	Design Value Site **Carissa Plains School 060798006**	Comment **Area meets attainment for 2015 Ozone NAAQS**

D) List of any sites (AQS ID) within planning area with invalid design values (e.g., due to data incompleteness)

[1] designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call
[2] Provide additional information for types of event described as "other"

Federal Ozone NAAQS Exceptional Event Initial Notification Sheet

Event Date	Type of Event	AQS Flag	Monitor AQS ID	AQS POC	Site Name	Pollutant	Concentration	Units	Event Name	Notes
Example 7/14/2008	Wildfire	IT	060570005	1	Grass Valley-Litton Building	Ozone-8hr	0.083	ppm	Mendocino Wildfire	Wildfire smoke from Mendocino Wildfire impacted ozone at site. https://www.fire.ca.gov/incidents/2018/7/27/ranch-fire-mendocino-complex/
8/3/2018	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.073	ppm	Multiple Fires	Wildfire smoke from River, Ranch, Carr, Donnell, and Ferguson Wildfires
8/4/2018	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.072	ppm	Multiple Fires	Wildfire smoke from River, Ranch, Carr, Donnell, and Ferguson Wildfires
8/6/2018	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.071	ppm	Multiple Fires	Wildfire smoke from Turkey, River, Ranch, Carr, Donnell, and Ferguson Wildfires
8/7/2018	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.071	ppm	Multiple Fires	Wildfire smoke from Turkey, River, Ranch, Carr, Donnell, and Ferguson Wildfires
8/9/2018	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.073	ppm	Multiple Fires	Wildfire smoke from River, Ranch, Carr, Donnell, and Ferguson Wildfires
8/18/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.073	ppm	Multiple Fires	Wildfire smoke from Lake, River, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, North Complex
8/20/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.076	ppm	Multiple Fires	Wildfire smoke from Lake, River, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, North Complex
8/21/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.106	ppm	Multiple Fires	Wildfire smoke from Lake, River, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, North Complex
8/22/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.073	ppm	Multiple Fires	Wildfire smoke from Lake, River, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, North Complex
9/2/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.074	ppm	Multiple Fires	Wildfire smoke from Lake, River, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, North Complex
9/3/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.071	ppm	Multiple Fires	Wildfire smoke from Lake, River, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, North Complex
9/5/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.076	ppm	Multiple Fires	Wildfire smoke from Lake, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, Creek, North Complex
9/6/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.076	ppm	Multiple Fires	Wildfire smoke from Lake, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, Creek, Bobcat, North Complex
9/12/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.070	ppm	Multiple Fires	Wildfire smoke from Lake, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, Creek, Bobcat, North Complex
9/14/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.071	ppm	Multiple Fires	Wildfire smoke from Lake, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, Creek, Bobcat, North Complex
9/15/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.072	ppm	Multiple Fires	Wildfire smoke from Lake, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, Creek, Bobcat, North Complex
9/16/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.080	ppm	Multiple Fires	Wildfire smoke from Lake, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, Creek, Bobcat, North Complex
9/17/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.072	ppm	Multiple Fires	Wildfire smoke from Lake, CZU Lightning Complex, SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, Creek, Bobcat, North Complex
9/29/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.072	ppm	Multiple Fires	Wildfire smoke from SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, Creek, Bobcat, North Complex
9/30/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.075	ppm	Multiple Fires	Wildfire smoke from SCU Lightning Complex, LNU Lightning Complex, August Complex, SQF Complex, Creek, Bobcat, North Complex
10/1/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.081	ppm	Multiple Fires	Wildfire smoke from LNU Lightning Complex, August Complex, SQF Complex, Creek, Bobcat, North Complex
10/2/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.081	ppm	Multiple Fires	Wildfire smoke from August Complex, SQF Complex, Creek, Bobcat, North Complex
10/3/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.071	ppm	Multiple Fires	Wildfire smoke from August Complex, SQF Complex, Creek, Bobcat, North Complex
10/4/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.070	ppm	Multiple Fires	Wildfire smoke from August Complex, SQF Complex, Creek, Bobcat, North Complex
10/6/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.073	ppm	Multiple Fires	Wildfire smoke from August Complex, SQF Complex, Creek, Bobcat, North Complex
10/16/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.072	ppm	Multiple Fires	Wildfire smoke from August Complex, SQF Complex, Creek, Bobcat, North Complex
10/17/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.074	ppm	Multiple Fires	Wildfire smoke from August Complex, SQF Complex, Creek, Bobcat, North Complex
10/31/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.072	ppm	Multiple Fires	Wildfire smoke from August Complex, SQF Complex, Creek, Bobcat, North Complex
11/1/2020	Wildfire	IT	060798005	1	Red Hills	Ozone-8hr	0.074	ppm	Multiple Fires	Wildfire smoke from August Complex, SQF Complex, Creek, Bobcat, North Complex

b) AQS AMP350 Data

Data is currently flagged with the REQEXC Code “rt-Wildfire-U.S.”

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Nov. 19, 2021

(44201) Ozone

SITE ID: 06-079-8005 POC: 1
COUNTY: (079) San Luis Obispo
CITY: (00000) Not in a city
SITE ADDRESS: 3601 GILLIS CANYON ROAD
SITE COMMENTS:
MONITOR COMMENTS:

STATE: (06) California
AQCR: (032) SOUTH CENTRAL COAST
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER: 10028-15-6
LATITUDE: 35.64368
LONGITUDE: -120.23135
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 712
PROBE HEIGHT: 4.7

SUPPORT AGENCY: (0946) San Luis Obispo County APCD
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: AUGUST 2020

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.044	.046	BF	.039	.043	.045	.043	.034	.036	.040	.048	.056	.057	.057	.058	.058	.059	.059	.060	.060	.058	.052	.056	.055	23	.060
2	.055	.052	BF	.046	.040	.047	.045	.048	.047	.046	.049	.049	.044	.051	.054	.052	.053	.054	.055	.058	.057	.053	.035	.038	23	.058
3	.039	.038	BF	.036	.034	.034	.033	.030	.030	.036	.045	.048	.050	.053	.054	.052	.040	.048	.055	.050	.041	.027	.023	.021	23	.055
4	.021	.024	BF	.030	.029	.028	.023	.023	.028	.030	.033	.039	.042	.042	.042	.041	.040	.037	.035	.030	.026	.024	.021	.021	23	.042
5	.019	.019	BF	.017	.019	.021	.021	.022	.025	.028	.031	.034	.041	.045	.045	.041	.038	.036	.034	.031	.029	.026	.024	.024	23	.045
6	.024	.023	BF	.023	.023	.024	.023	.024	.024	.027	.031	.034	.035	.038	.037	.037	.037	.035	.031	.027	.028	.028	.025	.024	23	.038
7	.024	.021	BF	.018	.021	.019	.020	.018	.024	.028	.032	.031	.031	.033	.031	.029	.032	.038	.039	.037	.034	.034	.037	.036	23	.039
8	.034	.038	BF	.032	.036	.038	.034	.028	.030	.033	.039	.044	.050	.054	.053	.047	.044	.038	.034	.032	.033	.037	.040	.040	23	.054
9	.040	.039	BF	.038	.039	.039	.038	.036	.038	.042	.048	.062	.061	.063	.059	.051	.046	.045	.038	.040	.041	.044	.046	.043	23	.063
10	.041	.039	BF	.039	.039	.040	.039	.039	.040	.044	.047	.053	.058	.059	.053	.046	.045	.037	.035	.034	.035	.039	.039	.037	23	.059
11	.037	.036	BF	.038	.038	.039	.036	.035	.035	.037	.037	.039	.043	.047	BA	.043	.039	.036	.033	.033	.033	.036	.036	.036	22	.047
12	.035	.035	BF	.036	.038	.039	.040	.050	.051	.052	.054	.055	.058	.060	.060	.050	.048	.041	.041	.040	.038	.043	.045	.049	23	.060
13	.048	.049	BF	.051	.055	.056	.056	.044	.032	.037	.043	.043	.041	.043	.037	.034	.037	.036	.034	.034	.034	.041	.050	.049	23	.056
14	.043	.041	BF	.037	.034	.036	.040	.050	.057	.056	.054	.050	.052	.054	.055	.054	.036	.029	.027	.027	.032	.030	.024	.023	23	.057
15	.021IT	.020IT	BF	.022IT	.021IT	.022IT	.022IT	.026IT	.035IT	.047IT	.029IT	.038IT	.045IT	AV	AV	AV	AV	AV	AV	AV	AV	.060IT	.060IT	.060IT	15	.060
16	.055IT	.056IT	BF	.053IT	.053IT	.053IT	.051IT	.053IT	.054IT	.059IT	.062IT	.058IT	.057IT	.059IT	.063IT	.066IT	.067IT	.062IT	.057IT	.058IT	.054IT	.052IT	.048IT	.053IT	23	.067
17	.053IT	.052IT	BF	.047IT	.047IT	.050IT	.047IT	.050IT	.052IT	.053IT	.056IT	.059IT	.064IT	.067IT	.069IT	.064IT	.063IT	.061IT	.064IT	.061IT	.058IT	.058IT	.058IT	.057IT	23	.069
18	.060IT	.061IT	BF	.050IT	.045IT	.045IT	.045IT	.046IT	.050IT	.054IT	.061IT	.072IT	.076IT	.077IT	.082IT	.077IT	.069IT	.066IT	.065IT	.059IT	.046IT	.049IT	.064IT	.059IT	23	.082
19	.056IT	.056IT	BF	.053IT	.047IT	.040IT	.035IT	.038IT	.049IT	.064IT	.073IT	.068IT	.061IT	.061IT	.056IT	.051IT	.053IT	.064IT	.068IT	.053IT	.057IT	.056IT	.063IT	.060IT	23	.073
20	.059rt	.057rt	BF	.050rt	.049rt	.048rt	.047rt	.044rt	.040rt	.044rt	.050rt	.050rt	.055rt	.064rt	.071rt	.074rt	.083rt	.081rt	.075rt	.073rt	.082rt	.075rt	.058rt	.063rt	23	.083
21	.071rt	.073rt	BF	.067rt	.068rt	.065rt	.062rt	.058rt	.065rt	.068rt	.075rt	.083rt	.086rt	.097rt	.110rt	.123rt	P.126rt	.117rt	.097rt	.092rt	.073rt	.075rt	.071rt	.063rt	23	.126
22	.063IT	.068IT	BF	.068IT	.067IT	.064IT	.063IT	.059IT	.058IT	.066IT	.070IT	.076IT	.081IT	.082IT	.072IT	.068IT	.075IT	.066IT	.060IT	.059IT	.058IT	.059IT	.059IT	.059IT	23	.082
23	.059IT	.061IT	BF	.061IT	.062IT	.060IT	.061IT	.059IT	.057IT	.044IT	.037IT	.035IT	.033IT	.034IT	.032IT	.031IT	.030IT	.029IT	.029IT	.029IT	.028IT	.027IT	.026IT	.024IT	23	.062
24	.024IT	.023IT	BF	.024IT	.024IT	.024IT	.030IT	.031IT	.044IT	.041IT	.046IT	.050IT	.047IT	.046IT	.043IT	.042IT	.037IT	.033IT	.029IT	.028IT	.028IT	.030IT	.032IT	.032IT	23	.050
25	.029IT	.028IT	BF	.024IT	.022IT	.028IT	.024IT	.021IT	.023IT	.029IT	.036IT	.041IT	.047IT	.036IT	.028IT	.026IT	.023IT	.021IT	.017IT	.015IT	.015IT	.014IT	.013IT	.015IT	23	.047
26	.015IT	.016IT	BF	.023IT	.019IT	.021IT	.018IT	.018IT	.024IT	.030IT	.036IT	.040IT	.045IT	.049IT	.044IT	.044IT	.047IT	.042IT	.038IT	.034IT	.034IT	.033IT	.034IT	.034IT	23	.049
27	.036IT	.036IT	BF	.036IT	.036IT	.037IT	.036IT	.036IT	.037IT	.038IT	.039IT	.044IT	.051IT	.057IT	.058IT	.051IT	.046IT	.045IT	.044IT	.041IT	.038IT	.038IT	.038IT	.040IT	23	.058
28	.037IT	.039IT	BF	.045IT	.050IT	.051IT	.054IT	.056IT	.056IT	.058IT	.062IT	.064IT	.065IT	.066IT	.064IT	.054IT	.045IT	.043IT	.040IT	.038IT	.039IT	.038IT	.038IT	.038IT	23	.066
29	.047IT	.052IT	BF	.053IT	.057IT	.058IT	.057IT	.055IT	.052IT	.052IT	.055IT	.058IT	.068IT	.068IT	.060IT	.051IT	.047IT	.046IT	.044IT	.042IT	.043IT	.042IT	.043IT	.045IT	23	.068
30	.045IT	.047IT	BF	.048IT	.046IT	.045IT	.047IT	.046IT	.043IT	.046IT	.048IT	.053IT	.064IT	.071IT	.072IT	.073IT	.074IT	.063IT	.047IT	.048IT	.056IT	.066IT	.070IT	.060IT	23	.074
31	.061IT	.057IT	BF	.061IT	.063IT	.063IT	.055IT	.049IT	.050IT	.053IT	.056IT	.060IT	.066IT	.069IT	.069IT	.069IT	.064IT	.059IT	.053IT	.051IT	.054IT	.059IT	.062IT	.060IT	23	.069
NO.:	31	31		31	31	31	31	31	31	31	31	31	31	30	29	30	30	30	30	30	30	31	31	31		
MAX:	.071	.073		.068	.068	.065	.063	.059	.065	.068	.075	.083	.086	.097	.110	.123	.126	.117	.097	.092	.082	.075	.071	.063		
AVG:	.0418	.0420		.0408	.0408	.0413	.0402	.0395	.0415	.0446	.0478	.0512	.0540	.0567	.0562	.0533	.0514	.0489	.0459	.0438	.0427	.0434	.0432	.0425		

MONTHLY OBSERVATIONS: 704 MONTHLY MEAN: .0457 MONTHLY MAX: .126

1 Values marked with 'P' exceed the PRIMARY STANDARD of: .125
1 Values marked with 'S' exceed the SECONDARY STANDARD of: .125

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk (**) indicates that the region has reviewed the value and does not concur with the qualifier.

1 Daily maxima above primary standard
1 Daily maxima above secondary standard

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Nov. 19, 2021

(44201) Ozone

SITE ID: 06-079-8005 POC: 1
COUNTY: (079) San Luis Obispo
CITY: (00000) Not in a city
SITE ADDRESS: 3601 GILLIS CANYON ROAD
SITE COMMENTS:
MONITOR COMMENTS:

STATE: (06) California
AQCR: (032) SOUTH CENTRAL COAST
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER: 10028-15-6
LATITUDE: 35.64368
LONGITUDE: -120.23135
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 712
PROBE HEIGHT: 4.7

SUPPORT AGENCY: (0946) San Luis Obispo County APCD
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: SEPTEMBER 2020

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.060IT	.058IT	BF	.057IT	.055IT	.054IT	.053IT	AV	AV	.047IT	.053IT	.054IT	.057IT	.057IT	.053IT	.053IT	.052IT	.049IT	.042IT	.042IT	.042IT	.043IT	.047IT	.052IT	21	.060
2	.045IT	.036IT	BF	.039IT	.044IT	.047IT	.046IT	.046IT	.044IT	.042IT	.053IT	.065IT	.071IT	.075IT	.076IT	.077IT	.078IT	.078IT	.075IT	.060IT	.054IT	.068IT	.064IT	.063IT	23	.078
3	.063IT	.063IT	BF	.060IT	.061IT	.061IT	.059IT	.060IT	.061IT	.065IT	.068IT	.071IT	BA	.068IT	.068IT	.071IT	.073IT	.071IT	.070IT	.076IT	.074IT	.069IT	.065IT	.064IT	22	.076
4	.065IT	.067IT	BF	.068IT	.067IT	.067IT	.070IT	.067IT	.060IT	.059IT	.061IT	.062IT	.065IT	.062IT	.060IT	.063IT	.063IT	.060IT	.056IT	.056IT	.059IT	.058IT	.061IT	.056IT	23	.070
5	.053IT	.057IT	BF	.060IT	.061IT	.058IT	.054IT	.052IT	.058IT	.065IT	.066IT	.067IT	.070IT	.072IT	.074IT	.073IT	.074IT	.077IT	.082IT	.083IT	.076IT	.069IT	.070IT	.070IT	23	.083
6	.070IT	.068IT	BF	.068IT	.073IT	.071IT	.069IT	.069IT	.072IT	.072IT	.072IT	.076IT	.072IT	.072IT	.072IT	.074IT	.078IT	.076IT	.075IT	.073IT	.074IT	.078IT	.080IT	.077IT	23	.080
7	.074IT	.070IT	BF	.071IT	.071IT	.073IT	.073IT	.071IT	.071IT	.067IT	.065IT	.063IT	.060IT	.059IT	.059IT	.062IT	.061IT	.061IT	.059IT	.056IT	.063IT	.068IT	.045IT	.047IT	23	.074
8	.046IT	.045IT	BF	.043IT	.042IT	.041IT	.040IT	.039IT	.037IT	.038IT	.039IT	.041IT	.044IT	.049IT	.056IT	.061IT	.061IT	.055IT	.044IT	.057IT	.058IT	.064IT	.053IT	.038IT	23	.064
9	.038IT	.035IT	BF	.036IT	.042IT	.041IT	.039IT	.037IT	.039IT	.040IT	.041IT	.041IT	.040IT	.041IT	.040IT	.036IT	.035IT	.036IT	.035IT	.036IT	.039IT	.039IT	.039IT	.039IT	23	.042
10	.038IT	.038IT	BF	.038IT	.036IT	.036IT	.037IT	.038IT	.039IT	.041IT	.040IT	.035IT	.035IT	.041IT	.042IT	.039IT	.038IT	.040IT	.040IT	.039IT	.038IT	.037IT	.038IT	.041IT	23	.042
11	.041IT	.037IT	BF	.025IT	.024IT	.025IT	.027IT	.028IT	.029IT	.031IT	.032IT	.034IT	.035IT	.037IT	.039IT	.041IT	.043IT	.036IT	.040IT	.044IT	.044IT	.049IT	.051IT	.050IT	23	.051
12	.048IT	.047IT	BF	.041IT	.042IT	.042IT	.046IT	.049IT	.052IT	.053IT	.056IT	.060IT	.062IT	.064IT	.068IT	.073IT	.076IT	.075IT	.072IT	.074IT	.065IT	.056IT	.056IT	.057IT	23	.076
13	.059IT	.062IT	BF	.061IT	.060IT	.064IT	.063IT	.060IT	.060IT	.067IT	.067IT	.064IT	.062IT	.065IT	.062IT	.063IT	.061IT	.055IT	.052IT	.053IT	.056IT	.058IT	.053IT	.045IT	23	.067
14	.053IT	.048IT	BF	.067IT	.070IT	.074IT	.073IT	.073IT	.075IT	.077IT	.073IT	.071IT	.069IT	.066IT	.066IT	.065IT	.060IT	.052IT	.045IT	.042IT	.042IT	.038IT	.035IT	.038IT	23	.077
15	.045IT	.059IT	BF	.081IT	.083IT	.082IT	.078IT	.076IT	.076IT	.079IT	.071IT	.076IT	.068IT	.065IT	.066IT	.062IT	.057IT	.051IT	.047IT	.045IT	.048IT	.048IT	.048IT	.048IT	23	.083
16	.052IT	.059IT	BF	.063IT	.070IT	.072IT	.073IT	.071IT	.072IT	.071IT	.071IT	.072IT	.070IT	.073IT	.079IT	.081IT	.081IT	.079IT	.078IT	.080IT	.081IT	.082IT	.081IT	.082IT	23	.082
17	.079IT	.075IT	BF	.067IT	.064IT	.063IT	.062IT	.060IT	.060IT	.067IT	.070IT	.070IT	.072IT	.074IT	.074IT	.072IT	.073IT	.073IT	.066IT	.067IT	.062IT	.066IT	.057IT	.057IT	23	.079
18	.037IT	.059IT	BF	.043IT	.044IT	.031IT	.030IT	.035IT	.042IT	.043IT	.045IT	.047IT	.050IT	.052IT	.053IT	.053IT	.051IT	.051IT	.032IT	.033IT	.034IT	.034IT	.035IT	.034IT	23	.059
19	.034IT	.035IT	BF	.035IT	.038IT	.038IT	.033IT	.034IT	.037IT	.040IT	.041IT	.043IT	.044IT	.047IT	.048IT	AV	.051IT	.049IT	.049IT	.049IT	.046IT	.044IT	.044IT	.043IT	22	.051
20	.043IT	.043IT	BF	.049IT	.050IT	.047IT	AV	.046IT	.049IT	.052IT	.056IT	.063IT	.063IT	.063IT	.064IT	.067IT	.068IT	.065IT	.065IT	.067IT	.066IT	.066IT	.065IT	.066IT	22	.068
21	.067IT	.066IT	BF	.065IT	.063IT	.062IT	.059IT	.058IT	.057IT	.058IT	.059IT	.064IT	.065IT	.066IT	.067IT	.066IT	.058IT	.056IT	.056IT	.058IT	.058IT	.055IT	.052IT	.055IT	23	.067
22	.055IT	.054IT	BF	.052IT	.056IT	.051IT	.051IT	.046IT	.047IT	.062IT	.063IT	.059IT	.073IT	BA	.072IT	.070IT	.064IT	.065IT	.060IT	.062IT	.058IT	.056IT	.055IT	.054IT	22	.073
23	.052IT	.049IT	BF	.048IT	.048IT	.048IT	.046IT	.046IT	BC	BC	.051IT	.053IT	.055IT	.055IT	.056IT	.057IT	.058IT	.055IT	.053IT	.051IT	.054IT	.054IT	.050IT	.048IT	21	.058
24	.045IT	.040IT	BF	.036IT	.030IT	.024IT	.023IT	.027IT	.032IT	.038IT	.039IT	.040IT	.043IT	.045IT	.044IT	.044IT	.043IT	.040IT	.041IT	.044IT	.045IT	.044IT	.034IT	.041IT	23	.045
25	.039IT	.037IT	BF	.026IT	.027IT	.027IT	.027IT	AV	AV	.036IT	.040IT	.041IT	.043IT	.045IT	.049IT	.049IT	.048IT	.046IT	.044IT	.046IT	.049IT	.050IT	.049IT	.047IT	21	.050
26	.047IT	.047IT	BF	.048IT	.048IT	.049IT	.048IT	.048IT	.048IT	.049IT	.049IT	.049IT	.051IT	.051IT	.049IT	.050IT	.048IT	.046IT	.051IT	.051IT	.047IT	.050IT	.048IT	.047IT	23	.051
27	.044IT	.044IT	BF	.044IT	.042IT	.040IT	.038IT	.031IT	.031IT	.032IT	.035IT	.038IT	.041IT	.044IT	.046IT	.047IT	.047IT	.044IT	.045IT	.047IT	.048IT	.047IT	.044IT	.045IT	23	.048
28	.045IT	.046IT	BF	.047IT	.050IT	.051IT	.053IT	.052IT	.050IT	.051IT	.054IT	.056IT	.056IT	.058IT	.059IT	.061IT	.064IT	.065IT	.067IT	.070IT	.069IT	.068IT	.070IT	.071IT	23	.071
29	.072IT	.065IT	BF	.066IT	.070IT	.069IT	.070IT	AV	.062IT	.061IT	.063IT	.064IT	.066IT	.059IT	.054IT	.053IT	.054IT	.056IT	.055IT	.056IT	.057IT	.057IT	.057IT	.067IT	22	.072
30	.070rt	.071rt	BF	.067rt	.073rt	.079rt	.079rt	.078rt	.074rt	.071rt	.069rt	.070rt	.070rt	.069rt	.064rt	.063rt	.074rt	.075rt	.074rt	.071rt	.064rt	.063rt	.063rt	.065rt	23	.079
31																									0	
NO.:	30	30		30	30	30	29	27	27	29	30	30	29	29	30	29	30	30	30	30	30	30	30	30		
MAX:	.079	.075		.081	.083	.082	.079	.078	.076	.079	.073	.076	.073	.075	.079	.081	.081	.079	.082	.083	.081	.082	.081	.082		
AVG:	.0526	.0527		.0524	.0535	.0529	.0524	.0517	.0531	.0543	.0554	.0570	.0577	.0584	.0593	.0602	.0597	.0579	.0557	.0563	.0557	.0559	.0536	.0536		

MONTHLY OBSERVATIONS: 679 MONTHLY MEAN: .0553 MONTHLY MAX: .083

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Nov. 19, 2021

(44201) Ozone

SITE ID: 06-079-8005 POC: 1
COUNTY: (079) San Luis Obispo
CITY: (00000) Not in a city
SITE ADDRESS: 3601 GILLIS CANYON ROAD
SITE COMMENTS:
MONITOR COMMENTS:

STATE: (06) California
AQCR: (032) SOUTH CENTRAL COAST
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER: 10028-15-6
LATITUDE: 35.64368
LONGITUDE: -120.23135
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 712
PROBE HEIGHT: 4.7

SUPPORT AGENCY: (0946) San Luis Obispo County APCD
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: OCTOBER 2020

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.073rt	.073rt	BF	.079rt	.079rt	.081rt	.079rt	.076rt	.071rt	.065rt	.065rt	.068rt	.073rt	.078rt	.080rt	.080rt	.078rt	.078rt	.088rt	.085rt	.083rt	.082rt	.081rt	.078rt	23	.088
2	.077rt	.077rt	BF	.074rt	.076rt	.077rt	.075rt	.075rt	.073rt	.071rt	.072rt	.073rt	.076rt	.081rt	.085rt	.086rt	.083rt	.081rt	.082rt	.078rt	.072rt	.071rt	.072rt	.071rt	23	.086
3	.071IT	.070IT	BF	.068IT	.068IT	.067IT	.068IT	.069IT	.069IT	.068IT	.066IT	.066IT	.070IT	.077IT	.075IT	.072IT	.071IT	.064IT	.060IT	.060IT	.058IT	.062IT	.066IT	.066IT	23	.077
4	.067IT	.070IT	BF	.084IT	.079IT	.068IT	.067IT	.062IT	.061IT	.056IT	.055IT	.057IT	.060IT	.065IT	.060IT	.065IT	.065IT	.068IT	.080IT	.081IT	.078IT	.062IT	.060IT	.065IT	23	.084
5	.064IT	.062IT	BF	.061IT	.056IT	.053IT	.053IT	.059IT	BC	BC	.050IT	.048IT	.048IT	.050IT	.052IT	.052IT	.053IT	.053IT	.057IT	.059IT	.060IT	.060IT	.060IT	.062IT	21	.064
6	.059IT	.060IT	BF	.061IT	.063IT	.064IT	.064IT	.066IT	.066IT	.074IT	.079IT	.074IT	.070IT	.072IT	.073IT	.073IT	.071IT	.072IT	.071IT	.070IT	.072IT	.066IT	.064IT	.065IT	23	.079
7	.063IT	.061IT	BF	.060IT	.062IT	.061IT	.061IT	.062IT	.061IT	.059IT	.057IT	.060IT	.064IT	.068IT	.071IT	.072IT	.071IT	.061IT	.063IT	.061IT	.060IT	.062IT	.070IT	.064IT	23	.072
8	.065IT	.066IT	BF	.056IT	.057IT	.054IT	.051IT	.049IT	.046IT	.048IT	BA	.049IT	.052IT	.052IT	.050IT	.047IT	.045IT	.041IT	.036IT	.037IT	.036IT	.034IT	.027IT	.024IT	22	.066
9	.025IT	.023IT	BF	.019IT	.020IT	.022IT	.023IT	.019IT	.020IT	.024IT	.028IT	.032IT	.040IT	.046IT	.049IT	.058IT	.062IT	.058IT	.056IT	.048IT	.030IT	.028IT	.030IT	.032IT	23	.062
10	.028IT	.029IT	BF	.027IT	.027IT	.022IT	.026IT	.021IT	.022IT	.022IT	.036IT	.032IT	.036IT	.042IT	.043IT	.039IT	.034IT	.027IT	.025IT	.024IT	.024IT	.030IT	.029IT	.025IT	23	.043
11	.026IT	.026IT	BF	.027IT	.028IT	.025IT	.026IT	.024IT	.026IT	.030IT	.031IT	.033IT	.035IT	.036IT	.036IT	.035IT	.035IT	.035IT	.035IT	.034IT	.033IT	.039IT	.041IT	.041IT	23	.041
12	.042IT	.041IT	BF	.040IT	.041IT	.041IT	.042IT	.041IT	.043IT	.045IT	.046IT	.046IT	.048IT	.050IT	.050IT	.050IT	.051IT	.049IT	.048IT	.046IT	.048IT	.053IT	.054IT	.056IT	23	.056
13	.058IT	.054IT	BF	.053IT	.053IT	.053IT	.054IT	.052IT	.055IT	.061IT	.063IT	.064IT	.067IT	.070IT	.070IT	.066IT	.066IT	.066IT	.058IT	.056IT	.061IT	.055IT	.056IT	.055IT	23	.070
14	.055IT	.052IT	BF	.058IT	.058IT	.060IT	.056IT	.051IT	.049IT	.051IT	.048IT	.044IT	.041IT	.034IT	.033IT	.030IT	.033IT	.035IT	.042IT	.051IT	.063IT	.065IT	.066IT	.066IT	23	.066
15	.069IT	.072IT	BF	.069IT	.067IT	.054IT	.047IT	.043IT	.043IT	.043IT	.048IT	.051IT	.054IT	.057IT	.060IT	.063IT	.061IT	.061IT	.063IT	.061IT	.060IT	.062IT	.060IT	.058IT	23	.072
16	.060IT	.058IT	BF	.054IT	.052IT	.056IT	.061IT	.066IT	.064IT	.066IT	.067IT	.069IT	.068IT	.070IT	.070IT	.070IT	.072IT	.072IT	.074IT	.074IT	.072IT	.071IT	.070IT	.070IT	23	.074
17	.072IT	.073IT	BF	.075IT	.076IT	.072IT	.071IT	.072IT	.074IT	.075IT	.076IT	.075IT	.071IT	.065IT	.068IT	.073IT	.076IT	.081IT	.082IT	.078IT	.068IT	.067IT	.067IT	.067IT	23	.082
18	.066IT	.065IT	BF	.064IT	.064IT	.063IT	.062IT	.062IT	.060IT	.061IT	.060IT	.057IT	.051IT	.053IT	.053IT	.053IT	.061IT	.066IT	.065IT	.052IT	.037IT	.036IT	.038IT	.049IT	23	.066
19	.051IT	.054IT	BF	.065IT	.062IT	.063IT	.061IT	.060IT	.063IT	.059IT	.061IT	.060IT	.054IT	.057IT	.059IT	.061IT	.060IT	.054IT	.055IT	.060IT	.069IT	.068IT	.066IT	.066IT	23	.069
20	.060IT	.057IT	BF	.056IT	.053IT	.052IT	.054IT	.055IT	.054IT	.059IT	.060IT	.058IT	.058IT	.057IT	.056IT	.053IT	.053IT	.050IT	.053IT	.055IT	.052IT	.053IT	.054IT	.055IT	23	.060
21	.055IT	.054IT	BF	.054IT	.054IT	.053IT	.053IT	.052IT	.052IT	.051IT	.051IT	.052IT	.052IT	.056IT	.058IT	.061IT	.062IT	.059IT	.059IT	.059IT	.060IT	.058IT	.060IT	.063IT	23	.063
22	.062IT	.062IT	BF	.060IT	.057IT	.051IT	.049IT	.049IT	.044IT	BA	.039IT	.042IT	.044IT	.048IT	.053IT	.051IT	.049IT	.045IT	.042IT	.040IT	.040IT	.040IT	.039IT	.039IT	22	.062
23	.039IT	.039IT	BF	.038IT	.036IT	.035IT	.034IT	.032IT	.033IT	.036IT	.039IT	.041IT	.043IT	.047IT	.048IT	.050IT	.050IT	.044IT	.041IT	.040IT	.039IT	.038IT	.039IT	.036IT	23	.050
24	.036IT	.037IT	BF	.040IT	.041IT	.038IT	.037IT	.037IT	.042IT	.043IT	.043IT	.045IT	.048IT	.048IT	.046IT	.043IT	.038IT	.034IT	.032IT	.031IT	.030IT	.032IT	.032IT	.032IT	23	.048
25	.032IT	.032IT	BF	.032IT	.029IT	.028IT	.029IT	.032IT	.032IT	.034IT	.035IT	.037IT	.038IT	.038IT	.038IT	.038IT	.037IT	.035IT	.034IT	.034IT	.036IT	.039IT	.040IT	.039IT	23	.040
26	.038IT	.036IT	BF	.036IT	.036IT	.034IT	.033IT	.032IT	.034IT	.034IT	.035IT	.037IT	.040IT	.039IT	.039IT	.037IT	.035IT	.038IT	.043IT	.045IT	.048IT	.050IT	.053IT	.051IT	23	.053
27	.050IT	.045IT	BF	.046IT	.045IT	.045IT	.046IT	.044IT	.045IT	.048IT	.049IT	.050IT	.052IT	.052IT	.051IT	.052IT	.052IT	.051IT	.051IT	.052IT	.052IT	.051IT	.050IT	.051IT	23	.052
28	.051IT	.050IT	BF	.049IT	.050IT	.051IT	.050IT	.050IT	.049IT	.051IT	.051IT	.053IT	.055IT	.055IT	.056IT	.060IT	.062IT	.061IT	.062IT	.063IT	.063IT	.063IT	.063IT	.062IT	23	.063
29	.060IT	.059IT	BF	.055IT	.051IT	.051IT	.051IT	.052IT	.053IT	.058IT	.059IT	.060IT	.060IT	.063IT	.064IT	.066IT	.065IT	.066IT	.065IT	.065IT	.065IT	.065IT	.064IT	.064IT	23	.066
30	.062IT	.061IT	BF	.060IT	.060IT	.059IT	.059IT	.059IT	.060IT	.062IT	.063IT	.064IT	.063IT	.061IT	.062IT	.064IT	.065IT	.066IT	.067IT	.067IT	.067IT	.067IT	.067IT	.068IT	23	.068
31	.067IT	.067IT	BF	.067IT	.066IT	.066IT	.066IT	.068IT	AV	.066IT	.066IT	.065IT	.065IT	.067IT	.066IT	.068IT	.069IT	.069IT	.073IT	.071IT	.071IT	.072IT	.072IT	.073IT	22	.073
NO.:	31	31		31	31	31	31	31	29	29	30	31	31	31	31	31	31	31	31	31	31	31	31	31		
MAX:	.077	.077		.084	.079	.081	.079	.076	.074	.075	.079	.075	.076	.081	.085	.086	.083	.081	.088	.085	.083	.082	.081	.078		
AVG:	.0549	.0544		.0544	.0537	.0522	.0519	.0513	.0505	.0524	.0533	.0536	.0547	.0566	.0572	.0577	.0576	.0561	.0568	.0560	.0551	.0549	.0552	.0553		

MONTHLY OBSERVATIONS: 708 MONTHLY MEAN: .0546 MONTHLY MAX: .088

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

2. Simi Valley (Ventura County)

a) Initial Ozone Initial Notification Submitted to U.S. EPA on March 15, 2021. EEPID647

EE Initial Notification Summary Information O_3

Submitting Agency: Ventura County APCD
Agency Contact: Dr. Laki Tisopulos
Date Submitted: 2/26/2021
Applicable NAAQS: 2008 8-Hour Ozone
Affected Regulatory Decision[1]: Attainment Determination for 2008 8-Hour Ozone
(for classification decisions, specify level of the classification with/without EE concurrence)
Area Name/Designation Status: Ventura County / Serious
Design Value Period (list three-year period): 2018-2020
(where there are multiple relevant design value periods, summarize separately)

A) See attached spreadsheet titled "Federal Exceptional Event Initial Notification Sheet"

B) Violating Sites Information
(listing of all violating sites in the planning area, regardless of operating agency, and regardless of whether or not they are impacted by EEs)

Site/monitor (AQS ID and POC)	Design Value (without EPA concurrence on any of the events listed in attached spreadsheet)	Design Value (with EPA concurrence on all events listed in attached spreadsheet)
Simi Valley-Cochran Street (06-111-2002-1)	0.077 ppm	0.074 ppm

C) Summary of Maximum Design Value (DV) Site Information (Effect of EPA Concurrence on Maximum Design Value Site Determination)
(Two highest values from Table B)

Maximum DV site (AQS ID) **without EPA concurrence** on any of the events listed in attached spreadsheet	Design Value 0.077 ppm	Design Value Site **06-111-2002-1**	Comment
Maximum DV site (AQS ID) **with EPA concurrence** on all events listed in attached spreadsheet	Design Value 0.074 ppm	Design Value Site **06-111-2002-1**	Comment Site would be in attainment

D) List of any sites (AQS ID) within planning area with invalid design values (e.g., due to data incompleteness) N/A

[1] designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call
[2] Provide additional information for types of event described as "other"

Federal Ozone NAAQS Exceptional Event Initial Notification Sheet

Event Date	Type of Event	AQS Flag	Monitor AQS ID	AQS POC	Site Name	Pollutant	Concentration	Units	Event Name	Notes
7/7/2018	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.080	ppm	Valley Fire	Wildfire smoke from Valley Fire impacted ozone at site. https://www.fire.ca.gov/incidents/2018/7/6/valley-fire/
8/7/2018	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.092	ppm	Five/Donnell Fires	Wildfire smoke from Five/Donnell Fires impacted ozone at site. https://www.fire.ca.gov/incidents/2018/8/6/five-fire/ https://www.fire.ca.gov/incidents/2018/8/1/donnell-fire/
8/18/2020	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.086	ppm	Holser/Lake/Dome Fires	Wildfire smoke from Holser/Lake/Dome Fires impacted ozone at site. https://www.fire.ca.gov/incidents/2020/8/17/holser-fire/ https://www.fire.ca.gov/incidents/2020/8/12/lake-fire/ https://inciweb.nwcg.gov/incident/7000/ (Dome Fire)
8/21/2020	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.082	ppm	Holser/Lake/Dome/SCU Lightning Complex/August Complex Fires	Wildfire smoke from Holser/Lake/Dome Fires impacted ozone at site. https://www.fire.ca.gov/incidents/2020/8/17/holser-fire/ https://www.fire.ca.gov/incidents/2020/8/12/lake-fire/ https://inciweb.nwcg.gov/incident/7000/ (Dome Fire) https://inciweb.nwcg.gov/incident/7056/ (SCU Lighning Complex Fire) https://inciweb.nwcg.gov/incident/6983/ (August Complex Fire)
9/4/2020	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.085	ppm	Creek/El Dorado Fires	Wildfire smoke from Creek/El Dorado Fires impacted ozone at site. https://www.fire.ca.gov/incidents/2020/9/4/creek-fire/ https://www.fire.ca.gov/incidents/2020/9/5/el-dorado-fire/
9/18/2020	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.079	ppm	Snow Fire	Wildfire smoke from Snow Fire impacted ozone at site. https://www.fire.ca.gov/incidents/2020/9/17/snow-fire/
10/2/2020	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.086	ppm	Bobcat/El Dorado/Creek/SQF Lightning Complex/Glass/Dolan/August Complex Fires	Wildfire smoke from Bobcat/El Dorado/Creek/SQF Lightening Complex/Glass/Dolan/August Complex Fires impacted ozone at site. https://inciweb.nwcg.gov/incident/7152/ (Bobcat Fire) https://inciweb.nwcg.gov/incident/7048/ (SQF Lightning Complex Fire) https://inciweb.nwcg.gov/incident/7018/ (Dolan Fire) https://www.fire.ca.gov/incidents/2020/9/4/creek-fire/ https://www.fire.ca.gov/incidents/2020/9/5/el-dorado-fire/ https://inciweb.nwcg.gov/incident/6983/ (August Complex Fire) https://en.wikipedia.org/wiki/Glass_Fire
10/3/2020	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.095	ppm	Bobcat/El Dorado/Creek/SQF Lightning Complex/Glass/Dolan/August Complex Fires	Wildfire smoke from Bobcat/El Dorado/Creek/SQF Lightening Complex/Glass/Dolan/August Complex Fires impacted ozone at site. https://inciweb.nwcg.gov/incident/7152/ (Bobcat Fire) https://inciweb.nwcg.gov/incident/7048/ (SQF Lightning Complex Fire) https://inciweb.nwcg.gov/incident/7018/ (Dolan Fire) https://www.fire.ca.gov/incidents/2020/9/4/creek-fire/ https://www.fire.ca.gov/incidents/2020/9/5/el-dorado-fire/ https://inciweb.nwcg.gov/incident/6983/ (August Complex Fire) https://en.wikipedia.org/wiki/Glass_Fire
10/4/2020	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.080	ppm	Bobcat/El Dorado/Creek/SQF Lightning Complex/Glass/Dolan/August Complex Fires	Wildfire smoke from Bobcat/El Dorado/Creek/SQF Lightening Complex/Glass/Dolan/August Complex Fires impacted ozone at site. https://inciweb.nwcg.gov/incident/7152/ (Bobcat Fire) https://inciweb.nwcg.gov/incident/7048/ (SQF Lightning Complex Fire) https://inciweb.nwcg.gov/incident/7018/ (Dolan Fire) https://www.fire.ca.gov/incidents/2020/9/4/creek-fire/ https://www.fire.ca.gov/incidents/2020/9/5/el-dorado-fire/ https://inciweb.nwcg.gov/incident/6983/ (August Complex Fire) https://en.wikipedia.org/wiki/Glass_Fire
10/5/2020	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.077	ppm	Bobcat/El Dorado/Creek/SQF Lightning Complex/Glass/Dolan/August Complex Fires	Wildfire smoke from Bobcat/El Dorado/Creek/SQF Lightening Complex/Glass/Dolan/August Complex Fires impacted ozone at site. https://inciweb.nwcg.gov/incident/7152/ (Bobcat Fire) https://inciweb.nwcg.gov/incident/7048/ (SQF Lightning Complex Fire) https://inciweb.nwcg.gov/incident/7018/ (Dolan Fire) https://www.fire.ca.gov/incidents/2020/9/4/creek-fire/ https://www.fire.ca.gov/incidents/2020/9/5/el-dorado-fire/ https://inciweb.nwcg.gov/incident/6983/ (August Complex Fire) https://en.wikipedia.org/wiki/Glass_Fire
10/14/2020	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.077	ppm	Bobcat/Snow Fires	Wildfire smoke from Bobcat/Snow Fires impacted ozone at site. https://inciweb.nwcg.gov/incident/7152/ (Bobcat Fire) https://www.fire.ca.gov/incidents/2020/9/17/snow-fire/
10/15/2020	Wildfire	IT	061112002	1	Simi Valley-Cochran Street	Ozone-8hr	0.084	ppm	Bobcat/Snow Fires	Wildfire smoke from Bobcat/Snow Fires impacted ozone at site. https://inciweb.nwcg.gov/incident/7152/ (Bobcat Fire) https://www.fire.ca.gov/incidents/2020/9/17/snow-fire/

b) AQS AMP350 Data

Data is currently flagged with the REQEXC Code “rt-Wildfire-U.S.”

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Oct. 28, 2021

(44201) Ozone

SITE ID: 06-111-2002 POC: 1
COUNTY: (111) Ventura
CITY: (72016) Simi Valley
SITE ADDRESS: 5400 COCHRAN STREET, SIMI VALLEY, CA 93063
SITE COMMENTS: SITE NAME & NO. SIMI VALLEY-5400 COCHRAN (5600434), STARTED 06/85. LOCATED AT SIMI
MONITOR COMMENTS:

STATE: (06) California
AQCR: (024) METROPOLITAN LOS ANGELES
URBANIZED AREA: (7702) SIMI VALLEY, CA
LAND USE: RESIDENTIAL
LOCATION SETTING: SUBURBAN

CAS NUMBER: 10028-15-6
LATITUDE: 34.276316
LONGITUDE: -118.683685
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 314
PROBE HEIGHT: 4

SUPPORT AGENCY: (1118) Ventura County APCD
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: AUGUST 2020

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.014	BF	.018	.022	.023	.018	.017	.038	.060	.065	.074	.082	.065	.067	.067	.070	.068	.065	.057	.049	.037	.031	.031	.026	23	.082
2	.021	BF	.022	.020	.017	.016	.024	.043	.059	.067	.075	.066	.065	.064	.064	.063	.062	.056	.050	.040	.030	.027	.023	.020	23	.075
3	.022	BF	.014	.013	.012	.008	.016	.032	.051	.064	.066	.069	.071	.068	.064	.062	.061	.060	.058	.045	.037	.031	.029	.024	23	.071
4	.019	BF	.016	.013	.011	.009	.012	.017	.033	.049	.047	.056	.058	.056	.057	.058	.056	.049	.041	.032	.028	.026	.020	.018	23	.058
5	.021	BF	.012	.010	.008	.007	.008	.020	.030	.036	.045	.047	.053	.055	.055	.053	.053	.051	.049	.046	.041	.039	.039	.034	23	.055
6	.031	BF	.028	.028	.031	.030	.029	.030	.031	.035	.040	.046	.055	.058	.053	.050	.050	.051	.046	.039	.036	.033	.025	.021	23	.058
7	.019	BF	.015	.021	.023	.015	.017	.033	.043	.052	.056	.059	.053	.051	.051	.051	.050	.042	.036	.031	.030	.027	.023	.017	23	.059
8	.015	BF	.013	.009	.008	.008	.012	.023	.047	.054	.060	.060	.059	.053	.049	.045	.043	.039	.035	.031	.028	.024	.021	.018	23	.060
9	.018	BF	.009	.008	.011	.007	.011	.022	.034	.045	.051	.053	.049	.046	.046	.046	.045	.043	.038	.032	.028	.025	.023	.022	23	.053
10	.018	BF	.011	.007	.008	.008	.009	.015	.029	.038	.044	.054	.059	.058	.049	.045	.043	.042	.039	.035	.032	.024	.019	.016	23	.059
11	.014	BF	.009	.008	.005	.003	.009	.016	.028	.036	.042	.047	.054	.049	.046	.045	.043	.041	.038	.032	.027	.022	.014	.014	23	.054
12	.013	BF	.012	.009	.005	.003	.009	.027	.043	.048	.056	.065	.069	.060	.054	.053	.046	.043	.039	.036	.031	.023	.018	.014	23	.069
13	.011	BF	.011	.009	.007	.012	.015	.013	.018	.019	.035	.050	.061	.058	.059	.057	.053	.054	.043	.037	.030	.020	.016	.012	23	.061
14	.012	BF	.013	.011	.009	.004	.010	.028	.048	.044	.043	.055	.052	.048	.042	.034	.031	.027	.024	.025	.026	.025	.014	.010	23	.055
15	.010	BF	.007	.005	.004	.004	.008	.015	.031	.045	.050	.059	.053	.054	.050	.048	.046	.047	.045	.039	.025	.025	.019	.019	23	.059
16	.019	BF	.026	.029	.027	.031	.029	.029	.036	.040	.047	.053	.062	.070	.065	.055	.053	.051	.041	.034	.028	.025	.020	.016	23	.070
17	.015	BF	.015	.010	.007	.005	.008	.023	.036	.051	.062	.070	.073	.078	.075	.065	.061	.057	.050	.047	.037	.030	.030	.032	23	.078
18	.035rt	BF	.025rt	.021rt	.014rt	.012rt	.013rt	.017rt	.035rt	.056rt	.079rt	.092rt	.095rt	.088rt	.090rt	.088rt	.083rt	.077rt	.070rt	.051rt	.038rt	.031rt	.030rt	.029rt	23	.095
19	.025IT	BF	.019IT	.017IT	.013IT	.009IT	.011IT	.028IT	.051IT	.073IT	.082IT	.085IT	.085IT	.080IT	.073IT	.067IT	.064IT	.059IT	.053IT	.047IT	.040IT	.032IT	.030IT	.031IT	23	.085
20	.025IT	BF	.019IT	.016IT	.010IT	.005IT	.008IT	.017IT	.042IT	.055IT	.069IT	.085IT	.088IT	.082IT	.072IT	.069IT	.069IT	.063IT	.052IT	.048IT	.036IT	.033IT	.029IT	.027IT	23	.088
21	.025rt	BF	.019rt	.015rt	.012rt	.007rt	.009rt	.020rt	.036rt	.060rt	.076rt	.097rt	.108rt	.100rt	.081rt	.070rt	.064rt	.057rt	.052rt	.042rt	.035rt	.031rt	.025rt	.021rt	23	.108
22	.019	BF	.024	.028	.024	.026	.020	.026	.046	.060	.073	.086	.084	.079	.075	.061	.045	.039	.042	.044	.040	.032	.025	.020	23	.086
23	.026	BF	.025	.024	.019	.016	.019	.029	.035	.032	.042	.046	.048	.045	.043	.039	.037	.035	.033	.033	.028	.025	.024	.023	23	.048
24	.022	BF	.014	.012	.009	.004	.009	.022	.031	.044	.045	.051	.048	.047	.044	.043	.042	.041	.038	.029	.026	.025	.023	.016	23	.051
25	.013	BF	.008	.006	.004	.003	.007	.018	.034	.040	.044	.053	.056	.046	.037	.033	.025	.023	.027	.031	.032	.026	.016	.015	23	.056
26	.012	BF	.008	.007	.004	.003	.006	.015	.026	.045	.046	.062	.056	.041	.036	.035	.039	.041	.037	.031	.022	.016	.014	.013	23	.062
27	.014	BF	.008	.006	.002	.001	.006	.015	.029	.050	.057	.059	.059	.054	.051	.053	.055	.054	.050	.041	.033	.026	.021	.019	23	.059
28	.016	BF	.011	.010	.006	.002	.006	.015	.030	.053	.066	.070	.067	.064	.063	.058	.052	.047	.044	.034	.025	.024	.018	.016	23	.070
29	.015	BF	.011	.009	.007	.006	.008	.012	.022	.033	.045	.060	.065	.061	.056	.052	.049	.043	.035	.031	.030	.025	.021	.019	23	.065
30	.015	BF	.016	.016	.016	.016	.016	.021	.028	.037	.047	.049	.053	.053	.053	.051	.049	.046	.041	.036	.033	.027	.025	.020	23	.053
31	.016	BF	.019	.015	.014	.012	.012	.017	.021	.032	.040	.045	.052	.061	.063	.061	.059	.053	.044	.035	.034	.030	.028	.026	23	.063
NO.:	31		31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		
MAX:	.035		.028	.029	.031	.031	.029	.043	.060	.073	.082	.097	.108	.100	.090	.088	.083	.077	.070	.051	.041	.039	.039	.034		
AVG:	.0184		.0154	.0140	.0119	.0100	.0127	.0225	.0362	.0470	.0550	.0623	.0637	.0611	.0575	.0542	.0515	.0483	.0435	.0375	.0317	.0271	.0230	.0203		

MONTHLY OBSERVATIONS: 713 MONTHLY MEAN: .0359 MONTHLY MAX: .108

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Oct. 28, 2021

(44201) Ozone

SITE ID: 06-111-2002 POC: 1
COUNTY: (111) Ventura
CITY: (72016) Simi Valley
SITE ADDRESS: 5400 COCHRAN STREET, SIMI VALLEY, CA 93063
SITE COMMENTS: SITE NAME & NO. SIMI VALLEY-5400 COCHRAN (5600434), STARTED 06/85. LOCATED AT SIMI
MONITOR COMMENTS:

STATE: (06) California
AQCR: (024) METROPOLITAN LOS ANGELES
URBANIZED AREA: (7702) SIMI VALLEY, CA
LAND USE: RESIDENTIAL
LOCATION SETTING: SUBURBAN

CAS NUMBER: 10028-15-6
LATITUDE: 34.276316
LONGITUDE: -118.683685
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 314
PROBE HEIGHT: 4

SUPPORT AGENCY: (1118) Ventura County APCD
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: OCTOBER 2020

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.047IT	BF	.046IT	.045IT	.038IT	.022IT	.007IT	.017IT	.038IT	.060IT	.070IT	.067IT	.066IT	.080IT	.091IT	.082IT	.073IT	.064IT	.051IT	.040IT	.029IT	.026IT	.026IT	.033IT	23	.091
2	.029rt	BF	.024rt	.022rt	.015rt	.005rt	.005rt	.011rt	.032rt	.054rt	.070rt	.083rt	.093rt	.099rt	.096rt	.091rt	.085rt	.073rt	.048rt	.041rt	.028rt	.021rt	.043rt	.057rt	23	.099
3	.056rt	BF	.037rt	.030rt	.025rt	.021rt	.018rt	.023rt	.058rt	.075rt	.084rt	.089rt	.098rt	.104rt	.104rt	.099rt	.093rt	.090rt	.078rt	.053rt	.044rt	.056rt	.062rt	.061rt	23	.104
4	.050rt	BF	.035rt	.037rt	.030rt	.029rt	.025rt	.026rt	.054rt	.073rt	.074rt	.078rt	.088rt	.093rt	.079rt	.079rt	.080rt	.074rt	.063rt	.048rt	.038rt	.030rt	.025rt	.019rt	23	.093
5	.020IT	BF	.030IT	.032IT	.024IT	.015IT	.010IT	.012IT	.040IT	.071IT	.079IT	.081IT	.081IT	.080IT	.080IT	.076IT	.071IT	.065IT	.056IT	.041IT	.036IT	.029IT	.022IT	.022IT	23	.081
6	.021	BF	.023	.020	.015	.008	.004	.011	.032	.041	.063	.077	.076	.071	.073	.072	.072	.062	.051	.036	.031	.026	.021	.024	23	.077
7	.018IT	BF	.020IT	.020IT	.012IT	.006IT	.004IT	.017IT	.039IT	.071IT	.072IT	.079IT	.078IT	.078IT	.072IT	.066IT	.062IT	.054IT	.049IT	.042IT	.035IT	.028IT	.024IT	.023IT	23	.079
8	.020	BF	.022	.020	.018	.018	.018	.018	.030	.035	.046	.054	.057	.056	.053	.052	.051	.050	.048	.046	.046	.043	.036	.024	23	.057
9	.021	BF	.015	.020	.023	.028	.012	.009	.029	BC	BC	.047	.055	.057	.055	.052	.047	.042	.039	.038	.036	.035	.031	.020	21	.057
10	.019	BF	.035	.038	.042	.039	.037	.036	.033	.040	.049	.056	.058	.053	.048	.046	.045	.045	.038	.035	.039	.039	.033	.023	23	.058
11	.019	BF	.012	.009	.007	.006	.009	.031	.043	.050	.055	.057	.058	.057	.054	.050	.045	.043	.037	.027	.019	.016	.010	.010	23	.058
12	.011	BF	.014	.014	.008	.004	.004	.010	.027	.048	.053	.060	.064	.066	.061	.059	.052	.045	.029	.018	.016	.012	.010	.017	23	.066
13	.016	BF	.034	.027	.018	.006	.005	.013	.036	.051	.052	.058	.067	.071	.069	.069	.065	.056	.034	.026	.019	.016	.019	.021	23	.071
14	.024IT	BF	.022IT	.017IT	.007IT	.003IT	.003IT	.010IT	.023IT	.045IT	.059IT	.071IT	.078IT	.078IT	.086IT	.082IT	.084IT	.082IT	.054IT	.042IT	.033IT	.026IT	.024IT	.033IT	23	.086
15	.036IT	BF	.032IT	.028IT	.022IT	.013IT	.006IT	.014IT	.042IT	.070IT	.081IT	.083IT	.094IT	.095IT	.093IT	.087IT	.073IT	.065IT	.041IT	.032IT	.031IT	.027IT	.030IT	.024IT	23	.095
16	.023	BF	.026	.032	.033	.037	.036	.039	.040	.041	.042	.043	.044	.044	.044	.043	.042	.043	.030	.021	.013	.011	.012	.013	23	.044
17	.014	BF	.015	.016	.016	.010	.006	.007	.015	.031	.042	.052	.064	.065	.063	.062	.060	.050	.048	.033	.024	.021	.032	.032	23	.065
18	.025	BF	.017	.021	.019	.014	.015	.021	.041	.058	.068	.076	.071	.060	.057	.054	.052	.048	.039	.030	.025	.020	.018	.017	23	.076
19	.013	BF	.006	.009	.007	.002	.002	.014	.034	.047	.061	.059	.057	.061	.059	.050	.042	.034	.026	.020	.017	.014	.015	.016	23	.061
20	.011	BF	.007	.005	.004	.003	.002	.002	.010	.022	.040	.056	.065	.069	.068	.062	.055	.048	.036	.030	.027	.020	.023	.019	23	.069
21	.019	BF	.018	.016	.020	.018	.011	.016	.021	.026	.037	.044	.054	.064	.068	.067	.057	.049	.048	.046	.037	.036	.039	.045	23	.068
22	.046	BF	.045	.044	.045	.046	.043	.038	.038	.039	.042	.043	.048	.052	.055	.055	.051	.049	.046	.044	.040	.032	.029	.028	23	.055
23	.026	BF	.036	.041	.043	.041	.039	.041	.035	.039	.041	.046	.049	.048	.048	.042	.037	.033	.032	.031	.028	.030	.029	.025	23	.049
24	.022	BF	.020	.020	.019	.015	.014	.017	.022	.031	.037	.036	.037	.037	.036	.035	.035	.033	.032	.031	.031	.031	.032	.033	23	.037
25	.033	BF	.027	.026	.032	.033	.034	.034	.034	.033	.035	.035	.037	.038	.038	.037	.037	.038	.037	.035	.031	.025	.020	.017	23	.038
26	.015	BF	.041	.043	.042	.040	.039	.038	.039	.042	.043	.045	.046	.049	.049	.050	.050	.050	.044	.038	.030	.011	.032	.047	23	.050
27	.045	.041	.031	.023	.012	.004	.002	.025	.045	.046	.047	.048	.047	.046	.045	.044	.042	.038	.039	.028	.017	.011	.011	.020	24	.048
28	.025	BF	.013	.011	.002	.001	.001	.005	BL	BL	.040	.046	.050	.057	.062	.060	.055	.051	.045	.031	.025	.019	.016	.016	21	.062
29	.017	BF	.013	.009	.004	.001	.001	.005	.015	.030	.036	.038	.036	.037	.038	.045	.066	.053	.032	.029	.018	.013	.009	.013	23	.066
30	.013	BF	.010	.011	.008	.001	.001	.005	.017	.031	.039	.045	.048	.057	.066	.068	.055	.035	.024	.017	.013	.012	.020	.015	23	.068
31	.017	BF	.018	.014	.009	.005	.003	.008	.017	.037	.040	.041	.042	.043	.046	.068	.072	.062	.043	.030	.023	.018	.033	.023	23	.072
NO.:	31	1	31	31	31	31	31	31	30	29	30	31	31	31	31	31	31	31	31	31	31	31	31	31		
MAX:	.056	.041	.046	.045	.045	.046	.043	.041	.058	.075	.084	.089	.098	.104	.104	.099	.093	.090	.078	.053	.046	.056	.062	.061		
AVG:	.0249	.0410	.0240	.0232	.0200	.0159	.0134	.0185	.0326	.0461	.0532	.0578	.0615	.0634	.0631	.0614	.0583	.0524	.0425	.0342	.0284	.0243	.0254	.0255		

MONTHLY OBSERVATIONS: 710 MONTHLY MEAN: .0378 MONTHLY MAX: .104

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

B. District Alerts/Advisories

1. San Luis Obispo County (Red Hills)

SLO COUNTY apcd | Air Pollution Control District
San Luis Obispo County

FOR IMMEDIATE RELEASE: August 18, 2020

Contact: **Meghan Field, 805-781-5912**
SLO County Air Pollution Control District

Dr. Penny Borenstein, 805-781-5500
SLO County Public Health Department

AIR QUALITY ALERT - SMOKE IMPACTING SAN LUIS OBISPO COUNTY, PREDOMINANTLY NORTHERN SLO COUNTY

SAN LUIS OBISPO, CALIFORNIA, – The San Luis Obispo (SLO) County Air Pollution Control District and Public Health Department are working in partnership to assess the air quality in order to identify any potential health impacts and to inform the community about safeguarding individual health. At this time, several wildfires in and out of San Luis Obispo County are impacting air quality, particularly in northern San Luis Obispo County.

Expect skies to be hazy and fine particulate ($PM_{2.5}$) concentrations to be higher than normal. Changing winds make it difficult to predict which areas of the county may be most affected. However, until the fires are put out, smoke will likely be intermittently present in our region.

If you smell smoke or see ash fall:
Air District officials recommend that if you smell smoke or see ash, take precautions, and use common sense to reduce your exposure to smoke. All adults and children should:

- Head indoors and remain indoors, if possible
- Avoid strenuous outdoor activity
- Close all windows and doors that lead outside to prevent bringing additional smoke inside

These precautions are especially important for sensitive groups, including children, older adults, and people with existing respiratory illness and heart conditions, as they are particularly vulnerable to the health effects of poor air quality. Families with small children should be aware that even if adults in the household have no symptoms, children may experience symptoms due to their smaller body mass and developing lungs. If smoke increases, healthy people could be affected as well. If you experience a cough, shortness of breath, wheezing, exhaustion, light-headedness or chest pain, stop any outdoor activity immediately and seek medical attention. More information can be found at slocleanair.org/air-quality/wildfire.

Face Coverings During Wildfires:
Cloth masks will not adequately protect you from inhaling wildfire smoke. During the COVID-19 pandemic, cloth masks are encouraged to protect others from the liquid droplets that are expelled when we speak, cough or sneeze from going into the air. Residual spray when you speak produces larger droplets than the $PM_{2.5}$ particles produced during wildfire events.

Due to COVID-19, N95 masks are in short supply and should be reserved for frontline workers as much as possible. That is why, to the extent possible, people should stay indoors when wildfire smoke is present as opposed to wearing an N95 mask or a cloth face covering.

For updates:
APCD and County officials will continue to closely monitor smoke impacts and air quality in San Luis Obispo County. By following the air quality index (AQI), the public can also monitor real-time air quality throughout SLO County. The AQI focuses on health effects individuals may experience within a few hours or days after breathing polluted air. The current and forecasted AQI is available via the APCD website: slocleanair.org and you can also follow the SLO County APCD and Public Health Department Twitter feeds for the latest updates (@slocleanair and @SLOPublicHealth). You can also sign up for AirAware alerts right on your phone by visiting our website at SLOCleanAir.org.

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Air Pollution Control District
San Luis Obispo County

FOR IMMEDIATE RELEASE: August 21, 2020

Contact: **Meghan Field, 805-781-5912**
SLO County Air Pollution Control District

Dr. Penny Borenstein, 805-781-5500
SLO County Public Health Department

AIR QUALITY ALERT – DUE TO SMOKE APCD RECOMMENDS ALL NON-EMERGENCY OUTDOOR WORK IN NORTH COUNTY BE POSTPONED UNTIL AIR QUALITY CONDITIONS IMPROVE

SAN LUIS OBISPO, CALIFORNIA, – As record-breaking levels of smoke continue to impact San Luis Obispo County, the San Luis Obispo (SLO) County Air Pollution Control District and Public Health Department are strongly recommending that all non-emergency outdoor work in the North County be postponed until air quality conditions improve.

Currently, the air quality in Paso Robles, Atascadero, and other North County locations is in the Hazardous range, and it is forecast to remain Hazardous today and to be Unhealthy tomorrow. The SLO County APCD does not have the authority to issue mandatory orders, but we strongly recommend that outdoor activities in these areas stop until air quality improves.

Outdoor work in any area where the Air Quality Index (AQI) exceeds 150 should stop. People can check the AQI at the District's website, https://www.slocleanair.org, or on https://www.airnow.gov. On the map at AirNow.gov, areas with AQI above 150 will be colored red, purple, or brown. Currently, this includes all of North County. In these areas, we strongly recommend that restaurants close or switch to take-out only, and that outdoor agricultural and construction work stop. Outdoor recreation should also be postponed until conditions improve. Outdoor work should be postponed until the AQI is 150 or less, which corresponds to Good, Moderate, or Unhealthy for Sensitive Group (Green, Yellow, or Orange on the Airnow.gov map.)

CalOSHA regulation 5141.1 may apply to most workers exposed to wildfire smoke, including people working outdoors and those working indoors but with open doors, bays, or windows. Employers and employees are encouraged to check CalOSHA's website at https://www.dir.ca.gov/dosh/wildfire/Worker-Protection-from-Wildfire-Smoke.html for details. Note that this is not an APCD regulation and we do not have authority to enforce it.

For updates:
SLO County APCD and County officials will continue to closely monitor smoke impacts and air quality in San Luis Obispo County. By following the Air Quality Index, the public can also monitor real-time air quality throughout SLO County. The AQI focuses on health effects individuals may experience within a few hours or days after breathing polluted air. The current and forecasted AQI is available via the APCD website: slocleanair.org and you can also follow the SLO County APCD and Public Health Department Twitter feeds for the latest updates (@slocleanair and @SLOPublicHealth). You can also sign up for AirAware alerts right on your phone by visiting our website at SLOCleanAir.org.

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2. Ventura County (Simi Valley)

VCAPCD Air Quality Alert for Wildfire Smoke for August 18-19, 2020

The Holser Fire started during the afternoon of Monday, August 17th, 2020 in Piru. As of 9am, it has now burned 3000 acres and is 20% contained. The overnight offshore winds allowed smoke to travel into the Santa Clara River Valley affecting the surrounding areas including Fillmore and Santa Paula. The late morning/afternoon onshore winds will push smoke back towards Piru. This same pattern is expected to continue tonight into tomorrow.

Please keep in mind that wildfire smoke concentrations can vary hour by hour and change frequently. Forecast AQI colors are meant to be as representative as possible for the 24-hr day. At times, air quality is likely to be better or worse than is indicated for the full day.

Air quality should be considered unhealthy in areas directly impacted by smoke. If you are in an area directly impacted by smoke, please exercise extreme caution and avoid vigorous outdoor or indoor exertion. People with respiratory or heart disease, the elderly, and children should remain indoors. Run your air conditioner if you have one. Keep the filter clean and fresh air intake closed. Close all windows and doors that lead outside to prevent bringing additional smoke inside. If this is not an option or it becomes extremely hot inside, please seek alternate shelter.

For information regarding the fire, evacuation notices, road closures...etc...please check https://www.vcemergency.com/ or the Twitter feed for the Ventura County Fire Department Public Information Officer, @vcfd_pio. Please check our website, vcapcd.org, or our Twitter feed for the latest air quality updates (@vcapcd). Thank you.

VCAPCD Air Quality Alert for Wildfire Smoke
for Friday thru Monday, August 21-24, 2020

Ventura County APCD is issuing an Air Quality Alert for wildfire smoke throughout Ventura County due to the smoke from numerous fires burning in California; predominantly in Northern California.

The smoke from these fires is currently sitting north and west of Ventura and is now entering and encompassing all of Ventura County. During these conditions, the air quality can be unhealthful.

This air quality alert will expire Monday, August 24, 2020 at 8AM PDT.

Please keep in mind that wildfire smoke concentrations can vary hour by hour and change frequently. Forecast AQI colors are meant to be as representative as possible for the 24-hr day. At times, air quality is likely to be better or worse than is indicated for the full day.

Air quality should be considered unhealthy in areas directly impacted by smoke. If you are in an area directly impacted by smoke, please exercise extreme caution and avoid vigorous outdoor or indoor exertion. People with respiratory or heart disease, the elderly, and children should remain indoors. Run your air conditioner if you have one. Keep the filter clean and fresh air intake closed. Close all windows and doors that lead outside to prevent bringing additional smoke inside. If this is not an option or it becomes extremely hot inside, please seek alternate shelter.

For additional information, call the Ventura County Air Pollution Control District at 805.662.6960 (Monday-Friday), visit vcapcd.org, or follow VCAPCD on Twitter (@vcapcd) for the latest air quality updates. Thank you.

VCAPCD·Air·Quality·Alert·for·Wildfire·Smoke·and·Ozone·for↵ Saturday·thru·Monday,·October·3-5,·2020¶

VCAPCD·is·issuing·an·Air·Quality·Alert·for·wildfire·smoke·throughout·Ventura·County·predominately·due·to·the·smoke·from·multiple·fires·in·Southern·California.··Calm·winds·overnight·allowed·smoke·concentrations·to·remain·elevated·through·this·morning.··Afternoon·onshore·winds·will·help·to·disperse·the·smoke·throughout·the·day.··This·pattern·is·expected·to·continue·thru·the·weekend.··This·Air·Quality·Alert·for·wildfire·smoke·is·in·effect·until·8AM,·Monday,·October·5,·2020.¶

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VCAPCD·is·also·issuing·an·Air·Quality·Alert·for·ozone·throughout·Ventura·County.··Ozone·is·expected·to·be·elevated·today·in·the·UNHEALTHY·FOR·SENSITIVE·GROUPS·throughout·the·county,·with·possible·UNHEALTHY·levels·being·reached·in·areas·of·the·county.··High·levels·of·ozone·are·expected·to·improve·thru·the·weekend.··This·Air·Quality·Alert·for·ozone·is·in·effect·until·8AM,·Monday,·October·5,·2020.¶

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Please·keep·in·mind·that·wildfire·smoke·concentrations·can·vary·hour·by·hour·and·change·frequently.·Forecast·AQI·colors·are·meant·to·be·as·representative·as·possible·for·the·24-hr·day.·At·times,·air·quality·is·likely·to·be·better·or·worse·than·is·indicated·for·the·full·day.¶

¶

Air·quality·should·be·considered·unhealthy·in·areas·directly·impacted·by·smoke.·If·you·are·in·an·area·directly·impacted·by·smoke,·please·exercise·extreme·caution·and·avoid·vigorous·outdoor·or·indoor·exertion.·People·with·respiratory·or·heart·disease,·the·elderly,·and·children·should·remain·indoors.·Run·your·air·conditioner·if·you·have·one.·Keep·the·filter·clean·and·fresh·air·intake·closed.·Close·all·windows·and·doors·that·lead·outside·to·prevent·bringing·additional·smoke·inside.·If·this·is·not·an·option·or·it·becomes·extremely·hot·inside,·please·seek·alternate·shelter.¶

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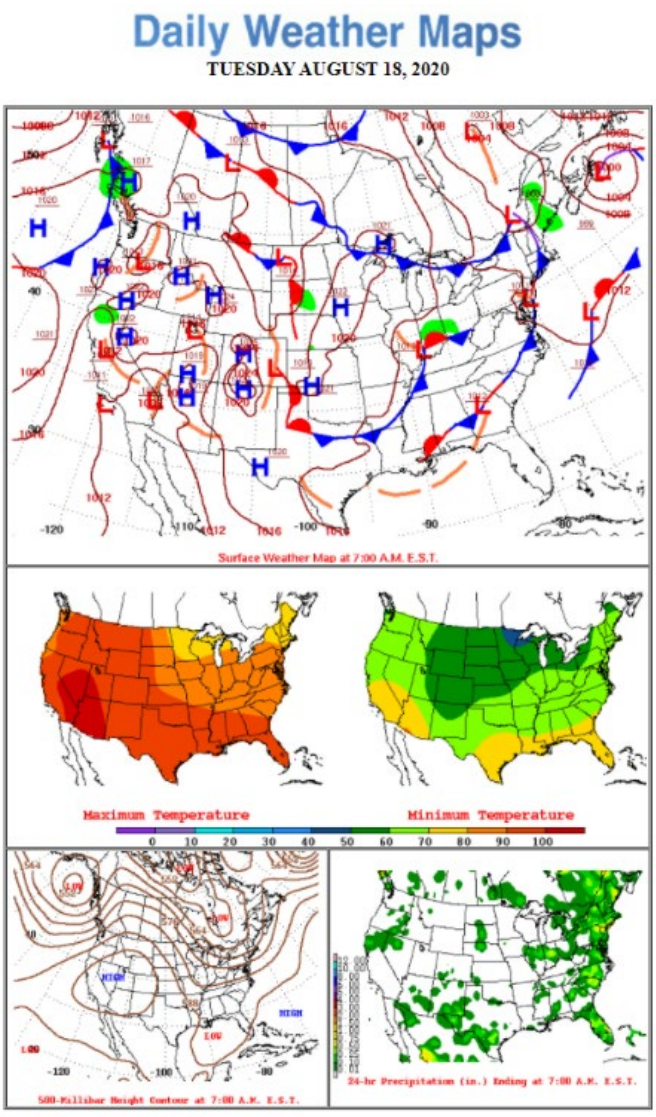
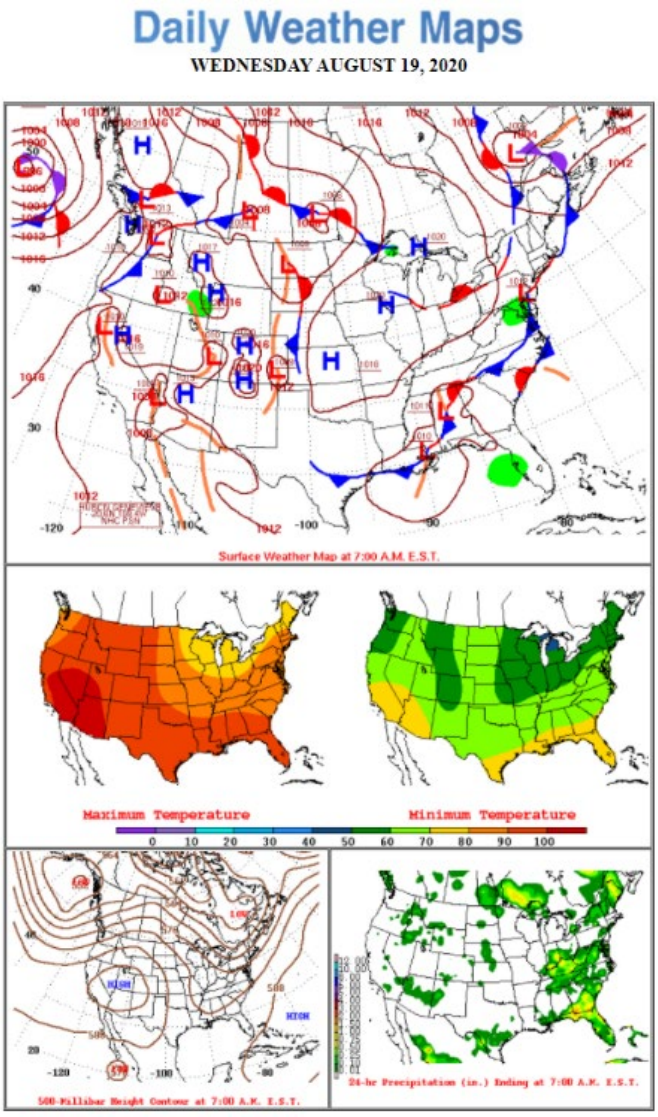
For·additional·information,·call·the·Ventura·County·Air·Pollution·Control·District·at·805.662.6960·(Monday-Friday),·visit·vcapcd.org,·or·follow·VCAPCD·on·Twitter·(@vcapcd)·for·the·latest·air·quality·updates.·Thank·you.¶

C. Meteorological Information

1. NWS Daily Maps

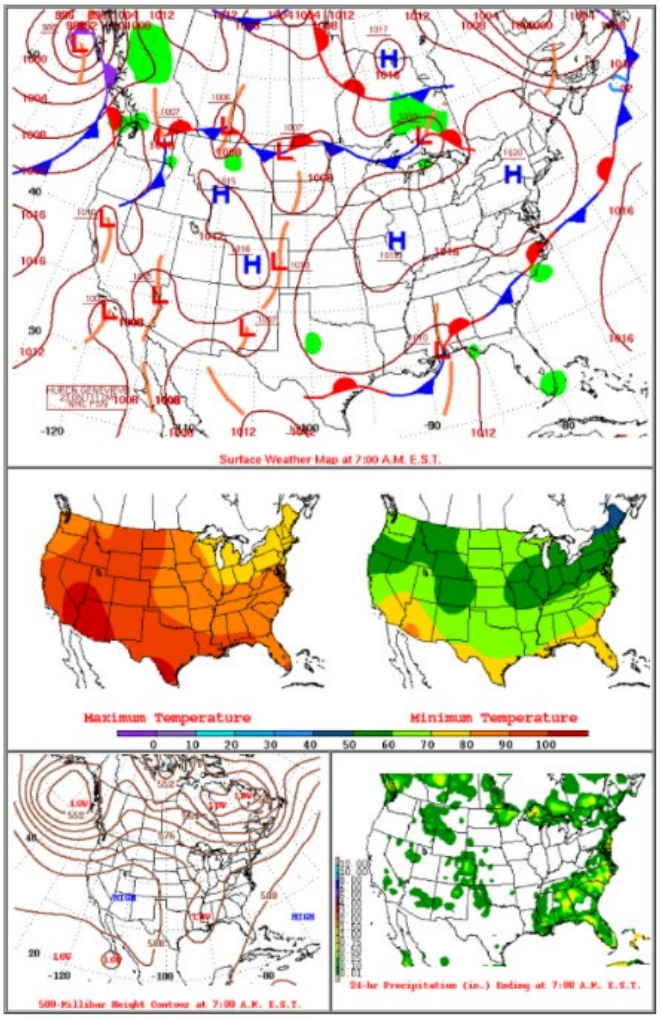
a) August 18 – August 21, 2020





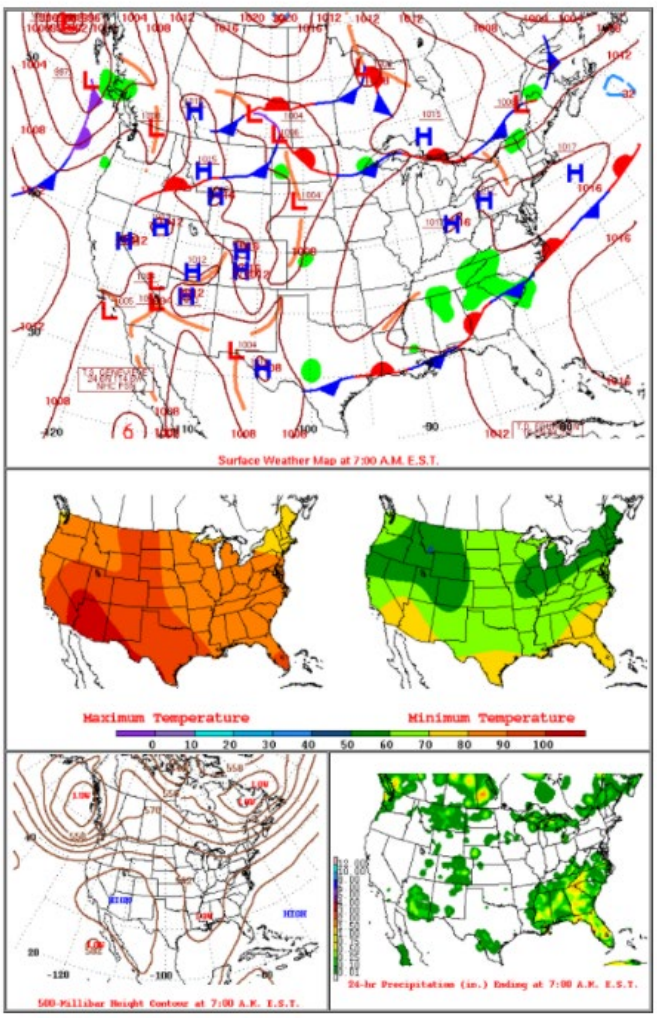
Daily Weather Maps

THURSDAY AUGUST 20, 2020

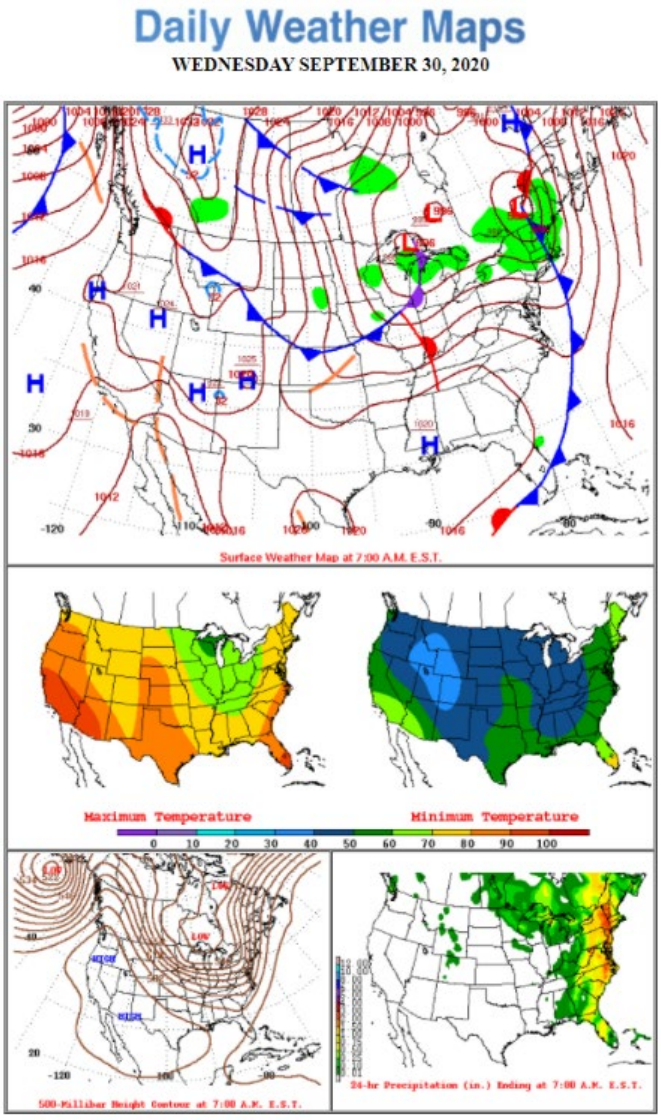


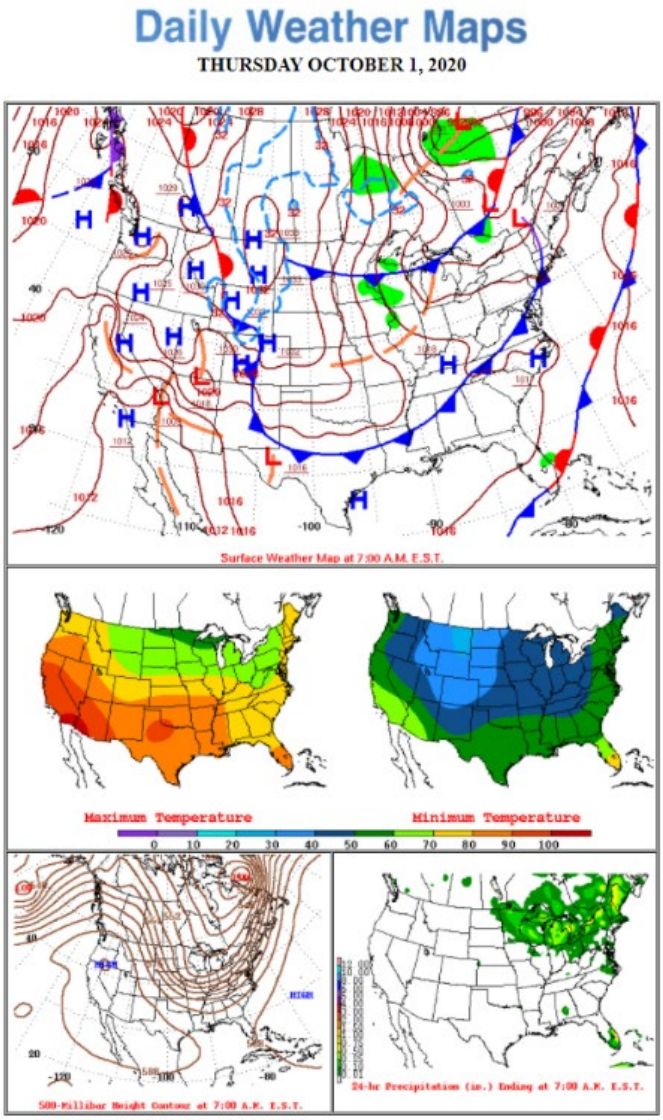
Daily Weather Maps

FRIDAY AUGUST 21, 2020



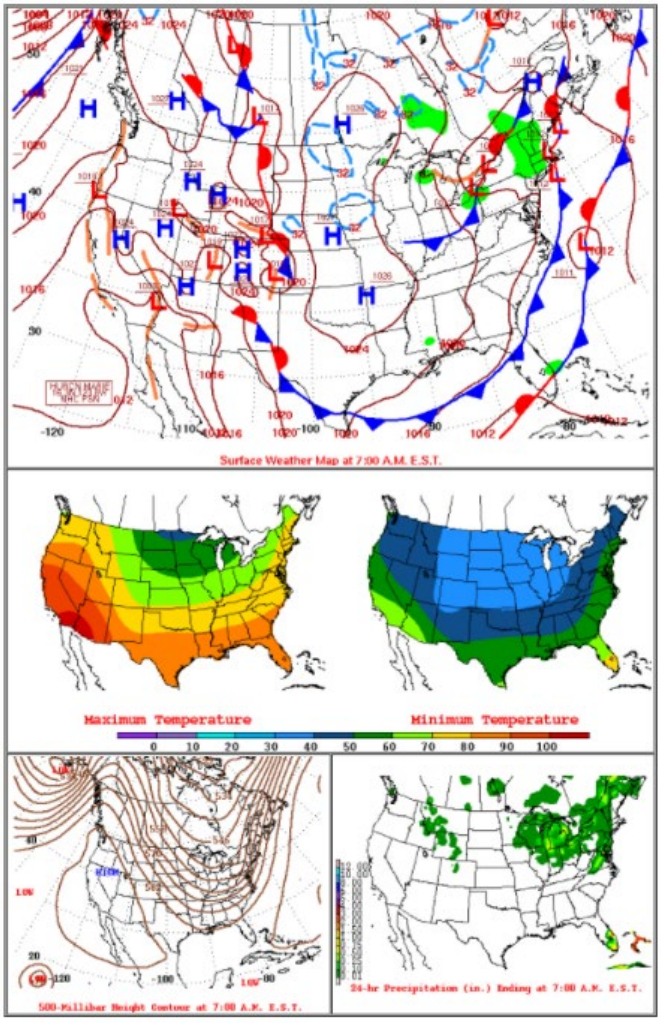
b) September 30 – October 4, 2020





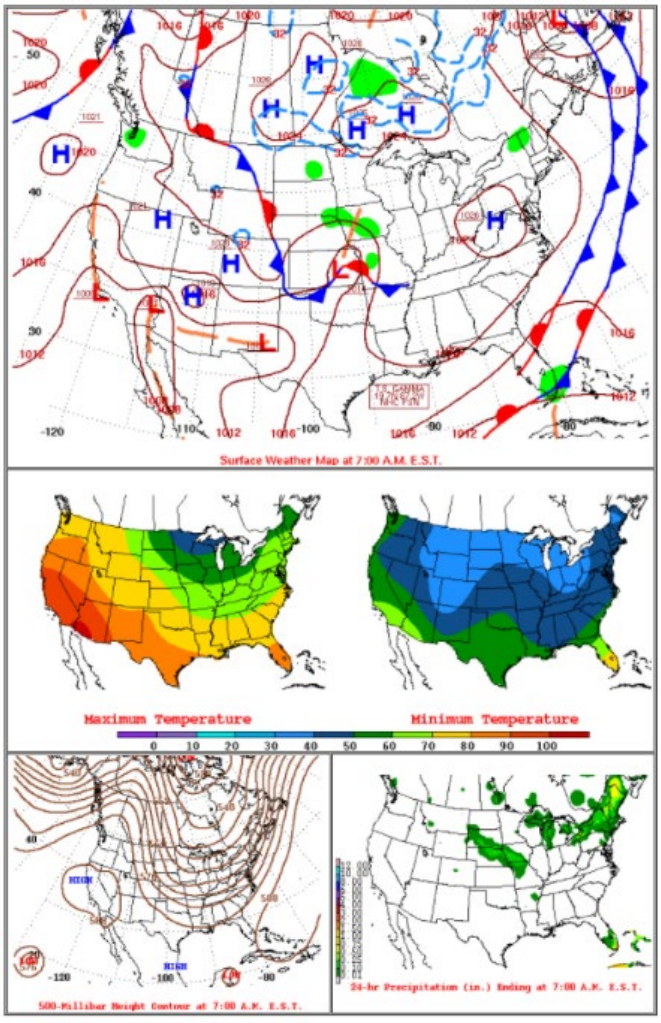
Daily Weather Maps

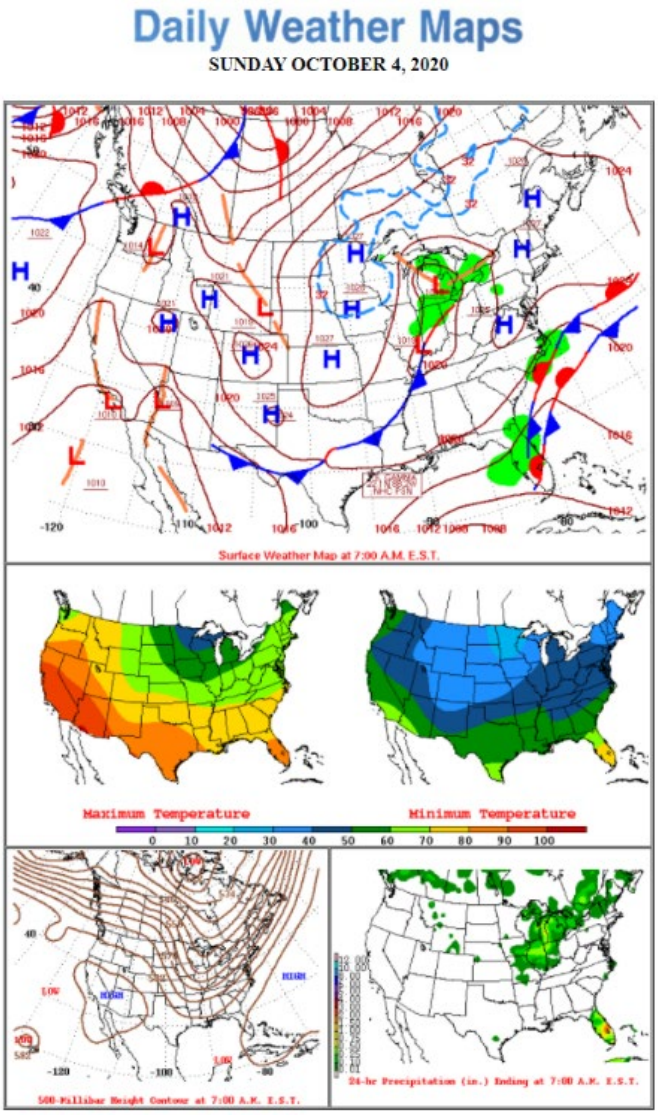
FRIDAY OCTOBER 2, 2020



Daily Weather Maps

SATURDAY OCTOBER 3, 2020





2. NWS Area Forecast Discussions

Excerpts from pertinent NWS Area Forecast Discussions (AFDs) by the Los Angeles/Oxnard (LOX) Office are presented below, with discussions of the thunderstorms which led to wildfires, smoke impacts, and deteriorating air quality. Sections specifically discussing San Luis Obispo and/or Ventura Counties are highlighted. Airports near the Red Hills monitor are KPRB (Paso Robles Municipal Airport, 40 miles southwest) and KPRB (Paso Robles Municipal Airport, 20 miles west). Airports near the Simi Valley monitor include KSZP (Santa Paula Airport, 20 miles west-northwest) and KSMO (Santa Monica Airport, 25 miles southeast). The complete AFDs can be found on the Iowa State University Mesonet site.[97]

[97] Iowa State University, Mesonet, *NWS Text Products*, last accessed 11/10/21

a) August 18 to 22, 2020

365

FXUS66 KLOX 172106

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

206 PM PDT Mon Aug 17 2020

.SYNOPSIS...17/202 PM.

Very hot conditions will continue through the week with very warm nights, especially for valley and interior areas. Temperatures will cool only slightly later in the week and will remain above normal through early next week. There is a slight chance of thunderstorms through Wednesday mostly over the mountains and the Antelope Valley.

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.SHORT TERM (TDY-THU)...17/146 PM.

High pressure over Utah continues to dominate the weather, producing very hot temps in all areas except the immediate coast and allowing moisture from the southeast to move in and spawn afternoon and evening thunderstorms across the interior. Convection has been slow to develop again in LA/Ventura counties today but some small cells have popped up around Big Bear and we expect to see at least some convection this afternoon farther to the west as there is ample instability, as demonstrated by the impressive pyrocumulus plumes from both the Lake and Ranch2 fires this afternoon. And like the last couple days there is enough moisture to generate some brief periods of heavy rain that may linger long enough to cause some localized flooding.

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441

FXUS66 KLOX 190207

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

707 PM PDT Tue Aug 18 2020

Updated Aviation Section

.AVIATION...19/0205Z.

High confidence in VFR everywhere through Wednesday, except for possible periods of LIFR/IFR conditions 10-16Z at KOXR (40% chance) KSMO KLAX KLGB (20% chance). There is also a chance of random MVFR FU anywhere, but especially at KPRB KSBP KSMX from the fires near Monterey. TS possible again at KWJF KPMD Wednesday afternoon.

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FXUS66 KLOX 190525

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

1025 PM PDT Tue Aug 18 2020

.SHORT TERM (TUE-FRI)...18/1023 PM.

UPDATE

The thunderstorms that brought flooding, lots of lightning, and gusty winds have diminished for the most part this evening. There is a cluster of thunderstorms however, currently 60 miles to the east of Los Angeles County, that is holding together better than expected. Moving toward the west at 30 mph, this gives us about 2 hours to see how it evolves. As it stands, it is more likely that this will dissipate soon, but there is still a chance that we see a few showers and a thunderstorm or two tonight from it. This includes the urban areas of Los Angeles County. For tomorrow afternoon, the convective ingredients are not as good as today, but they are still really favorable for thunderstorms. Upped the chances some over the LA County mountains and deserts, and added slight chances to the Ventura County mountains. The other interesting wrinkle is the presence of smoke. A rather thick layer of smoke from the fires over Monterey County is covering much of SLO and SBA Counties with even some areas seeing very poor visibility. This could be an issue well into Wednesday.

Otherwise, the forecast is in good shape, with the long-term heat wave continuing. Wednesday should be cooler than Tuesday, but really just by the numbers as most will classify it as just hot. The one caveat to this is a healthy coastal eddy, which is already spinning up south of Point Conception, could result in a shallow marine layer returning with some additional cooling to the coastal valleys.

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FXUS66 KLOX 191559

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

859 AM PDT Wed Aug 19 2020

.SHORT TERM (TDY-FRI)...19/855 AM.

Another very hot day in store for southwestern CA today as the heat wave continues. The day has started out clear to partly cloudy with just some debris clouds from yesterday's convection passing over the area, and no low clouds. However, there were extensive areas of smoke over SLO/SBA Counties from the Central CA fires. The marine inversion was squashed to the surface this morning in all areas, and northerly flow over SLO/SBA County caused downsloping toward the coast with temps impressively in the low 90s to start the day around SLO City, the Los Osos area and in the hills of NW SLO County. Otherwise, temps were in the 70s and 80s for most areas early this morning. Temps will heat up to well over the century mark away from the coast today, altho some locations on the Central Coast should top 100 with that northerly flow. Just about the entire forecast area continues under an excessive heat warning today, and a couple of record high temps will be possible.

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.AVIATION...19/1213Z.

High confidence in all TAFs. However, there could be some HZ issues due to several fires across NoCal with smoke advecting south. There is a good chance that KPRB will remain under IFR/MVFR Visbys through much of the day.

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466

FXUS66 KLOX 191751

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

1051 AM PDT Wed Aug 19 2020

.SHORT TERM (TDY-FRI)...19/855 AM.

Another very hot day in store for southwestern CA today as the heat wave continues. The day has started out clear to partly cloudy with just some debris clouds from yesterday's convection passing over the area, and no low clouds. However, there were extensive areas of smoke over SLO/SBA Counties from the Central CA fires. The marine inversion was squashed to the surface this morning in all areas, and northerly flow over SLO/SBA County caused downsloping toward the coast with temps impressively in the low 90s to start the day around SLO City, the Los Osos area and in the hills of NW SLO County. Otherwise, temps were in

the 70s and 80s for most areas early this morning. Temps will heat up to well over the century mark away from the coast today, altho some locations on the Central Coast should top 100 with that northerly flow. Just about the entire forecast area continues under an excessive heat warning today, and a couple of record high temps will be possible.

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.AVIATION...19/1750Z.

High confidence in all TAFs. However, there could be some smoke issues due to several fires across NoCal with smoke advecting south. There is a good chance that KPRB will remain under IFR/MVFR Visbys through much of the day.

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841

FXUS66 KLOX 192351

AFDLOX

Area Forecast Discussion...UPDATED

National Weather Service Los Angeles/Oxnard CA

451 PM PDT Wed Aug 19 2020

.SHORT TERM (TDY-SAT)...19/232 PM.

Some thunderstorms with some heavy rain and small hail developed over the eastern San Gabriel Mtns early this afternoon, while cu buildups with a few showers were noted over the VTU County mtns thus far. Forecast instability parameters on the 12Z NAM were impressive for this afternoon, with surface- based LI's -7 to -8 over the mountains and deserts, K indices over 40, and MUCAPE 1500-1900 J/kg over the mtns. Scattered showers and thunderstorms should continue over the L.A. County mtns possibly into early this evening, and may develop by mid afternoon for the VTU County mtns and Antelope Vly foothills. With PWATs in the 1.25-1.50 range, there should be some heavy rain and the potential for localized flooding especially over the L.A. County mtns to the foothills of the Antelope Vly.

Otherwise, another very hot day for southwestern CA today as the heat wave continues. Mostly sunny skies covered much of the region altho areas of smoke from the northern CA fires covered a good portion of SLO/SBA Counties. Little change is expected the rest of the day. Temps will heat up to well over the century mark away from the coast this afternoon, and should be as high as 110-113 in the SLO Interior vlys and Antelope Vly, altho the smoke in SLO County could help to knock down temps some from expected highs. Just about the entire forecast area continues under an excessive heat warning today, and a couple of record high temps will be possible.

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.AVIATION...19/2348Z.

At 2300Z at KLAX, there was a 1000 ft marine layer at KLAX. The top of the marine layer was near 2800 ft with a temperature of 31 degrees Celsius.

Moderate to high confidence in the 00Z TAFs. High confidence in VFR conditions for most sites, but moderate confidence north of Point Conception due to reduced visibility in smoke.

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FXUS66 KLOX 200541

AFDLOX

Area Forecast Discussion...UPDATED

National Weather Service Los Angeles/Oxnard CA

1041 PM PDT Wed Aug 19 2020

.SHORT TERM (WED-SAT)...19/830 PM.

UPDATE

Thunderstorms that brought gusty winds and frequent lightning to the eastern San Gabriel mountains and the Antelope Valley this afternoon ended early this evening and skies have cleared nicely. With a very shallow marine layer from the strong upper high and weak northerly gradients, only expecting minimal low clouds tonight. Smoke will likely continue drifting over SLO and SBA Counties and possibly farther south from the fires over Monterey County which may lead to poor visibility in some places. This will likely continue through Thursday. Overnight temperatures will remain quite warm, with lows only dropping into the upper 60s to low 70s.

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.AVIATION...20/0540Z.

Moderate to high confidence in the TAFs. High confidence in all TAFs except for KPRB, KSBP and KSMX due to variable visibility from smoke and occasional cigs from smoke layers.

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920

FXUS66 KLOX 201549

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

849 AM PDT Thu Aug 20 2020

.SHORT TERM (TDY-SAT)...20/846 AM.

UPDATE

The heat-inducing upper level high remains parked over the southwest, with very weak onshore flow. Excessive heat will continue today and tomorrow. Will likely be extending our heat warning and advisory products (see LAXNPWLOX) through Friday for some or most areas. Look for that update later this morning. All the convective ingredients are down today compared to yesterday, but there is still enough instability and moisture aloft to warrant a slight chance of afternoon thunderstorms today for at least the San Gabriel Mountains and adjacent Antelope Valley hills. Smokey conditions will continue today, especially over SLO and SBA Counties, as northerly flow aloft carries the smoke from fires around Monterey toward us. There is some hope for improvement later tomorrow or Saturday as the northerly flow weakens turns more southerly. That northerly flow will generate gusty north to northeast winds over wind prone areas tonight, like SBA County, the Tejon Pass, and the SLO County Mountains. May need an advisory for SBA County, but looks just under at this point. Also seeing some patches of dense fog off the Coast of LA/Ventura/SBA Counties this morning, which might be a sign of more to come.

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.AVIATION...20/1205Z.

Moderate to high confidence in 12Z TAFs. High confidence in all TAFs except for KPRB, KSBP and KSMX due to variable visibility from smoke and occasional cigs from smoke layers. Also 40% chance for IFR CIGs between 12z-16z.

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139

FXUS66 KLOX 202042

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

142 PM PDT Thu Aug 20 2020

.SYNOPSIS...20/1222 PM.

Excessively hot conditions will continue through Friday, with areas of smoke and coastal dense fog. Cooler but still warmer than usual this weekend through most of next week. Afternoon thunderstorms possible in some mountains and interior valleys, especially over the weekend when flash flooding threats exist.

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.SHORT TERM (TDY-SUN)...20/132 PM.

The upper level high that brought all the heat this week remains parked over the southwest, with very weak onshore flow at the surface. The high will weaken some more on Friday, but the onshore flow will be even weaker, and so the Excessive heat will continue for one more day through Friday. Expect daytime highs and overnight lows to be similar to a couple of degrees lower than today. Extended all the Heat Warnings and Advisories over Los Angeles and Ventura Counties as a result. The picture is more challenging to the north. Abundant amounts of smoke from around Monterey continues to stream into SLO and SBA Counties, which has minimized sunlight and kept temperatures much less than expected.

Being closest to the fires, this effect is most pronounced over SLO County, and therefore dropped all heat products. SBA County is also affected, but to a lesser degree, so downgraded the heat warnings to heat advisories and extended them into Friday. The smoke itself is really affecting air quality, but there is some hope of relief on Saturday when the lower level winds reverse from northerly to southerly. There is a large patch of dense fog off the LA Coast, which could affect the beaches tonight, but should not get too far inland with the hot conditions and weakening onshore flow. Seeing a few benign cumulus clouds over the LA Mountains which should stay benign, but cannot completely rule out one growing into a thunderstorm in the next few hours. Similar story expected on Friday.

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.AVIATION...20/1839Z.

Overall... Moderate to high confidence in the current TAFs. KPRB, KSBP, and KSMX have reduced confidence due to LIFR/IFR CIGs and variable VSBY from smoke and smoke layers. Ventura and Los Angeles coastal terminals have a fifteen percent chance of a marine intrusion 08z-17z. Other terminals also have a chance of occasional reduced VSBY due to smoke. Otherwise and elsewhere, VFR conditions will prevail.

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282

FXUS66 KLOX 202119

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

219 PM PDT Thu Aug 20 2020

.SYNOPSIS...20/1222 PM.

Excessively hot conditions will continue through Friday, with areas of smoke and coastal dense fog. Cooler but still warmer than usual this weekend through most of next week. Afternoon thunderstorms possible in some mountains and interior valleys, especially over the weekend when flash flooding threats exist.

&&

.AVIATION...20/1839Z.

Overall... Moderate to high confidence in the current TAFs. KPRB, KSBP, and KSMX have reduced confidence due to LIFR/IFR CIGs and variable VSBY from smoke and smoke layers. Ventura and Los Angeles coastal terminals have a fifteen percent chance of a marine intrusion 08z-17z. Other terminals also have a chance of occasional reduced VSBY due to smoke. Otherwise and elsewhere, VFR conditions will prevail.

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531

FXUS66 KLOX 202240

AFDLOX

Area Forecast Discussion...UPDATED

National Weather Service Los Angeles/Oxnard CA

340 PM PDT Thu Aug 20 2020

.SYNOPSIS...20/332 PM.

Excessively hot conditions will continue through Friday, with areas of smoke and dense fog over portions of the coastal waters. It will cool some this weekend into next week, but will temperatures will remain above normal. Afternoon thunderstorms will be possible in some mountains and interior valleys, especially over the weekend, with a threat of flash flooding in stronger storms.

.AVIATION...20/1839Z.

Overall... Moderate to high confidence in the current TAFs. KPRB, KSBP, and KSMX have reduced confidence due to LIFR/IFR CIGs and variable VSBY from smoke and smoke layers. Ventura and Los Angeles coastal terminals have a fifteen percent chance of a marine intrusion 08z-17z. Other terminals also have a chance of occasional reduced VSBY due to smoke. Otherwise and elsewhere, VFR conditions will prevail.

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236

FXUS66 KLOX 210050

AFDLOX

Area Forecast Discussion...UPDATED

National Weather Service Los Angeles/Oxnard CA

550 PM PDT Thu Aug 20 2020

.SYNOPSIS...20/332 PM.

Excessively hot conditions will continue through Friday, with areas of smoke and dense fog over portions of the coastal waters. It will cool some this weekend into next week, but will temperatures will remain above normal. Afternoon thunderstorms will be possible in some mountains and interior valleys, especially over the weekend, with a threat of flash flooding in stronger storms.

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.AVIATION...21/0048Z.

Overall... Moderate to high confidence in the current TAFs with the exception of KPRB, KSBP, KSMX, and KSBA where there is low confidence. VSBY from smoke and cigs from smoke layers for these sites will likely fluctuate between LIFR and MVFR. For KLAX, KLGB, and KSMO, there is a 20 percent chance of marine layer clouds, and there is a 10 percent chance for KOXR from 08Z to 17Z. If cigs do form, there is a 60% chance they will be IFR. All terminals without FU have a chance of occasional reduced VSBY due to smoke.

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791

FXUS66 KLOX 210303

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

803 PM PDT Thu Aug 20 2020

.SYNOPSIS...20/802 PM.

Excessively hot conditions will continue through Friday, along with areas of smoke. Dense fog will affect portions of the coastal waters. It will cool some this weekend into next week, but temperatures will remain above normal. Afternoon thunderstorms will be possible in some mountains and interior valleys, over the weekend, with a threat of flash flooding in stronger storms.

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.SHORT TERM (THU-SUN)...20/800 PM.

UPDATE

The main issue for the overnight period is the abundant smoke streaming over the area from the north, originating from the wildfires in Monterey County. The smoke has been affecting areas north of Point Conception for the past couple of days, but now has moved over Ventura, and to a lesser degree over LA County this evening. This will have adverse effects on air quality for many areas, but will also keep daytime high temperatures lower than they would be otherwise. Tonight's lows are forecast to be a few degrees cooler than last night, but the smoke may trap some heat near the surface, offsetting the cooling effect.

Meanwhile, the large upper high remains over the Four Corners area, and will weaken only slightly on Friday and a bit more into the weekend. Temperatures will diminish 2-3 degrees compared to today's highs, but still expect excessive heat over interior Ventura and LA Counties, with advisory level heat over interior SBA County and the LA Coast. Expect to see plenty of highs in the upper 90s to 105 for interior areas, and up to 108 in the AV.

Low clouds off the LA Coast could push onshore a short distance, tonight, aided by a weak eddy spinning up overnight. But for the most part, clear/smoky skies are likely across the area tonight and Friday.

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581

FXUS66 KLOX 211024

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

324 AM PDT Fri Aug 21 2020

.SYNOPSIS...21/240 AM.

Dangerously hot conditions will continue today. There will also be areas of smoke over much of the area. A cooling trend will start today and accelerate over the weekend, but temperatures will remain above normal. During the weekend there will be a slight chance of of afternoon thunderstorms over the mountains and interior valleys.

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.SHORT TERM (TDY-SUN)...21/323 AM.

It will also be another smoky hazy day as smoke from the fires in MRY county merge with smoke from the local fires.

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.AVIATION...21/0617Z.

Low confidence in KPRB, KSBP, KSMX and KSBA due to highly variable VIS due to smoke. Also there will be FU layers between 025 and 050. KSBA may also have LIFR cig/vis due to stratus 07Z-15Z.

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624

FXUS66 KLOX 211603

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

903 AM PDT Fri Aug 21 2020

.SYNOPSIS...21/900 AM.

Dangerously hot conditions, areas of smoke, and dense fog will continue today. A cooling trend will accelerate over the weekend, but temperatures will remain near to just above normal. Remnant moisture from Hurricane Genevieve will increase the threat of thunderstorms anywhere and flooding in the mountains and deserts. Fairly benign weather expected Monday through Wednesday.

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.SHORT TERM (TDY-SUN)...21/849 AM.

UPDATE

All sort of things going on today. First off, today should be a touch cooler as the high aloft weakens, but it still will be hot. The Heat warnings and advisories will continue today, and all look good to finally expire this evening with significant cooling still expected on Saturday. Secondly, a shallow marine layer has expanded over all coastal areas, with dense fog affecting coastal areas of all four counties. This fog could linger into the afternoon hours. Thirdly, smoke continues to impact most areas from the fires around Monterey, but especially SLO and SBA Counties where visibilities are down near 1/2 mile in some places. Fortunately a wind shift is still expected by later tomorrow which should improve this greatly. Lastly, the left overs of Hurricane Genevieve is moving up a little faster than previously expected, with the fringes hitting the San Gabriel Mountains by later this afternoon. Added a slight chance of thunderstorms as a result. Still concerned about thunderstorm chances tonight through Sunday and the potential for Flash Flooding over the weekend. Items on the table to figure out today include: 1) The need for a Flash Flood Watch for most mountains and far interior valleys for the weekend 2) Whether or not to include thunderstorms in the forecast for all areas (including coasts and valleys) tonight and Saturday Night. At first glance, leaning towards yes to both of those questions, but will assess more today before making any changes for the afternoon forecast package.

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.AVIATION...21/1044Z.

Low confidence in the current forecast. There is chance of IFR to MVFR conditions in smoke, mainly for terminals north of KSMO. There could also be MVFR to VFR conditions with smoke layers below 5000 feet. There is a chance of LIFR to IFR conditions in low clouds for coastal terminals through 17Z. Higher confidence in VFR conditions after 17Z, except for linger smoke restrictions.

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042

FXUS66 KLOX 211831

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

1131 AM PDT Fri Aug 21 2020

.SYNOPSIS...21/900 AM.

Dangerously hot conditions, areas of smoke, and dense fog will continue today. A cooling trend will accelerate over the weekend, but temperatures will remain near to just above normal. Remnant moisture from Hurricane Genevieve will increase the threat of thunderstorms anywhere and flooding in the mountains and deserts. Fairly benign weather expected Monday through Wednesday.

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.SHORT TERM (TDY-SUN)...21/849 AM.

UPDATE

All sort of things going on today. First off, today should be a touch cooler as the high aloft weakens, but it still will be hot. The Heat warnings and advisories will continue today, and all look good to finally expire this evening with significant cooling still expected on Saturday. Secondly, a shallow marine layer has expanded over all coastal areas, with dense fog affecting coastal areas of all four counties. This fog could linger into the afternoon hours. Thirdly, smoke continues to impact most areas from the fires around Monterey, but especially SLO and SBA Counties where visibilities are down near 1/2 mile in some places. Fortunately a wind shift is still expected by later tomorrow which should improve this greatly. Lastly, the left overs of Hurricane Genevieve is moving up a little faster than previously expected, with the fringes hitting the San Gabriel Mountains by later this afternoon. Added a slight chance of thunderstorms as a result. Still concerned about thunderstorm chances tonight through Sunday and the potential for Flash Flooding over the weekend. Items on the table to figure

out today include: 1) The need for a Flash Flood Watch for most mountains and far interior valleys for the weekend 2) Whether or not to include thunderstorms in the forecast for all areas (including coasts and valleys) tonight and Saturday Night. At first glance, leaning towards yes to both of those questions, but will assess more today before making any changes for the afternoon forecast package.

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711

FXUS66 KLOX 212206

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

306 PM PDT Fri Aug 21 2020

.SHORT TERM (TDY-MON)...21/305 PM.

The upper level high that brought all the heat this week will continue to weaken into Saturday, while onshore returns to normal. This will maintain above normal temperatures into Monday, but much cooler than Thursday and Friday. The current suite of Heat Warnings and Advisories will be allowed to end this evening on time, with no plans on extending them. Dense fog near the coast, will impact the coastal areas tonight, but not sure how it will all evolve with the high clouds moving in. Smokey air will continue to impact most areas tonight, but expecting big improvements this weekend as the winds carrying that smoke from Monterey shift 180 degrees.

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.AVIATION...21/1827Z.

Low confidence in the current forecast. There is chance of IFR to MVFR conditions in smoke, mainly for terminals north of KSMO. There could also be MVFR to VFR conditions with smoke layers below 5000 feet. The marine layer returned to the coast this morning, however its influence will be cut back in coverage tonight south of Point Conception. The south coast of Santa Barbara County and coastal LA county have the best chance of seeing brief periods of low ceilings.

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215

FXUS66 KLOX 220115

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

615 PM PDT Fri Aug 21 2020

.AVIATION...22/0113Z.

Low confidence for coastal TAF sites from 05z-16z in respect to LIFR/IFR CIGs due to stratus. Moderate confidence for all TAF sites N of Ventura County with MVFR to VFR smoke layer below 5000 ft through 18z, then affect areas N of Pt. Conception after that. There will be a slight chance of thunderstorms across the Antelope Valley after 18z Sat which could bring moderate UDDF and LLWS in and around thunderstorms if they develop between 18z-03z

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226

FXUS66 KLOX 220411

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

911 PM PDT Fri Aug 21 2020

.SHORT TERM (FRI-MON)...21/906 PM.

The remnants of former Hurricane Genevieve are moving into Southwest California tonight in the form of mid and high level clouds. Patchy dense fog could impact portions of the coast as well, but the coverage of this dense fog will be in question due to the extent of the upper level clouds. Smokey air will continue to impact most areas tonight, especially across San Luis Obispo and Santa Barbara counties. Expecting improvements in the smokey conditions across our forecast area over the weekend as the southeast monsoon flow strengthens.

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.AVIATION...22/0113Z.

Low confidence for coastal TAF sites from 05z-16z in respect to LIFR/IFR CIGs due to stratus. Moderate confidence for all TAF sites N of Ventura County with MVFR to VFR smoke layer below 5000 ft through 18z, then affect areas N of Pt. Conception after that.

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327

FXUS66 KLOX 221028

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

328 AM PDT Sat Aug 22 2020

.SHORT TERM (TDY-MON)...22/321 AM.

Mid and high level clouds along with an increase in humidity courtesy of former Hurricane Genevieve have kept many areas low temps in the mid 70s to lower 80s. Fortunately the clouds, lower hgts and an increase in onshore flow will bring 3 to 6 degrees of cooling to all areas save for the Central Coast where downsloping winds will warm max temps 2 to 4 degrees. While these conditions are just a little under heat advisory criteria people should still take it easy in the heat and humidity today.

Otherwise its going to be a very chaotic weather day as the remnants of former Hurricane Genevieve interact with the large amount of smoke generated by the areas fires and a shallow marine layer. The worst of the smoky conditions will be over SLO and most of SBA counties. With the mid level clouds interacting low clouds and smoke layers have to call the character of the day: partly to mostly cloudy.

The one bit of good news is that smokey conditions should improve across the area as the southeast monsoon flow strengthens.

The biggest question mark for today is the chc of TSTMs. Moisture will not be a problem as 850 MB dewpoints will rise about 12 degrees and PWATS climb to near 1.6 inches.

Expecting improvements in the smokey conditions across our forecast area over the weekend as the southeast monsoon flow strengthens.

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454

FXUS66 KLOX 221630

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

930 AM PDT Sat Aug 22 2020

.AVIATION...22/1015Z.

Low confidence in the current forecast. There is a chance of LIFR to IFR conditions at coastal terminals in low clouds and fog through 16Z. There is a chance of IFR to MVFR conditions in smoke through the period. There is a slight chance of thunderstorms after 12Z.

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817

FXUS66 KLOX 221731

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

1031 AM PDT Sat Aug 22 2020

.AVIATION...22/1731Z.

Low confidence in the current forecast. There is a chance of IFR to MVFR conditions in smoke through the period. There is a slight chance of thunderstorms after 18Z-19z, mainly in the mountains and deserts.

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546

FXUS66 KLOX 222113

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

213 PM PDT Sat Aug 22 2020

.SHORT TERM (TDY-TUE)...22/202 PM.

Mid-level clouds were moving into SBA/SLO Counties early this afternoon. Radar was showing showers with these clouds but still not much was reaching the ground. This band of clouds will move off to the NW and thru SBA/SLO Counties thru this afternoon. Otherwise mostly sunny skies with haze or smoke will persist.

.AVIATION...22/1731Z.

Low confidence in the current forecast. There is a chance of IFR to MVFR conditions in smoke through the period. There is a slight chance of thunderstorms after 18Z-19z, mainly in the mountains and deserts.

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101

FXUS66 KLOX 230019

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

519 PM PDT Sat Aug 22 2020

.AVIATION...23/0017Z.

Low confidence in 00z TAFs in respect to stratus, the potential for showers and thunderstorms across the forecast area through 18z Sunday. Better confidence for thunderstorms Sunday between 18z- 03z Mon. Moderate confidence in smoke layer forecast as southerly winds should steer much of the smoke to the north of the forecast area through Sunday. There still could be some MVFR Vsbys at some locations N of Point Conception overnight.

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b) September 28 to October 4, 2020

797

FXUS66 KLOX 290545

AFDLOX

Area Forecast Discussion...UPDATED

National Weather Service Los Angeles/Oxnard CA

1045 PM PDT Mon Sep 28 2020

updated aviation discussion

.SHORT TERM (MON-THU)...28/834 PM.

A strong upper level ridge of high pressure across the west coast combined with weak offshore flow during the night and morning hours will bring a long duration heat wave across the region through at least Friday. The gusty Santa Ana winds that affected the interior areas earlier today brought dramatic warming and drying to those areas, with some valley locations climbing to over 100 degrees. The gusty Santa Ana winds and very low humidities brought critical Red Flag Warning conditions to the LA/Ventura County mountains and Santa Clarita Valley earlier today, but this warming was allowed to expire at 5 pm as the offshore winds have begun to diminish this evening. There were two fires that occurred in the LA county mountains today, one near Acton and the other in Bouquet Canyon.

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.FIRE WEATHER...28/555 PM.

For tonight and Tuesday, offshore winds will be weaker and more localized, shifting to an onshore direction Tuesday afternoon. Relative humidity will exhibit poor recovery away from the coast tonight with humidity falling into the teens and single digits again on Tuesday. With these conditions, elevated to brief critical fire weather conditions can be expected across the area.

For Wednesday through Friday, hot and dry conditions will continue. Winds will exhibit diurnal trends, weakly offshore at night and weakly onshore during the day. So, elevated fire weather conditions are expected to continue. Additionally, the atmosphere will be favorable for plume-dominated fire behavior on any new or existing fires this week, capable of rapid fire growth and extreme fire behavior at times.

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068

FXUS66 KLOX 010307

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

807 PM PDT Wed Sep 30 2020

.SHORT TERM (WED-SAT)...30/801 PM.

UPDATE

Going with a persistence forecast for the Central Coast, patchy dense fog is likely again near Santa Maria and possibly further north toward San Luis. Otherwise, continued clear skies are expected, with haze from wildfires around the area.

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530

FXUS66 KLOX 011541

AFDLOX

Area Forecast Discussion...UPDATED

National Weather Service Los Angeles/Oxnard CA

841 AM PDT Thu Oct 1 2020

.SHORT TERM (TDY-SAT)...01/840 AM.

UPDATE

Almost a carbon copy of yesterday to start out with temperatures of 80 degrees to around 90 in the foothill communities and even many coastal locations (83 at Morro Bay, 84 Pismo Beach, 85 Ventura, etc.). Offshore pressure gradients is very much the same as on Wednesday morning, however, winds have backed off a little quicker in the typical windy corridors and ridges. Still have a few northeast gusts to 25 mph at Porter Ranch, Whitaker Peak, and Wiley Ridge. There is a high layer of smoke making a bigger presence across southwest CA this morning mainly from fires in the Sierra. It will be much hazier and unpleasant today due to the smoke, but really have no impact to the high temperatures. This remains a dangerous heat wave with an excessive heat warning in place through 8pm for the inland valleys where highs will reach 105-110 degrees, especially Woodland Hills and Ojai. All other areas will remain in a heat advisory through Friday with highs today well into the 90s to lower 100s. Many new record highs are anticipated today which is why it is important to take this late season heat very seriously. Reduce outdoor exercise or strenuous work during the hottest part of the day between 10am- 7pm, drink more water, and find cooling centers or an air conditioned building. Onshore pressure gradient trends will be 1 mb stronger this afternoon, so hopefully coastal areas will start to cool earlier in the evening.

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FXUS66 KLOX 021624

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

924 AM PDT Fri Oct 2 2020

.SHORT TERM (TDY-SUN)...02/920 AM.

Skies are expected to remain mostly clear tonight through Sun, except for some smoke layers at times especially N of Point Conception. The marine inversion will remain surface-based tonight with no low clouds along the coast. It looks like the marine inversion will start to form Sat night but remain very shallow, with perhaps some low clouds developing along the Central Coast and some immediate coastal areas S of Point Conception later Sat night into Sun morning. Temps will remain above normal across the region for most areas thru the weekend, but will still be several degrees cooler than recent days. The warmest vlys and lower mtns should be in the mid 90s to 102 on Sat, and in the 90s on Sun. Lows in the foothills and lower mtns should continue very warm tonight, with many locations likely not dropping below 80 degrees.

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868

FXUS66 KLOX 022125

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

225 PM PDT Fri Oct 2 2020

.SHORT TERM (TDY-MON)...02/215 PM.

Mostly sunny skies covered the forecast area early this afternoon, although there some mostly thin smoke layers over parts of SLO/SBA Counties. The LAX-DAG pressure gradient as of 21Z was still -1.6 mb, while the NAM predicted +0.4 mb at 18Z and +2.7 mb at 00Z, which is significantly over-forecasted. It looks like gradients will likely remain offshore to the E all day today. These gradients have supported continued N to NE winds over the foothills, mountains and deserts into the afternoon which should continue for the most part the rest of the day. Temperatures across the region have responded to the offshore flow and warmed to as high as 109 degrees thus far at Los Prietos RAWS and San Luis Obispo RAWS, with many automated stations reaching into the low 100s, especially away from the coast. It looks like highs will wind up in the 100-109 degree range for inland coastal areas into the vlys, and in the mid 90s to around 100 in the lower mtns, with local temps possibly up to 110 or even 111. There may be record highs today at some official climate stations as well. With the hot temps, a Heat Advisory will remain in effect until 8 PM for all areas except for the Antelope Valley. Please see the latest Non-Precipitation Weather Message (LAXNPWLOX) for further details on the Heat Advisories.

An H5 591 dm upper level high over srn CA today will slowly weaken to 589 dm Sat, then the ridge will slowly move E Sun thru Mon, with H5 heights lowering 587-589 dm.

Skies are expected to remain mostly clear tonight through Monday, except for some smoke layers at times especially N of Point Conception. The marine inversion will remain surface-based tonight with no low clouds along the coast. It looks like the marine inversion will start to form Saturday night but remain very shallow, with perhaps some low clouds developing along the Central Coast and along the immediate coastal of Santa Catalina Island later Saturday night into Sun morning. Only a slight expansion into the L.A. County coast is expected Sunday night into Monday morning. Any low clouds will likely be accompanied with patchy dense fog. Temps will remain above normal across the region for most areas thru Monday but will still be several degrees cooler than recent days. The warmest vlys and lower mtns should be in the mid-90s to 102 on Saturday, and in the 90s on Sunday and Monday. Lows in the foothills and lower mtns should continue very warm tonight, with many locations likely not dropping below 80 degrees.

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.AVIATION...02/1809Z.

Overall... Moderate to high confidence in the current TAFs. IFR/MVFR VSBY due to smoke will persist at KPRB, KSBP, and KSMX through at least early afternoon and a ten percent chance of MVFR VSBY elsewhere due to smoke. Otherwise and elsewhere, VFR conditions will prevail.

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885

FXUS66 KLOX 030426

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

926 PM PDT Fri Oct 2 2020

.SYNOPSIS...02/913 PM.

Temperatures will begin to cool gradually over the weekend, though they will remain above normal through the week. Smoke will continue to affect much of the region, particularly on the Central Coast, and low clouds will return to many coastal areas next week.

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781

FXUS66 KLOX 031030

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

330 AM PDT Sat Oct 3 2020

.AVIATION...03/0625Z.

High confidence in VFR conditions across the forecast area through the period except for a 30 percent chc of 5SM HZ 10Z-16Z.

KPRB, KSBP and KSMX will have SCT-BKN025-035 in smoke layers through the morning.

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528

FXUS66 KLOX 031619

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

919 AM PDT Sat Oct 3 2020

.SHORT TERM (TDY-MON)...03/907 AM.

Low clouds and dense fog developed over the coastal waters last night including just along and off the SLO County coast and over the SoCal Bight mainly SE of the Channel Islands. Some low clouds and patchy dense fog pushed into the far southern L.A. County coast around Long Beach and San Pedro, as well as the immediate coast of Santa Catalina Island. The low clouds should thin out as the day progresses, otherwise mostly sunny skies will prevail across the forecast area today altho some smoke layers will continue to affect portions of SLO/SBA Counties. A warm airmass continuing today along with persistent offshore pressure gradients this morning will help to bring well above normal temps to much of the region, albeit several degrees cooler than recent days. Afternoon highs are expected to be in the 90s to around 102 from the inland coastal plain to the vlys and lower mtns.

A 589 dm high at H5 over srn CA today will edge slowly eastward into sern CA on Sun and mainly into AZ on Mon, with H5 heights over the forecast area remaining in the 589 dm range thru the period. In addition, a weak 584 dm upper level low is forecast to be several hundred miles SW of Pt Conception on Mon.

The marine inversion will remain shallow and near surface-based tonight through Mon. Some low clouds will be possible along portions of the immediate coast each night and morning, with patchy dense fog likely with any low clouds. Otherwise, mostly sunny skies will continue except for a few smoke layers at times. The NAM is forecasting onshore gradient trends during the period as well, altho the magnitude of the onshore gradients may be over-forecasted in the afternoon. Weak flow at night will give way to increasing onshore flow each afternoon across the region. This will help to very slowly lower temps thru Mon, but they will still continue to be about 6 to 12 deg or more above normal away from the immediate coast. Highs in the warmest vlys and lower mtns should generally be in the 90s both Sun and Mon.

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.AVIATION...03/1231Z.

High confidence in VFR conditions across the forecast area, except moderate confidence for LA/Ventura County coastal sites where there is a 30% chance of LIFR cigs through 16Z.

KPRB, KSBP, and KSMX will likely have SCT-BKN025-035 in smoke layers through the morning.

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FXUS66 KLOX 032112

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

212 PM PDT Sat Oct 3 2020

.SHORT TERM (TDY-TUE)...03/208 PM.

Some patchy low clouds and dense fog were noted at a few beaches along the VTU/L.A. County coast early this afternoon. These may linger into mid to late afternoon, otherwise mostly sunny skies will prevail the rest of the day across the forecast area altho some thin smoke layers will linger especially over SLO/SBA Counties. The LAX-DAG pressure gradient was -1.4 mb at 20Z which was helping some offshore flow to continue over inland areas, mainly foothills, mtns and deserts. It was also helping to boost temps across the region into the low 100s in some areas. Well above normal temps will continue this afternoon, albeit several degrees cooler than recent days for most areas. Still, the hottest temps thus far include 106 at the San Luis Obispo RAWS and 104 in Solvang. Overall, though, most areas away from the coast will be in the 90s to around 102 this afternoon.

A 589 dm high at H5 over srn CA today will edge slowly eastward into sern CA on Sun and mainly into AZ on Mon, with H5 heights over the forecast area remaining in the 589 dm range thru the period. In addition, a weak 584 dm upper level low is forecast to be several hundred miles SW of Pt Conception on Mon. This upper level low will slowly track NE and move to just off the Central Coast by Tue afternoon, with an increasing SW flow aloft.

The marine inversion will remain shallow and near surface-based to perhaps a few hundred feet deep tonight through Tue. Some low clouds will be possible along portions of the immediate coast S of Point Conception tonight and Sun morning, and mainly along the Central Coast and L.A. County Coast each night and morning Sun night thru Tue. Patchy dense fog will be likely with any low clouds thru the period. Otherwise, mostly clear skies will continue except for some mid and hi level clouds on Tue as moisture from Hurricane Marie starts to move in. it also looks like some thin smoke layers may persist in some areas at least thru Sun.

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.AVIATION...03/1816Z.

KPRB, KSBP, and KSMX could have SCT-BKN025-035 in smoke layers today.

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814

FXUS66 KLOX 041024

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

324 AM PDT Sun Oct 4 2020

.AVIATION...04/0615Z.

KPRB, KSBP and KSMX will have SCT-BKN025-035 in smoke layers through the morning.

KSBP and KSMX have a 20 percent chc of LIFR conds 12Z-16Z.

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082

FXUS66 KLOX 041542

AFDLOX

Area Forecast Discussion

National Weather Service Los Angeles/Oxnard CA

842 AM PDT Sun Oct 4 2020

.SHORT TERM (TDY-TUE)...04/841 AM.

Low clouds and areas of dense fog covered much of the coastal waters, and into the coast S of Point Conception this morning. A Dense Fog Advisory is in effect for the coast of SBA/VTU/L.A. Counties until 9 AM as the dense fog should lift rather quickly with the daytime heating. The low clouds and fog are expected to clear off the coast by late morning to early afternoon, altho some low clouds and local dense fog may linger at a few beaches thru late today. Otherwise mostly sunny skies will prevail across the region thru this afternoon except some thin smoke layers may persist mainly over parts of SLO/SBA Counties.

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.AVIATION...04/1243Z.

KPRB, KSBP, and KSMX will have SCT-BKN025-035 in smoke layers through the morning.

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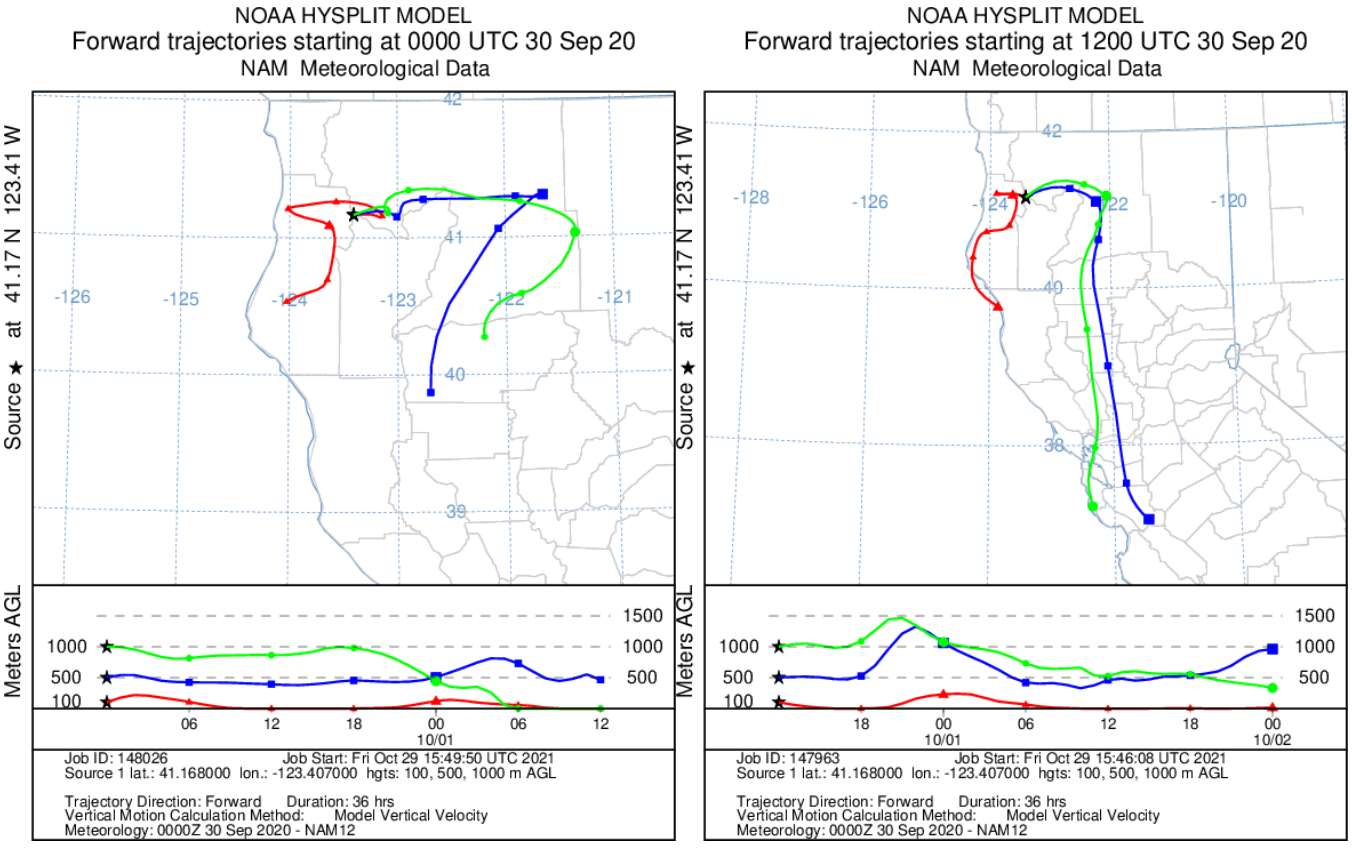
D. Transport

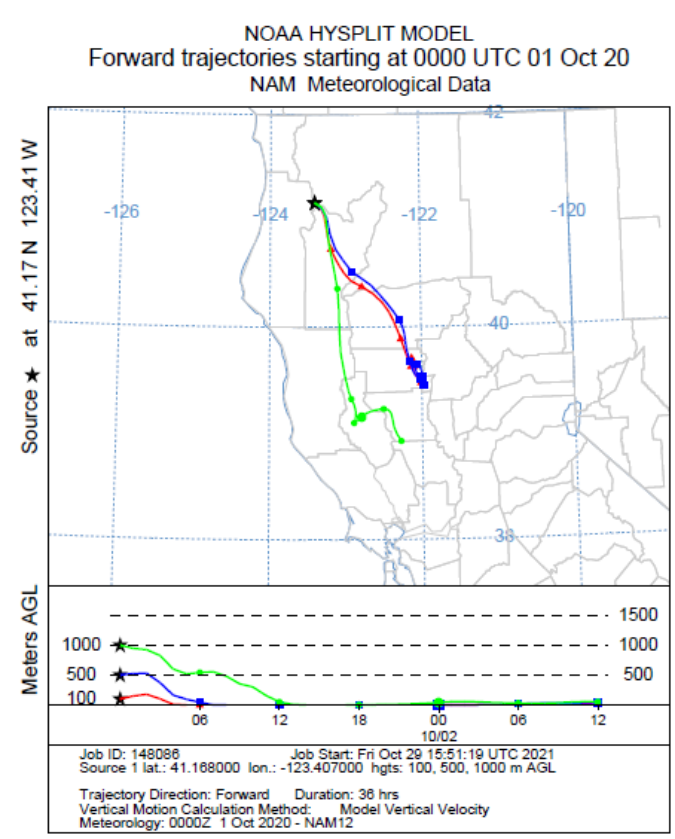
1. HYSPLIT Forward Trajectory (from Fires)

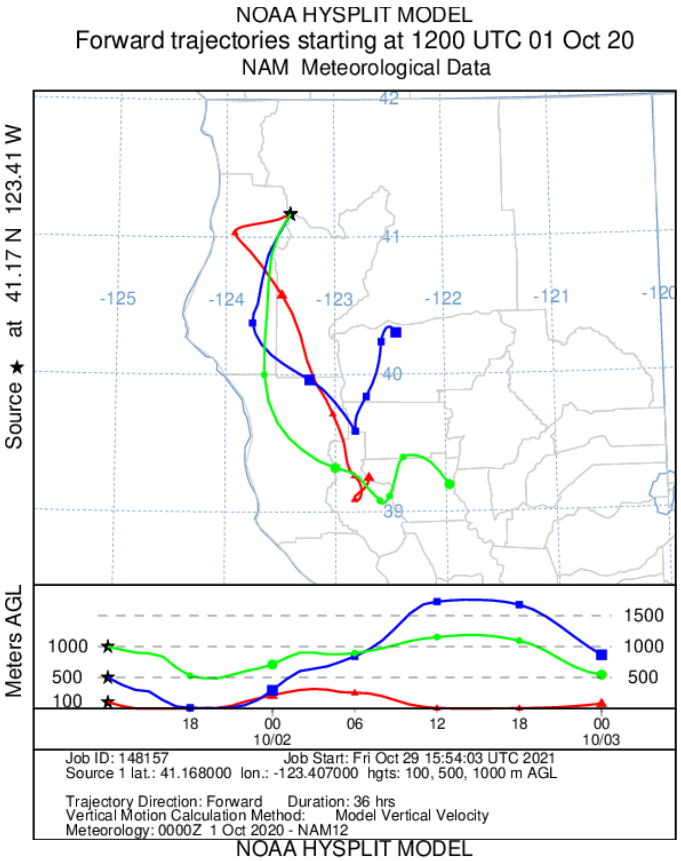
The forward trajectory tool of the HYSPLIT model was used to indicate how emissions from the wildfires were transported toward the monitors. The model was run from each major fire for 36 hours during the days of potential impact of the exceeding monitors using two starting times: 00UTC (16PST previous day) and 12UTC (04PST same day). These model runs offer insight into the path a hypothetical parcel of smoke would take from each fire. This provides for a generalized understanding of smoke transport from a single fire across a region, connecting a specific wildfire with smoke in satellite imagery, and finding potential correlations at a site through analysis of the intersection of forward and backward trajectories.

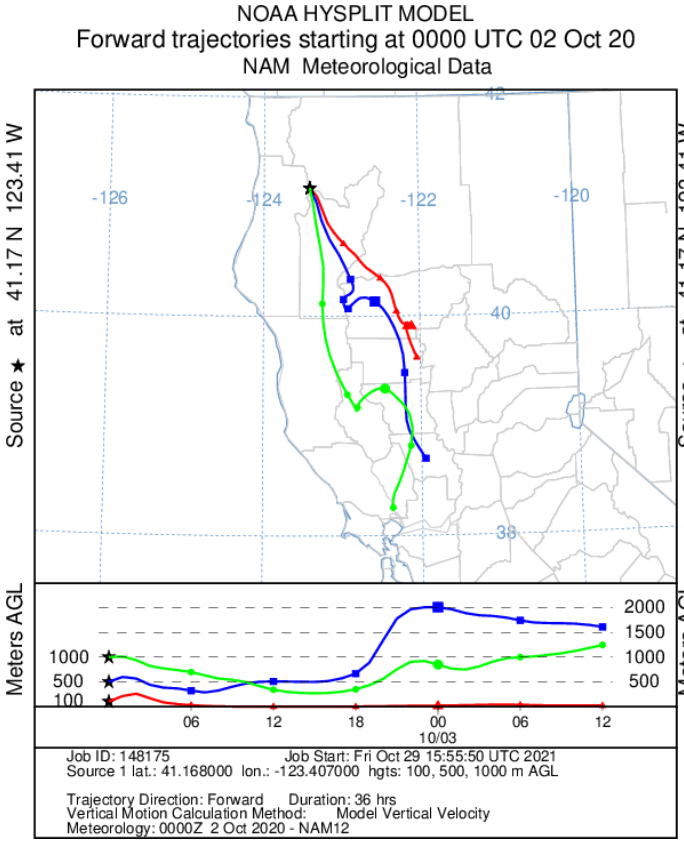
a) Red Salmon Complex

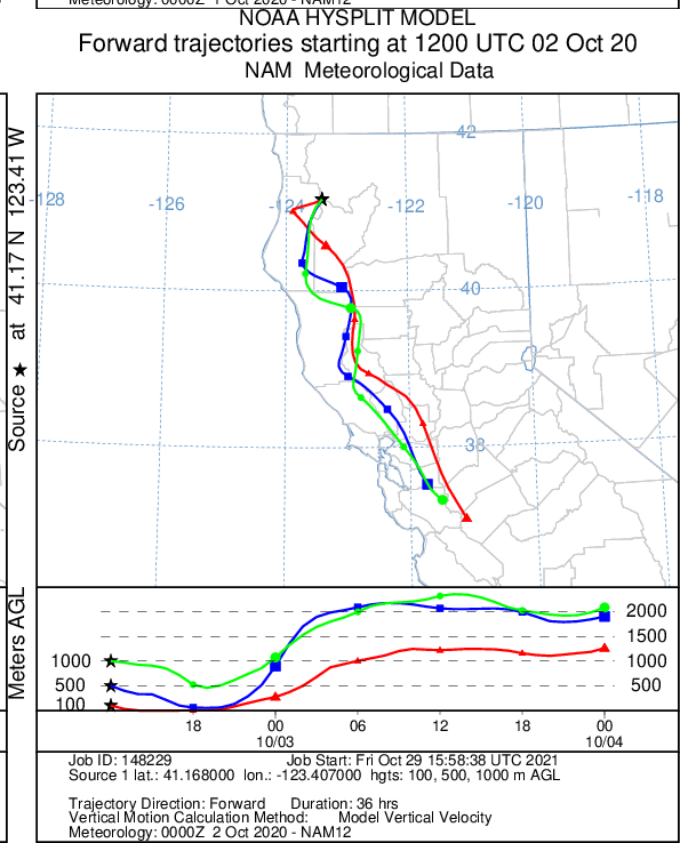
Fire	Start	Containment	Latitude	Longitude	Total Acres
Red Salmon Complex	7/27/20	11/17/20	41.1680	-123.4070	144,679

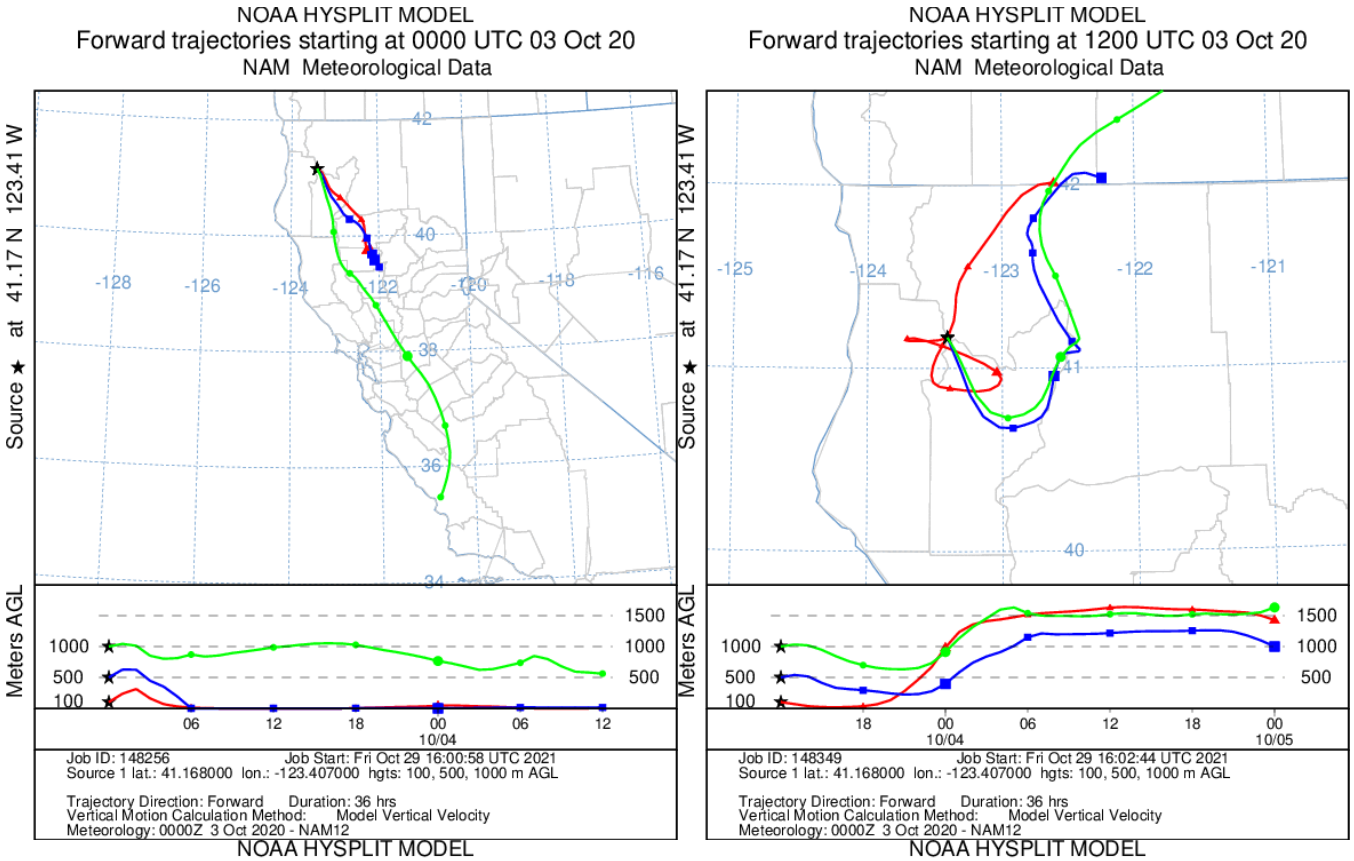



NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 41.17 N 123.41 W
Meters AGL
Job ID: 148086 Job Start: Fri Oct 29 15:51:19 UTC 2021
Source 1 lat.: 41.168000 lon.: -123.407000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 36 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Oct 2020 - NAM12


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 41.17 N 123.41 W
Meters AGL
Job ID: 148157 Job Start: Fri Oct 29 15:54:03 UTC 2021
Source 1 lat.: 41.168000 lon.: -123.407000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 36 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Oct 2020 - NAM12

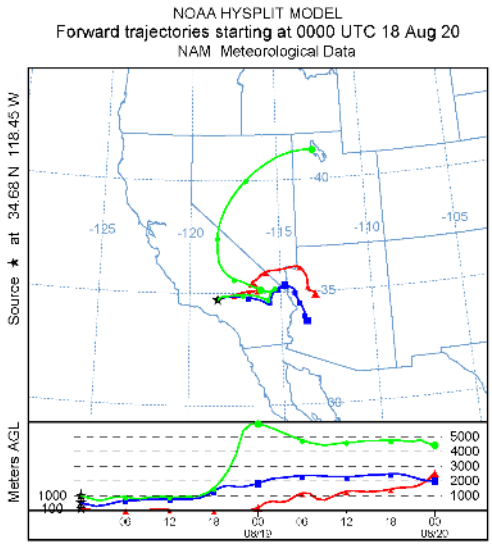

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 41.17 N 123.41 W
Meters AGL
Job ID: 148175 Job Start: Fri Oct 29 15:55:50 UTC 2021
Source 1 lat.: 41.168000 lon.: -123.407000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 36 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Oct 2020 - NAM12

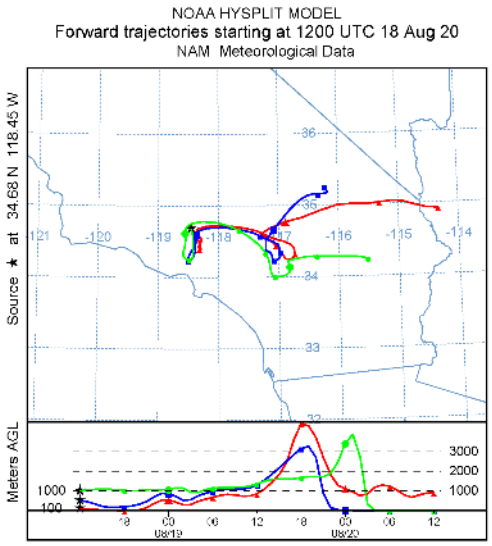

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 41.17 N 123.41 W
Meters AGL
Job ID: 148229 Job Start: Fri Oct 29 15:58:38 UTC 2021
Source 1 lat.: 41.168000 lon.: -123.407000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 36 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 2 Oct 2020 - NAM12

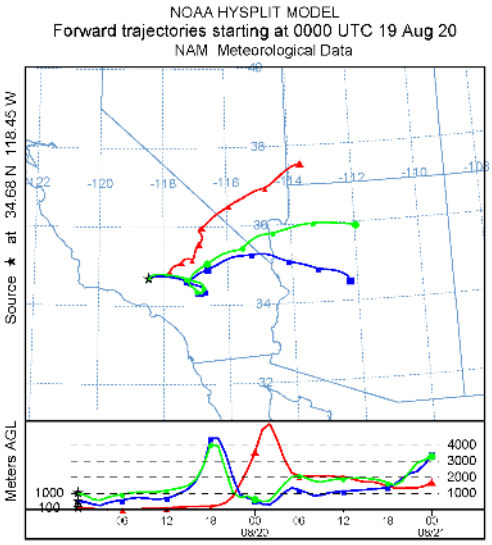

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 41.17 N 123.41 W
Meters AGL
Job ID: 148256 Job Start: Fri Oct 29 16:00:58 UTC 2021
Source 1 lat.: 41.168000 lon.: -123.407000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 36 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Oct 2020 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 41.17 N 123.41 W
Meters AGL
Job ID: 148349 Job Start: Fri Oct 29 16:02:44 UTC 2021
Source 1 lat.: 41.168000 lon.: -123.407000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 36 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 3 Oct 2020 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Oct 20
NAM Meteorological Data
Source ★ at 41.17 N 123.41 W
Meters AGL
Job ID: 148429 Job Start: Fri Oct 29 16:04:32 UTC 2021
Source 1 lat.: 41.168000 lon.: -123.407000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 36 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Oct 2020 - NAM12
NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Oct 20
NAM Meteorological Data
Source ★ at 41.17 N 123.41 W
Meters AGL
Job ID: 148501 Job Start: Fri Oct 29 16:06:28 UTC 2021
Source 1 lat.: 41.168000 lon.: -123.407000 hgts: 100, 500, 1000 m AGL
Trajectory Direction: Forward Duration: 36 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 4 Oct 2020 - NAM12

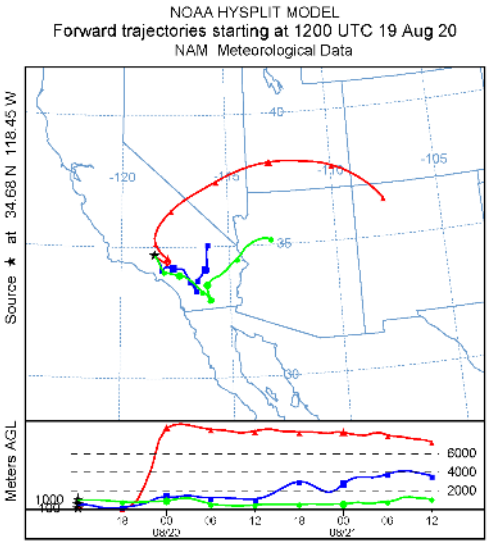
b) Lake Fire

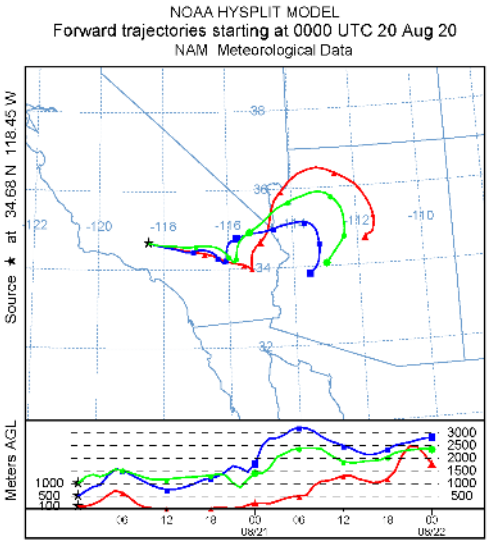
Fire	Start	Containment	Latitude	Longitude	Total Acres
Lake	8/12/20	9/29/20	34.6790	-118.4520	31,089






NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 34.68 N 118.45 W
Meters AGL
4000
3000
2000
1000
1000
100
U8/20
U8/22


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 34.68 N 118.45 W
Meters AGL
6000
4000
2000
1000
100
U8/20
U8/21


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 34.68 N 118.45 W
Meters AGL
3000
2500
2000
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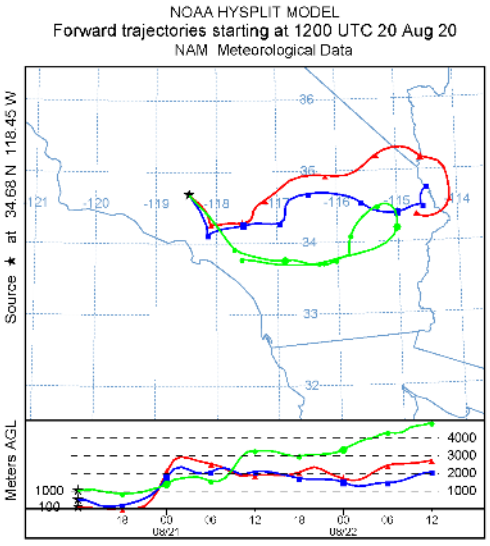
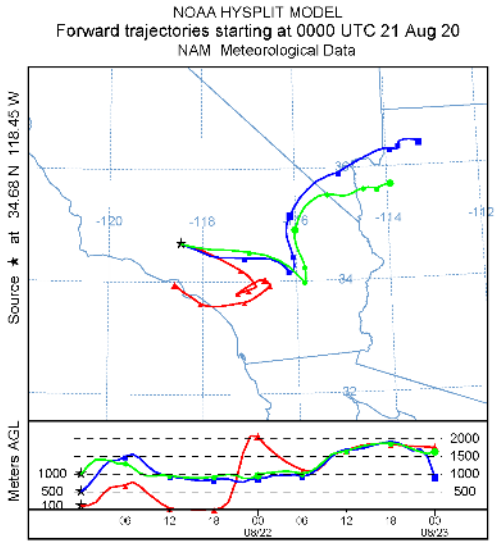
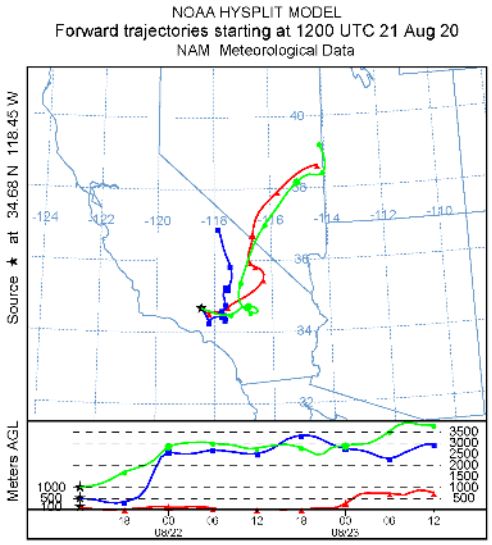
500
100
U8/21
U8/22

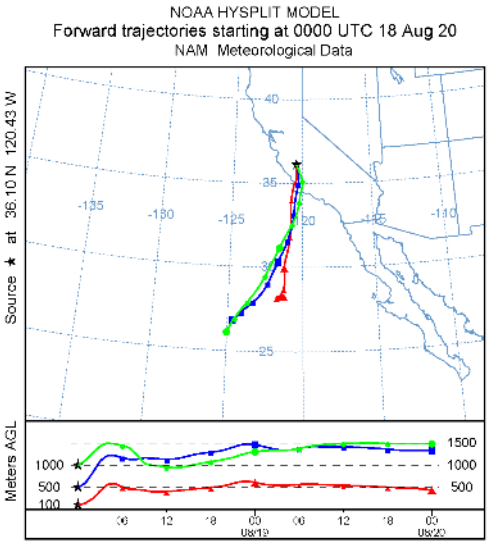

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 34.68 N 118.45 W
Meters AGL
4000
3000
2000
1000
1000
100
U8/21
U8/22

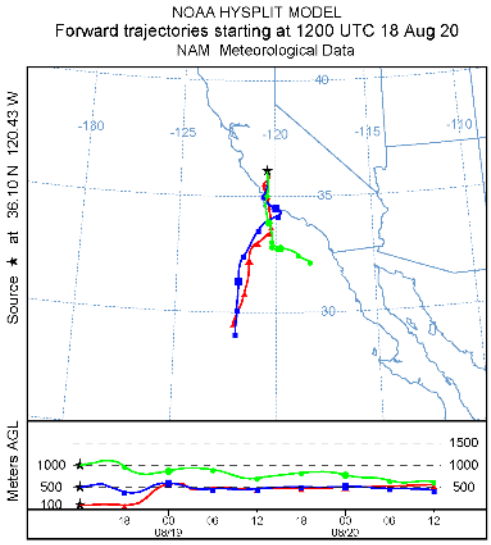


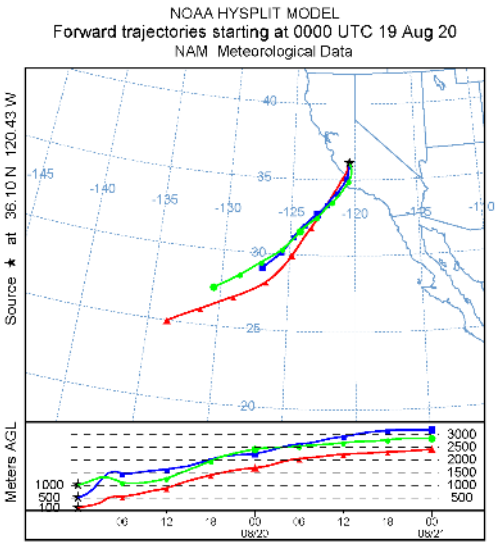


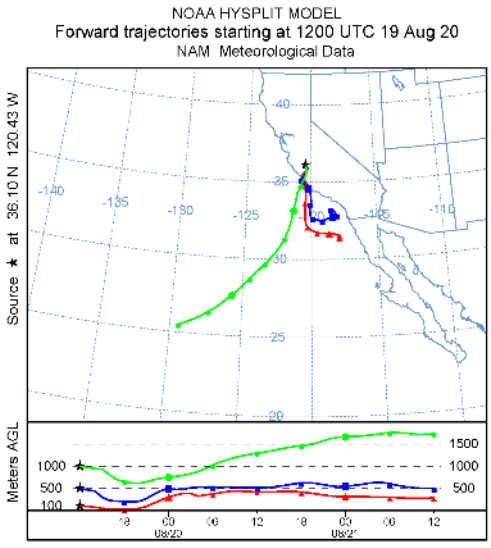
c) Hills Fire

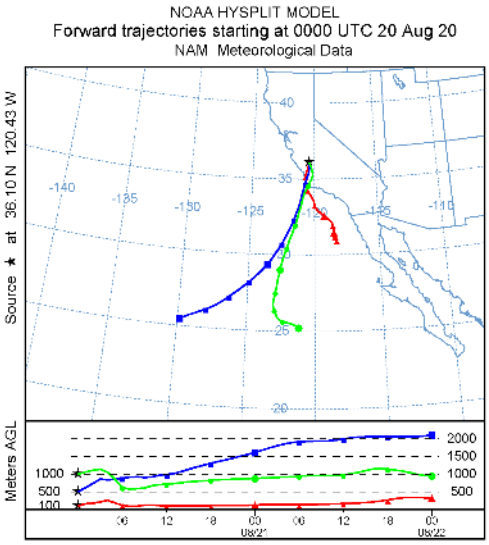
Fire	Start	Containment	Latitude	Longitude	Total Acres
Hills	8/15/20	8/24/20	36.0988	-120.4273	2,121

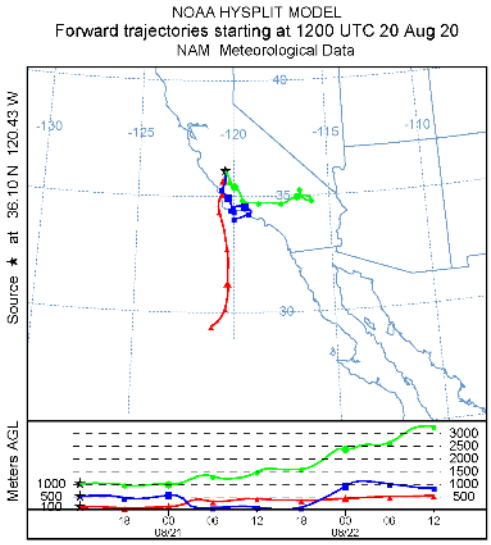

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 18 Aug 20
NAM Meteorological Data
Source ★ at 36.10 N 120.43 W
Meters AGL

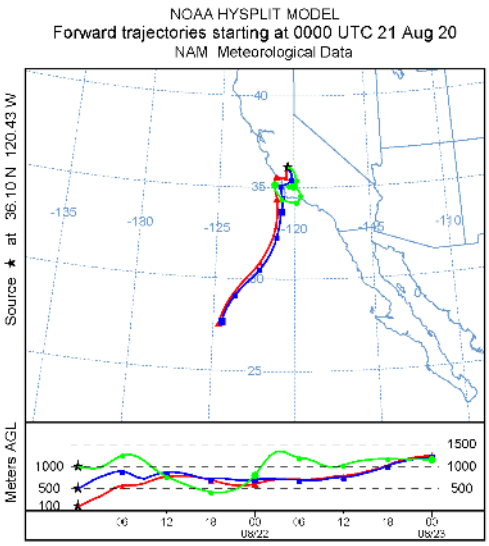

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 18 Aug 20
NAM Meteorological Data
Source ★ at 36.10 N 120.43 W
Meters AGL

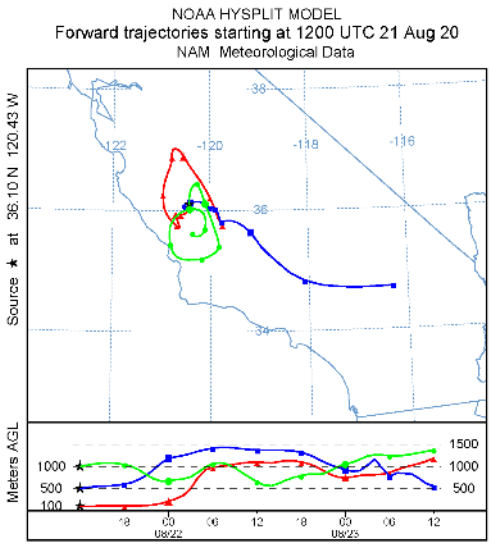

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 36.10 N 120.43 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 36.10 N 120.43 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 36.10 N 120.43 W
Meters AGL

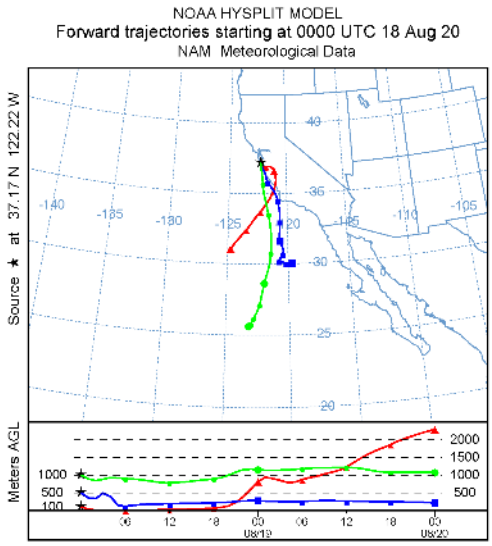

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 36.10 N 120.43 W
Meters AGL

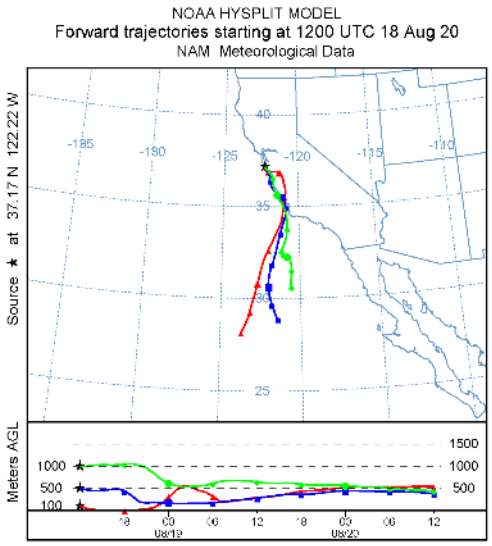

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 36.10 N 120.43 W
Meters AGL

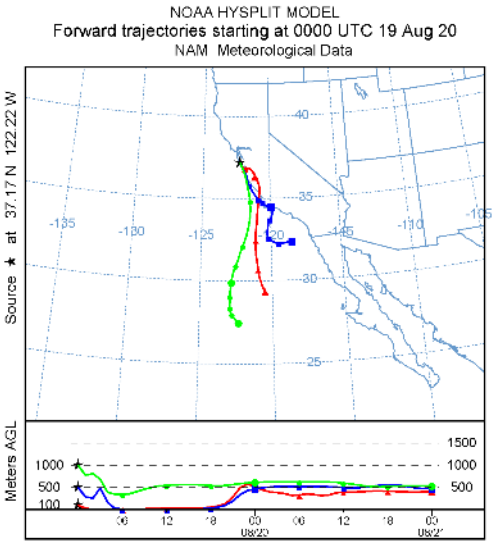

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 36.10 N 120.43 W
Meters AGL

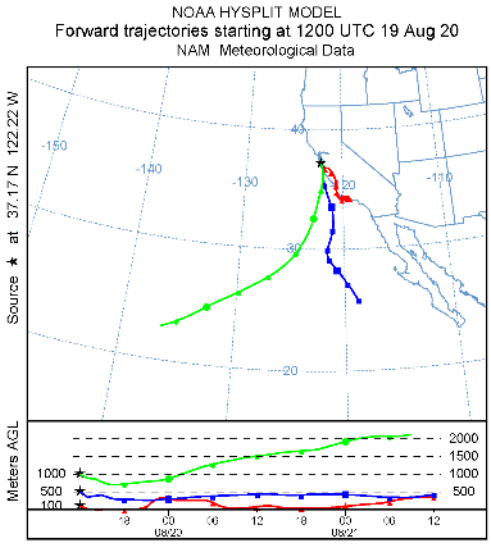
d) CZU Lightning Complex

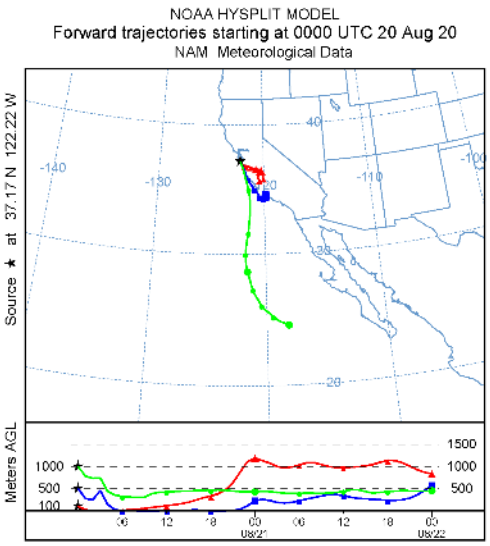
Fire	Start	Containment	Latitude	Longitude	Total Acres
CZU Lightning Complex	8/16/20	9/22/20	37.1716	-122.2228	86,509

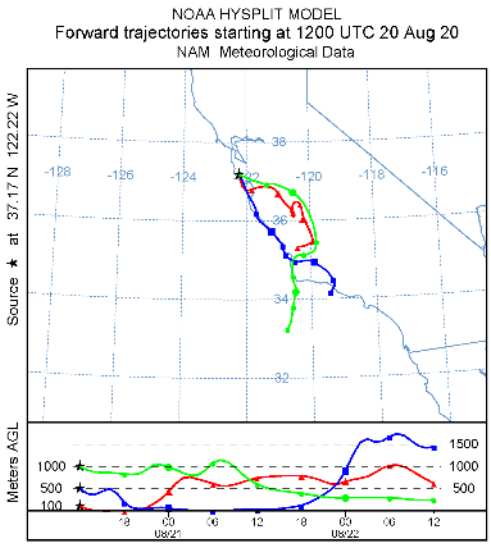


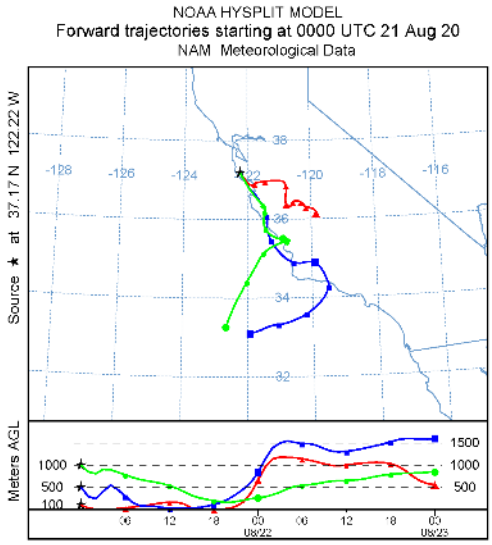


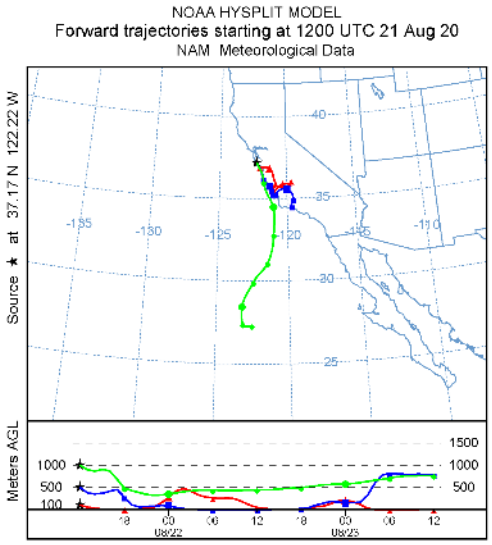

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 37.17 N 122.22 W
Meters AGL
1500
1000
500
100
08/20
08/21

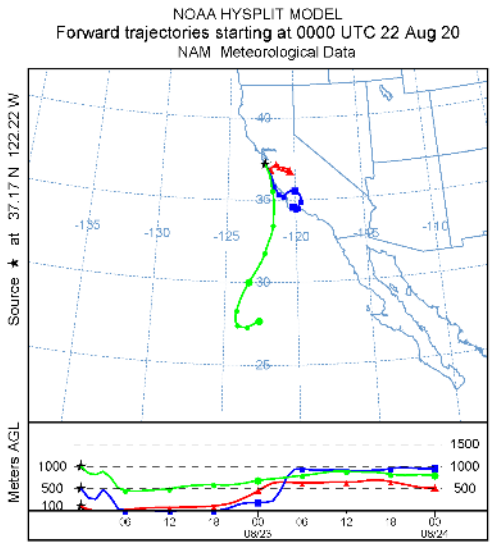

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 37.17 N 122.22 W
Meters AGL
2000
1500
1000
500
100
08/20
08/21

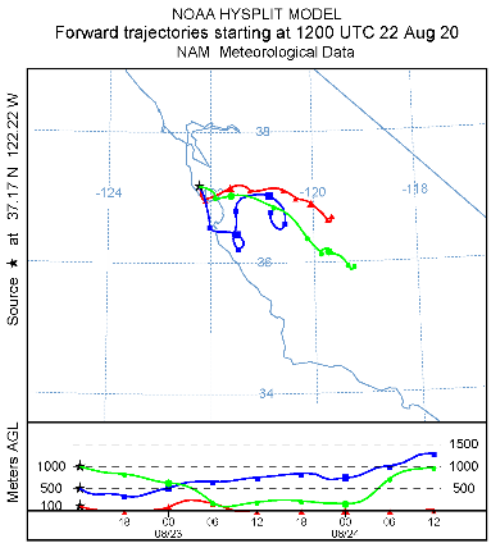

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 37.17 N 122.22 W
Meters AGL
1500
1000
500
100
08/21
08/22


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 37.17 N 122.22 W
Meters AGL
1500
1000
500
100
08/21
08/22


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 37.17 N 122.22 W
Meters AGL
1500
1000
500
100
08/22
08/23

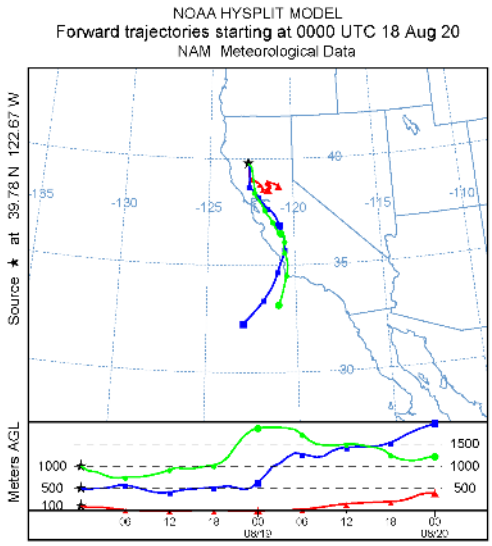

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 37.17 N 122.22 W
Meters AGL
1500
1000
500
100
08/22
08/23

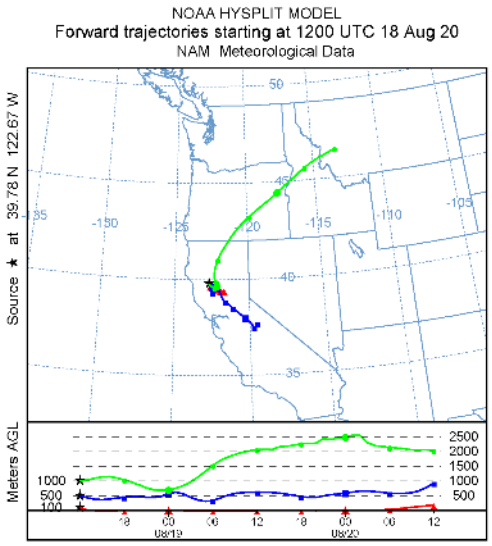

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 37.17 N 122.22 W
Meters AGL
1500
1000
500
100
08/23
08/24

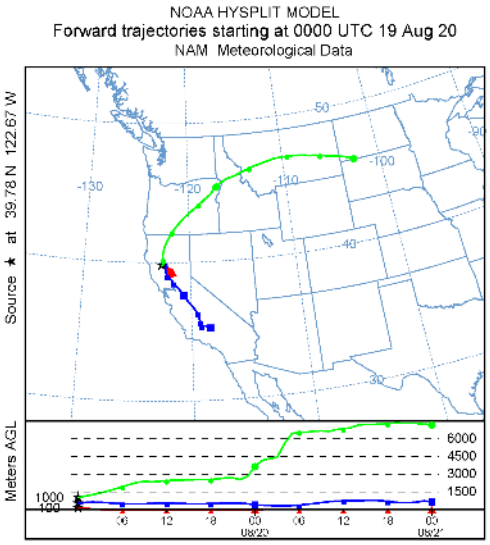

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 37.17 N 122.22 W
Meters AGL
1500
1000
500
100
08/23
08/24

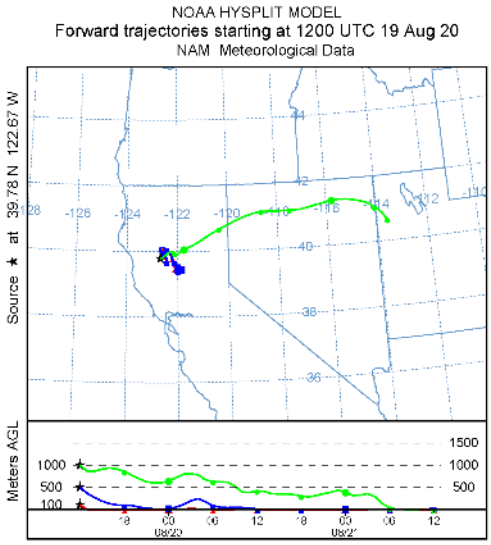
e) August Complex

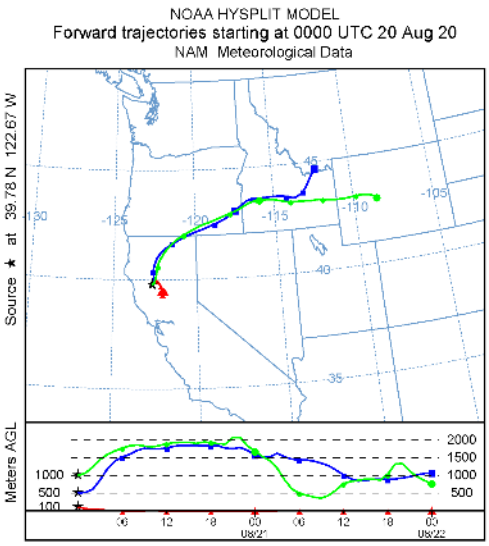
Fire	Start	Containment	Latitude	Longitude	Total Acres
August Complex	8/16/20	11/11/20	39.776	-122.673	1,032,648

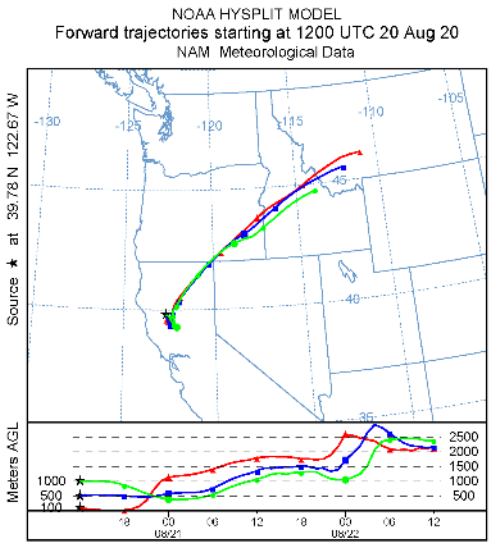


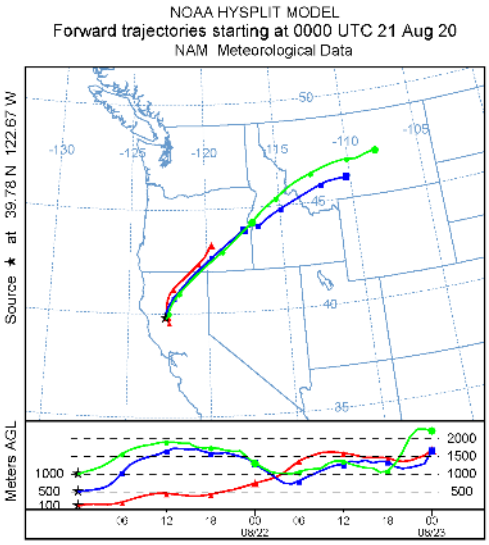


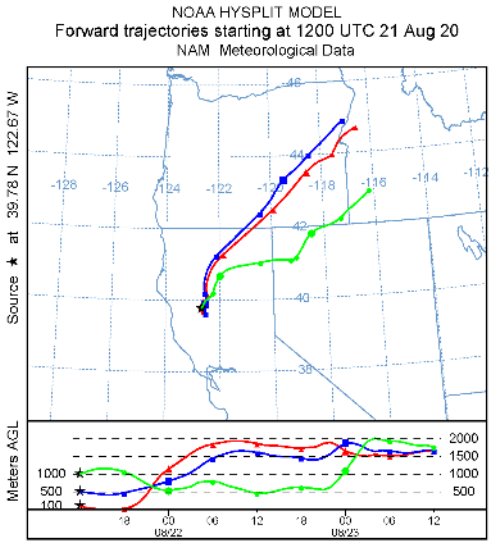

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
6000
4500
3000
1500
1000
100
U8/20
U8/22

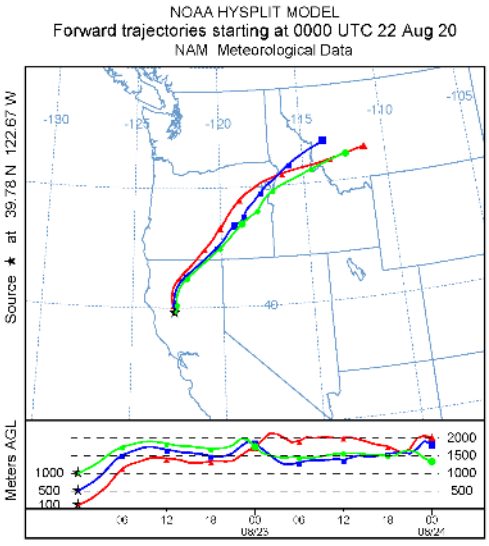

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
1500
1000
500
100
U8/20
U8/22

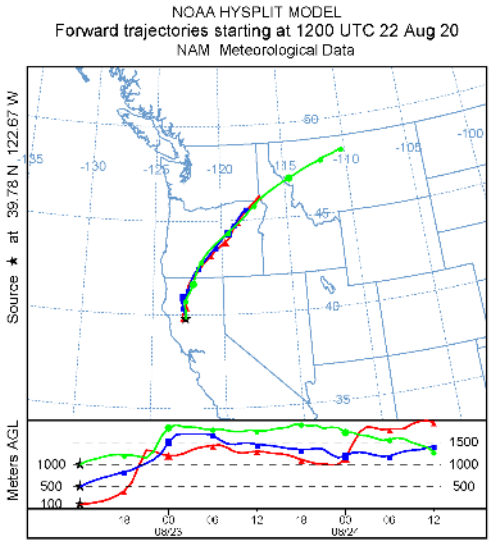

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
2000
1500
1000
500
100
U8/21
U8/22

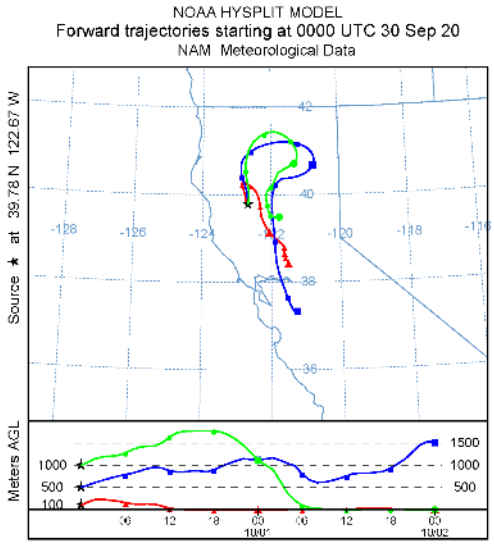

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
2500
2000
1500
1000
500
100
U8/21
U8/22

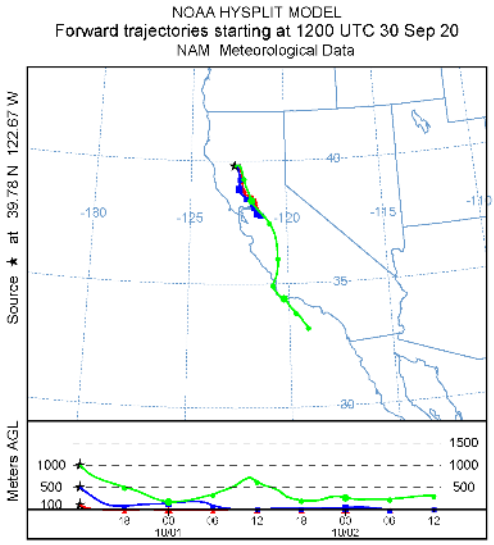

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
2000
1500
1000
500
100
08/22
08/23

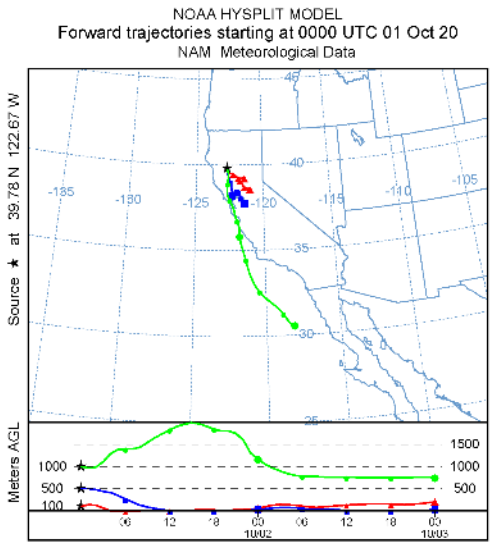

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
2000
1500
1000
500
100
08/22
08/23

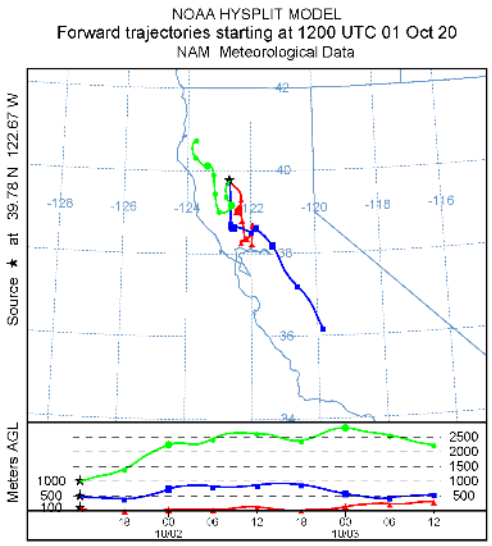

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
2000
1500
1000
500
100
08/23
08/24

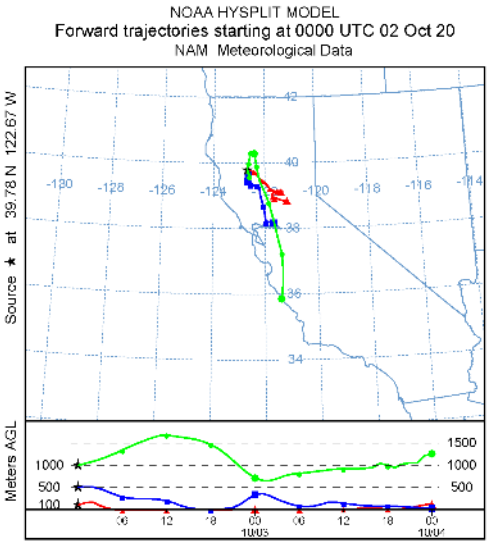

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
1500
1000
500
100
08/23
08/24

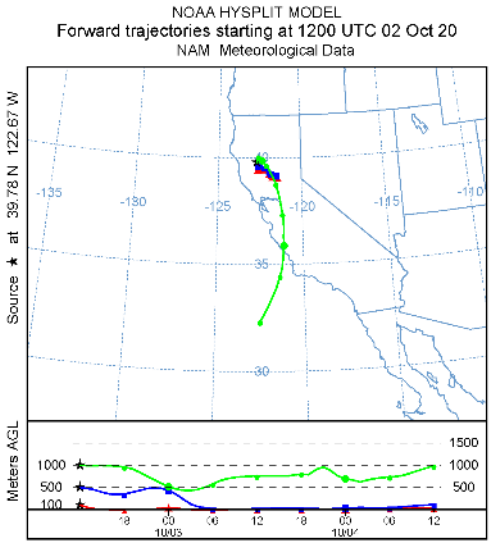

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 30 Sep 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
1500
1000
500
100

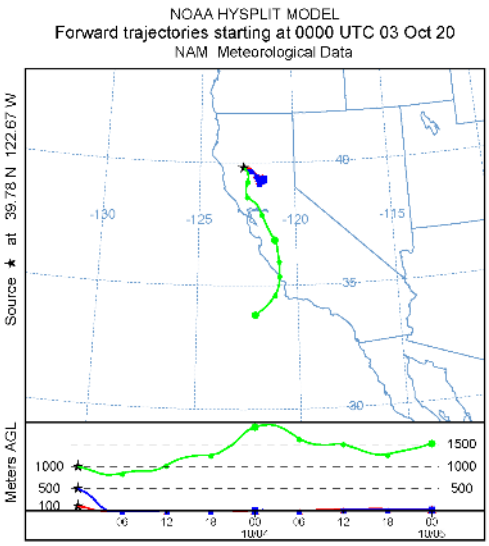

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 30 Sep 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
1500
1000
500
100

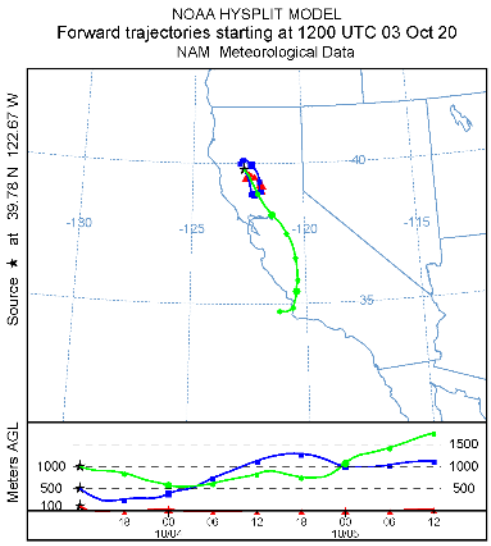

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
1500
1000
500
100

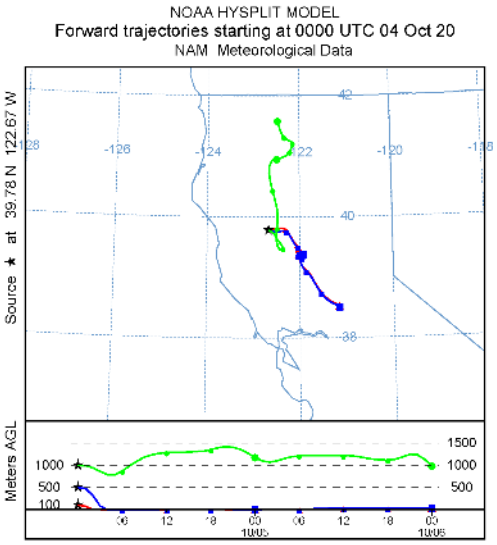

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
2500
2000
1500
1000
500
100

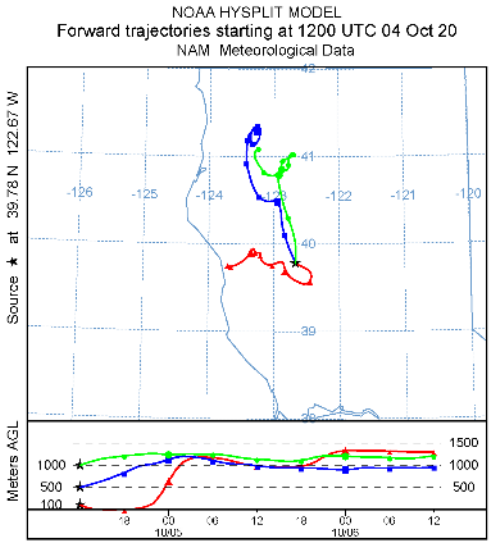

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
1500
1000
500
100


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
1500
1000
500
100


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
1500
1000
500
100

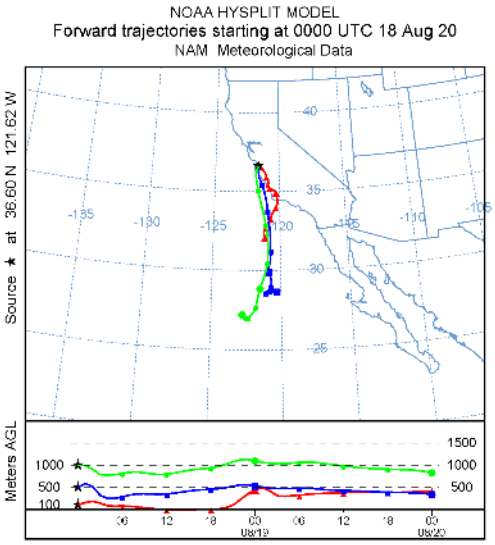

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 39.78 N 122.67 W
Meters AGL
1500
1000
500
100

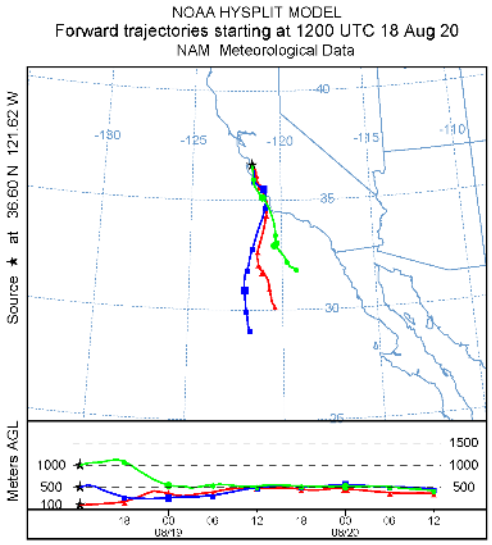


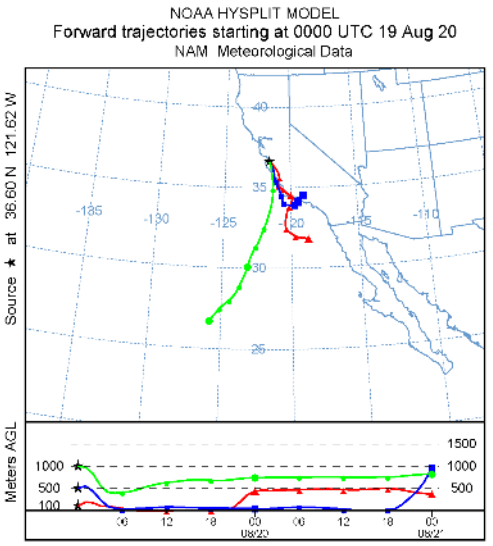


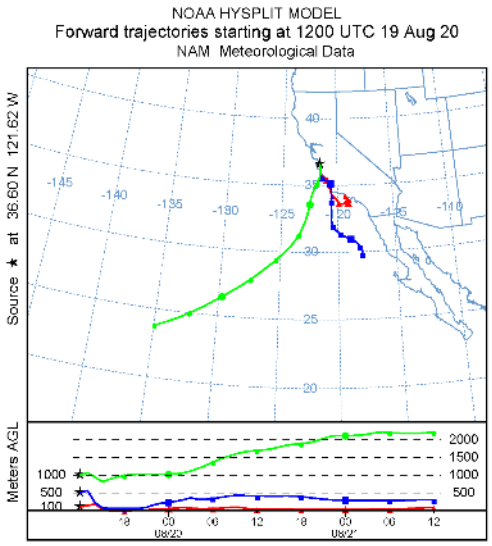
f) River Fire

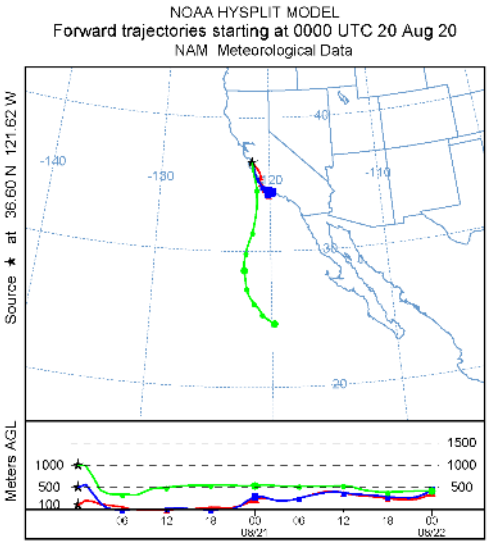
Fire	Start	Containment	Latitude	Longitude	Total Acres
River	8/16/20	9/4/20	36.6024	-121.6216	48,088

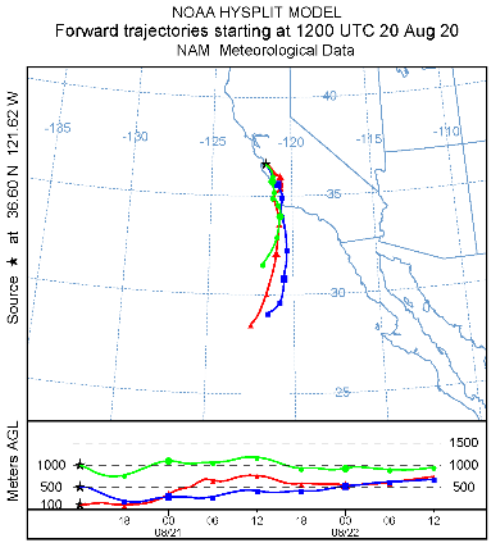

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 18 Aug 20
NAM Meteorological Data
Source ★ at 36.60 N 121.62 W
Meters AGL
1500
1000
500
100
08/19
08/20

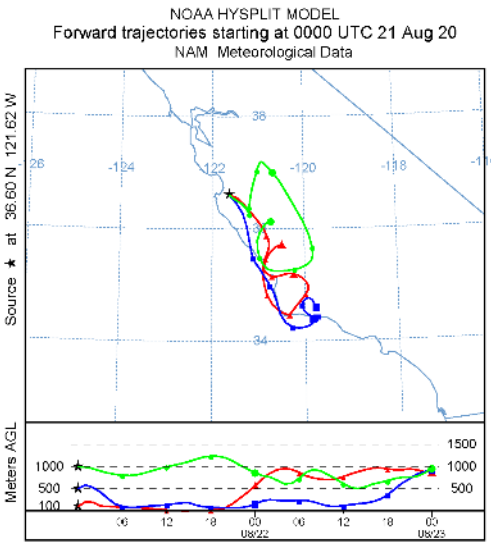

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 18 Aug 20
NAM Meteorological Data
Source ★ at 36.60 N 121.62 W
Meters AGL
1500
1000
500
100
08/19
08/20

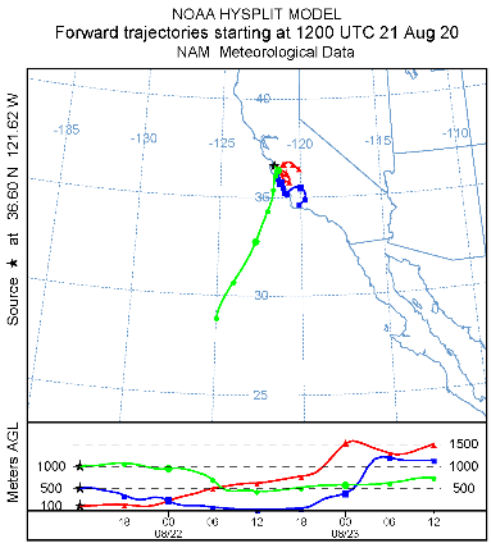

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 36.60 N 121.62 W
Meters AGL
1500
1000
500
100
08/20
08/21

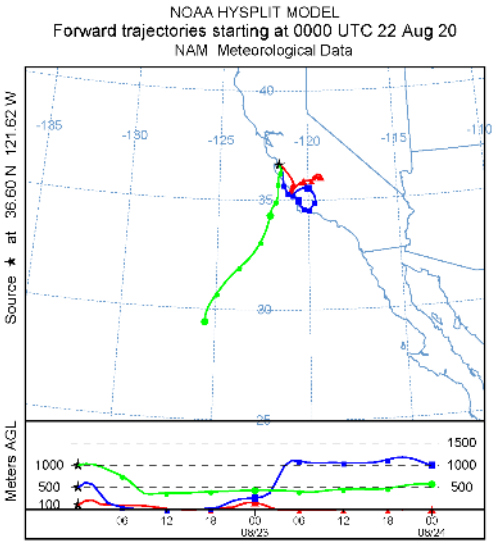

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 36.60 N 121.62 W
Meters AGL
2000
1500
1000
500
100
08/20
08/21

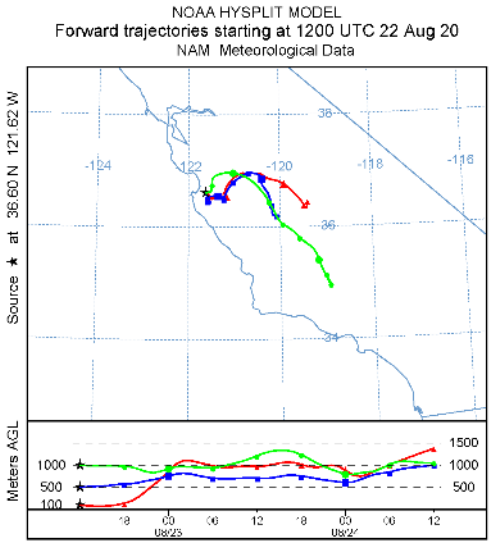

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 36.60 N 121.62 W
Meters AGL
1500
1000
500
100
08/21
08/22


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 36.60 N 121.62 W
Meters AGL
1500
1000
500
100
08/21
08/22


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 36.60 N 121.62 W
Meters AGL
1500
1000
500
100
08/22
08/23

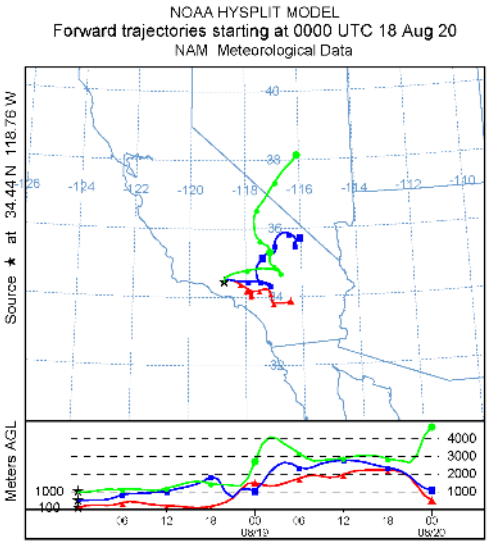

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 36.60 N 121.62 W
Meters AGL
1500
1000
500
100
08/22
08/23

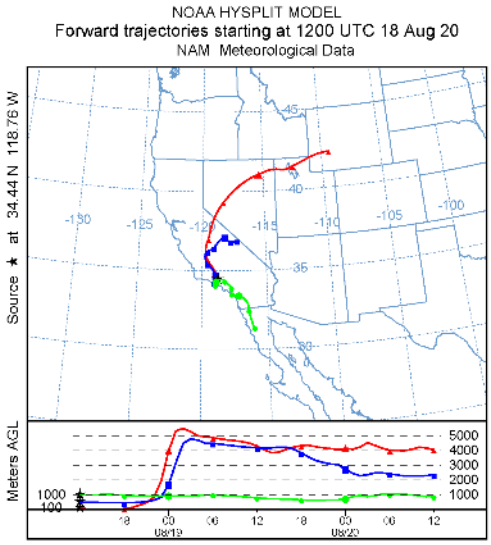


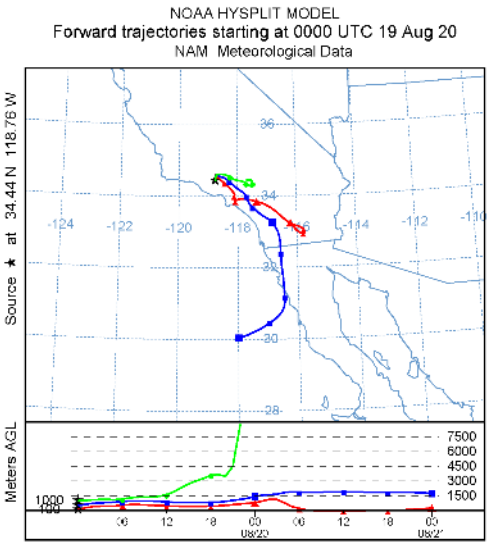


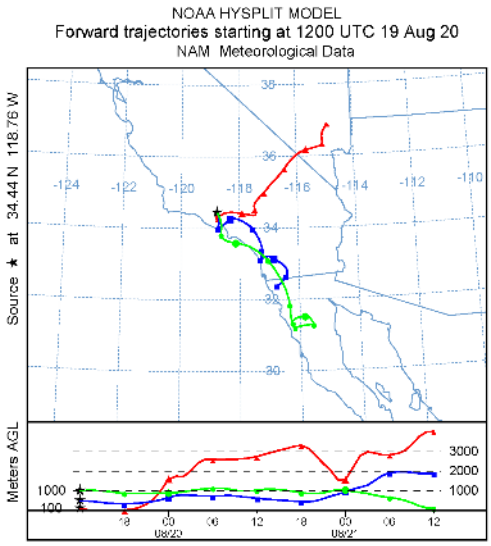
g) Holser Fire

Fire	Start	Containment	Latitude	Longitude	Total Acres
Holser	8/17/20	9/6/20	34.4388	-118.7590	3,000


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 18 Aug 20
NAM Meteorological Data
Source ★ at 34.44 N 118.76 W
Meters AGL
4000
3000
2000
1000
1000
100
08/19
08/20

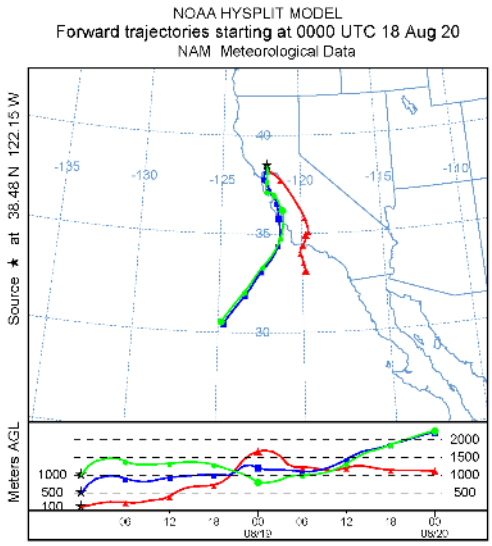

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 18 Aug 20
NAM Meteorological Data
Source ★ at 34.44 N 118.76 W
Meters AGL
5000
4000
3000
2000
1000
1000
100
08/19
08/20

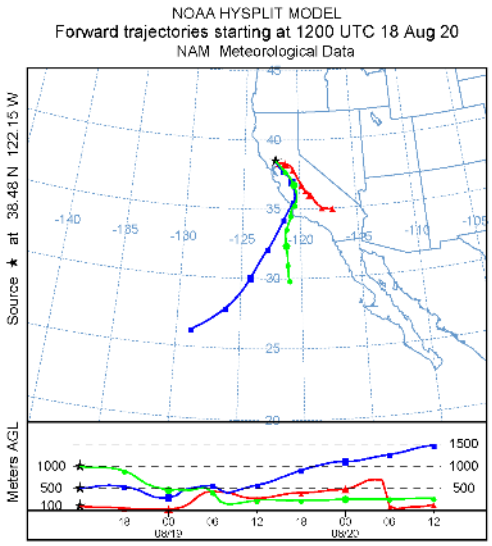

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 34.44 N 118.76 W
Meters AGL
7500
6000
4500
3000
1500
1000
100
08/20
08/21

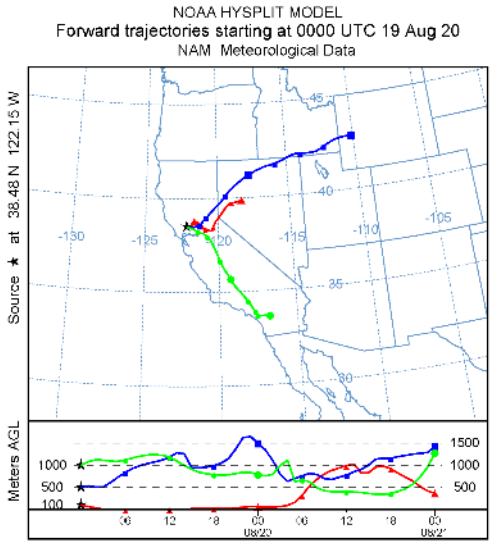

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 34.44 N 118.76 W
Meters AGL
3000
2000
1000
1000
100
08/20
08/21

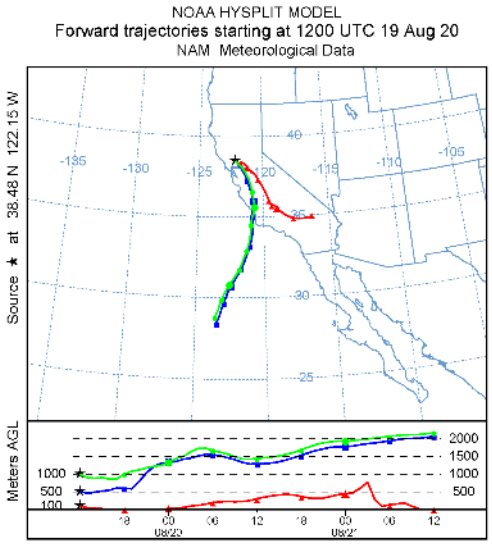
h) LNU Lightning Complex

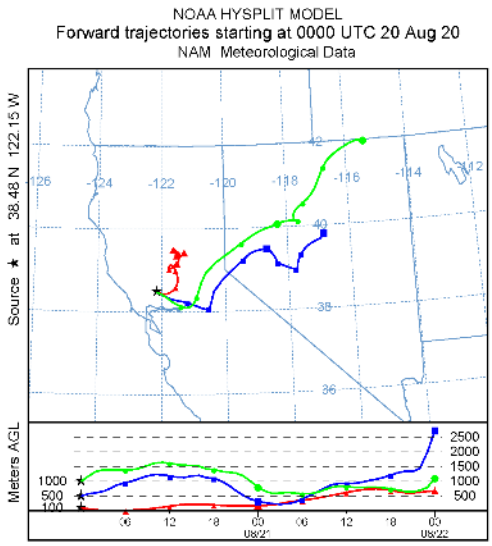
Fire	Start	Containment	Latitude	Longitude	Total Acres
LNU Lightning Complex	8/17/20	10/2/20	38.4819	-122.1486	363,220

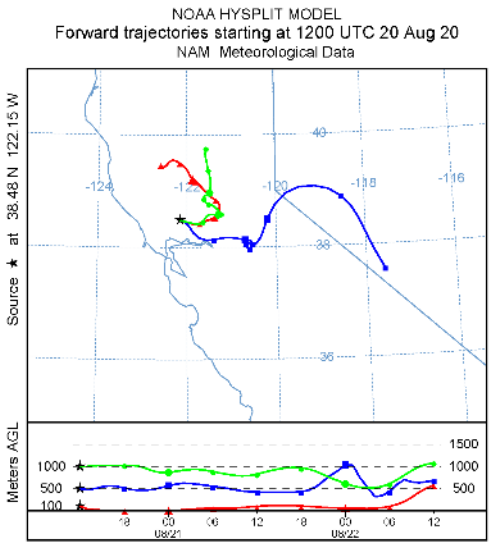


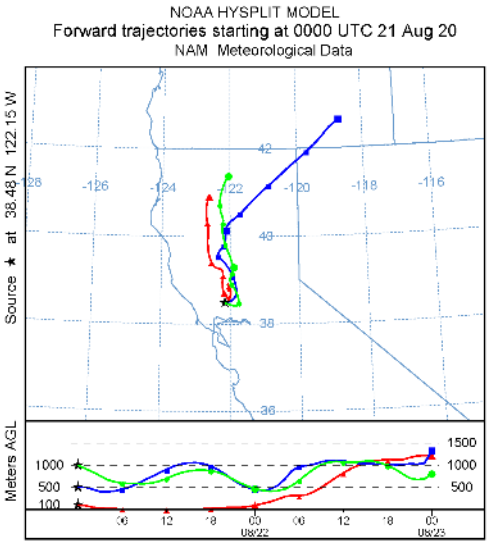


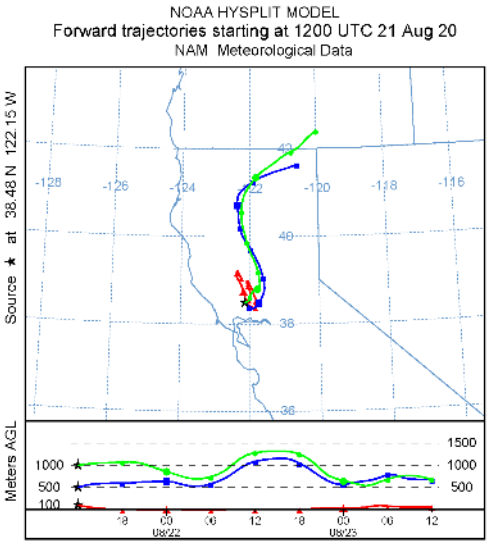

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL

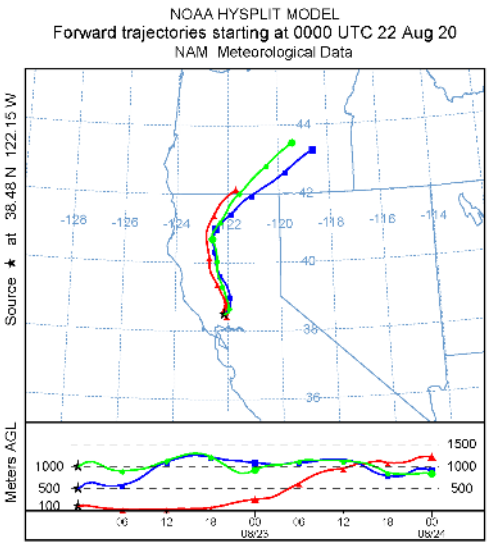

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL

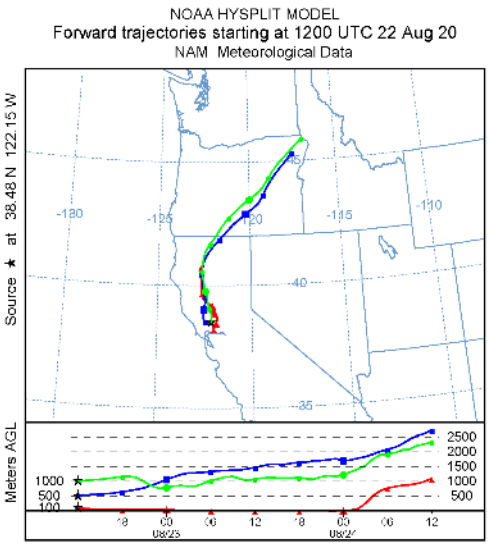

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL

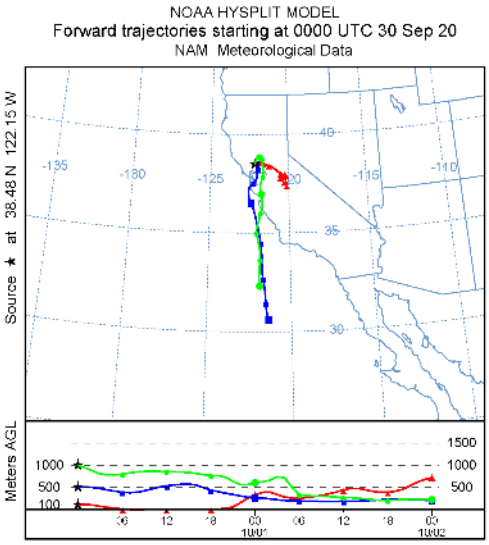

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL

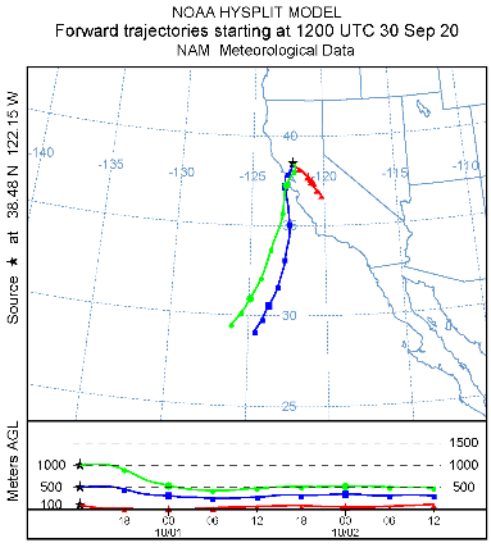

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL
1500
1000
500
100
08/22
08/23

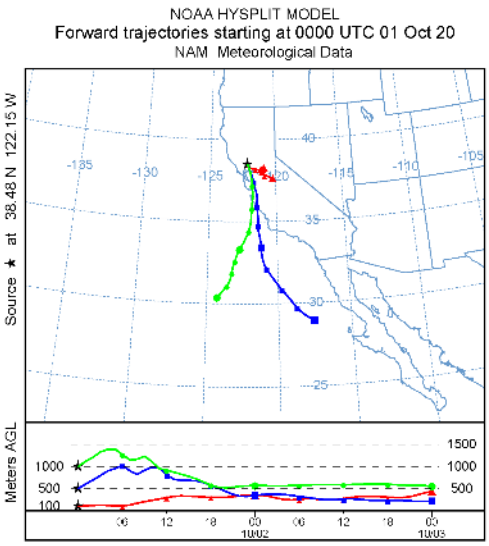

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL
1500
1000
500
100
08/22
08/23

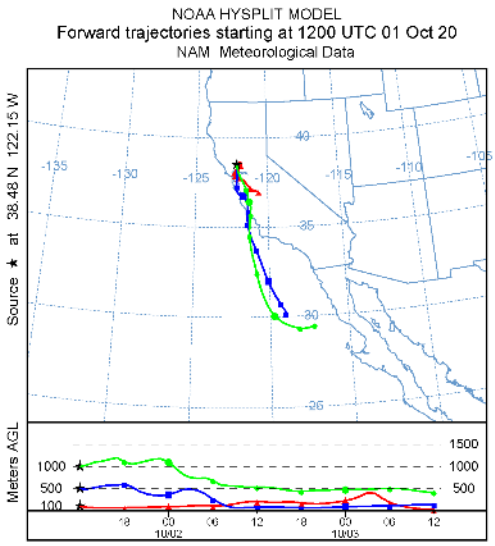

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL
1500
1000
500
100
08/23
08/24


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL
2500
2000
1500
1000
500
100
08/23
08/24


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 30 Sep 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL
1500
1000
500
100

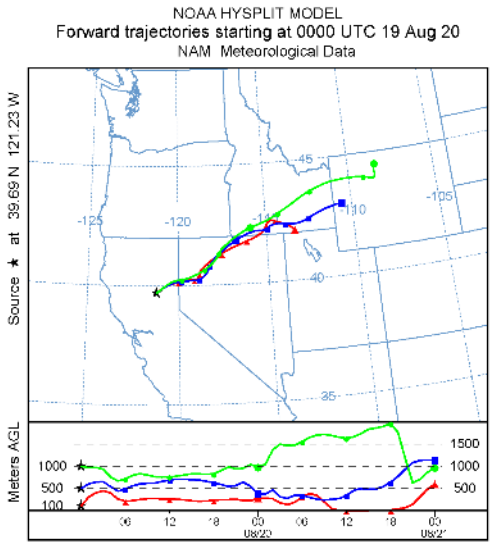

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 30 Sep 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL
1500
1000
500
100

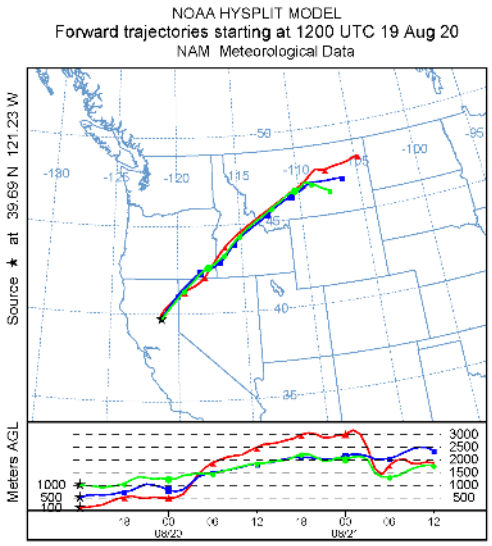

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL
1500
1000
500
100

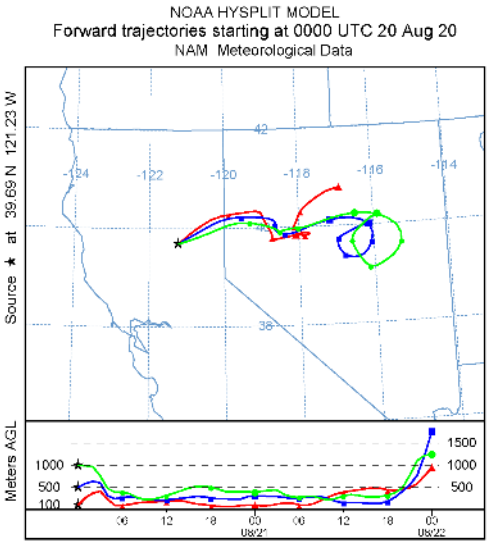

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 38.48 N 122.15 W
Meters AGL
1500
1000
500
100

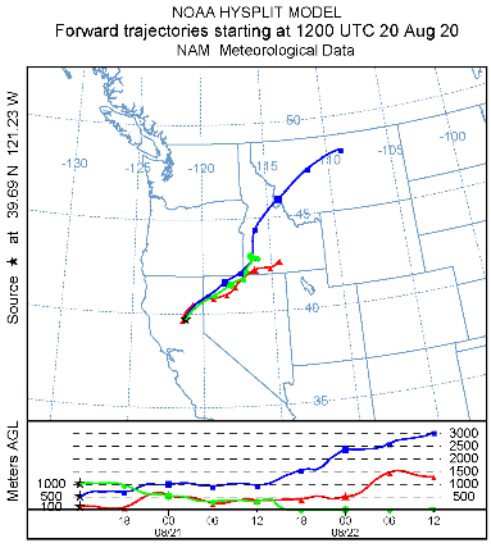
i) North Complex

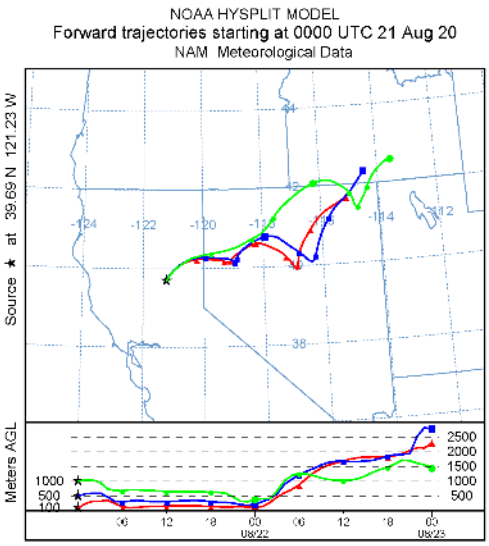
Fire	Start	Containment	Latitude	Longitude	Total Acres
North Complex	8/18/20	12/3/20	39.6907	-121.2272	318,935

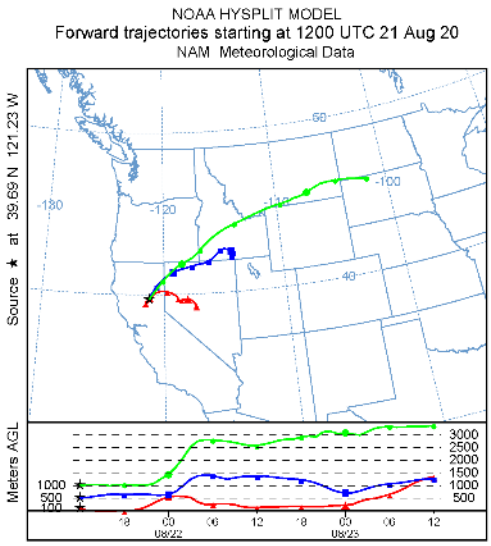


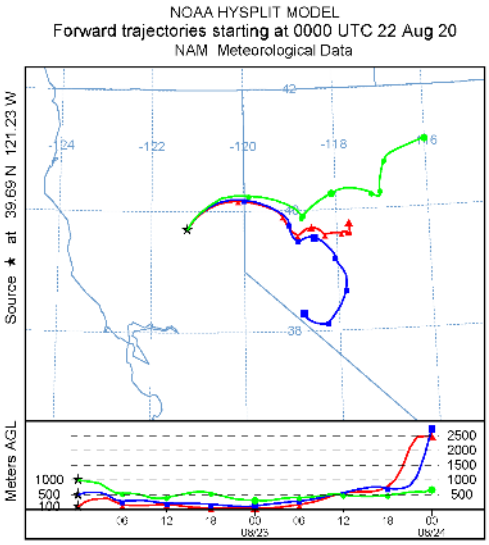


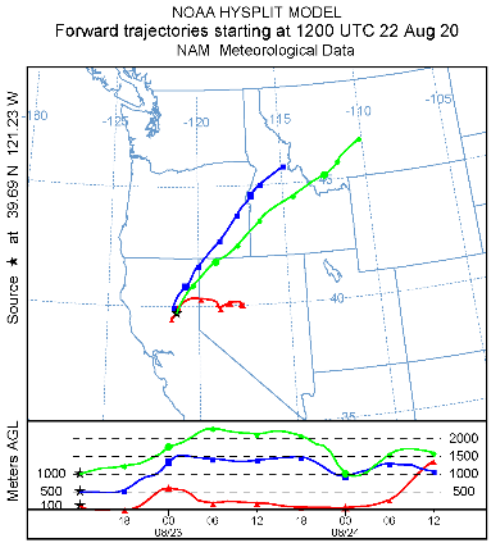

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL

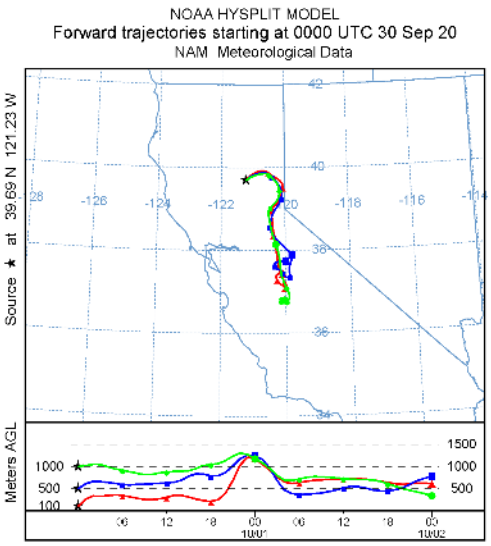

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL

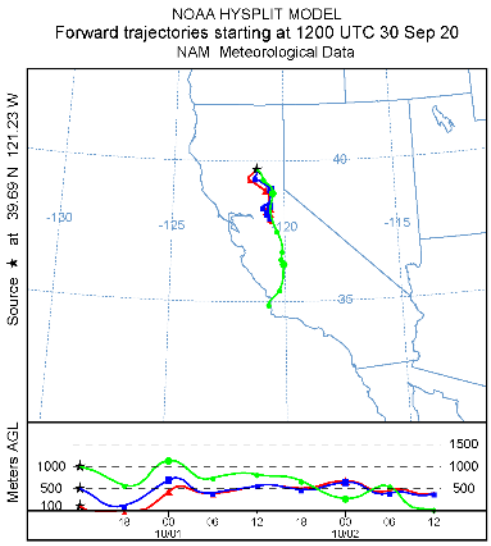

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL

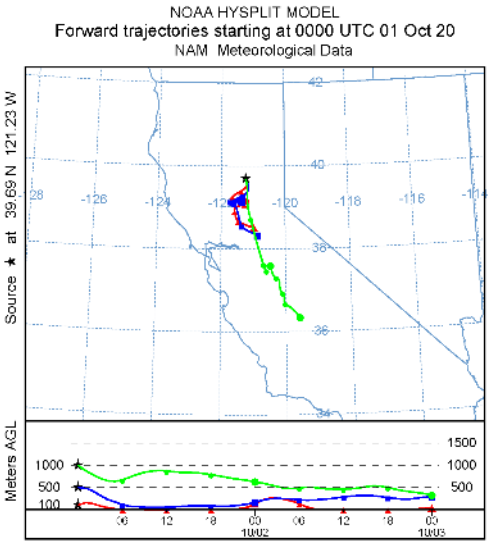

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL

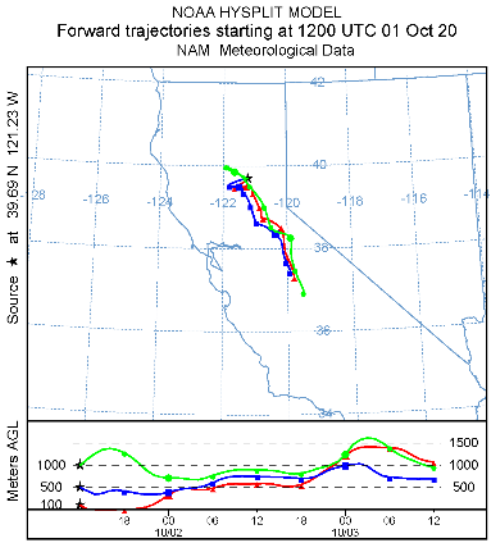

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 30 Sep 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 30 Sep 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL
1500
1000
500
100


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL
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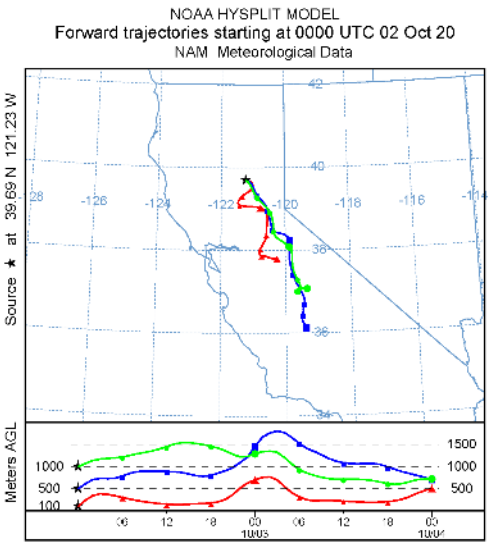
1000
500
100


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL
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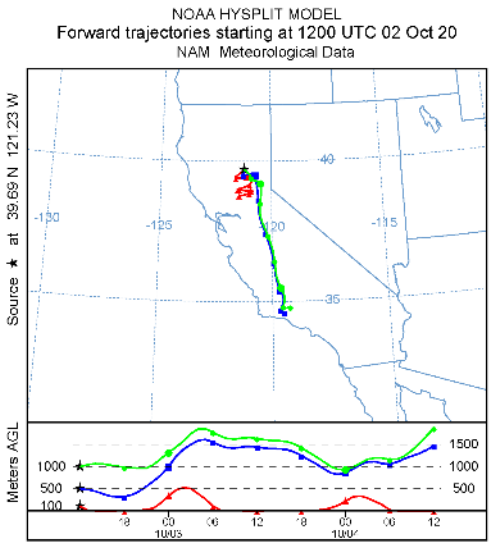
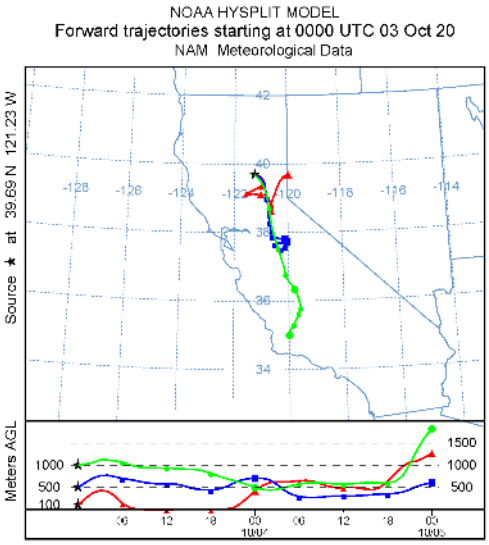
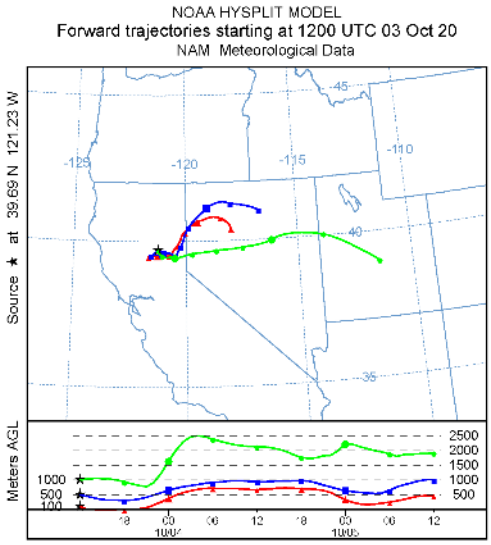
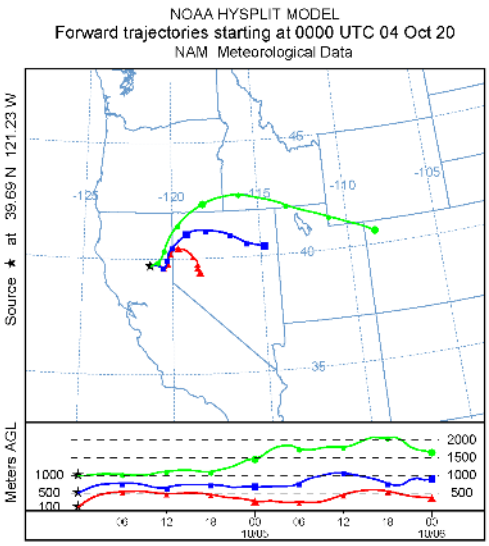
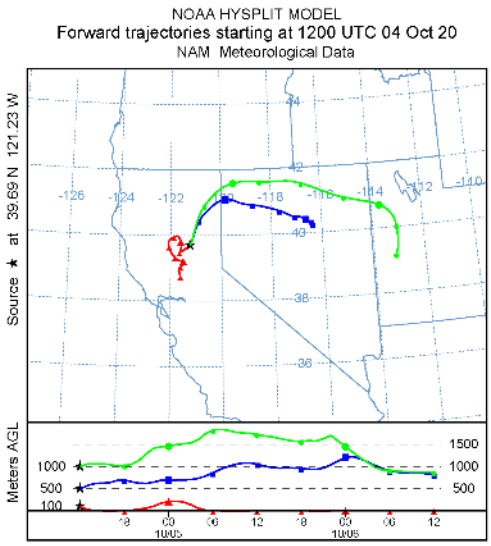
1000
500
100


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL
1500
1000
500
100


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL

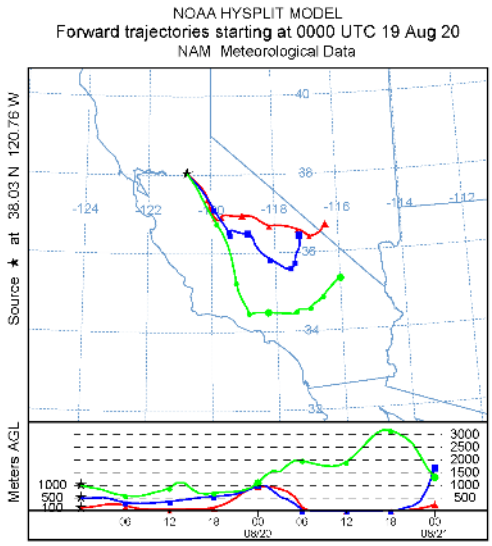

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL

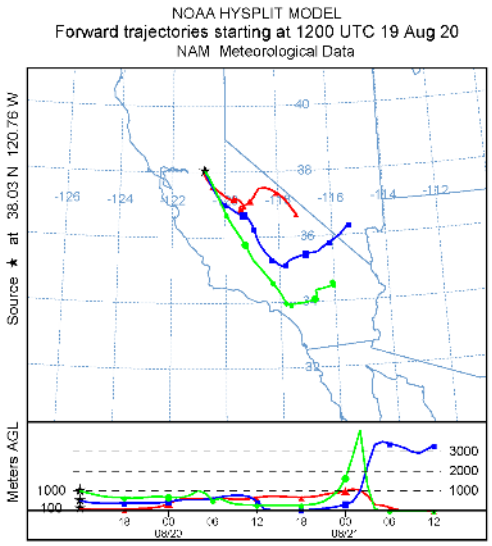

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Oct 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL

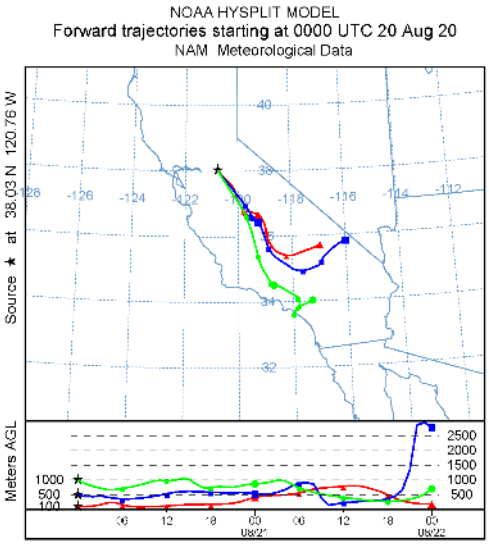

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Oct 20
NAM Meteorological Data
Source ★ at 39.69 N 121.23 W
Meters AGL

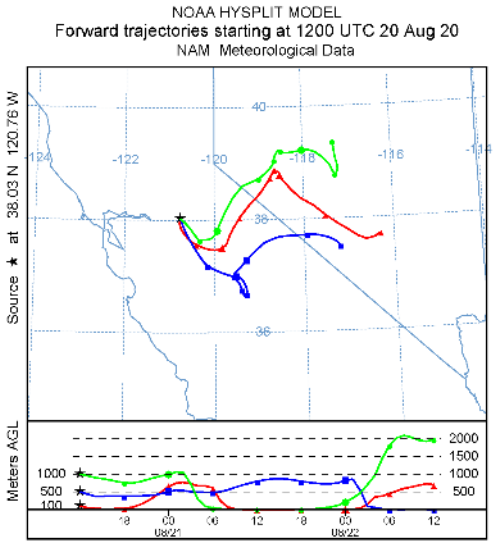
j) Salt Fire

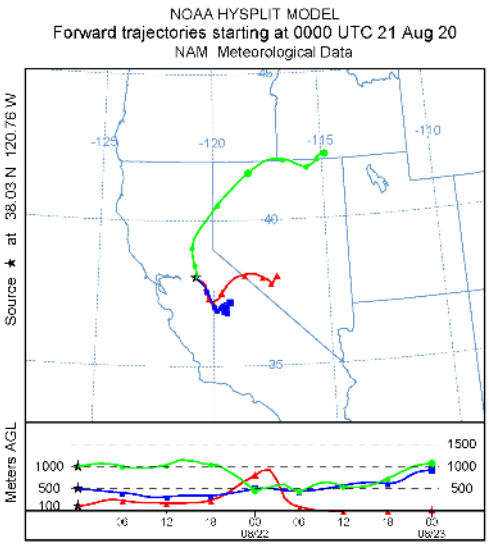
Fire	Start	Containment	Latitude	Longitude	Total Acres
Salt	8/18/20	8/24/20	38.0279	-120.7633	1,789

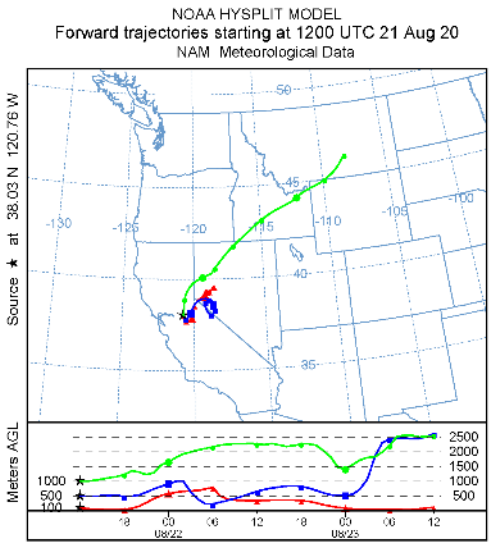


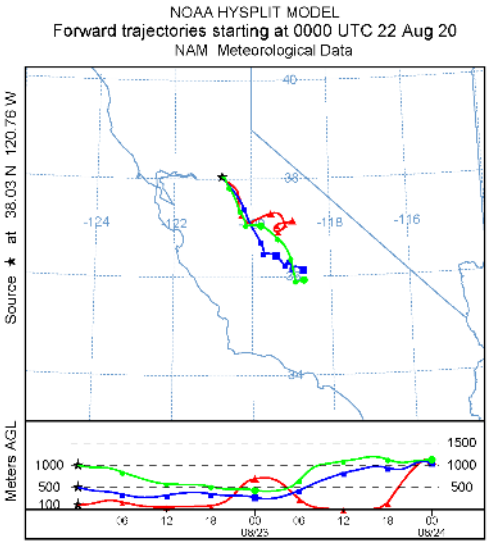


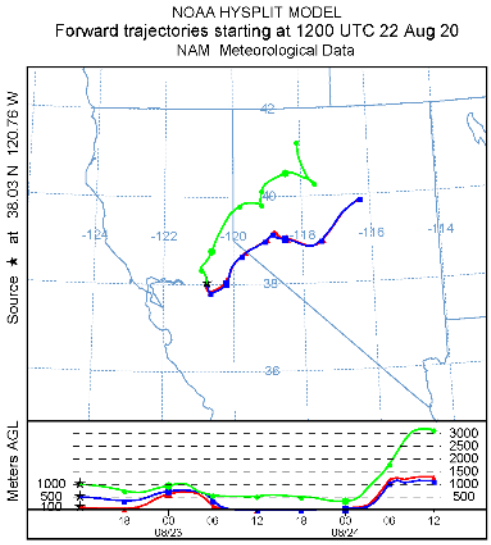

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 38.03 N 120.76 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 38.03 N 120.76 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 38.03 N 120.76 W
Meters AGL

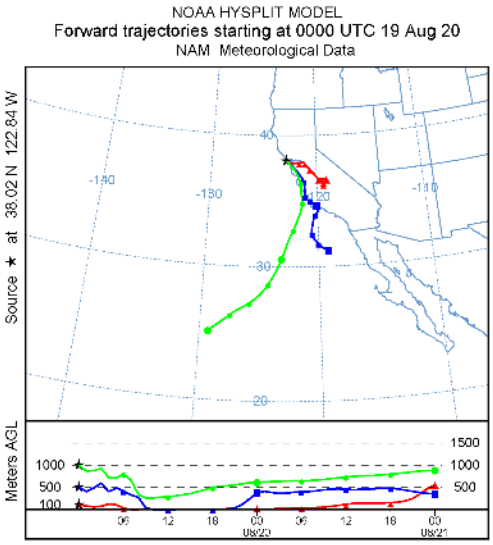

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 38.03 N 120.76 W
Meters AGL

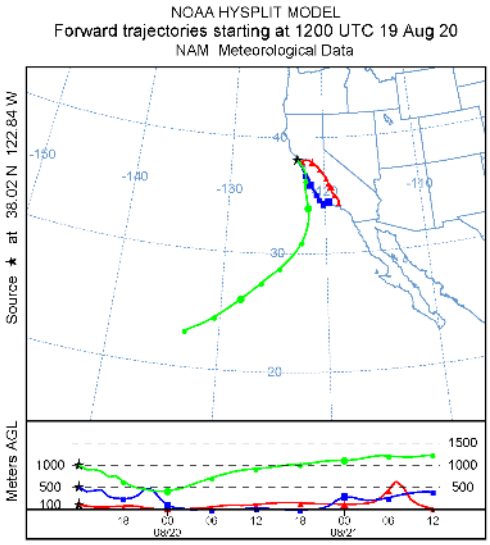


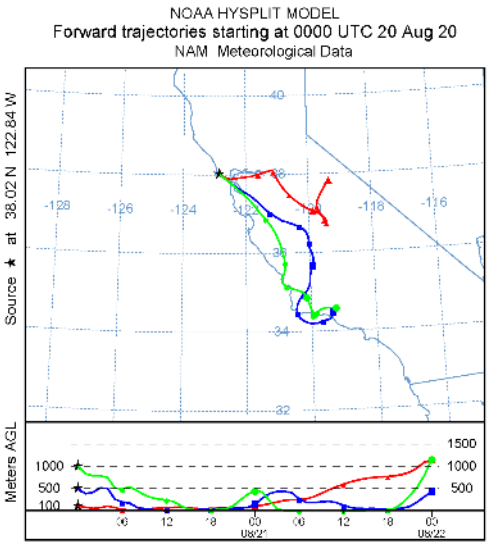


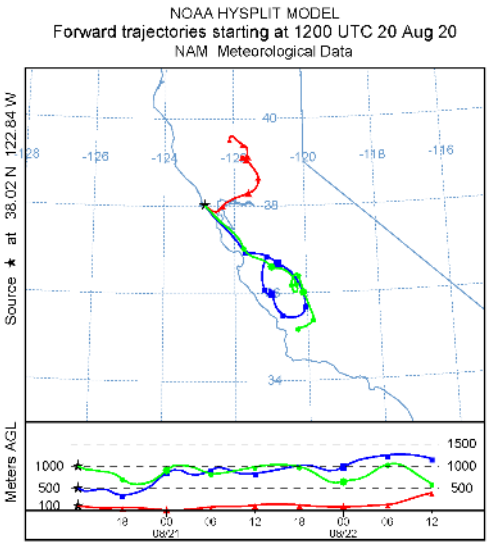
k) Woodward Fire

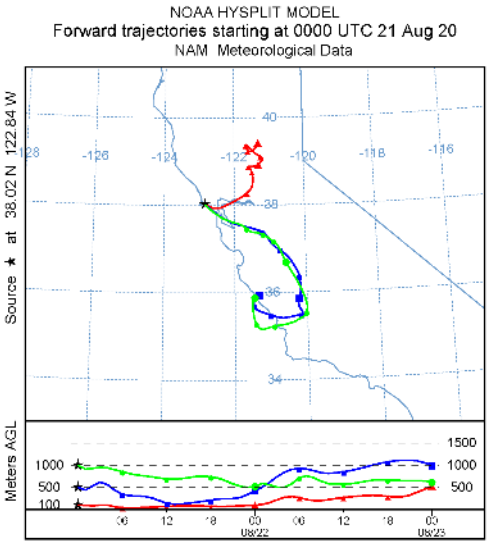
Fire	Start	Containment	Latitude	Longitude	Total Acres
Woodward	8/18/20	10/2/20	38.0181	-122.8367	4,929

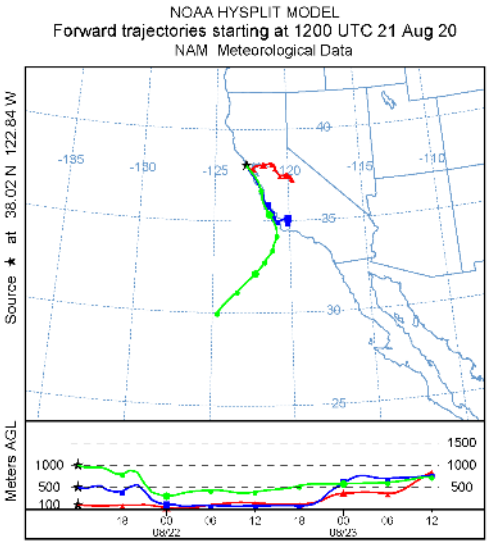

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 38.02 N 122.84 W
Meters AGL

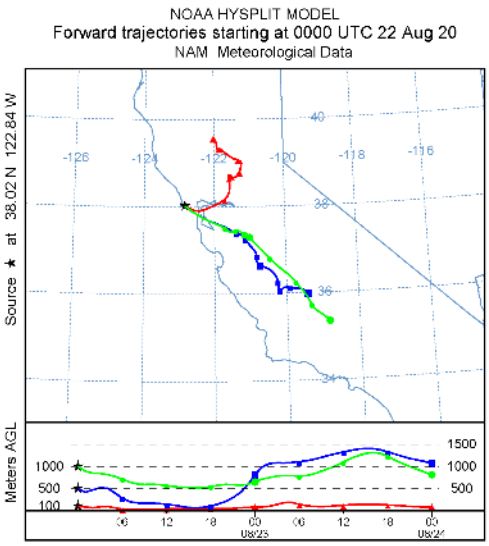

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 38.02 N 122.84 W
Meters AGL

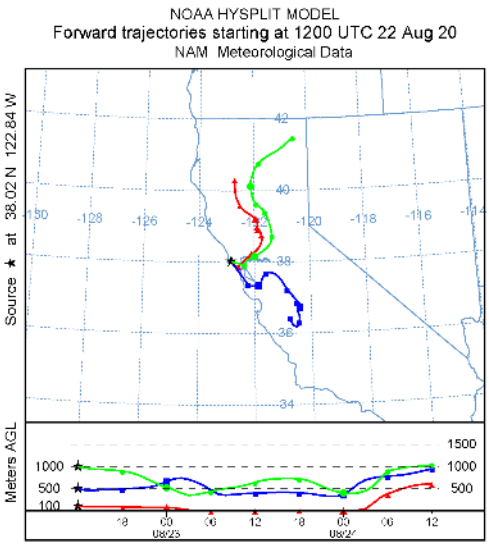

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 38.02 N 122.84 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 38.02 N 122.84 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 38.02 N 122.84 W
Meters AGL
1500
1000
500
100
08/22
08/23

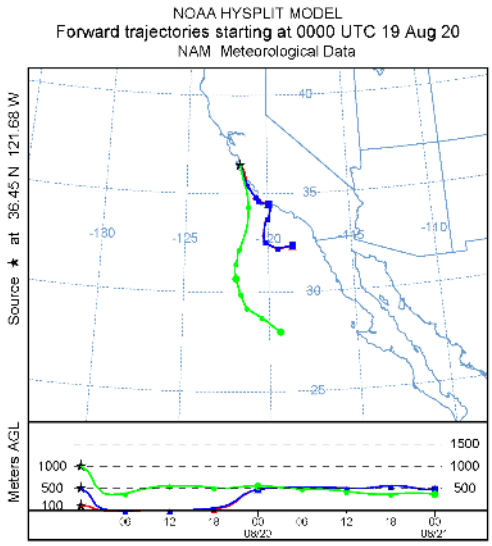

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 38.02 N 122.84 W
Meters AGL
1500
1000
500
100
08/22
08/23

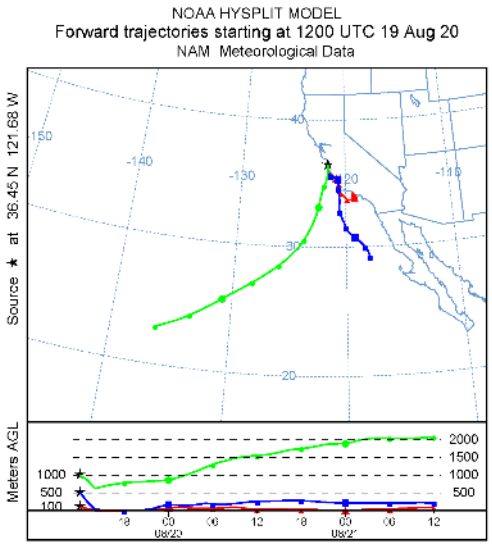

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 38.02 N 122.84 W
Meters AGL
1500
1000
500
100
08/23
08/24

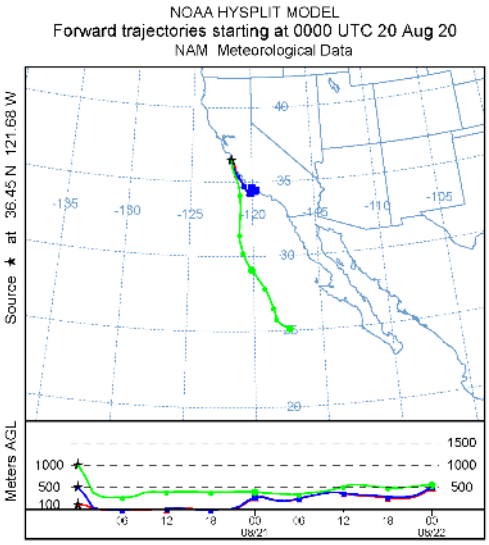

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 38.02 N 122.84 W
Meters AGL
1500
1000
500
100
08/23
08/24

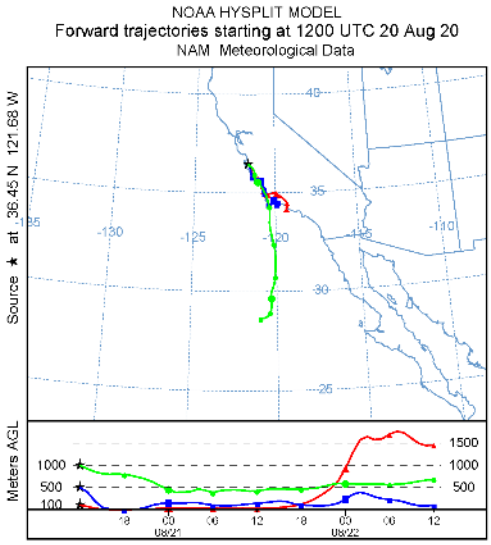
l) Carmel Fire

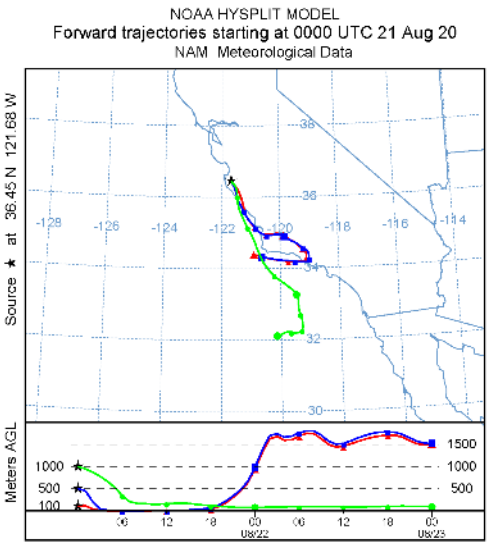
Fire	Start	Containment	Latitude	Longitude	Total Acres
Carmel	8/18/20	9/4/20	36.4463	-121.6818	6,905

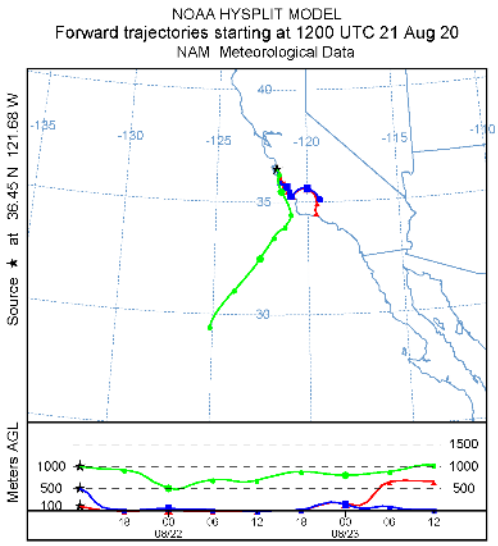


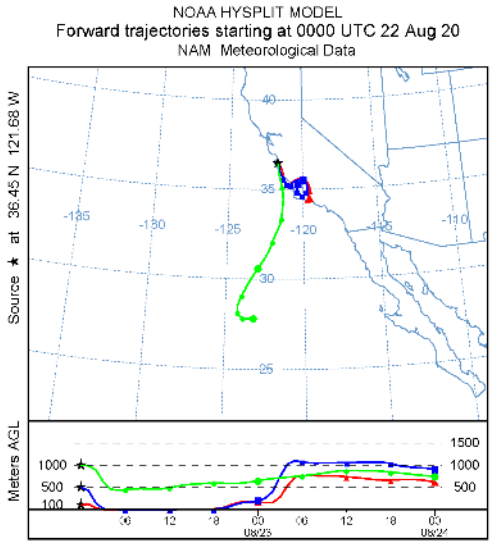


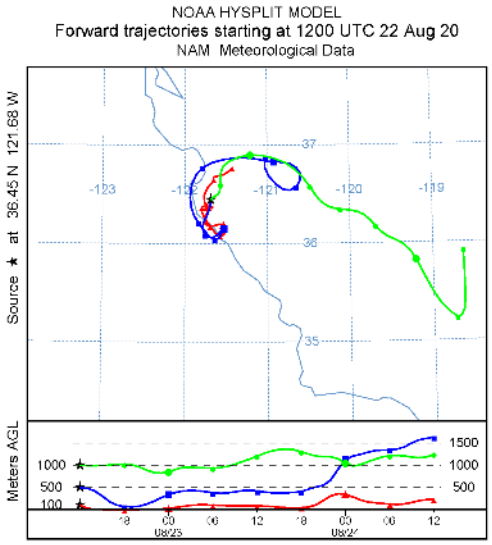

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 36.45 N 121.68 W
Meters AGL
1500
1000
500
100
08/21
08/22


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 36.45 N 121.68 W
Meters AGL
1500
1000
500
100
08/21
08/22


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 36.45 N 121.68 W
Meters AGL
1500
1000
500
100
08/22
08/23

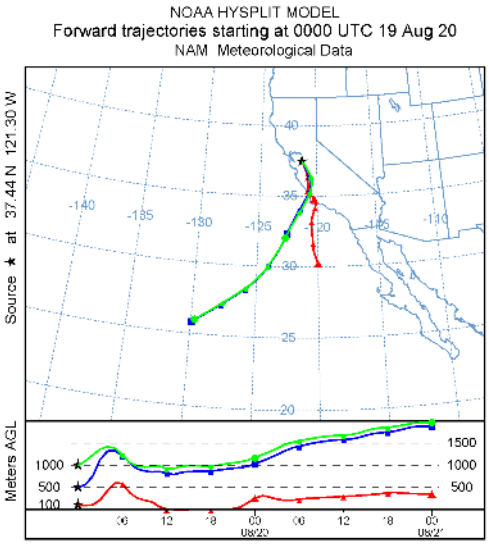

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 36.45 N 121.68 W
Meters AGL
1500
1000
500
100
08/22
08/23

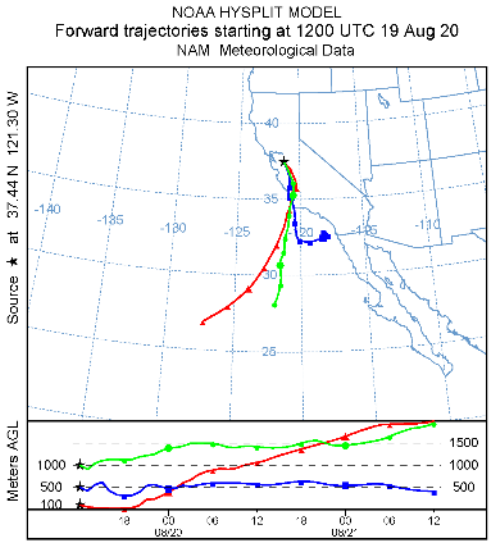


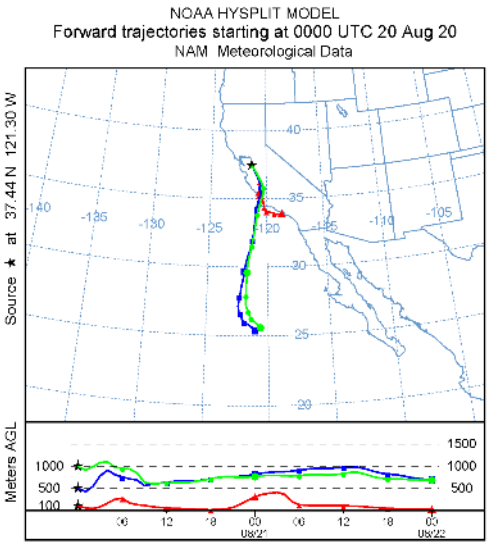


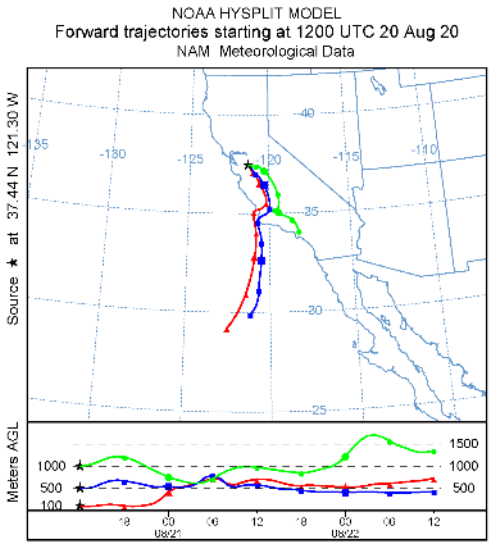
m) SCU Lightning Complex

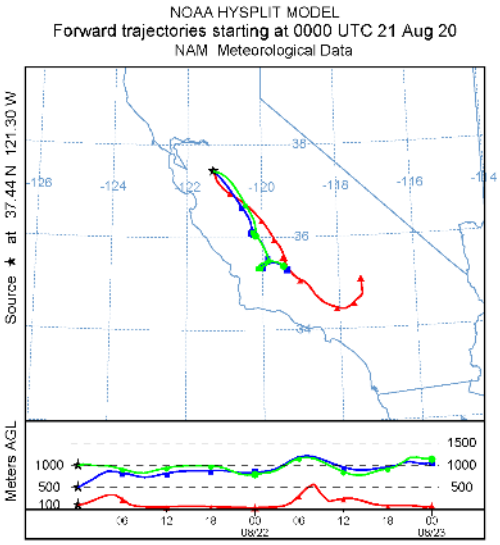
Fire	Start	Containment	Latitude	Longitude	Total Acres
SCU Lightning Complex	8/18/20	10/1/20	37.4394	-121.3044	396,624

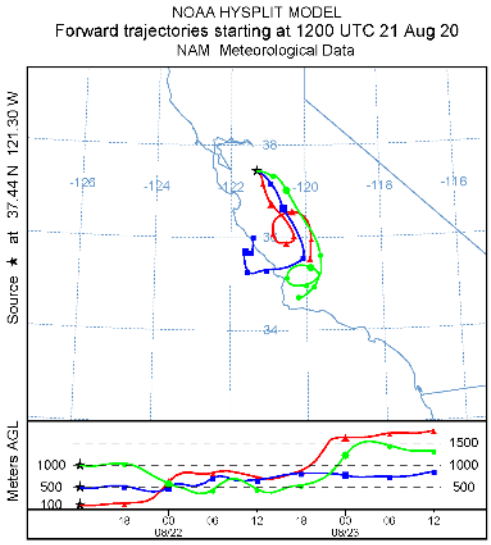

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 37.44 N 121.30 W
Meters AGL
1500
1000
500
100
U8/20
U8/21

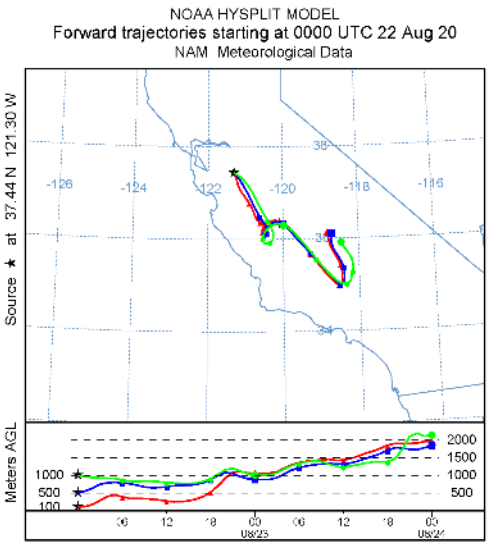

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 19 Aug 20
NAM Meteorological Data
Source ★ at 37.44 N 121.30 W
Meters AGL
1500
1000
500
100
U8/20
U8/21

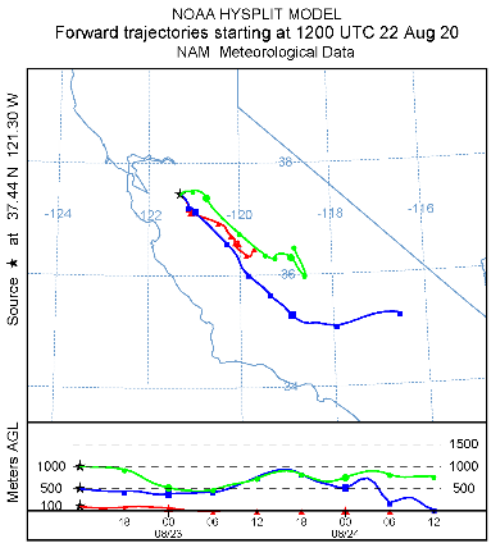

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 37.44 N 121.30 W
Meters AGL
1500
1000
500
100
U8/21
U8/22


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 20 Aug 20
NAM Meteorological Data
Source ★ at 37.44 N 121.30 W
Meters AGL
1500
1000
500
100
U8/21
U8/22


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 37.44 N 121.30 W
Meters AGL

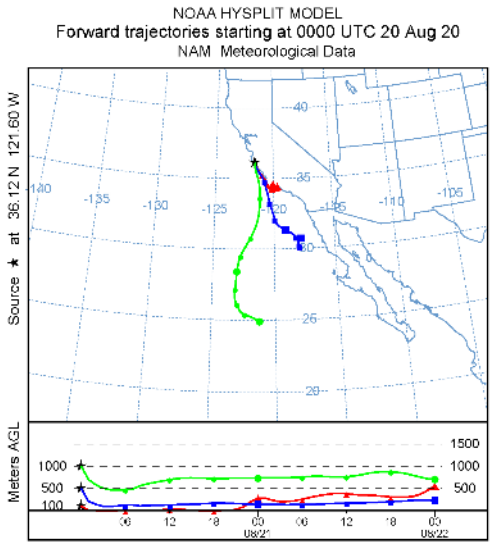

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 37.44 N 121.30 W
Meters AGL

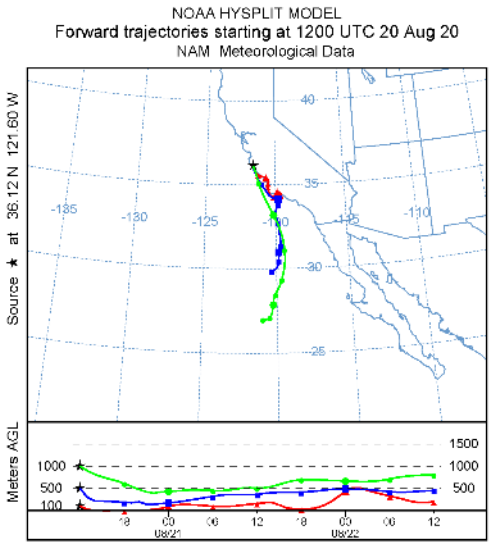

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 37.44 N 121.30 W
Meters AGL

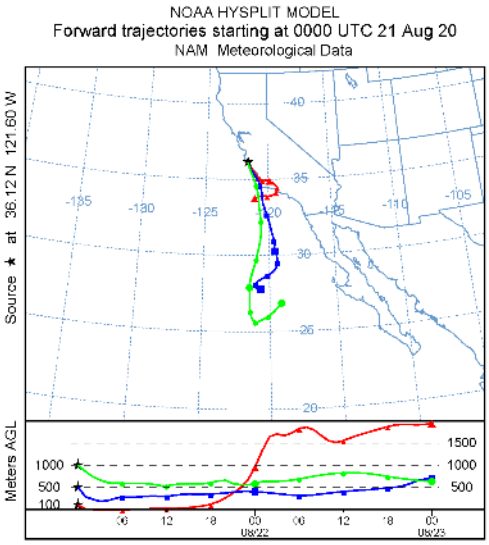

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 37.44 N 121.30 W
Meters AGL

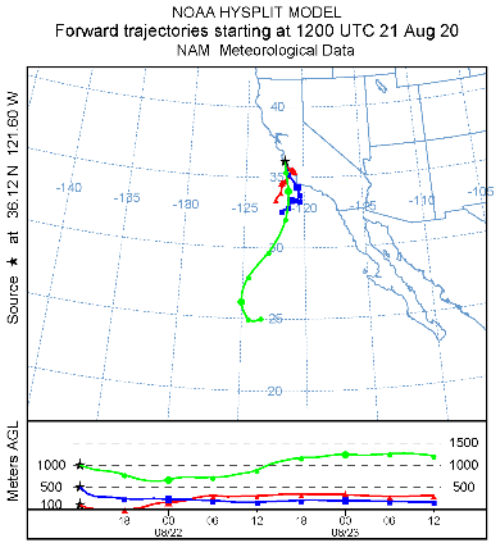
n) Dolan Fire

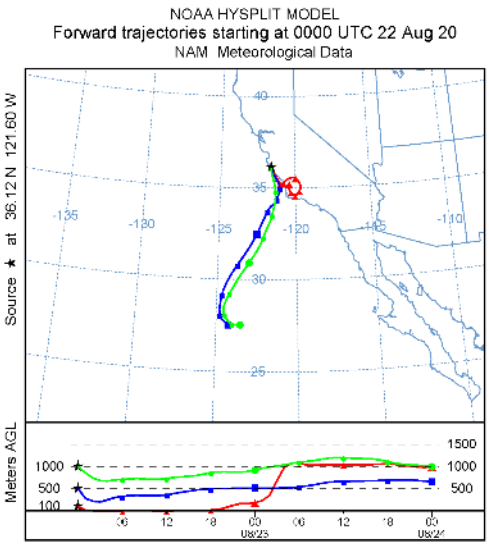
Fire	Start	Containment	Latitude	Longitude	Total Acres
Dolan	8/19/20	12/31/20	36.123	-121.602	124,924

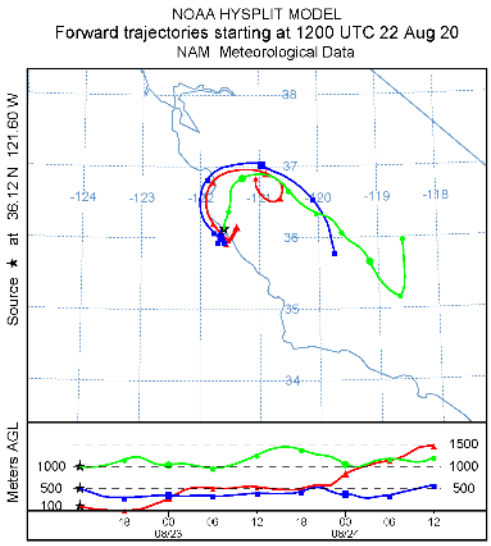





NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 36.12 N 121.60 W
Meters AGL
1500
1000
500
100
08/22
08/23

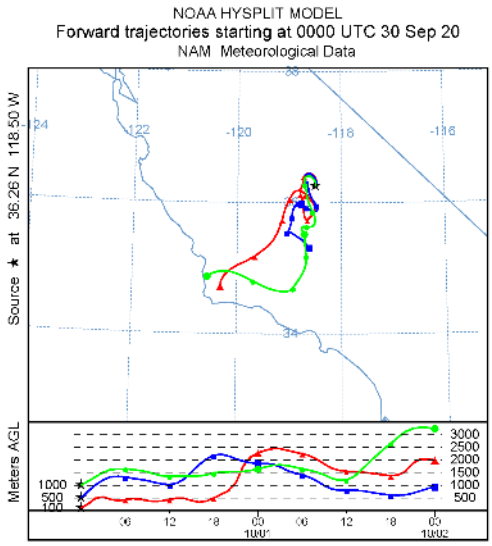

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 21 Aug 20
NAM Meteorological Data
Source ★ at 36.12 N 121.60 W
Meters AGL
1500
1000
500
100
08/22
08/23

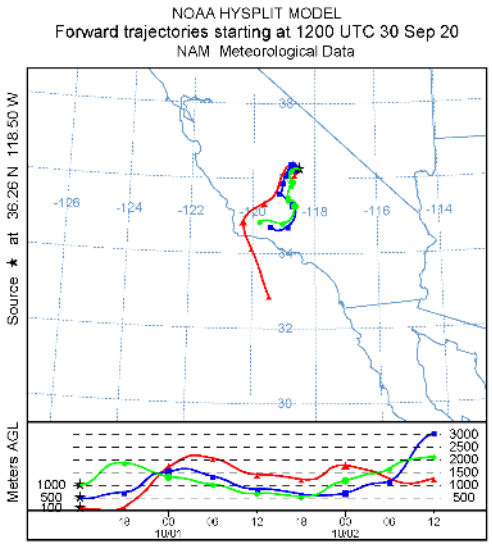

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 36.12 N 121.60 W
Meters AGL
1500
1000
500
100
08/23
08/24

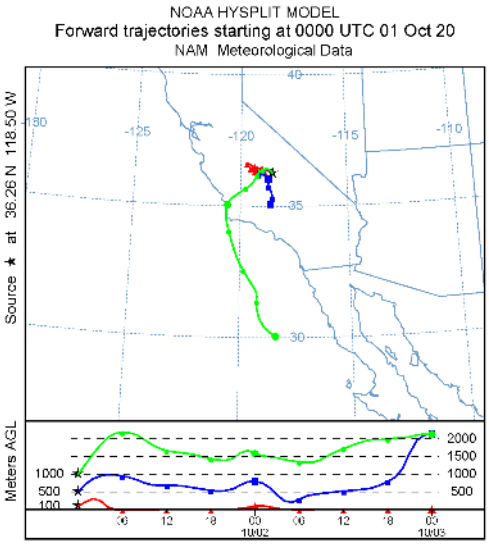

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 22 Aug 20
NAM Meteorological Data
Source ★ at 36.12 N 121.60 W
Meters AGL
1500
1000
500
100
08/23
08/24

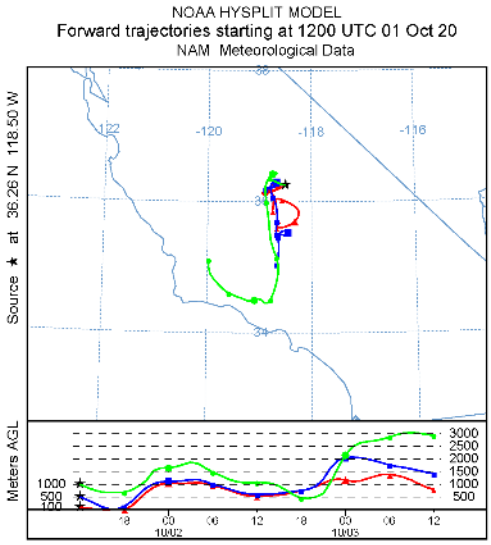
o) SQF Complex

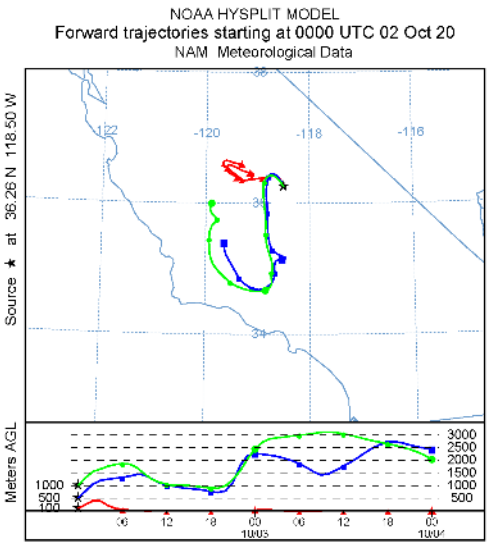
Fire	Start	Containment	Latitude	Longitude	Total Acres
SQF Complex	8/21/20	1/6/21	36.255	-118.497	174,178

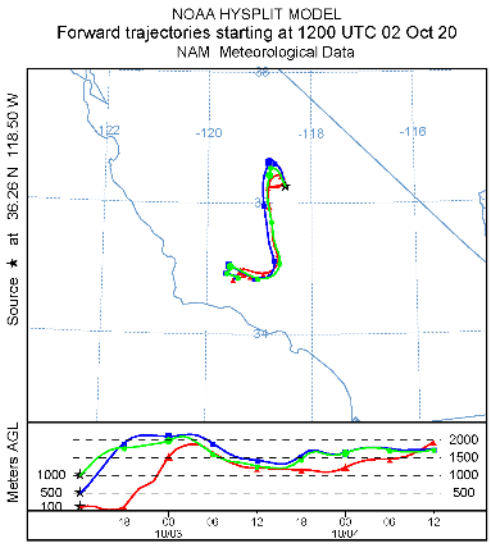


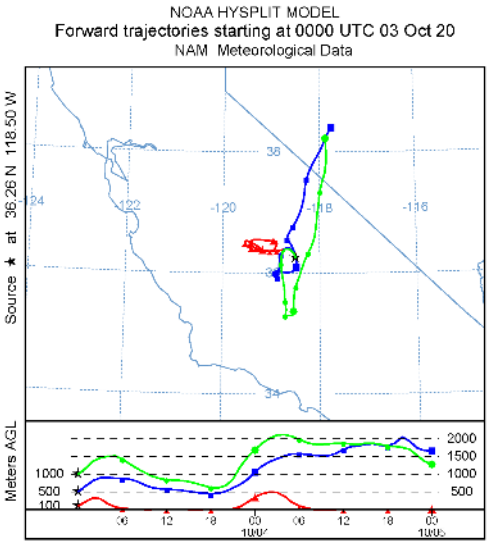


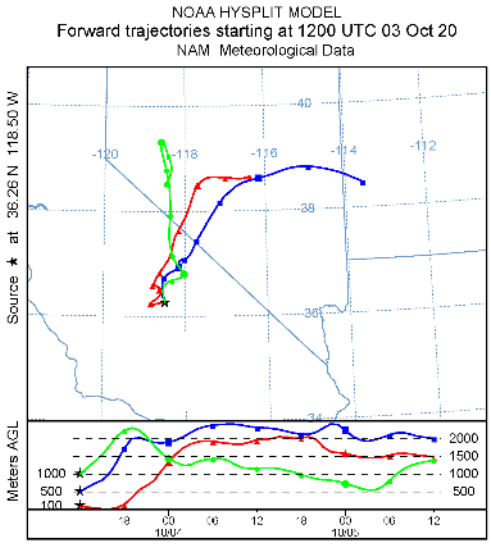

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 36.26 N 118.50 W
Meters AGL

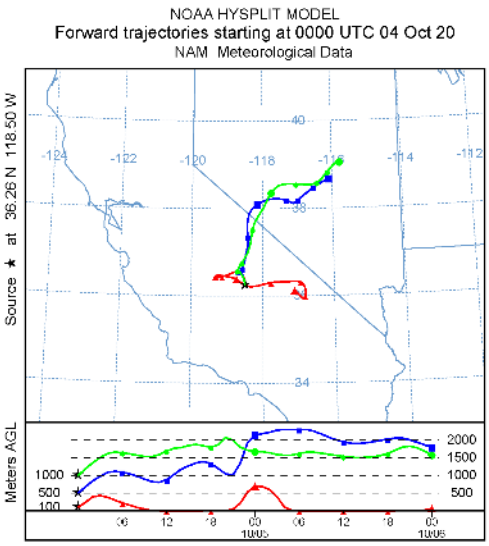

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 36.26 N 118.50 W
Meters AGL

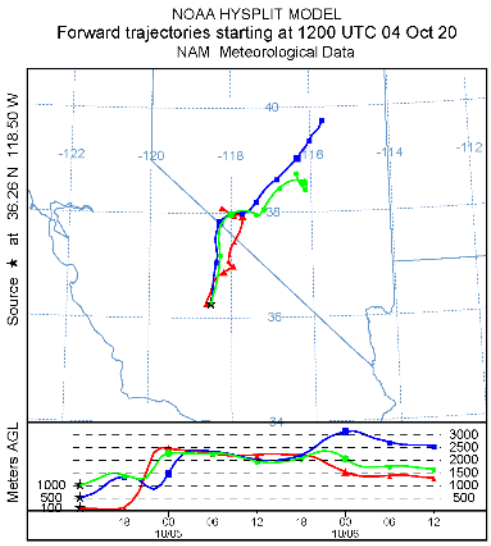

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 36.26 N 118.50 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 36.26 N 118.50 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 36.26 N 118.50 W
Meters AGL

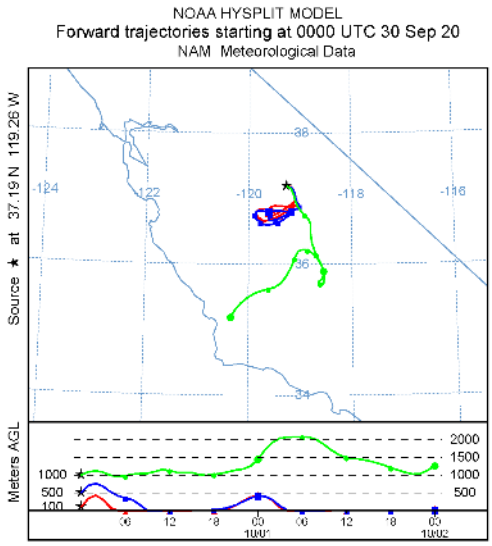

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 36.26 N 118.50 W
Meters AGL

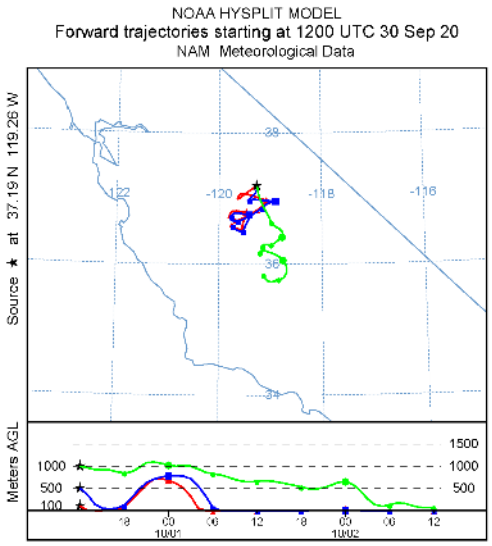

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Oct 20
NAM Meteorological Data
Source ★ at 36.26 N 118.50 W
Meters AGL

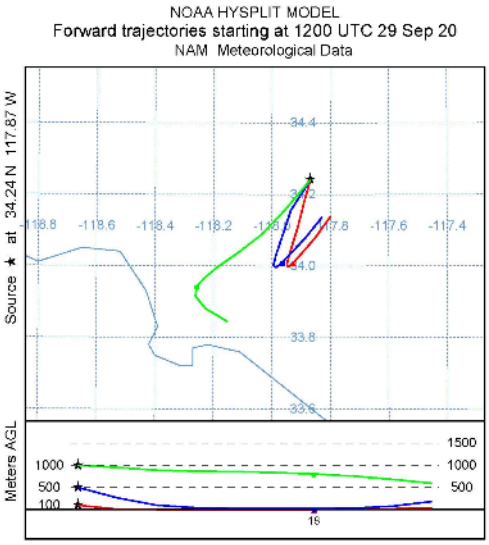

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Oct 20
NAM Meteorological Data
Source ★ at 36.26 N 118.50 W
Meters AGL

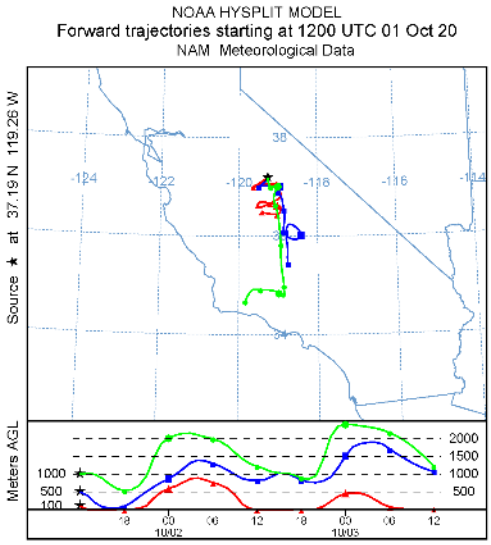
p) Creek Fire

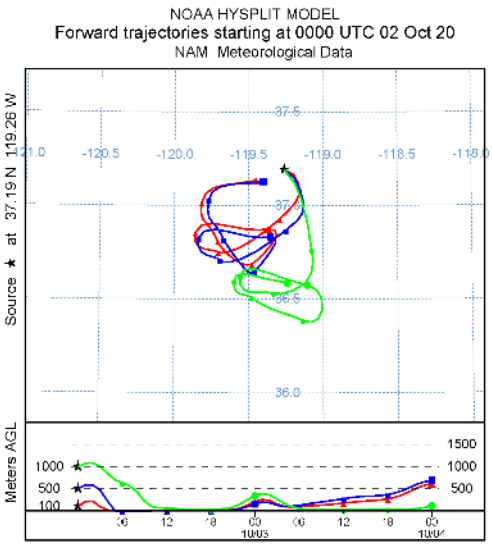
Fire	Start	Containment	Latitude	Longitude	Total Acres
Creek	9/4/20	12/24/20	37.1915	-119.2612	379,895

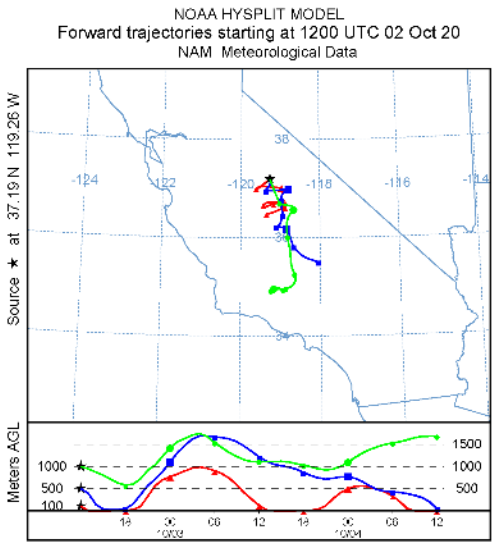


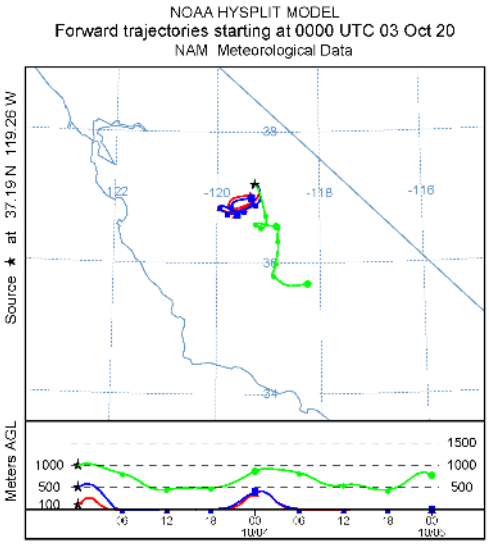


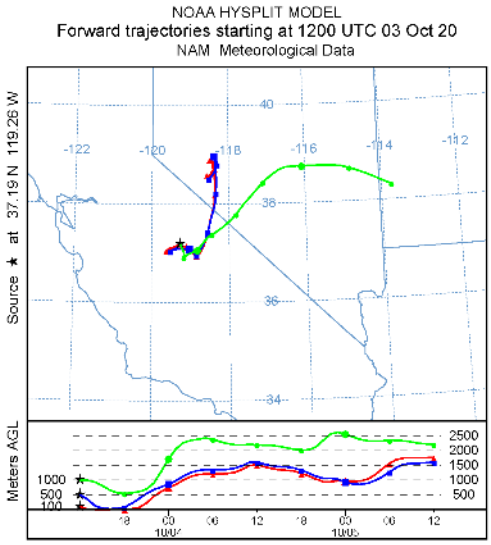

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 29 Sep 20
NAM Meteorological Data
Source ★ at 34.24 N 117.87 W
Meters AGL

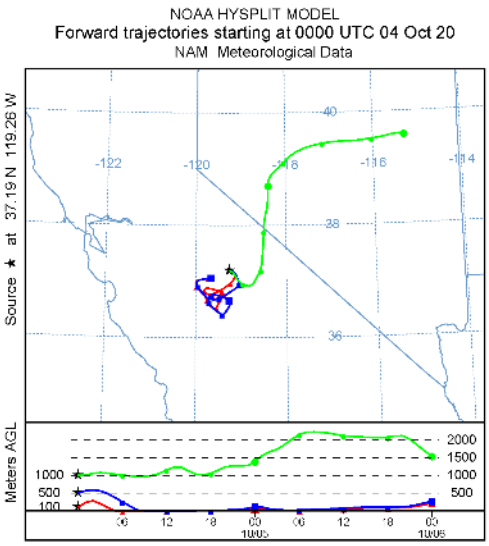

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 37.19 N 119.26 W
Meters AGL

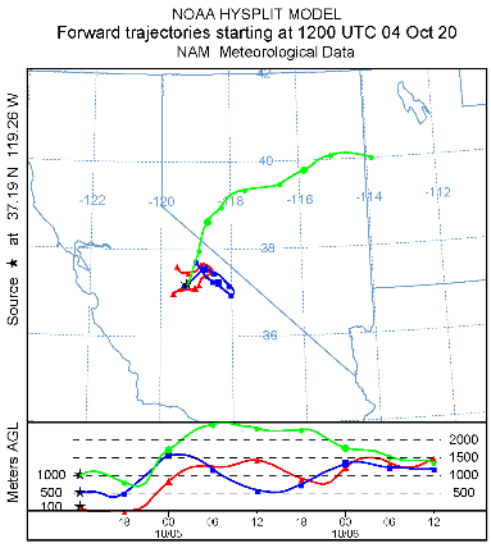

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 37.19 N 119.26 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 37.19 N 119.26 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 37.19 N 119.26 W
Meters AGL

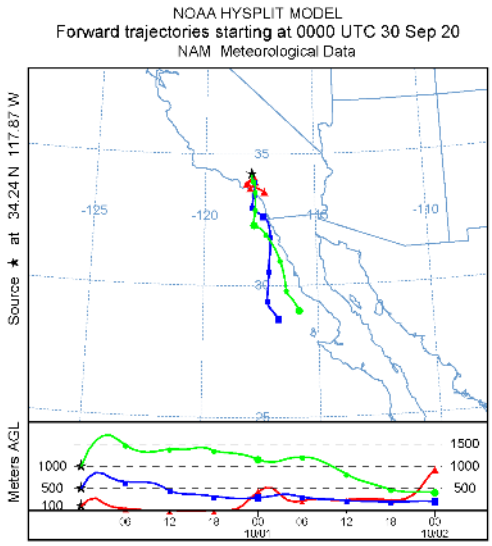

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 37.19 N 119.26 W
Meters AGL

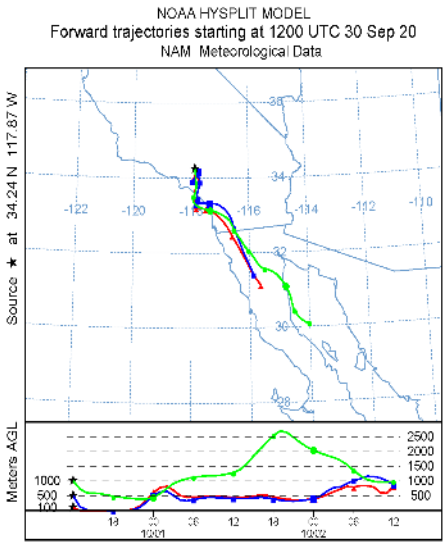

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Oct 20
NAM Meteorological Data
Source ★ at 37.19 N 119.26 W
Meters AGL

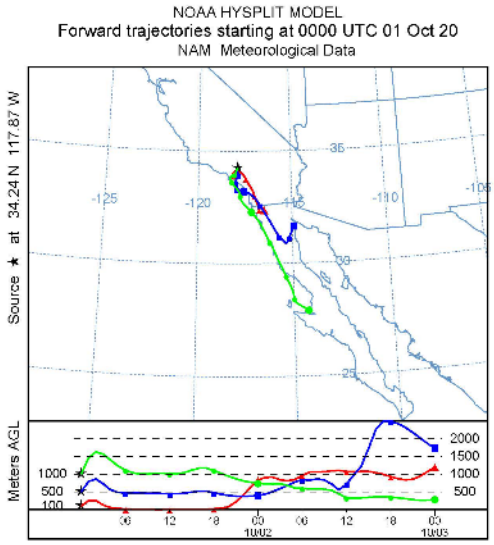

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Oct 20
NAM Meteorological Data
Source ★ at 37.19 N 119.26 W
Meters AGL

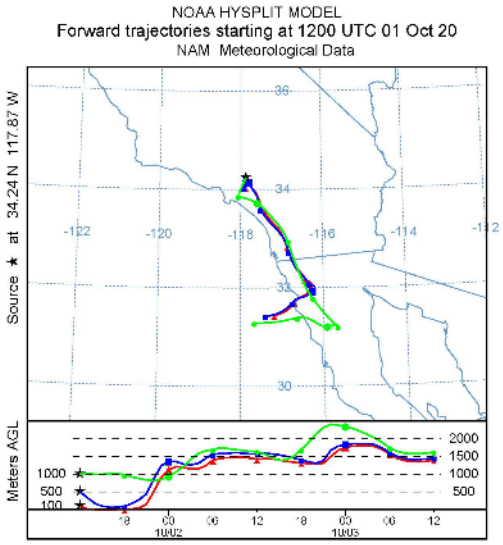
q) Bobcat Fire

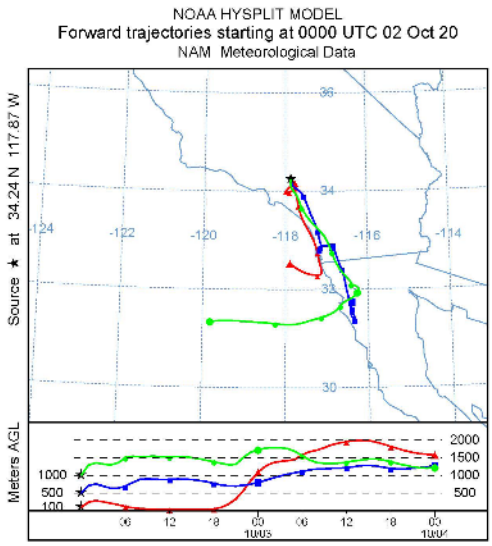
Fire	Start	Containment	Latitude	Longitude	Total Acres
Bobcat	9/6/20	11/8/20	39.2447	-117.9648	115,796

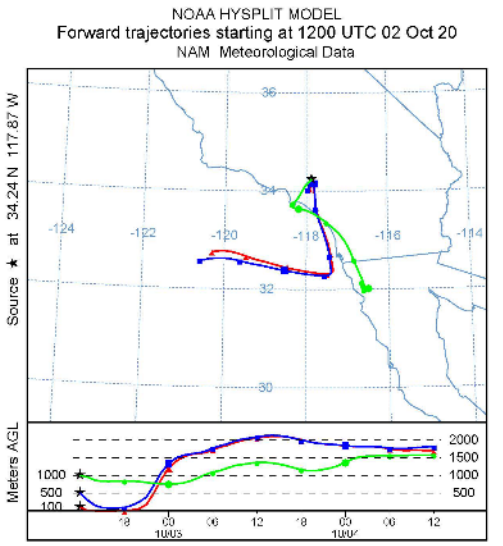


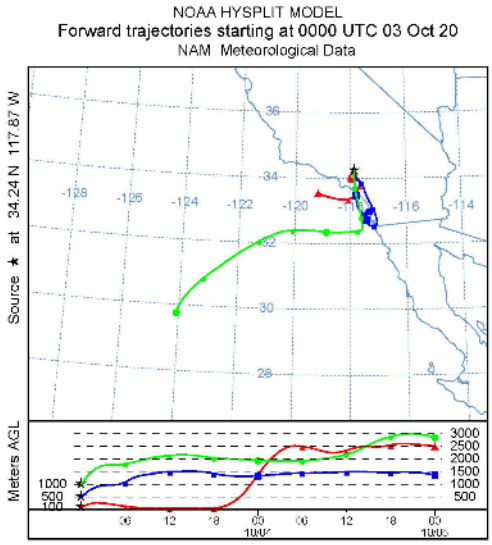


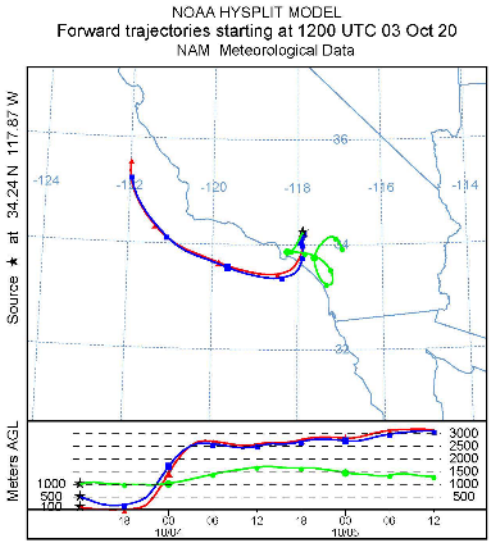

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 34.24 N 117.87 W
Meters AGL

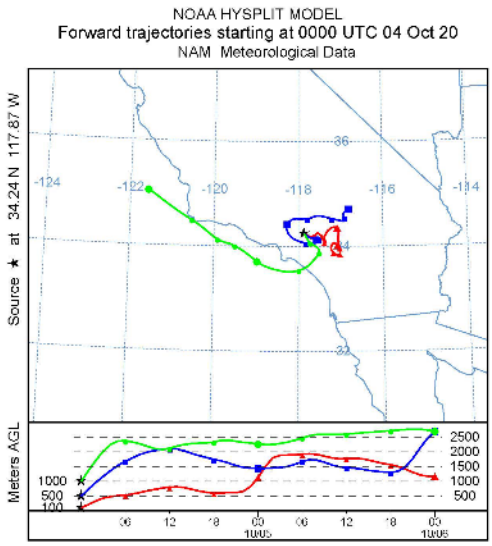

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 01 Oct 20
NAM Meteorological Data
Source ★ at 34.24 N 117.87 W
Meters AGL

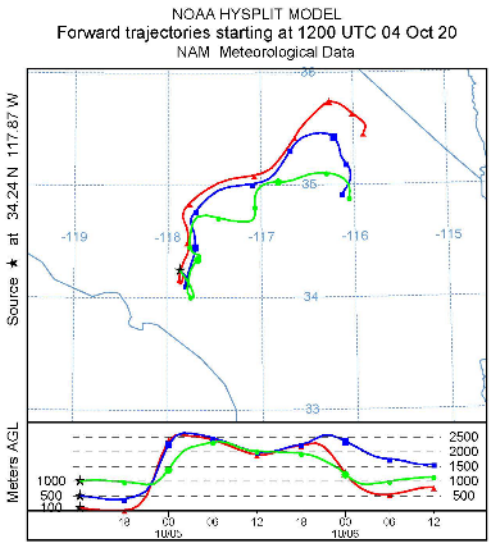

NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 34.24 N 117.87 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 02 Oct 20
NAM Meteorological Data
Source ★ at 34.24 N 117.87 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 34.24 N 117.87 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 03 Oct 20
NAM Meteorological Data
Source ★ at 34.24 N 117.87 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 0000 UTC 04 Oct 20
NAM Meteorological Data
Source ★ at 34.24 N 117.87 W
Meters AGL


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 04 Oct 20
NAM Meteorological Data
Source ★ at 34.24 N 117.87 W
Meters AGL

2. HYSPLIT Backward Trajectory (from Monitor)

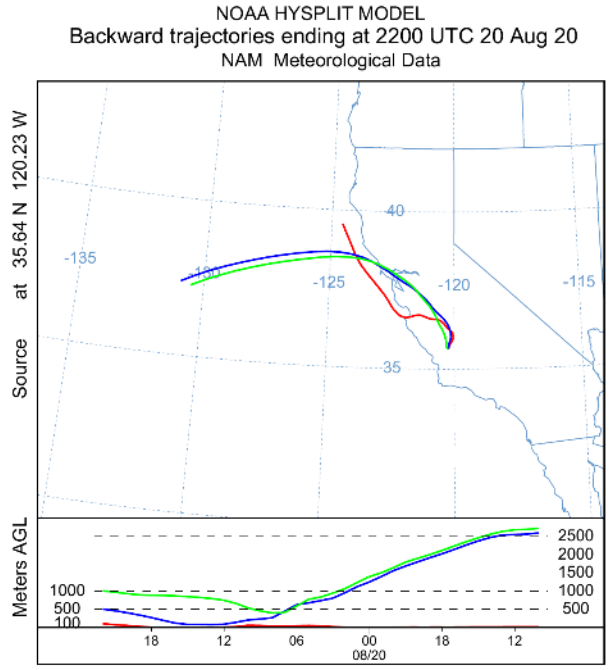
NOAA's HYSPLIT[98] model was used to determine simple back-trajectories showing the path that an air parcel took for a specified period of time (here, 36 hours) before reaching each of the exceeding monitors at the hour of maximum concentration in the exceeding 8-hour time period. Three height levels (red: 100 meters (m), blue: 500m; green: 1000m) were used to indicate transport near the surface and in the mid to upper levels of the atmosphere. Tables indicate the first hour of the exceeding 8-hour time period and the hour of the maximum concentrations within that 8-hour time period. Both PST (Pacific Standard Time) and UTC (Universal Coordinated Time) are noted.

a) E. San Luis Obispo (Red Hills)

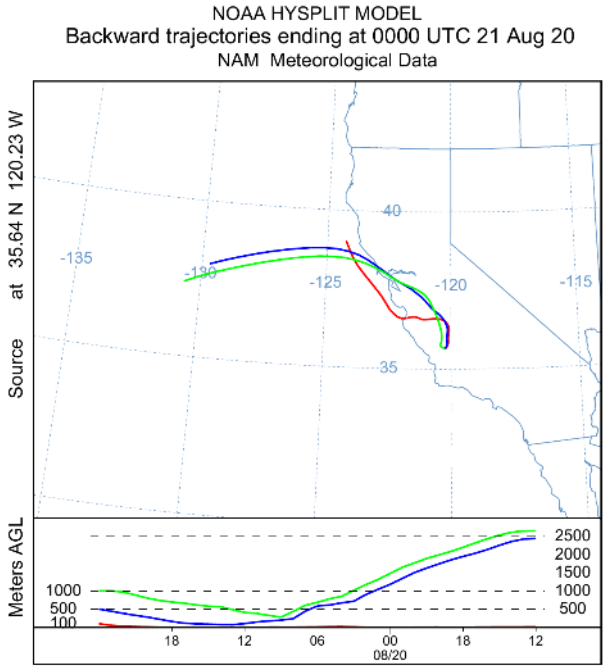
Date (PST)	First Hour (PST)	Date (PST)	Max Hour (PST)	Date (UTC)	First Hour (UTC)	Date (UTC)	Max Hour (UTC)
8/20/2020	14	8/20/2020	16	8/20/2020	22	8/21/2020	0
8/21/2020	12	8/21/2020	16	8/21/2020	20	8/22/2020	0
9/30/2020	23	10/1/2020	5	10/1/2020	7	10/1/2020	13
10/1/2020	13	10/1/2020	18	10/1/2020	21	10/2/2020	2
10/2/2020	12	10/2/2020	15	10/2/2020	20	10/2/2020	23

[98] HYbrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT)

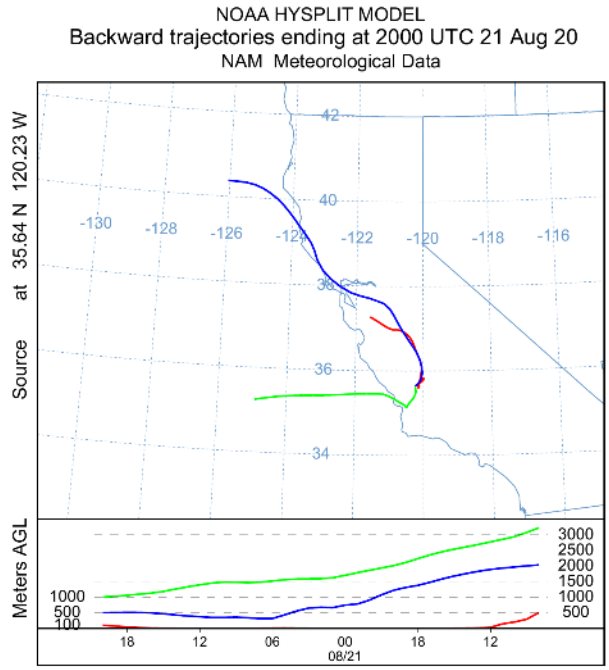
First Hour: August 20, 2020 14PST
(8/20/2020 22UTC)



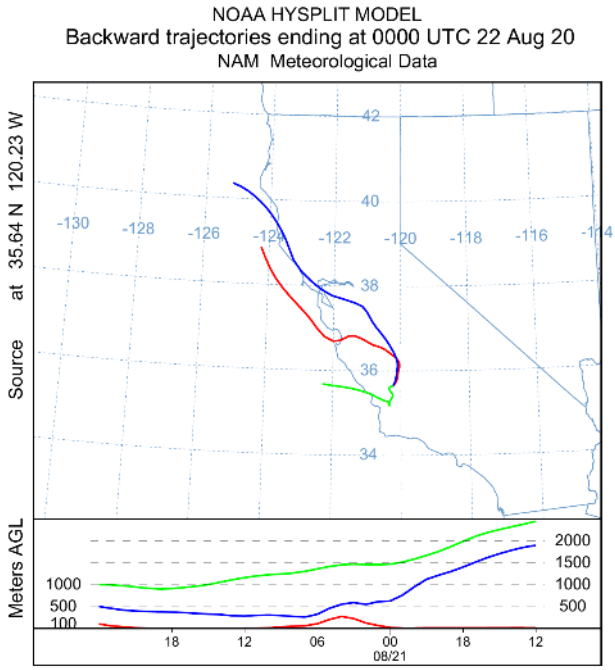
Maximum Hour: August 20, 2020 16PST
(8/21/2020 00UTC)



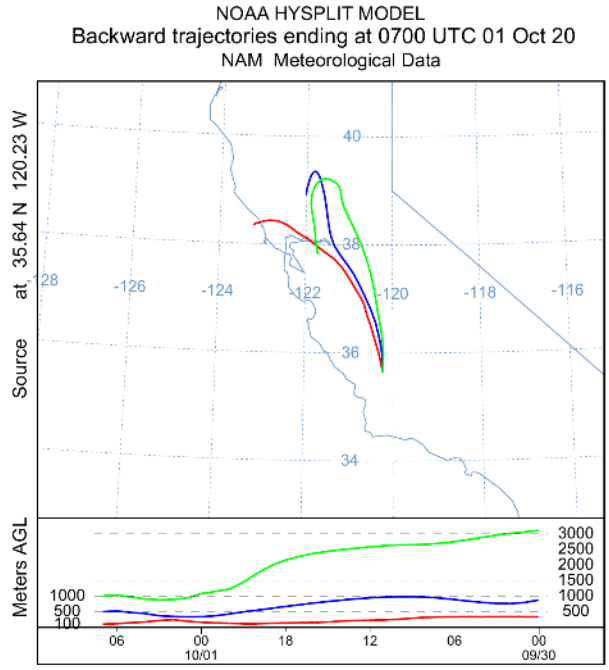
First Hour: August 21, 2020 12PST
(8/21/2020 20UTC)



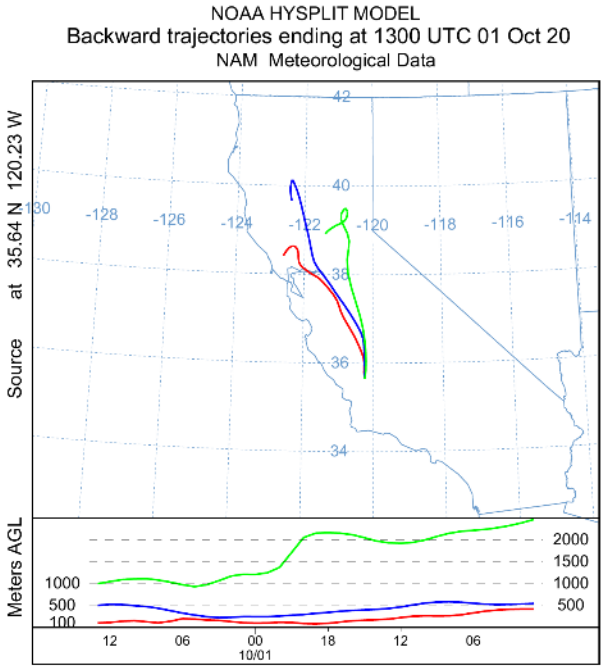
Maximum Hour: August 21, 2020 16PST
(8/22/2020 00UTC)



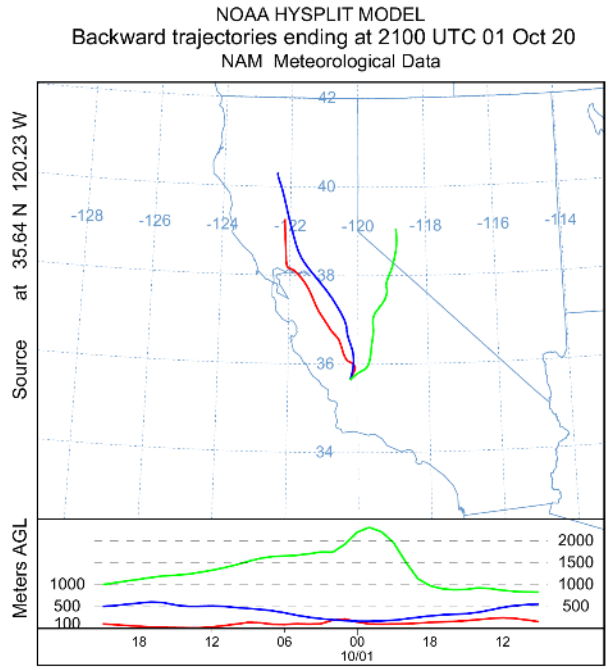
First Hour: September 30, 2020 23PST (10/01/2020 07UTC)



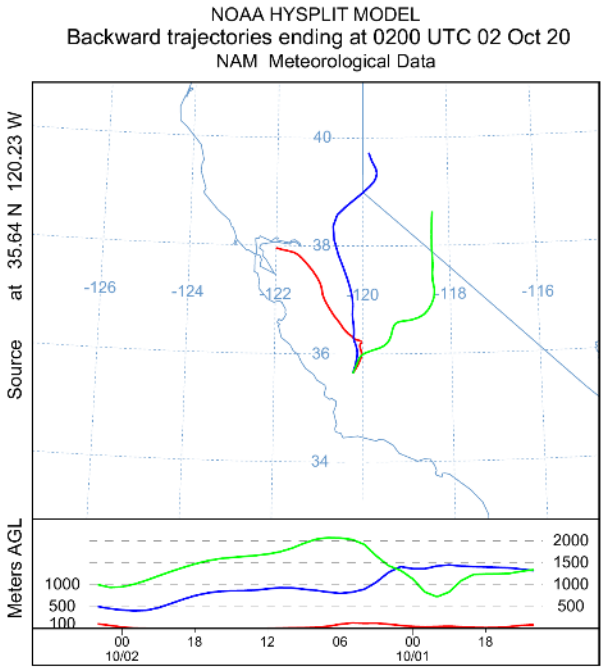
Maximum Hour: October 01, 2020 05PST (10/01/2020 13UTC)



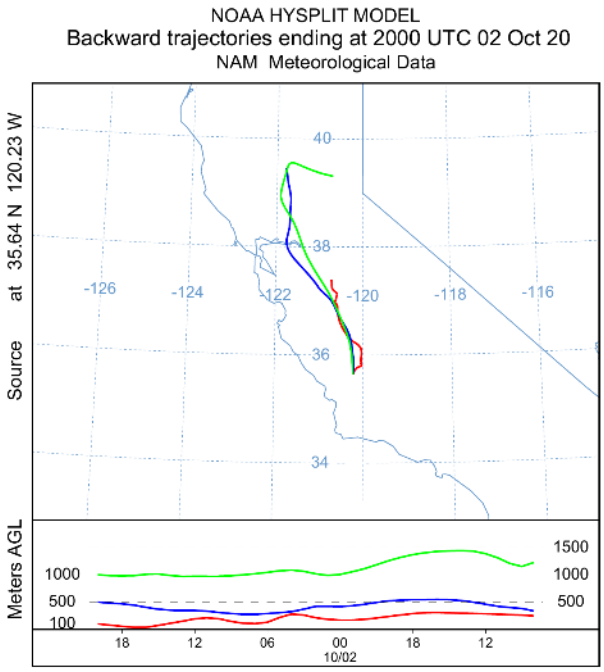
First Hour: October 01, 2020 13PST (10/01/2020 21UTC)



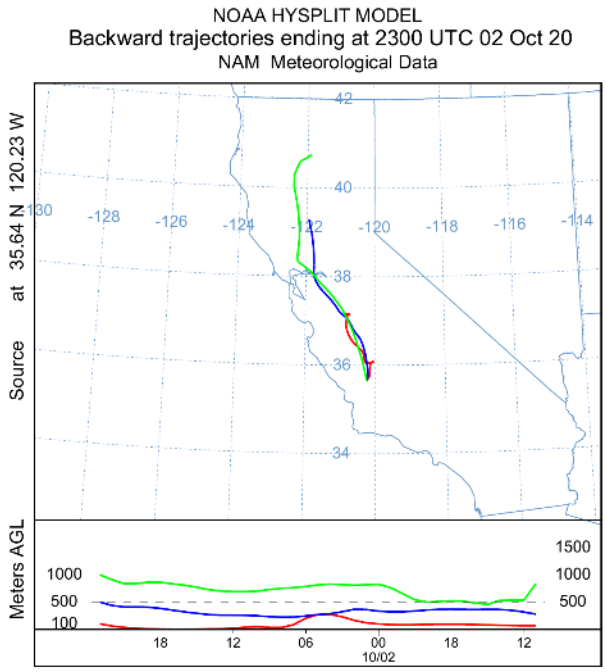
Maximum Hour: October 01, 2020 18PST (10/02/2020 02UTC)



First Hour: October 02, 2020 12PST (10/02/2020 20UTC)



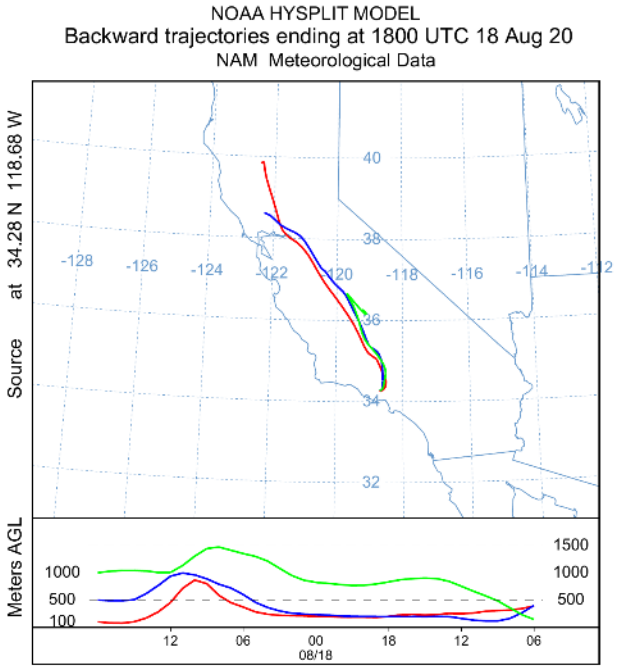
Maximum Hour: October 02, 2020 15PST (10/02/2020 23UTC)



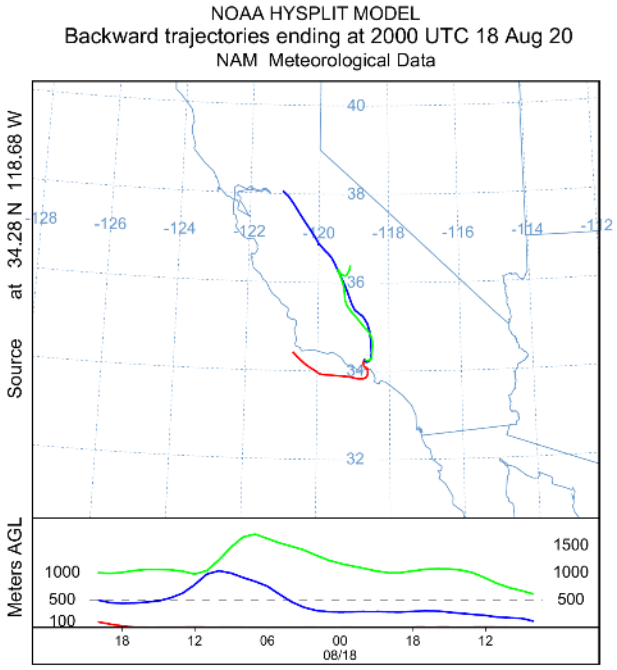
b) Ventura County (Simi Valley)

Date (PST)	First Hour (PST)	Date (PST)	Max Hour (PST)	DATE (UTC)	First Hour (UTC)	Date (UTC)	Max Hour (UTC)
8/18/2020	10	8/18/2020	12	8/18/2020	18	8/18/2020	20
8/21/2020	9	8/21/2020	12	8/21/2020	17	8/21/2020	20
10/2/2020	10	10/2/2020	13	10/2/2020	18	10/2/2020	21
10/3/2020	10	10/3/2020	13	10/3/2020	18	10/3/2020	21
10/4/2020	9	10/4/2020	13	10/4/2020	17	10/4/2020	21

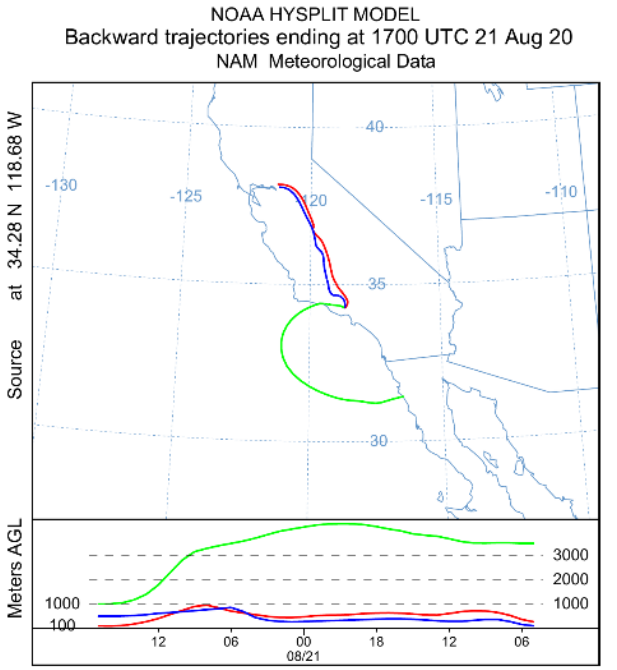
First Hour: August 18, 2020 10PST
(8/18/2020 18UTC)



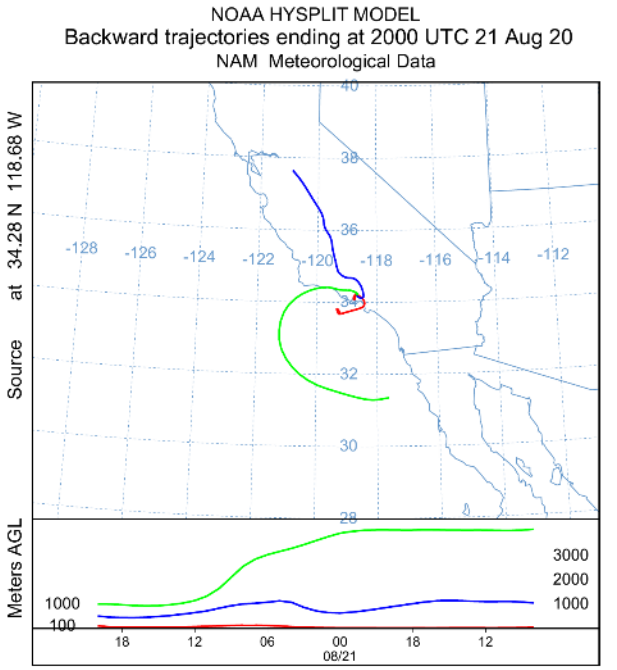
Maximum Hour: August 18, 2020 12PST
(8/18/2020 20UTC)



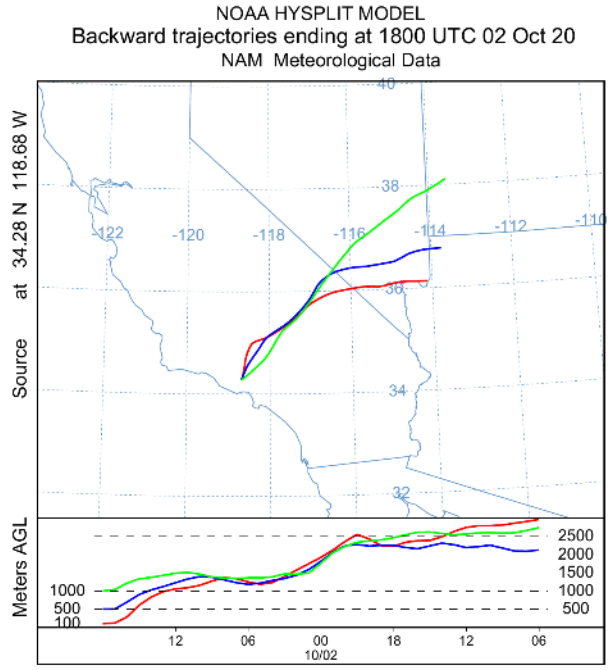
First Hour: August 21, 2020 09PST
(8/21/2020 17UTC)



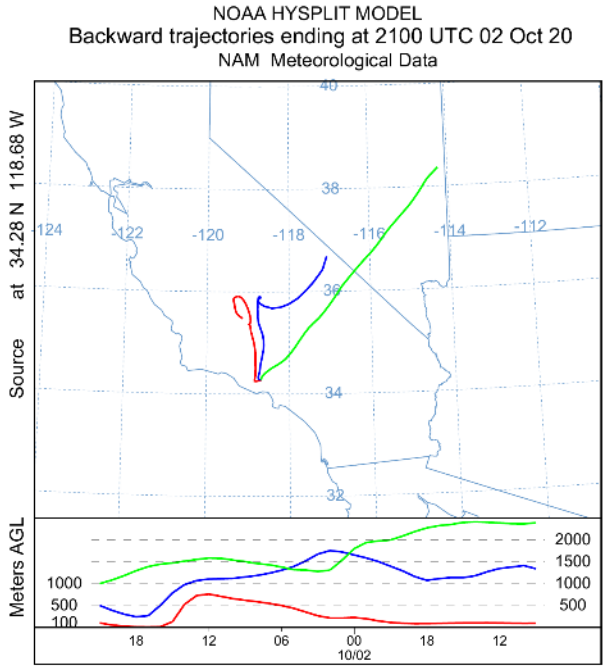
Maximum Hour: August 21, 2020 12PST
(8/21/2020 20UTC)



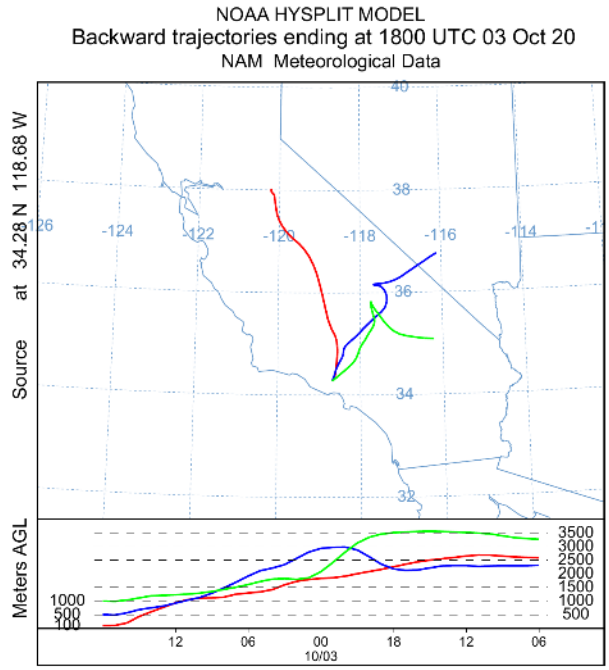
First Hour: October 02, 2020 10PST
(10/02/2020 18UTC)



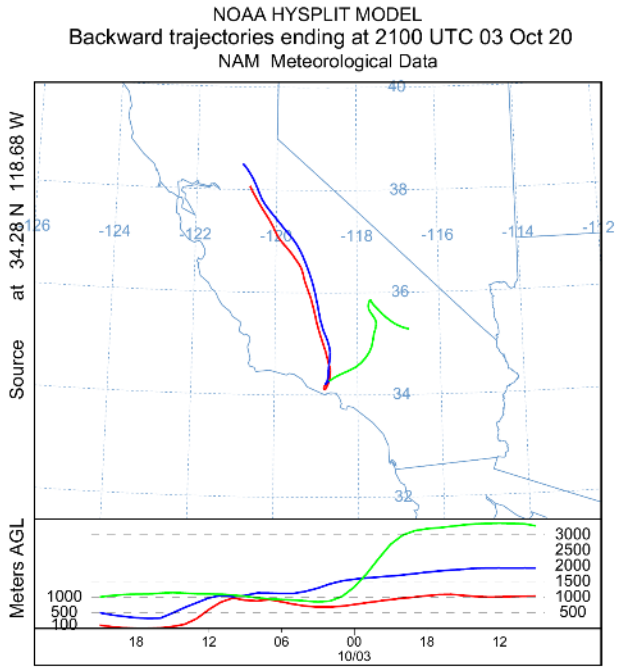
Maximum Hour: October 02, 2020 13PST
(10/02/2020 21UTC)



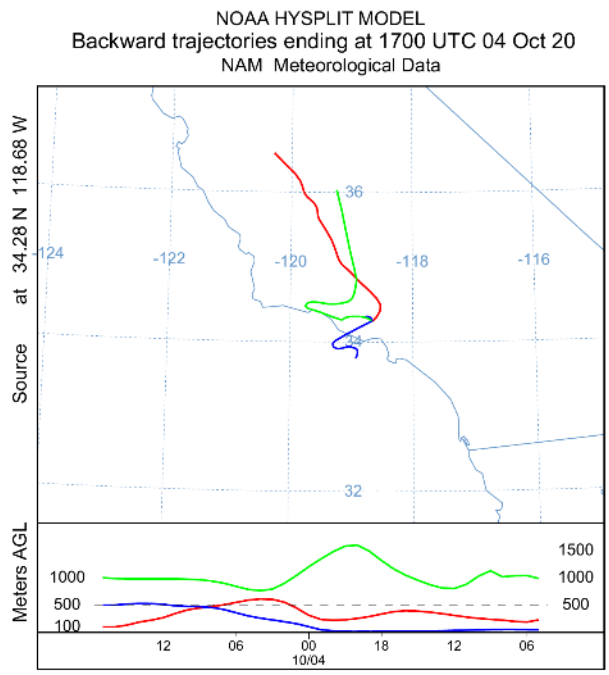
First Hour: October 03, 2020 10PST
(10/03/2020 18UTC)



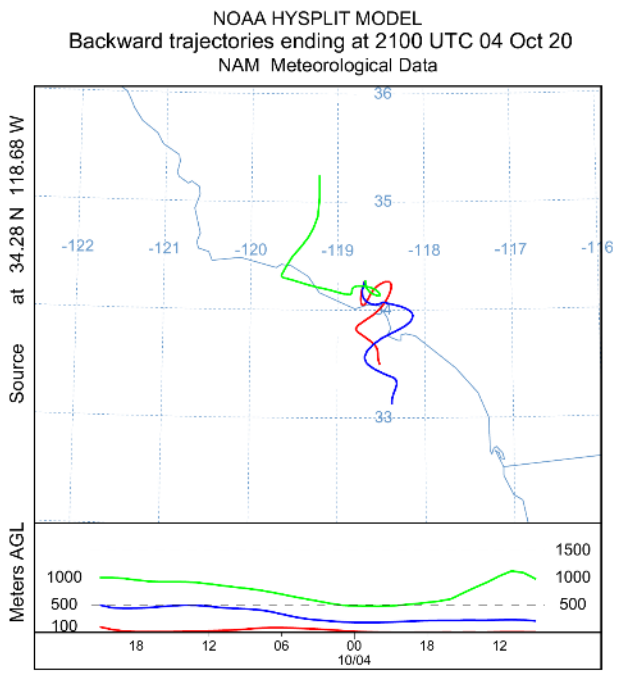
Maximum Hour: October 03, 2020 13PST
(10/03/2020 21UTC)



First Hour: October 04, 2020 09PST
(10/04/2020 17UTC)



Maximum Hour: October 04, 2020 13PST
(10/04/2020 21UTC)



E. Satellite and Modeled Products

1. NOAA Smoke Text Products[99]

The NOAA Smoke Text Product is a text-based analysis of data from multiple satellites. These products are used to give an overall view of smoke origins, current locations, and potential transport, and can supplement information from other media. Observations are generally recorded twice each day, and excerpts from each are shown below. The majority of these reports highlight the large amounts of smoke issued on an almost daily basis and their impacts on California and the rest of the U.S. Individual areas at the county level are not specifically noted. Smoke Text Products from May 1 through August 31, 2020 are unavailable.

a) Wednesday, September 30, 2020

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY

THROUGH 1730z September 30, 2020

SMOKE:

[99] NOAA Hazard and Mapping System (HMS), *Fire and Smoke Text Product*, last accessed 8/31/21

California/Pacific NW/Western Canada/Alaskan Panhandle/Northeast Pacific...

Major wildfires throughout central and northern California continue to produce moderate to thick smoke this morning. The region of light to moderate smoke, with a couple thick areas of smoke, blankets an area from southeastern Alaska to northwestern Montana and southern Alberta to central California and into the northeastern Pacific Ocean. The thickest smoke was observed emanating from the western flank of the SQF Complex, the Wolf, the August Complex and the Bear Fires. Much of the smoke was moving off the California coast and then mainly to the north-northeast along the eastern periphery of a cyclone in the Gulf of Alaska, with some drawn west into southeastern Alaska.

Hosley

THROUGH 0240z October 1, 2020

SMOKE:

California/Pacific NW/Western Canada/Northeast Pacific...

Wildfires throughout central and northern California continue to produce a large area of smoke that extends from California north through the entire West Coast into British Columbia, Alberta, southern Yukon and the southern Northwest Territories. Over the Pacific Northwest the smoke extended east into the Northern Rockies. The highest density smoke within this plume was inland over California extending north northwest up the Pacific Coast into western Oregon and southwest Washington.

Hanna

b) Thursday, October 1, 2020

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY

THROUGH 1800z October 1, 2020

SMOKE:

California/Pacific NW/Western Canada/Northeast Pacific...

Wildfires throughout central and northern California continue to produce a large area of smoke that extends from California north through the entire West Coast and over the Pacific Northwest the smoke extended east into the Northern Rockies. The moderate density smoke within this plume was inland over California extending north northwest up the Pacific Coast into western Oregon, southwest Washington, and most of Idaho.

Rodriguez

THROUGH 0200z October 2, 2020

SMOKE:

United States, Southwest Canada, Southeast Canada and North Atlantic Ocean….

A large area of light to moderate density smoke from the ongoing wildfires over California, Wyoming and Colorado was seen on over much of the United States and extended from the western United States through the Central and Southern Plains through the Southeastern United States and extending northeast through eastern New England, southeast Canada and offshore to the North Atlantic Ocean just south of Greenland. An area of moderate density smoke was seen within this area over portions of the Southeastern United States and Southern Plains from Georgia extending west into Texas and Oklahoma. Further to the west, an area of high density smoke was seen from the ongoing wildfires over California and extending north along coastal California and Oregon and then northeast into southern Washington and northern Idaho.

Hanna

c) Friday, October 2, 2020

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY

THROUGH 1720z October 2, 2020

SMOKE:

United States, Southwest Canada, Pacific Ocean, Atlantic Ocean….

Large wildfires continue to rage in California, Texas, and on the Colorado/Wyoming border. An area of dense smoke was observed over Northern California running South to Central California. A large area of moderate smoke covers most of California, Western Oregon, and Southern Washington. A second moderate density smoke band is observed in Northern Idaho running West across Northern Washington, and southwestern Canada. Light Density smoke covers most of California and Oregon, all of Washington and Southwestern Canada. In the Central United states a moderate density area of smoke is observed over Northern Texas, Western Oklahoma, Eastern Colorado, Northwestern New Mexico, Southern Kansas, and Southwestern Oklahoma. Lighter Density smoke can be seen in Northern Texas, most of Oklahoma, Central and Eastern Colorado, Northwestern New Mexico, Southern Kansas, and Southwestern Oklahoma. A band of moderately dense smoke is also observed across Northern Florida, Southern Georgia, Southern Alabama, Southern South Carolina, and Southern North Carolina. An area of light density smoke is observed in Central Texas, Southern Louisiana, Southern Mississippi, Northern Florida, Southern Georgia, Southern Alabama, Southern South Carolina, Southern North Carolina, extending South into the Gulf of Mexico and East into the Atlantic Ocean.

Eglin

THROUGH 0100Z October 3, 2020

SMOKE:

United States, Southwest Canada, Pacific Ocean, Atlantic Ocean…

Wildfires across the western CONUS (mainly in California) were observed continuing to emit thick smoke this afternoon. This smoke was moving west across California's central valley.

From there a portion was moving south over the western Channel Islands and around a low pressure area off the San Diego coast. A second portion was moving north from the central valley into western Oregon and then the Columbia River Valley, the Snake River Valley, and across the Salt Lake City area. Some moderate density smoke is also observed across northern Washington State and the British Columbia coast.

Hosley

d) Saturday, October 3, 2020

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY

THROUGH 1810z October 3, 2020

SMOKE:

California/Pacific NW/Western Canada/Northeast Pacific/Northwestern Mexico...

Major wildfires throughout central and northern California continue to produce heavy smoke this morning. Moderate and heavy density smoke is observed over central California and covers most of northern California extending west offshore into the Pacific Ocean. An area of light density smoke covers all of California, southwestern Arizona, western and northern Nevada, most of Oregon, western Washington, and northwestern Mexico. The light density smoke extends approximately 700 miles off the coast over the open waters of the Pacific.

YL

THROUGH 0200Z October 4, 2020

SMOKE:

Western United States, Central and Southern Plains, Southeast United States and Southwest Canada….

The wildfires ongoing over southern Wyoming, north central Colorado and California continue to produce a large area of smoke that extends through most of the western United States through the Central and Southern Plains and into the southeastern United States. Within this area several areas of moderate to high density smoke were seen. The first along the western Gulf Coast states from Alabama west through eastern Texas and then extending south into the western Gulf of Mexico. Further to the west, an area of moderate density smoke extended from just offshore the northern Baja into and through central and northern California, central Oregon, southern Washington and western Idaho. Highest density smoke was seen from offshore southern California through inland central and northern California into southern Oregon.

Hanna

e) Sunday, October 4, 2020

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY

THROUGH 1630Z October 4, 2020

SMOKE:

Western United States including most of California/Northern Rockies/Pacific Northwest/ Eastern Pacific Ocean/Intermountain West/Southern Canada...

Widespread fire complex activity continues to be observed in parts of Northern/East-Central California and a large region of moderate to heavy density smoke was observed from the large fire complexes. Moderate to heavy density smoke was observed over most of Northern California as well as over most of the San Joaquin Valley and southward over Central California. Moderate to heavy density smoke was also observed both well to the Southwest of the California coast several hundred miles southwest offshore over the Eastern Pacific Ocean and as well as to the Northeast/East of the region over parts of the Inter Mountain West and Northern Rockies including Western Nevada, Southern Oregon, Eastern Washington State, North Idaho, Montana, and Wyoming. The smoke is progressing around a strong high pressure system present over the Western United States.

Sambucci

THROUGH 0140Z October 5, 2020

SMOKE:

Western, Central and Southeastern United States and the Gulf of Mexico….

The wildfires over California, Wyoming and Colorado continue to produce a large area of smoke that covers the western United States and extends through the central and northern Rockies into the central and southeastern United States and the western and central Gulf of Mexico. There were several areas of higher density smoke in this region with an area of moderate density smoke seen along the central Gulf coast and extending south through the western Gulf of Mexico. Another area of moderate density smoke was also seen extending from southern Idaho, southern Oregon and northern Nevada into central and northern California and then extending offshore central California into the northeast Pacific Ocean. High density smoke was seen near the larger active wildfires over north central Colorado, southern Wyoming, northern Utah, central Montana and also over central and northern California.

Hanna

2. NAAPS – Aerosol Optical Depth and Smoke Surface Concentration[100]

Navy's Atmospheric Aerosol Prediction System (NAAPS) Global Aerosol Model – NAAPS Archive Product

Modeling results are presented for each day at both 5am (05PST) and 5pm (17PST) for August 18, 20, and 21 and September 30 through October 4, 2020.

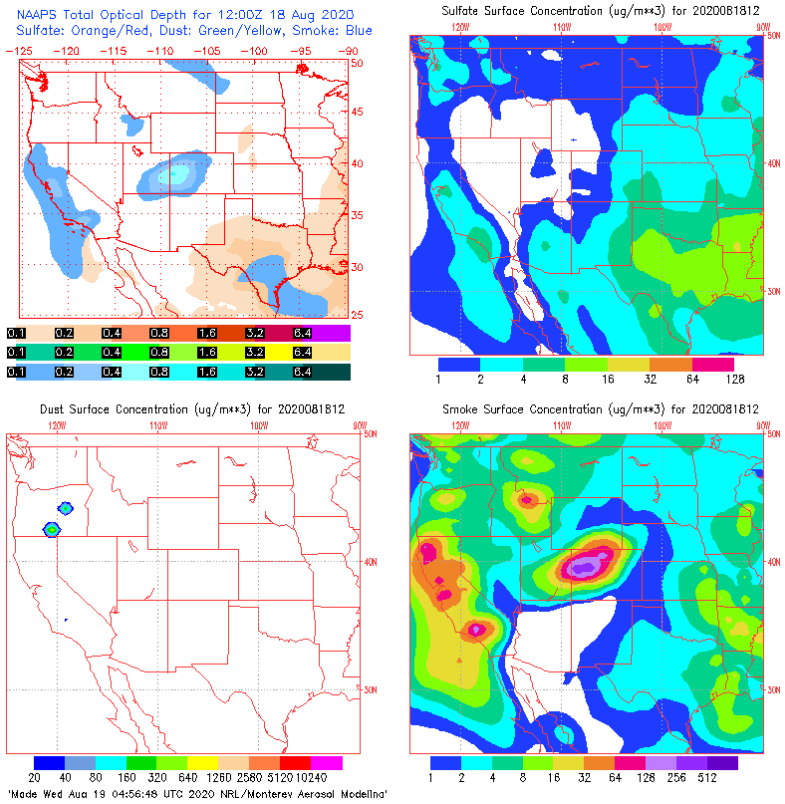
[100] Naval Postgraduate Education, *NAAPS Global Aerosol Model*, last accessed 7/29/21

Aerosol optical depth (AOD) is an indication of the amount of particles in the atmosphere using their scattering and absorbing properties. An AOD of less than 0.1 is considered clean, with higher AOD numbers indicating increasingly poor visibility. The NAAPS model separates the potential sources into dust, sulfates, and smoke, depending on particle size.

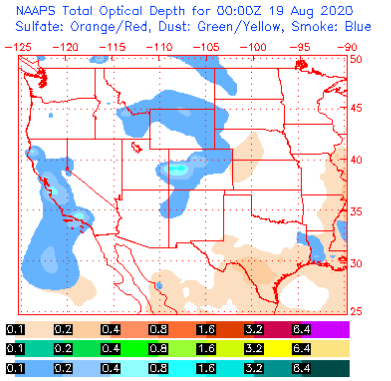
The Total Optical Depth (top left panel) for each day shows smoke over California including the Red Hills and Simi Valley regions. The Smoke Surface Concentrations (bottom right panel) show the varied surface smoke levels on each day and indicate smoke at the surface level of the Red Hills and Simi Valley monitor areas.

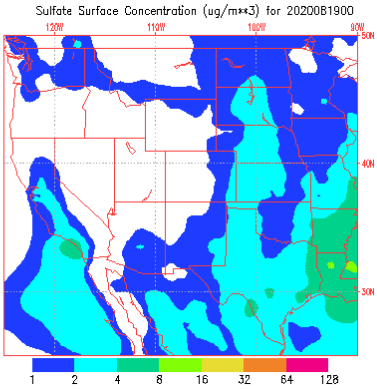
a) August 18, 20, and 21, 2020

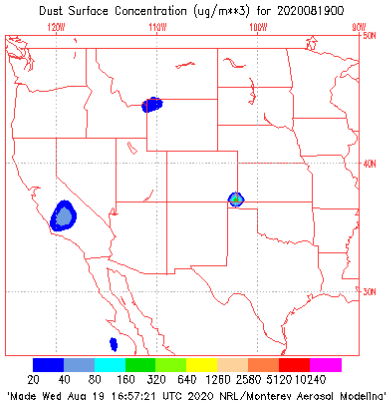
August 18, 2020 @ 5am PST

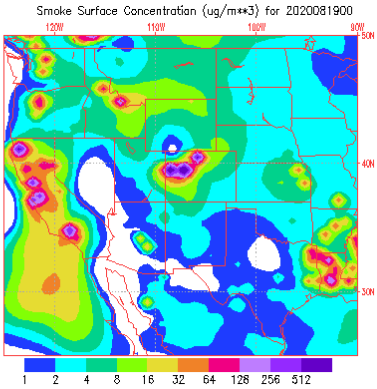


August 18, 2020 @ 5pm PST

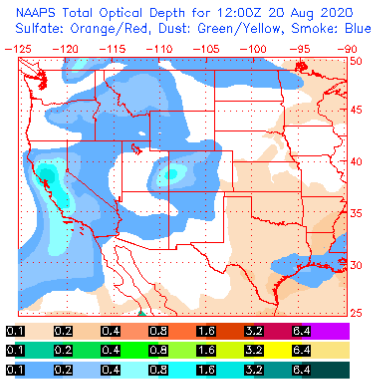


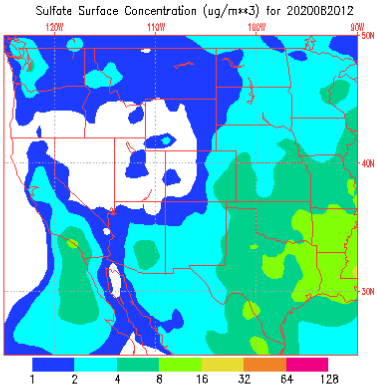


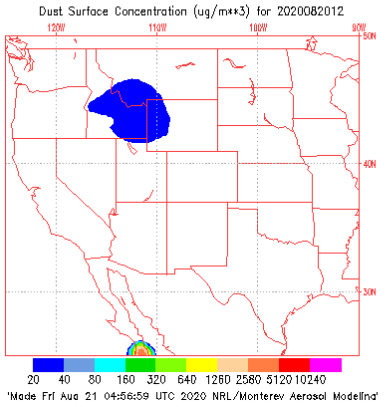


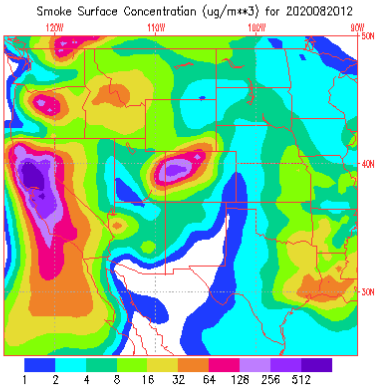


August 20, 2020 @ 5am PST

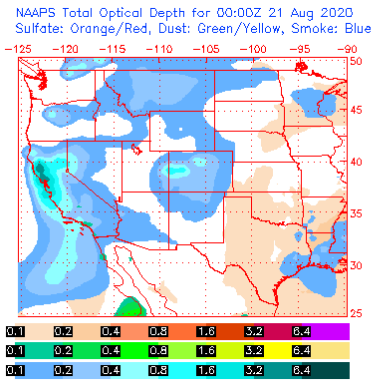


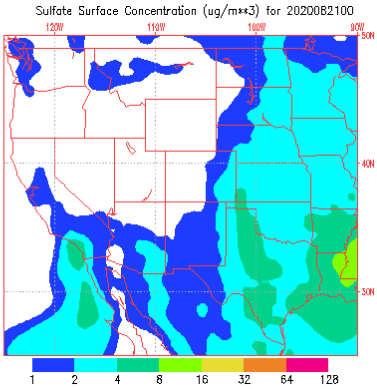


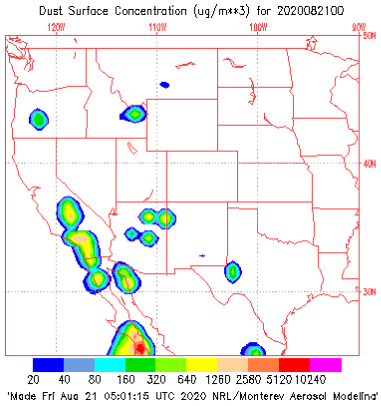


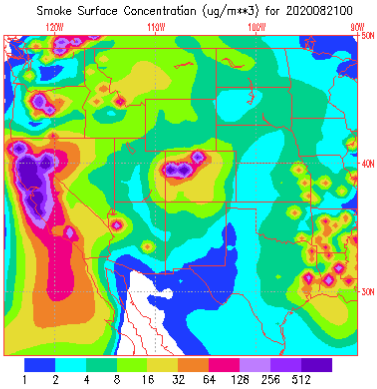


August 20, 2020 @ 5pm PST

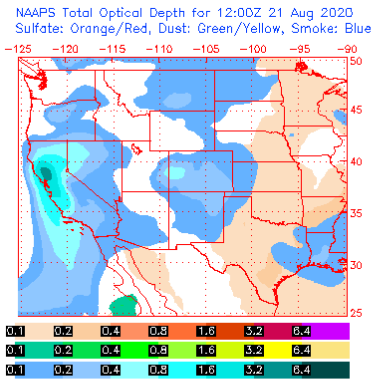


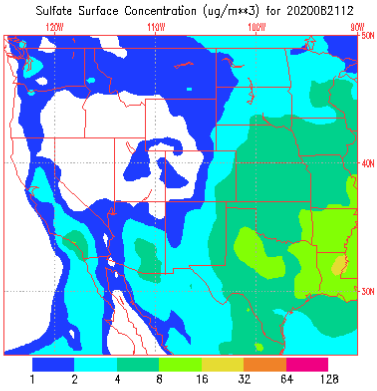


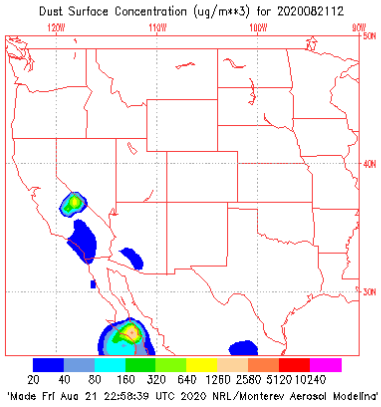


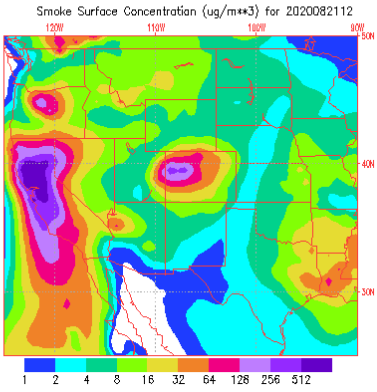


August 21, 2020 @ 5am PST

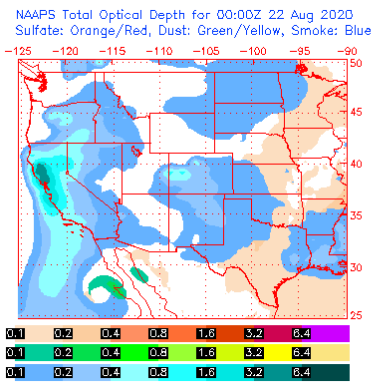


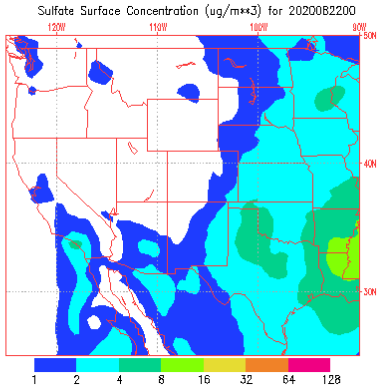


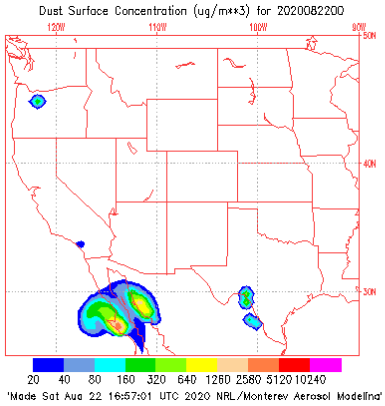


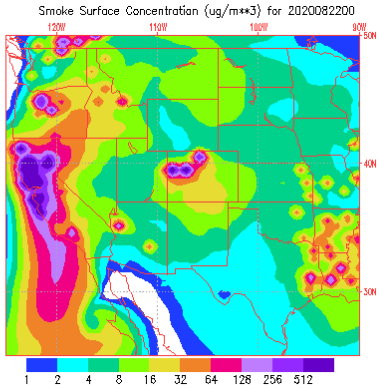


August 21, 2020 @ 5pm PST



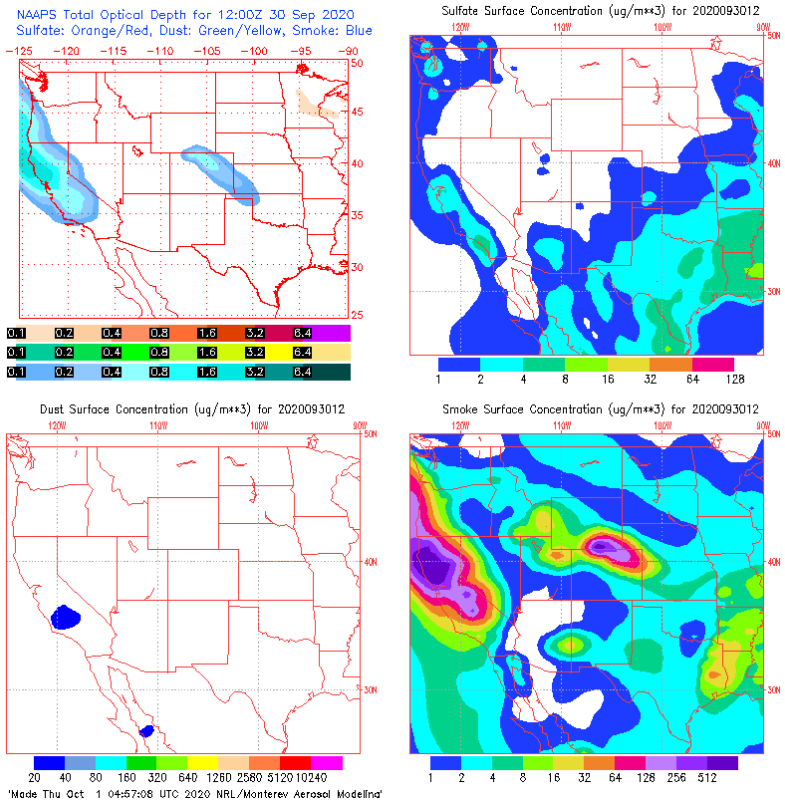




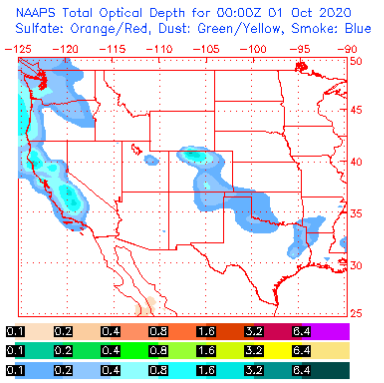


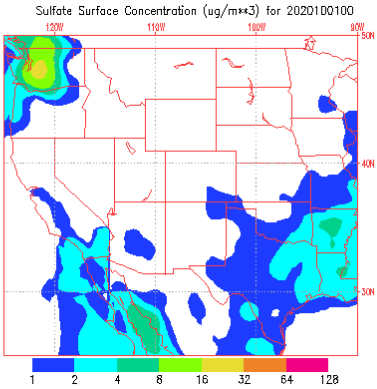
b) September 30 – October 4, 2020

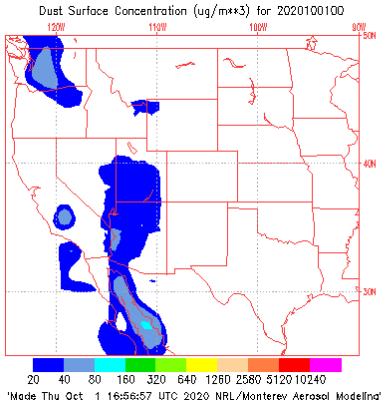
September 30, 2020 @ 5am PST

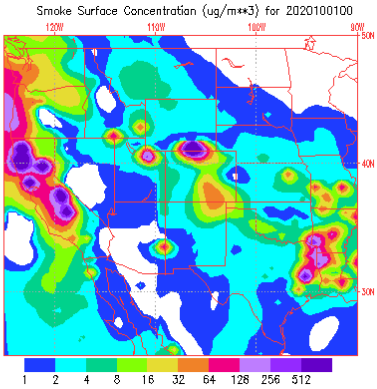


September 30, 2020 @ 5pm PST

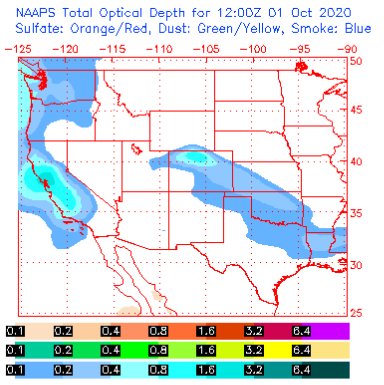


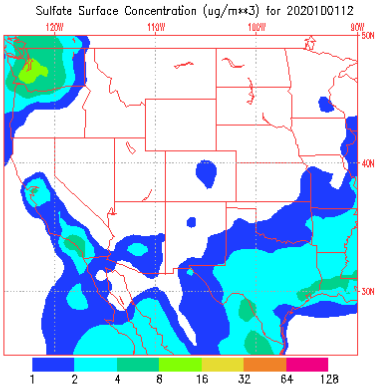


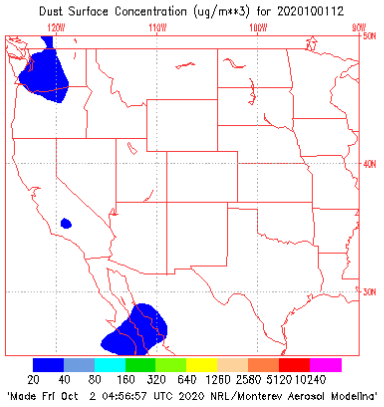


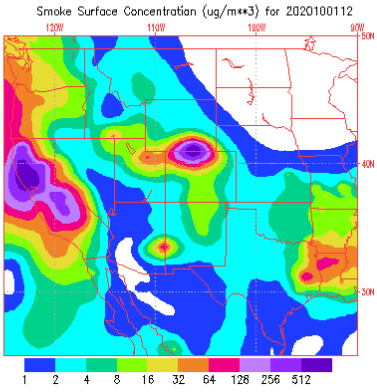


October 1, 2020 @ 5am PST

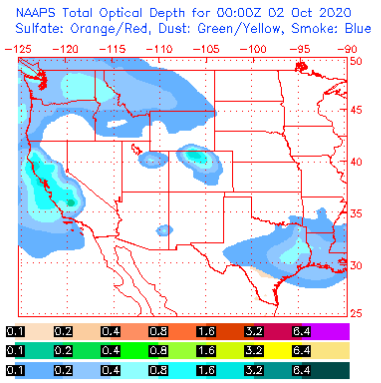


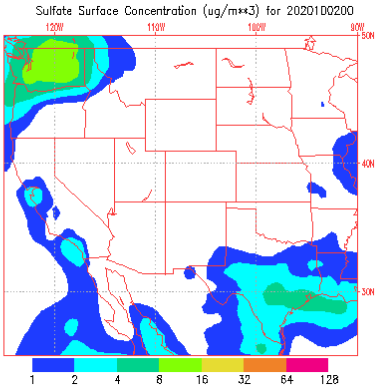


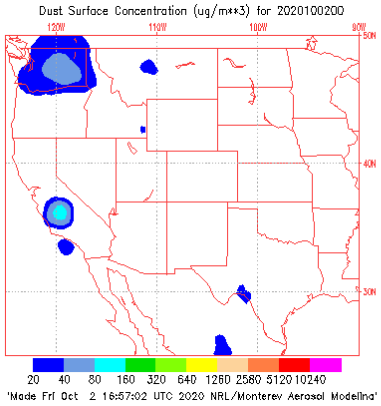


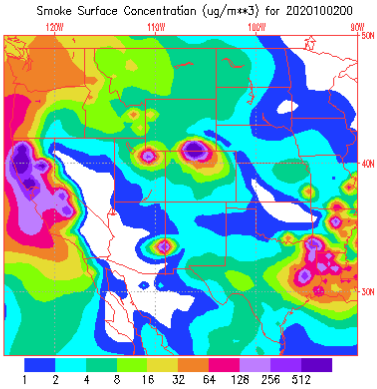


October 1, 2020 @ 5pm PST









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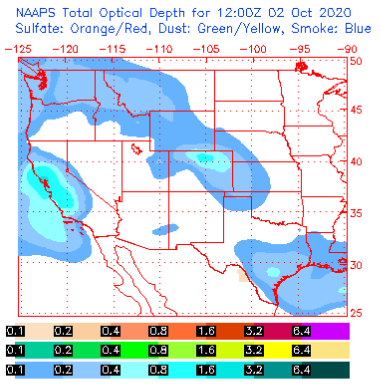

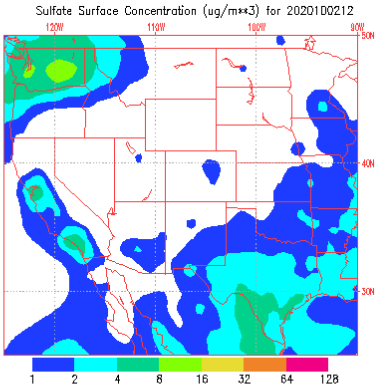

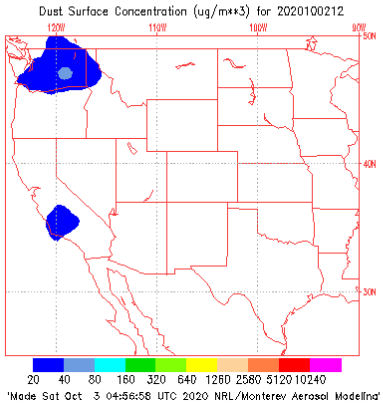

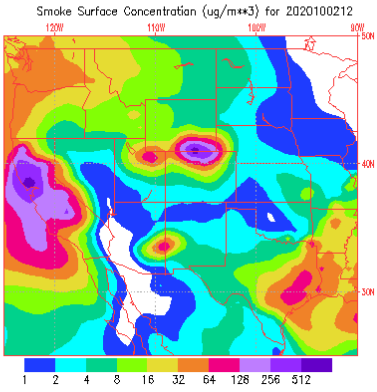

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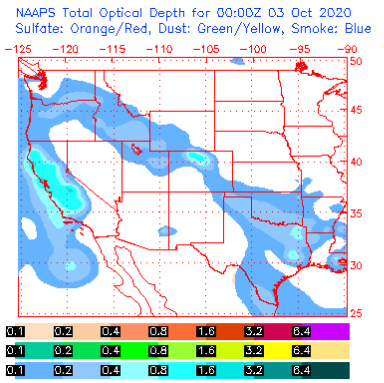
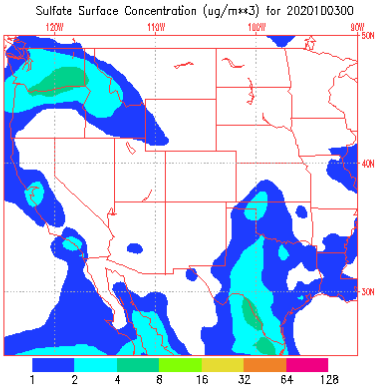
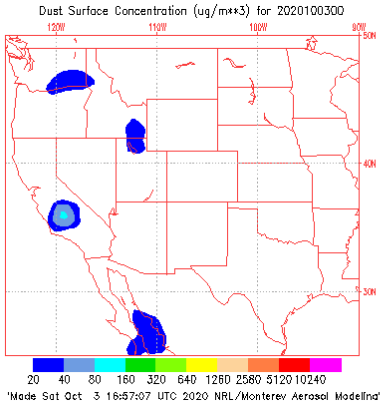
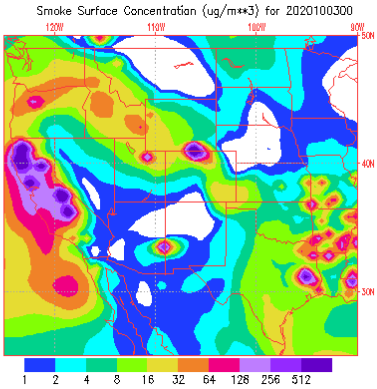
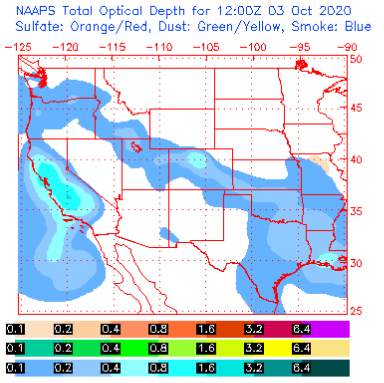


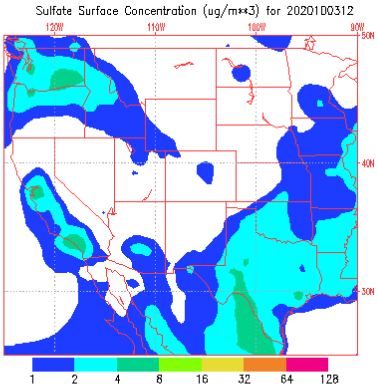


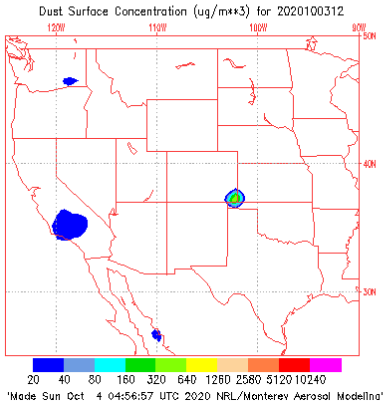


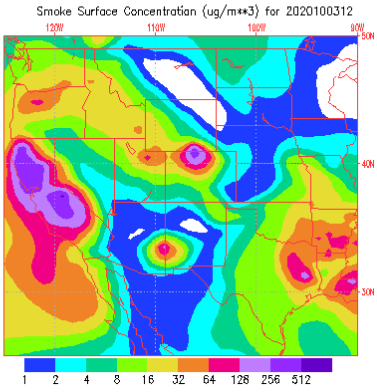


October 3, 2020 @ 5am PST

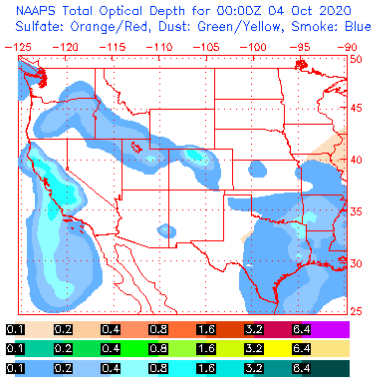


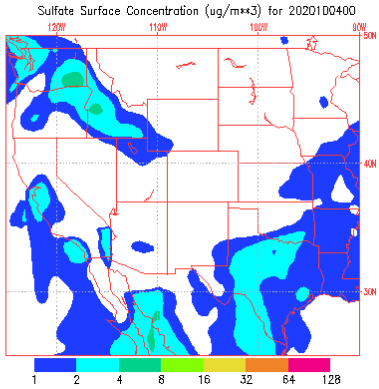


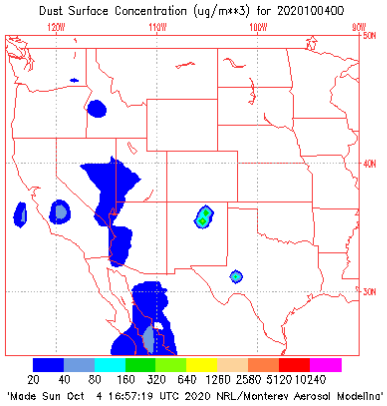


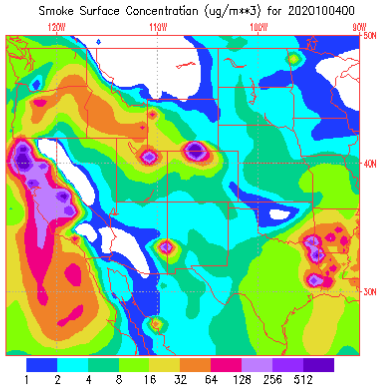


October 3, 2020 @ 5pm PST

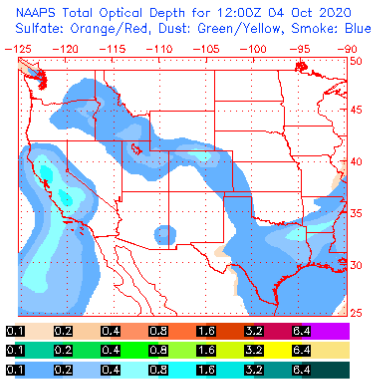


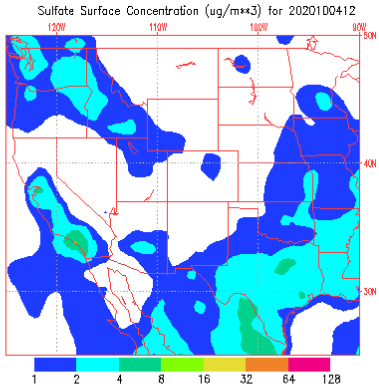


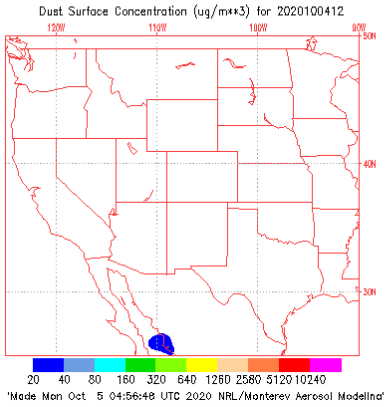


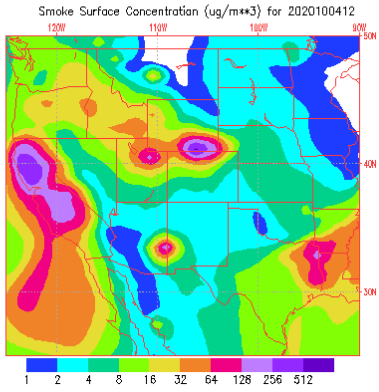


October 4, 2020 @ 5am PST









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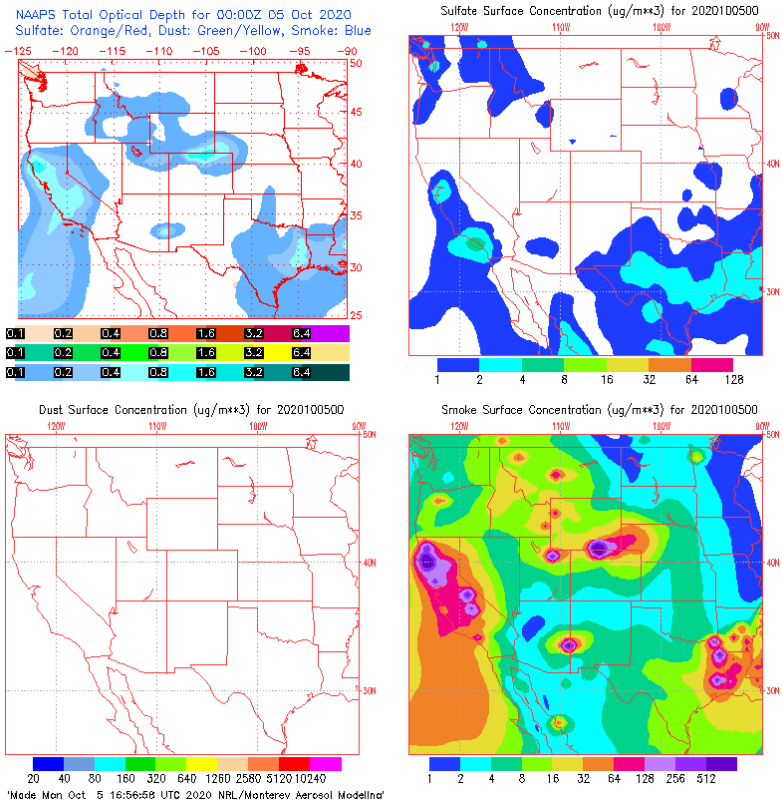
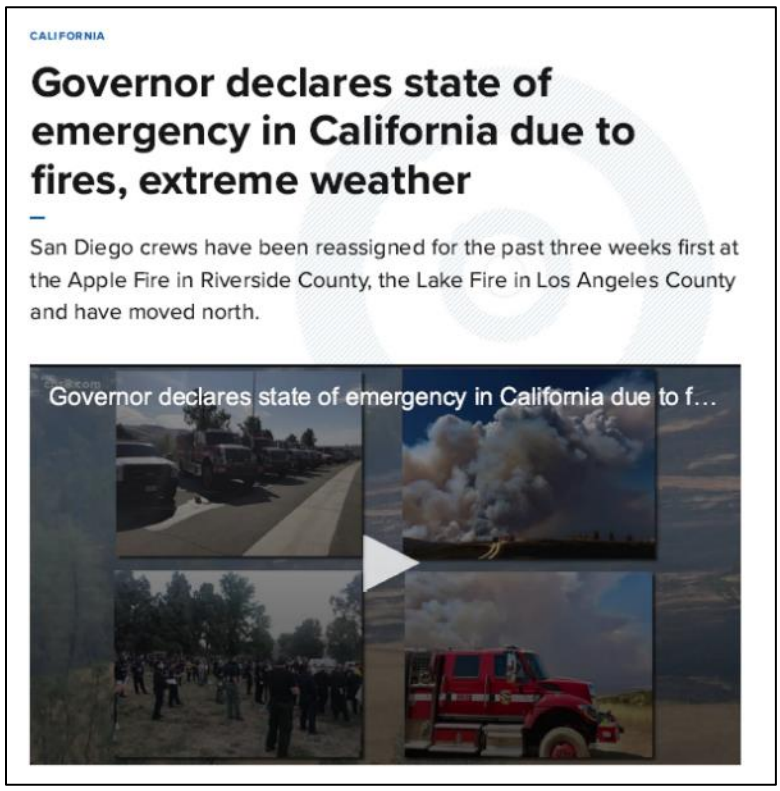


F. Media Reports

Examples of traditional news and social media accounts of wildfires and smoke impacts, arranged by type of media and date. Due to the amount of information available, not all available articles are provided.

1. News media

a) August 17-22, 2020



CBS8, Governor declares state of emergency in California due to fires, extreme weather, *https://www.cbs8.com/article/news/local/california/governor-declares-state-of-emergency-in-california-due-to-fires-extreme-weather/509-03c1f06a-1ddd-4913-83e6-158e3d12149c*, August 17, 2020, last accessed 11/4/2021

CBS Los Angeles, Holser Fire Burning Near Lake Piru Doubles in Size,

https://losangeles.cbslocal.com/2020/08/18/holser-fire-burning-near-lake-piru-doubles-in-size/, August 18, 2020, last accessed 11/4/2021

Lake Fire burns more than 21,000 acres; county declares local emergency

EMILY ALVARENGA(HTTPS://SIGNALSCV.COM/AUTHOR/EALVARENGA/) AUGUST 18, 2020 9:21 AM

The Lake Fire burns along Pine Canyon Road on Friday, Aug. 14, 2020. Rick McClure/For The Signal

Santa Clara Signal, Lake Fire burns more than 21,000 acres; county declares local emergency, *https://signalscv.com/2020/08/lake-fire-burns-more-than-21000-acres-38-contained/*, August 18, 2020, last accessed 11/4/2021

NEWS CHANNEL 3 FOX 11 12

MENU

San Luis Obispo County

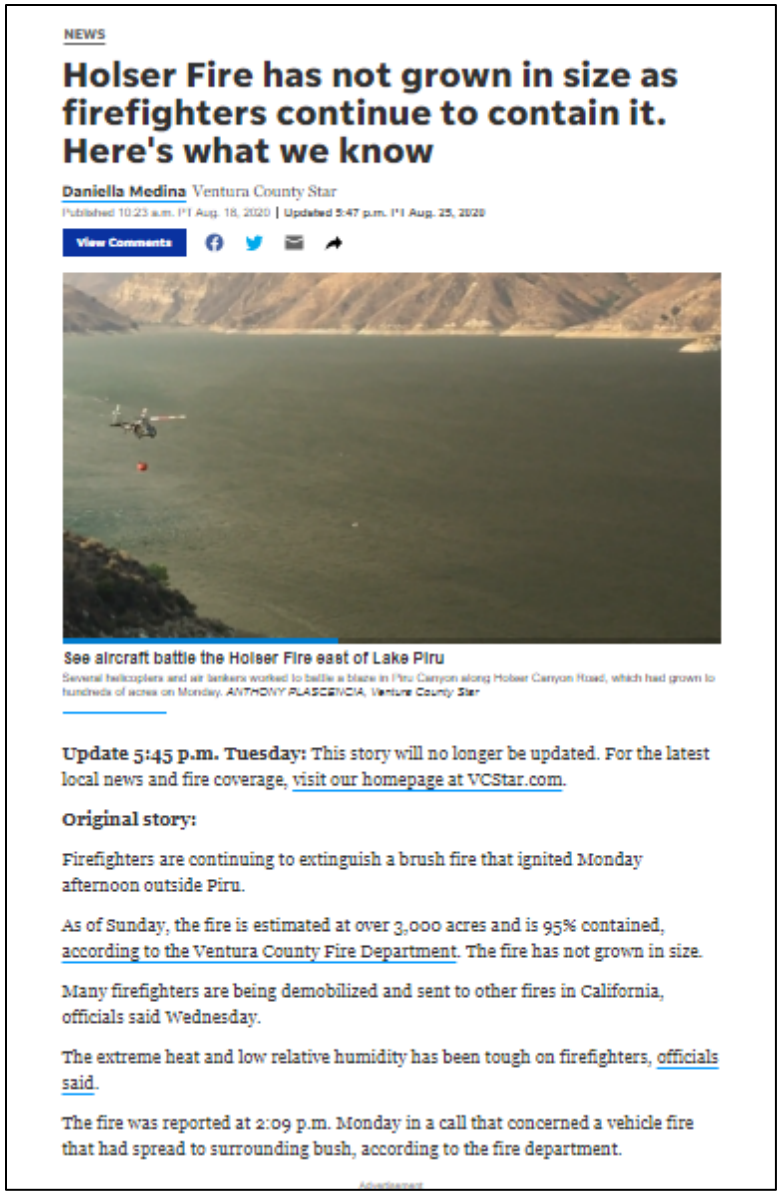
By Julia Nguyen

Published August 18, 2020 5:34 pm

San Luis Obispo County warns of bad air quality due to smoke

KEYT

KEYT.com, San Luis Obispo County warns of bad air quality due to smoke, *https://keyt.com/health/2020/08/18/san-luis-obispo-county-warns-of-bad-air-quality-due-to-smoke/*, August 18, 2020, last accessed 11/4/2021



NEWS

Holser Fire has not grown in size as firefighters continue to contain it. Here's what we know

Daniella Medina Ventura County Star

Published 10:23 a.m. PT Aug. 18, 2020 | Updated 5:47 p.m. PT Aug. 25, 2020

View Comments

Update 5:45 p.m. Tuesday: This story will no longer be updated. For the latest local news and fire coverage, visit our homepage at VCStar.com.

Original story:

Firefighters are continuing to extinguish a brush fire that ignited Monday afternoon outside Piru.

As of Sunday, the fire is estimated at over 3,000 acres and is 95% contained, according to the Ventura County Fire Department. The fire has not grown in size.

Many firefighters are being demobilized and sent to other fires in California, officials said Wednesday.

The extreme heat and low relative humidity has been tough on firefighters, officials said.

The fire was reported at 2:09 p.m. Monday in a call that concerned a vehicle fire that had spread to surrounding bush, according to the fire department.

Ventura County Star, Holser Fire has not grown in size as firefighters continue to contain it. Here's what we know, *https://www.vcstar.com/story/news/2020/08/18/holser-fire-near-ventura-county-california-lake-piru-update/3391648001/*, August 18, 2020, last accessed 11/4/2021

DONATE

NATIONAL

1 Dead In California Fire, As Lightning-Strike Fires Push Resources To Limit

August 19, 2020 · 10:17 PM ET

VANESSA ROMO

Embers burn along a hillside as the LNU Lightning Complex fires tear through unincorporated Napa County, Calif., on Tuesday. Fire crews across the region scrambled to contain dozens of wildfires sparked by lightning strikes as a statewide heat wave continues.

Noah Berger/AP

National Public Radio, 1 Dead in California Fire, As Lightning-Strike Fires Push Resources To Limit, *https://www.npr.org/2020/08/19/904086804/1-dead-in-california-fire-as-lightning-strike-fires-push-resources-to-limit*, August 19, 2020, last accessed 11/4/2021

Paso Robles Daily News

Home | Paso Robles | Crime | Entertainment | Politics | Wine | Sports | Region | State

You are here: Home » Region » Update: Paso Robles' skies fill with smoke from fires near Salinas and Carmel

Update: Paso Robles' skies fill with smoke from fires near Salinas and Carmel

Posted: 7:10 am, August 19, 2020 by News Staff

A photo of the River Fire near Salinas, Calif. by Cal Fire.

Paso Robles Daily News, Update: Paso Robles' skies fill with smoke from fires near Salinas and Carmel, *https://pasoroblesdailynews.com/paso-robles-skies-filled-with-smoke-from-fire-near-salinas/113124/*, August 19, 2020, last accessed 11/4/2021

74° KTLA 5 LA's VERY OWN

LIVE NOW / KTLA 5 News at 3

WEATHER ALERTS / There are 3 areas under alert. Click for alert details.

CALIFORNIA

Smoke from California wildfires stretches at least 600 miles, satellite image shows

by: CNN Wire

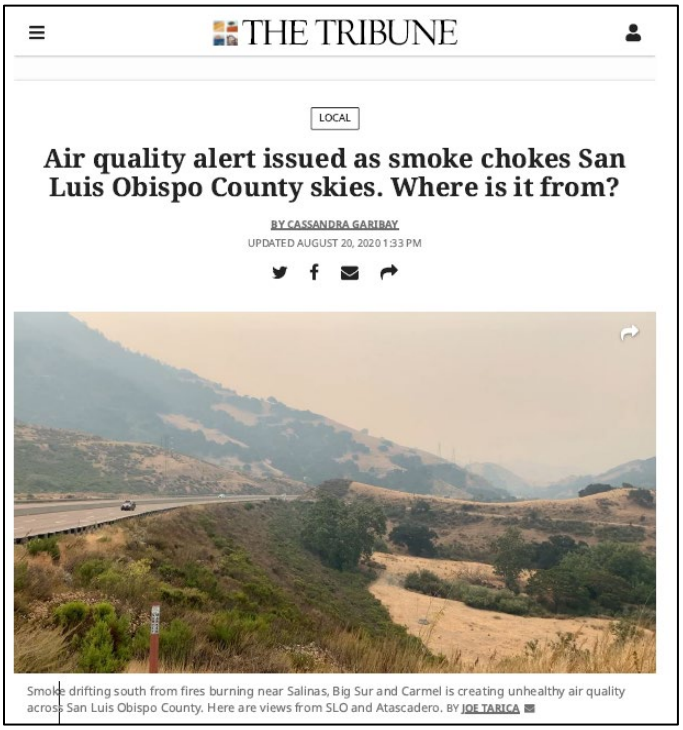
Posted: Aug 20, 2020 / 08:38 AM PDT / Updated: Aug 20, 2020 / 07:54 PM PDT

This is an archived article and the information in the article may be outdated. Please look at the time stamp on the story to see when it was last updated.

New satellite images show the smoke from wildfires that's drifted 600 miles into the Pacific Ocean, and made California's air quality plummet to "very unhealthy" and "hazardous" levels.

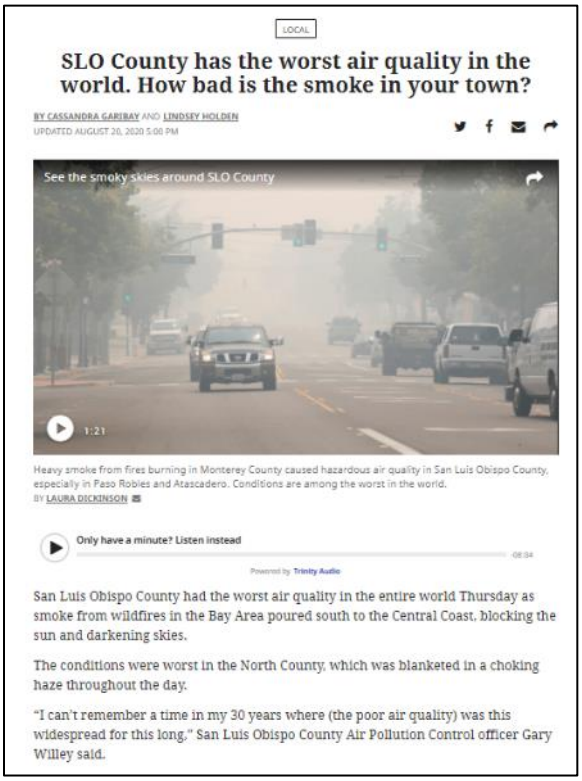
KTLA.com, Smoke from California wildfires stretches at least 600 miles, satellite image shows, *https://ktla.com/news/california/smoke-from-california-wildfires-stretches-at-least-600-miles-satellite-image-shows/*, August 20, 2020, last accessed 11/4/2021

San Luis Obispo Tribune, Don't go outside if you can help it. Here's how to stay safe from smoke in SLO County, *https://www.sanluisobispo.com/news/local/article245110800.html*, August 20, 2020, last accessed 11/4/2021

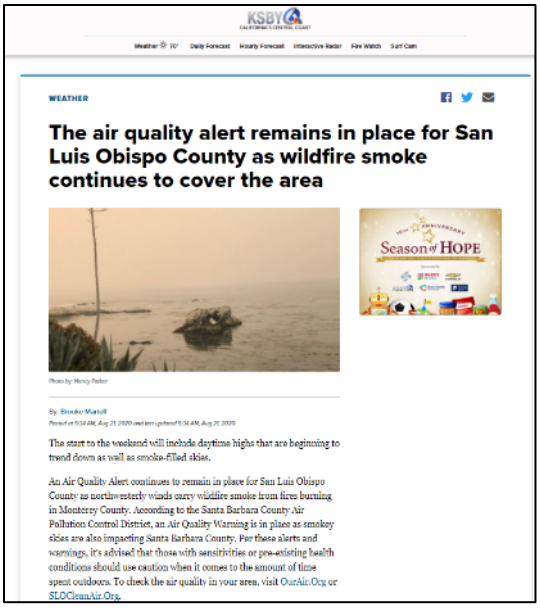


San Luis Obispo Tribune, Air quality alert issued as smoke chokes San Luis Obispo County skies. Where is it from?, *https://www.sanluisobispo.com/news/local/article245077630.html*, August 20, 2020, last accessed 11/4/2021

San Luis Obispo Tribune, 'Wildfire orange' sun: Smoke from Big Sur fire smothers SLO County skies, *https://www.sanluisobispo.com/news/weather-news/article245083280.html*, August 20, 2020, last accessed 11/9/2021



San Luis Obispo Tribune, SLO County has the worst air quality in the world. How bad is the smoke in your town?, *https://www.sanluisobispo.com/news/local/article245109120.html*, August 20, 2020, last accessed 11/4/2021



KSBY

WEATHER

The air quality alert remains in place for San Luis Obispo County as wildfire smoke continues to cover the area

The start to the weekend will include daytime highs that are beginning to trend down as well as smoke-filled skies.

An Air Quality Alert continues to remain in place for San Luis Obispo County as northwesterly winds carry wildfire smoke from fires burning in Monterey County. According to the Santa Barbara County Air Pollution Control District, an Air Quality Warning is in place as smokey skies are also impacting Santa Barbara County. For these alerts and warnings, it's advised that those with sensitivities or pre-existing health conditions should use caution when it comes to the amount of time spent outdoors. To check the air quality in your area, visit OurAir.Org or SLOCleanAir.Org.

KSBY.com, The air quality alert remains in place for San Luis Obispo County as wildfire smoke continues to cover the area, *https://www.ksby.com/weather/the-air-quality-alert-remains-in-place-for-san-luis-obispo-county-as-wildfire-smoke-continues-to-cover-the-area*, August 21, 2020, last accessed 11/4/2021

11/4/21, 3:03 PM Holser Fire will smoke on for days outside Piru, while Lake Fire still burns in LA County

VC Star.

COUNTY

Holser Fire will smoke on for days outside Piru, while Lake Fire still burns in LA County

Gretchen Wenner Ventura County Star

Published 2:48 p.m. PT Aug. 21, 2020 | Updated 4:10 p.m. PT Aug. 22, 2020

Firefighters continued to make good progress Friday on the Holser Fire outside Piru and the larger Lake Fire in Los Angeles County.

The Holser Fire's footprint remained at 3,000 acres and was 95% contained as of midday Friday, said Capt. Brian McGrath of the Ventura County Fire Department.

"The fire hasn't grown at all," McGrath said, even after winds tested it overnight.

On Saturday afternoon, the acreage and containment figures were unchanged, officials said.

California fires: A look at CZU, LNU, River, other fires around the state

Residents and motorists in east Ventura County might see smoke coming from the remote canyon terrain. That's because there are large stumps smoldering deep in the burn area that are too dangerous for crews to access.

"There will be visible smoke from the interior of the burn for many days," McGrath said. The smoking stumps pose no threat in terms of the fire spreading, he added.

No visible smokes were seen within 300' of the fire's edge on Saturday afternoon, the department reported.

The Holser Fire was reported around 2:09 p.m. Monday as a vehicle fire on Holser Canyon Road, east of Piru Canyon Road. It quickly tore through the dry canyons near Lake Piru during a regional heat wave, threatening structures and prompting evacuation warnings. It spread into Los Angeles County.

On Friday, McGrath provided new details about the fire's origin.

Ventura County Star, Holser Fire will smoke on for days outside Piru, while Lake Fire still burns in LA County, *https://www.vcstar.com/story/news/local/communities/county/2020/08/21/holser-fire-smoke-days-outside-piru-while-lake-fire-still-burns-la-county/3412001001/*, August 21, 2020, last accessed 11/4/2021

VC Star.

OUTDOORS

California wildfires: Smoke prompts air quality alert for Ventura County

Cheri Carlson Ventura County Star

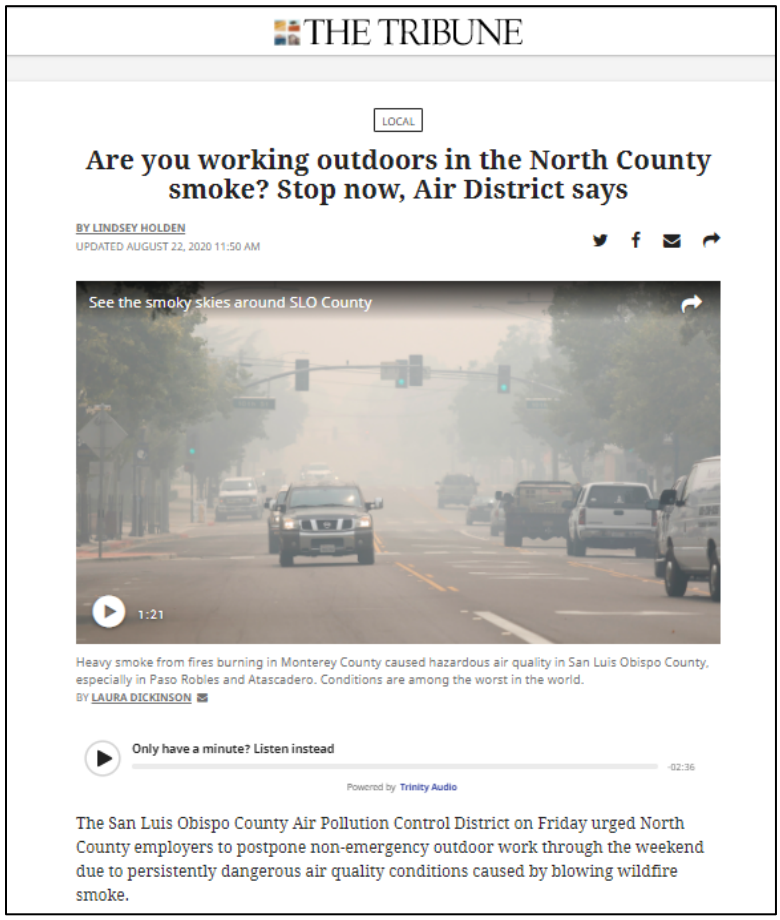
Published 2:33 p.m. PT Aug. 21, 2020 | Updated 3:29 p.m. PT Aug. 21, 2020

Smoke from wildfires burning out of control in Northern California triggered a local air quality alert on Friday.

Particle levels were listed at a moderate level in most coastal areas of Ventura County, according to a federal air quality index. Higher levels, however, were reported farther east, including in Simi Valley, Moorpark, Fillmore and Piru.

In those spots, the air was deemed unhealthy for sensitive groups

Ventura County Star, California wildfires: Smoke prompts air quality alert for Ventura County, *https://www.vcstar.com/story/news/special-reports/outdoors/2020/08/21/holser-lake-fire-smoke-prompts-air-quality-alert-ventura-county/3408496001/*, August 21, 2020, last accessed 11/4/2021



THE TRIBUNE

LOCAL

Are you working outdoors in the North County smoke? Stop now, Air District says

BY LINDSEY HOLDEN

UPDATED AUGUST 22, 2020 11:50 AM

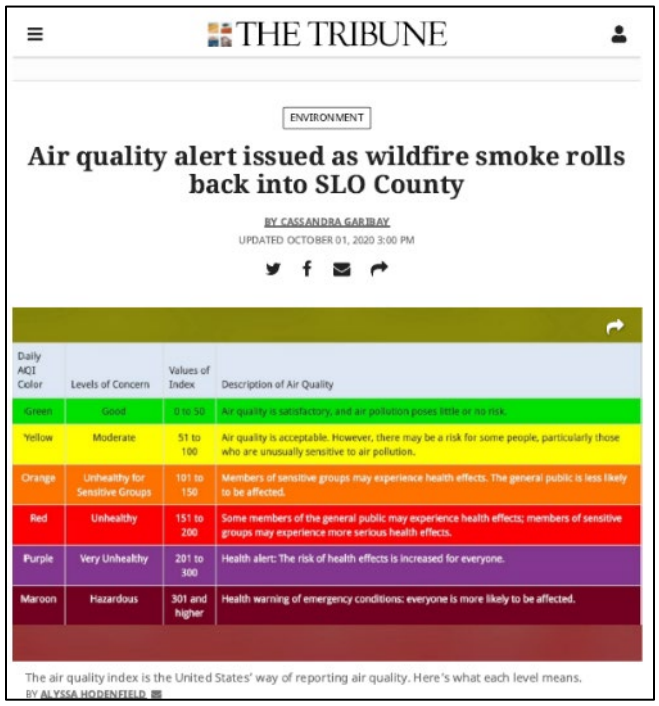
Heavy smoke from fires burning in Monterey County caused hazardous air quality in San Luis Obispo County, especially in Paso Robles and Atascadero. Conditions are among the worst in the world.

BY LAURA DICKINSON

The San Luis Obispo County Air Pollution Control District on Friday urged North County employers to postpone non-emergency outdoor work through the weekend due to persistently dangerous air quality conditions caused by blowing wildfire smoke.

San Luis Obispo Tribune, Are you working outdoors in the North COuny smoke? Stop now, Air District says, *https://www.sanluisobispo.com/news/local/article245147495.html*, August 22, 2020, last accessed 11/4/2021

b) September 30-October 4, 2020



THE TRIBUNE

ENVIRONMENT

Air quality alert issued as wildfire smoke rolls back into SLO County

BY CASSANDRA GARIBAY

UPDATED OCTOBER 01, 2020 3:00 PM

Daily AQI Color	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.

The air quality index is the United States' way of reporting air quality. Here's what each level means.

BY ALYSSA HODENFIELD

San Luis Obispo Tribune, Air quality alert issued as wildfire smoke rolls back into SLO County, *https://www.sanluisobispo.com/news/local/environment/article246152880.html*, October 1, 2020, last accessed 11/9/2021

THE TRIBUNE

HOMEPAGE

Dolan Fire reaches 90% containment, but high winds and heat pose a threat

BY CASSANDRA GARIBAY

OCTOBER 01, 2020 12:34 PM

Big Sur resident talks about Dolan fire experience

2:15

Lucia resident Rhea Withrow talks about her experience with the Dolan Fire which is still burning in Big Sur, California. The fire has isolated homes and businesses and shut down tourism in the middle of the summer along scenic Highway 1. BY KAYTLYN LESLIE

San Luis Obispo Tribune, Dolan Fire reaches 90% containment, but high winds and heat pose a threat, *https://www.sanluisobispo.com/article246150170.html*, October 1, 2020, last accessed 11/9/2021

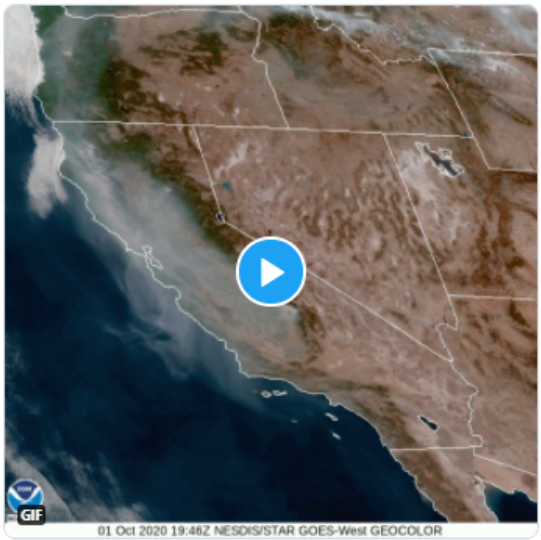
Posted at 5:47 PM, Oct 01, 2020 and last updated 9:47 PM, Oct 01, 2020

Air quality on the Central Coast is worsening once again as a result of California's wildfires and air quality experts say it likely won't improve this weekend.

Air Quality Alerts were issued for San Luis Obispo and Santa Barbara counties through Sunday as a blanket of smoke covers much of the area.

SLOCleanAir
@SLOCleanAir

A satellite look at the smoke plume that is currently impacting #SLOCounty skies. We expect smoke to be present through the weekend, but conditions are changing rapidly. Head to SLOCleanAir.org for current conditions.



5:33 PM · Oct 1, 2020

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"Never, ever do I remember it being like this, never," said David Rosenthal, a longtime San Luis Obispo resident. "This is the worst I've ever seen it.

Thursday afternoon, Rosenthal was getting in some disc golf practices at Meadow Park before conditions worsened.

"It almost makes me want to leave the area if it continues like this," Rosenthal said.

Over the past few weeks, smoke has been imported from devastating wildfires, most recently from the Glass Fire burning in Napa and Sonoma counties and the Creek Fire burning east of Fresno.

KSBY.com, A blanket of smoke returns to the Central Coast, air quality alerts issued, *https://www.ksby.com/news/local-news/a-blanket-of-smoke-returns-to-the-central-coast-air-quality-alerts-issued. October 1*, 2020, last accessed 11/9/2021

The Guardian, Smoke choking California again as dangerous fire conditions continue, *https://www.theguardian.com/world/2020/oct/02/california-fire-conditions-glass-fire-red-flag-warning*, October 2, 2020, last accessed 11/9/2021

KTLA.com, Bobcat Fire has damaged or destroyed at least 115 homes and continues to burn with 84% containment, *https://ktla.com/news/local-news/bobcat-fire-has-damaged-or-destroyed-at-least-115-homes-and-continues-to-burn-with-84-containment/*, October 3, 2020, last accessed 11/9/2021

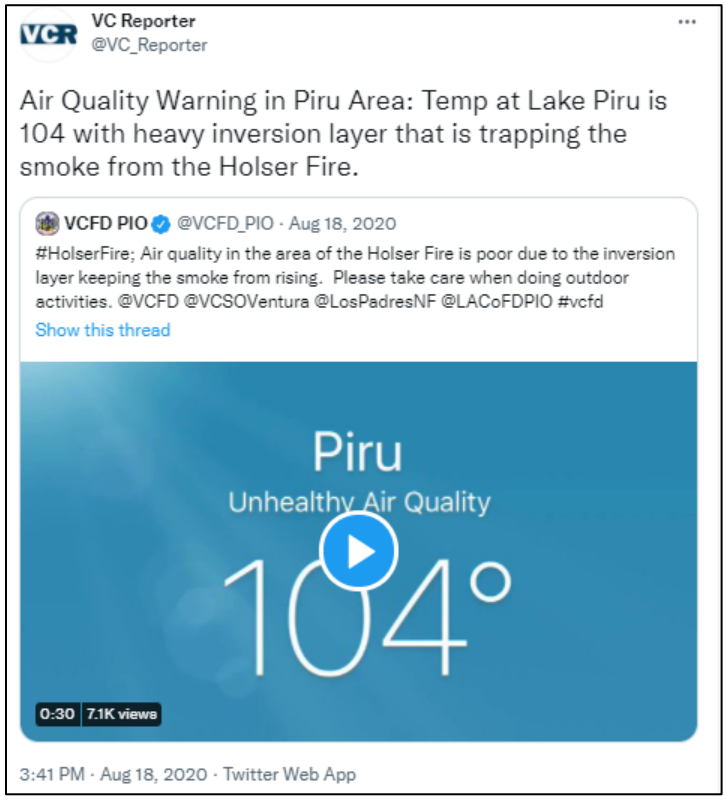
2. Social media

a) August 18-22, 2020

https://www.facebook.com/SLOCountyAPCD/

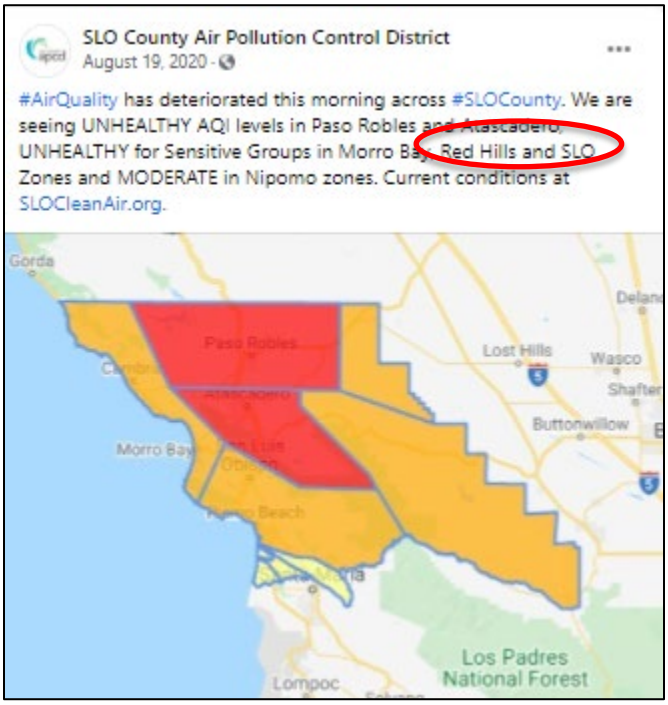
https://twitter.com/CityAgouraHills/status/1295829508134772737

https://twitter.com/VCFD_PIO/status/1295835696880422912



https://twitter.com/VC_Reporter/status/1295853300063993856

https://www.facebook.com/CountyOfVentura



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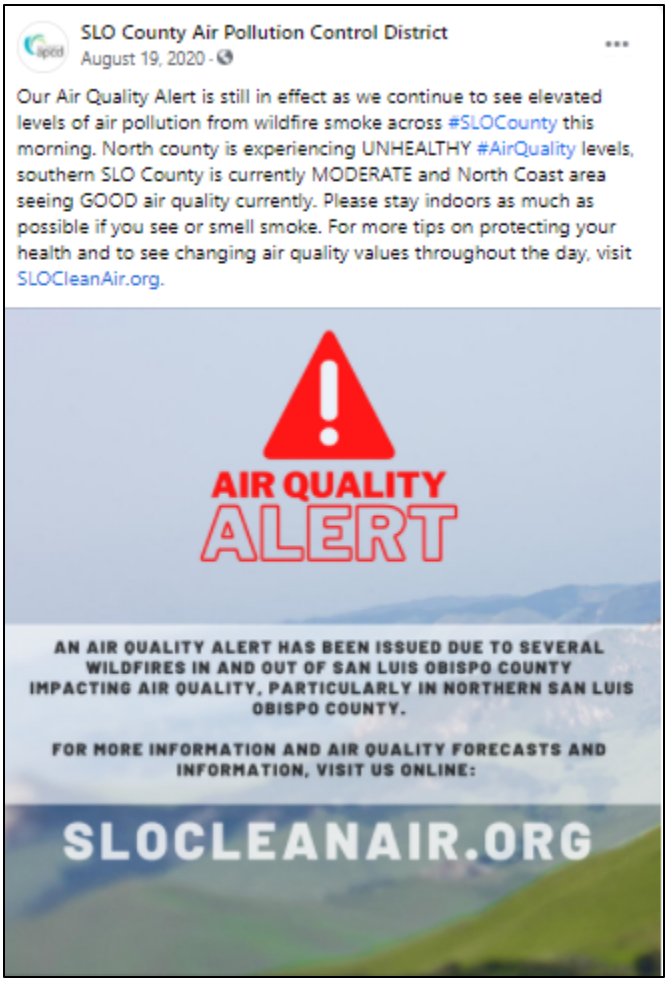

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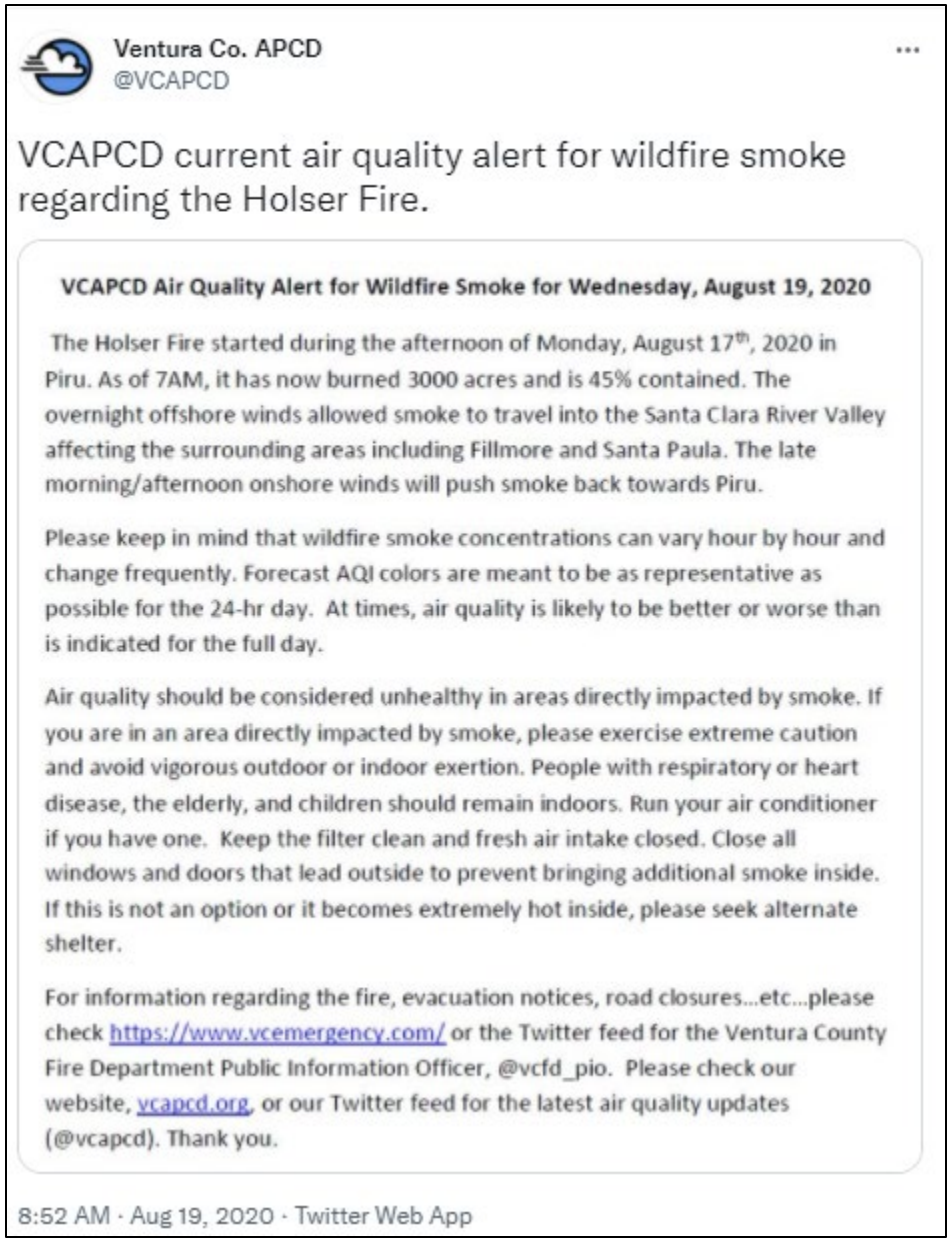
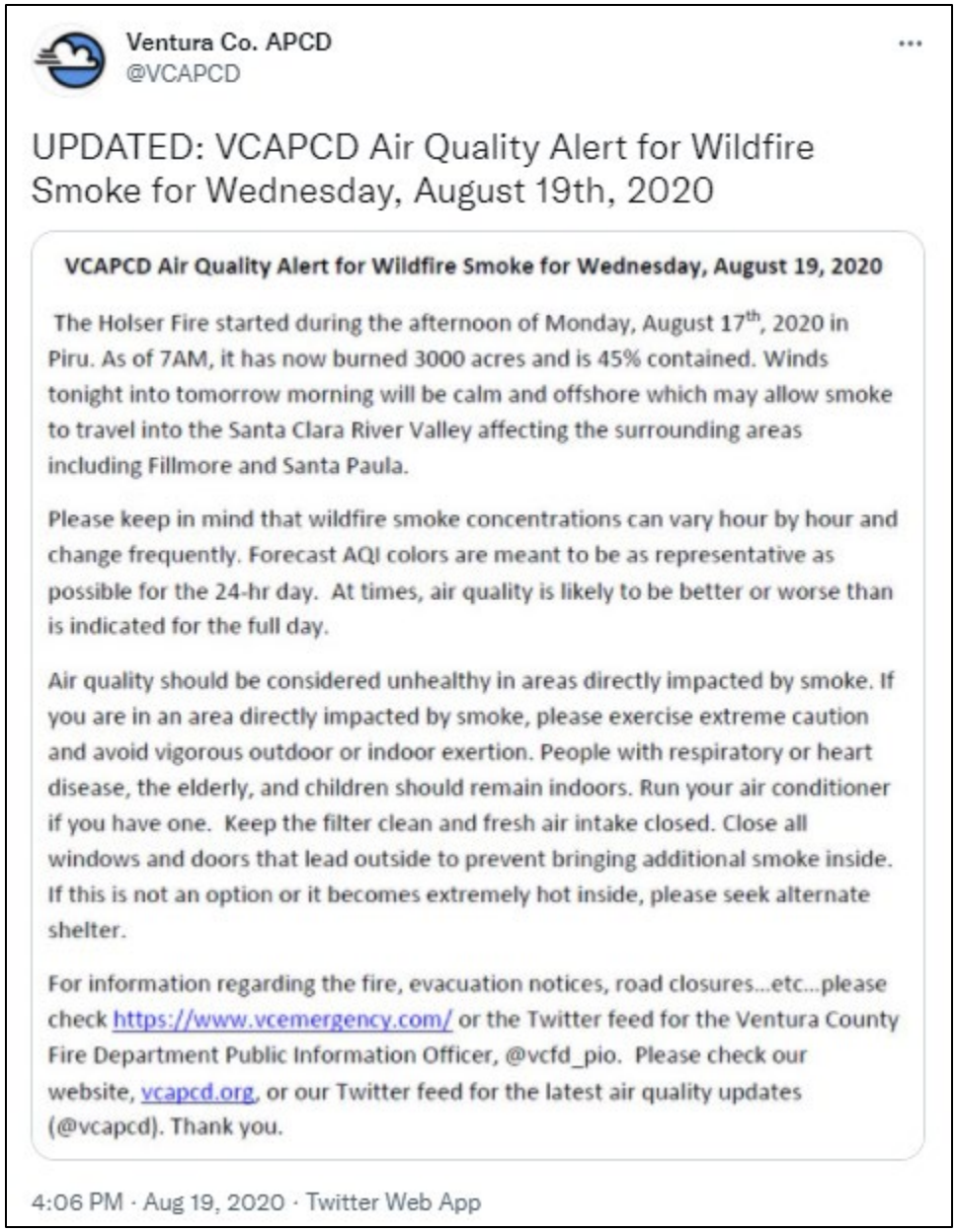


https://twitter.com/VCAPCD/status/1296112747856314368

https://twitter.com/VCHumanServices/status/1296140785302175749



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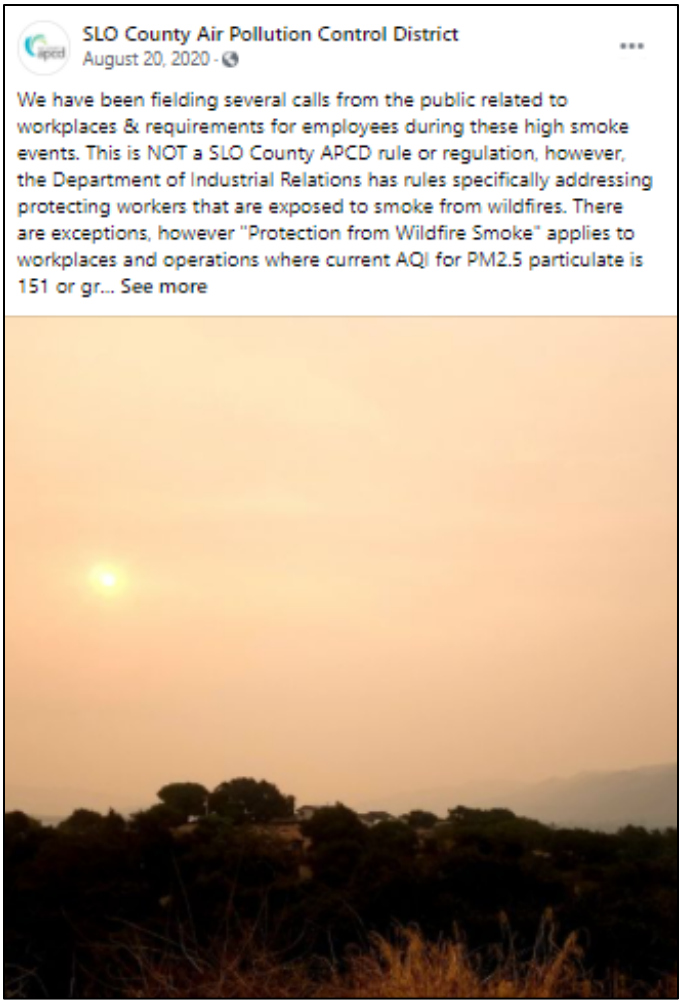

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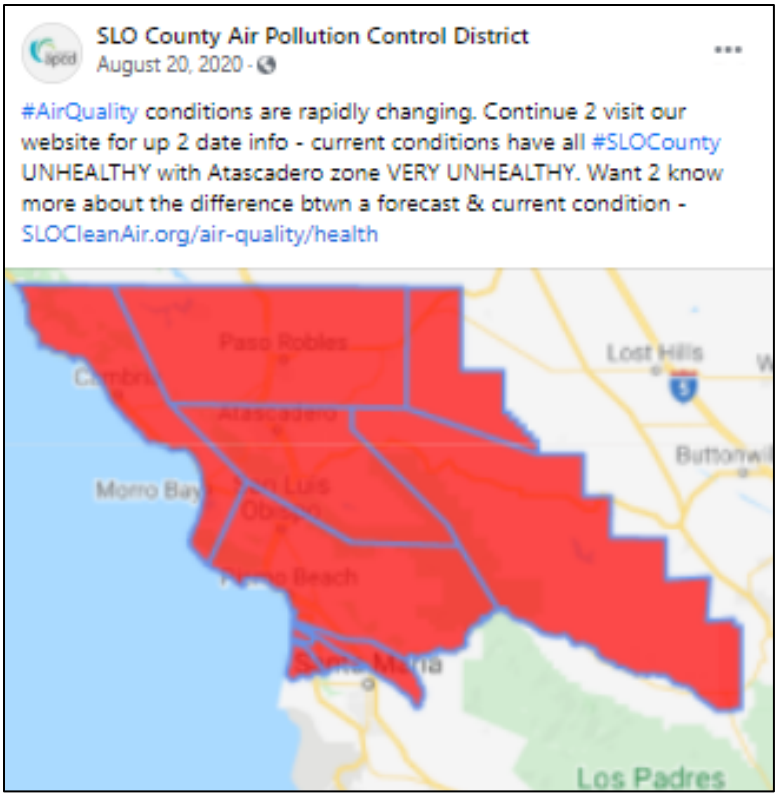

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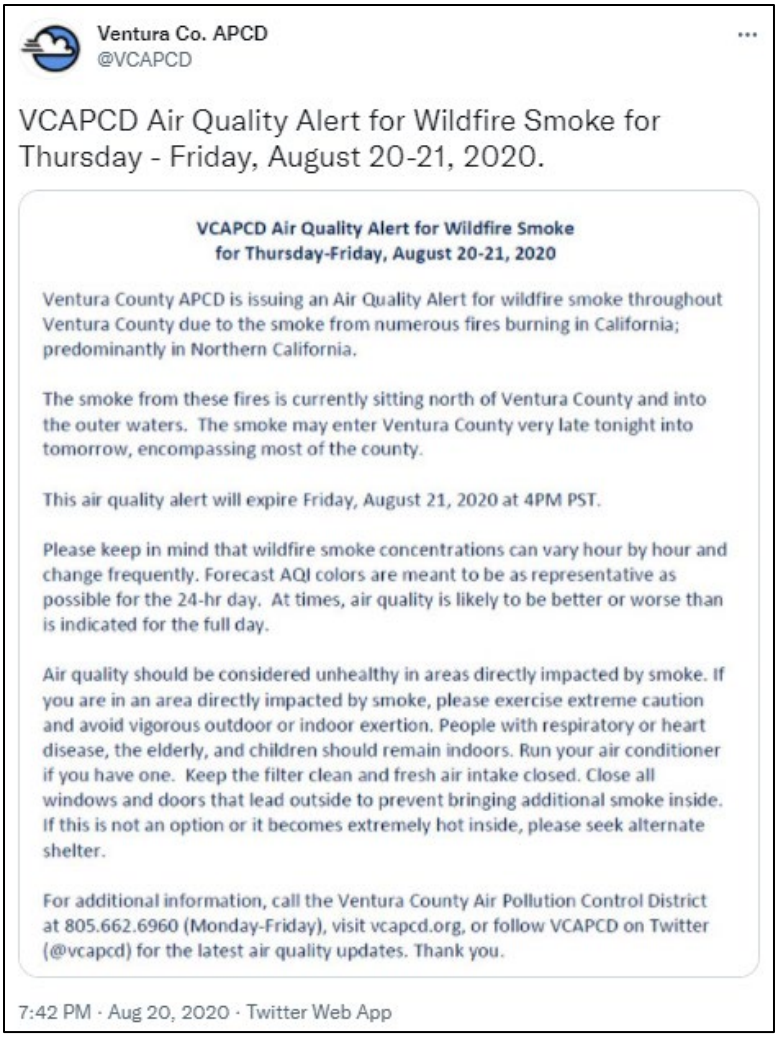

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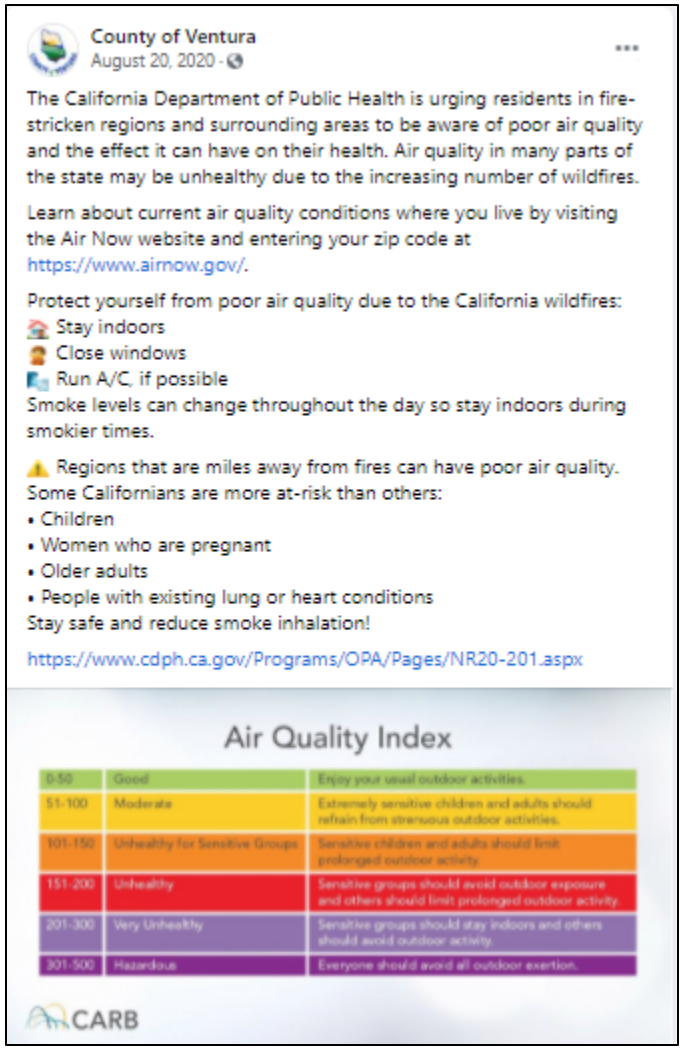

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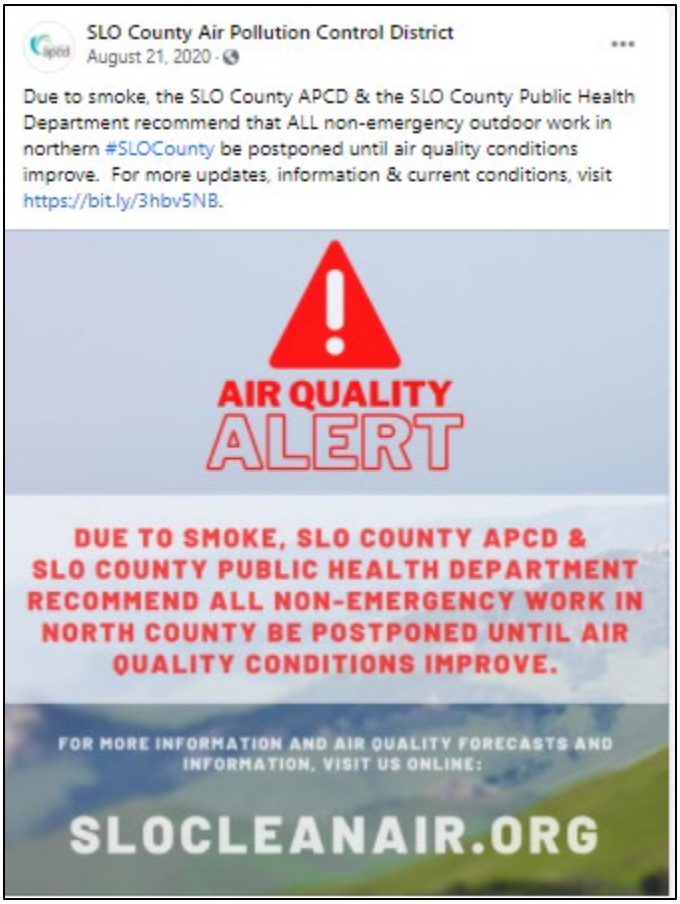

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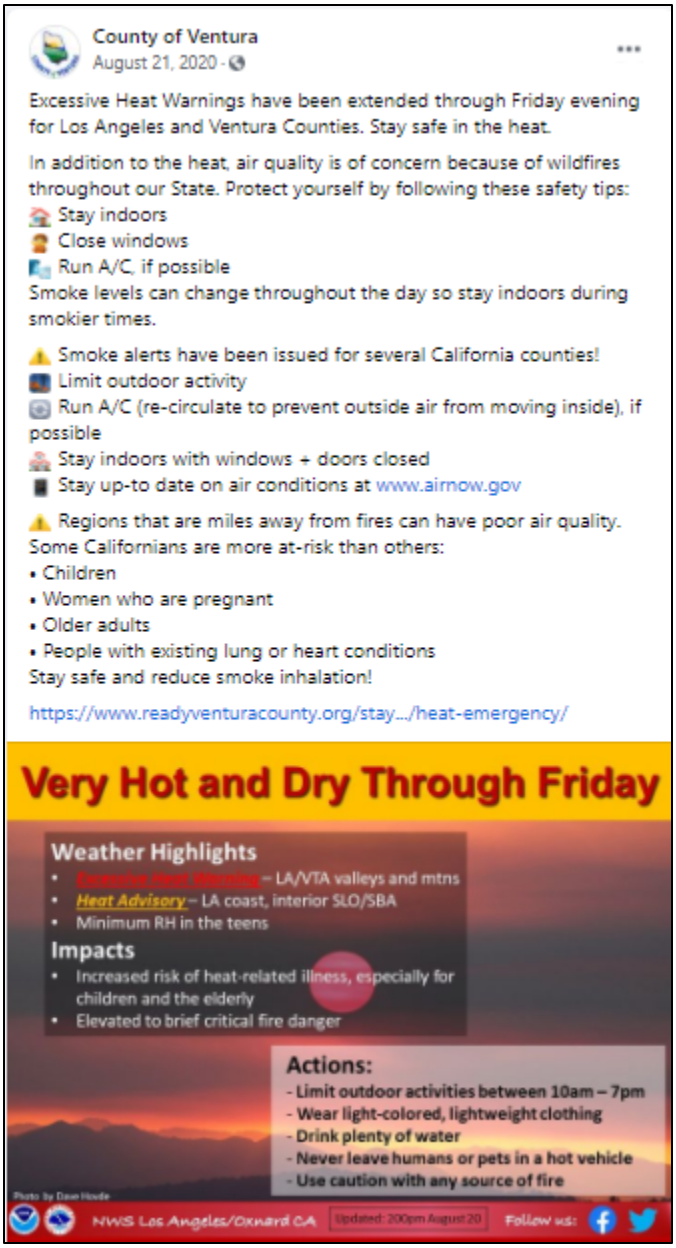
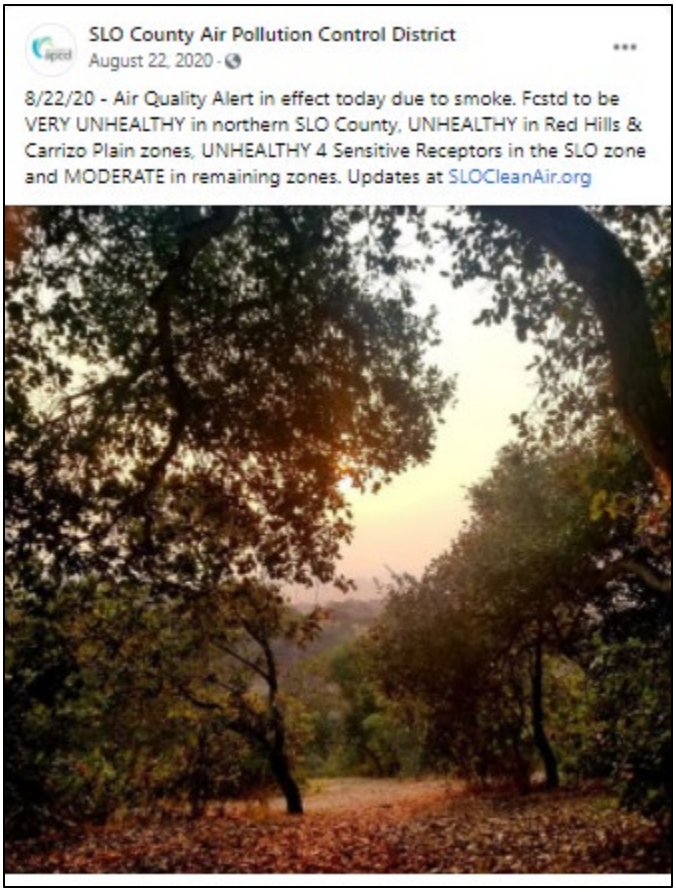
https://twitter.com/vcstar/status/1296924151496744962



https://www.facebook.com/CountyOfVentura



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b) September 29 – October 4, 2020

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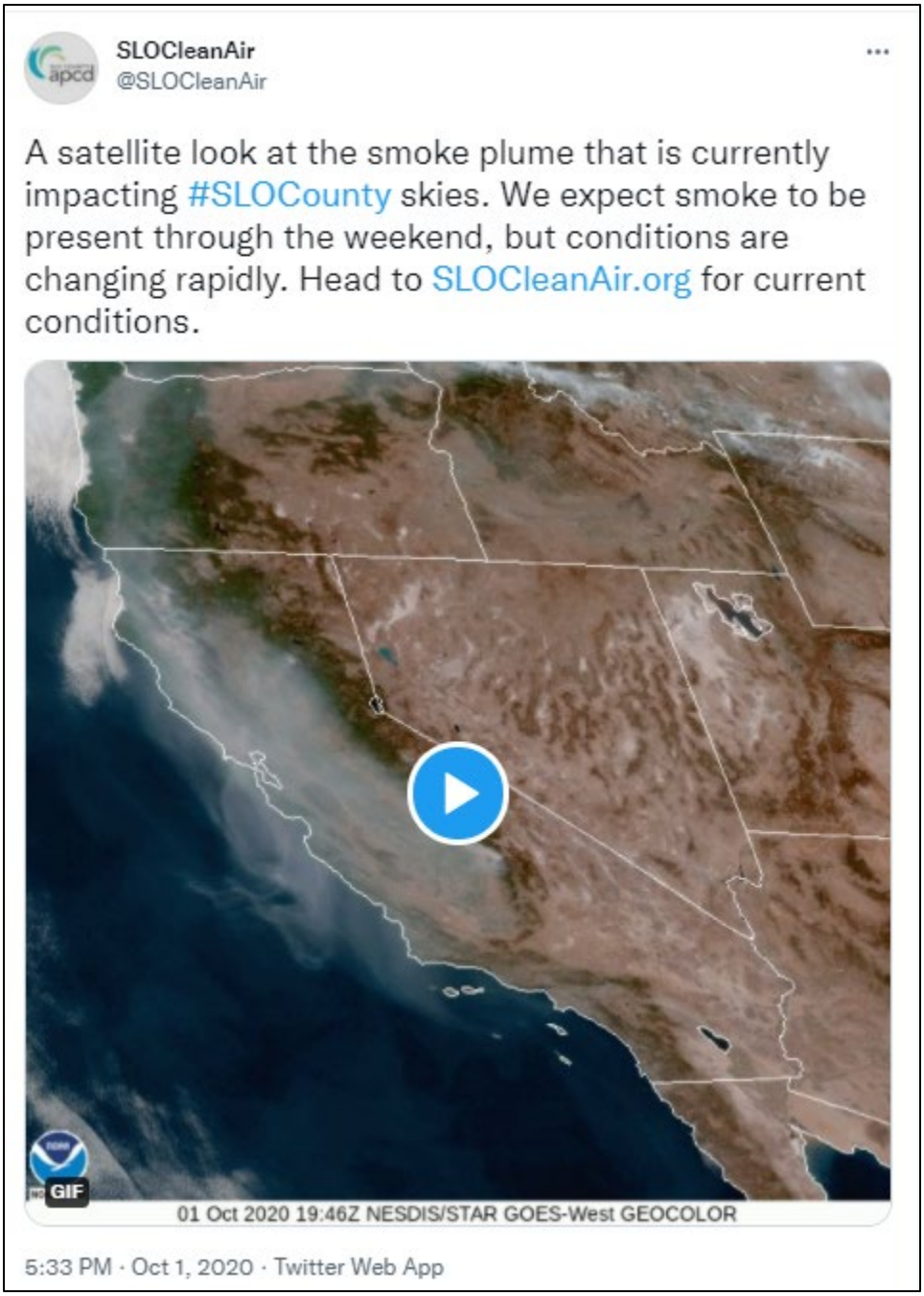

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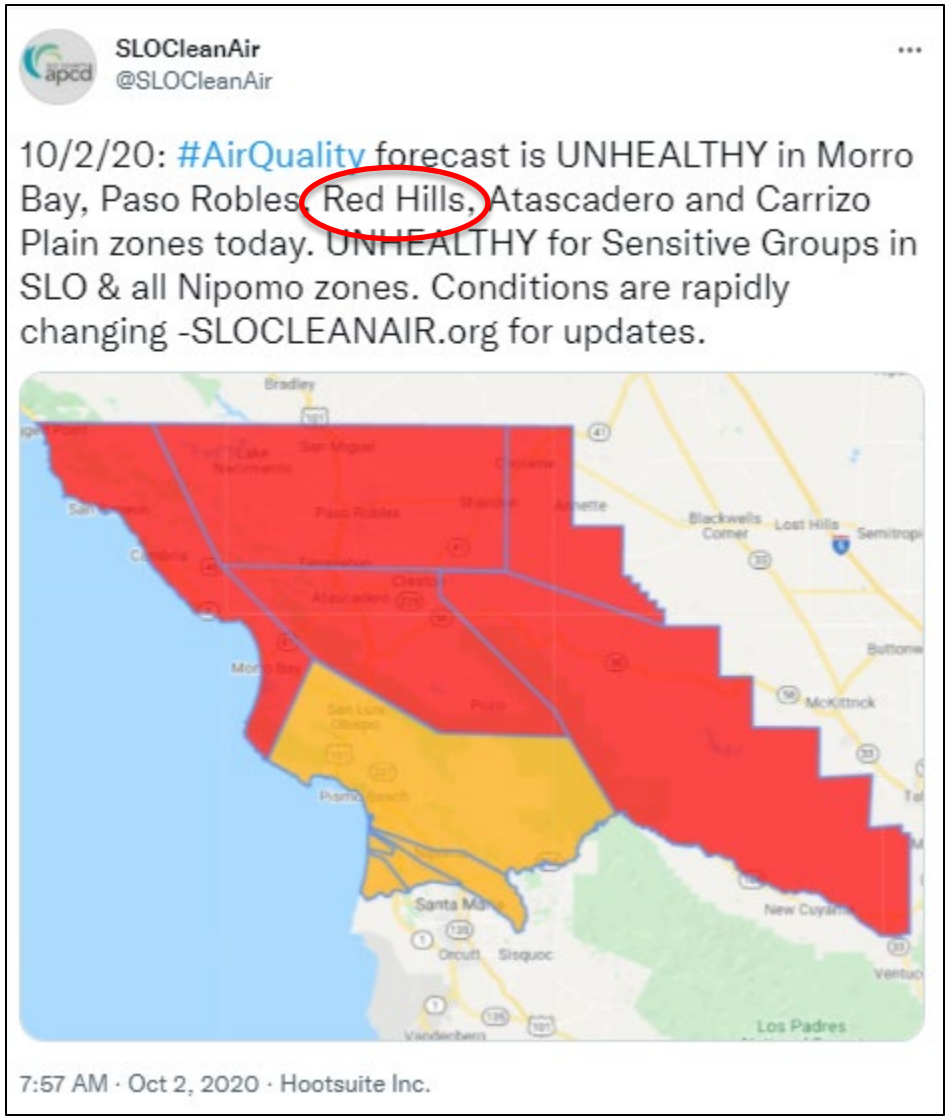

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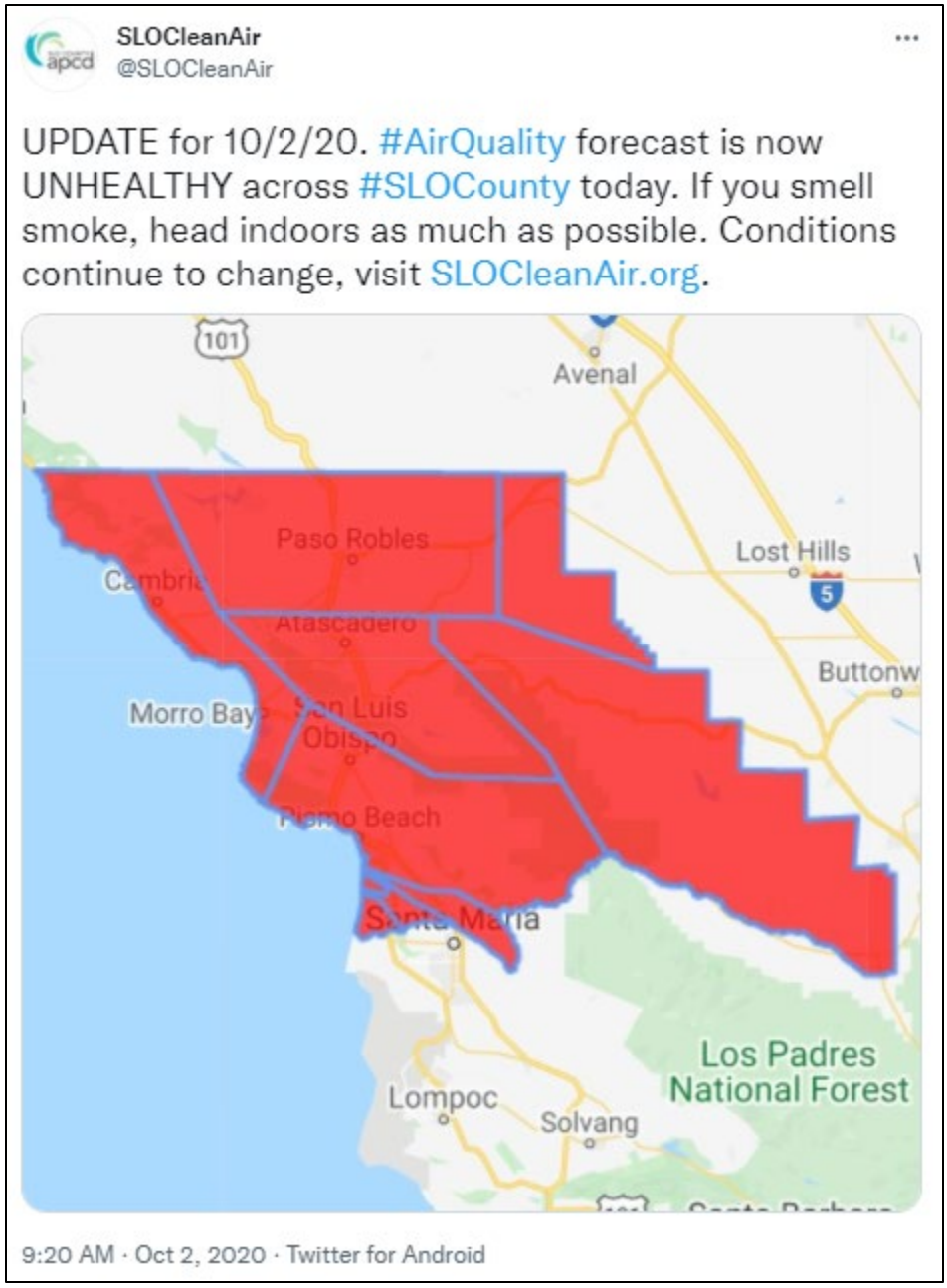

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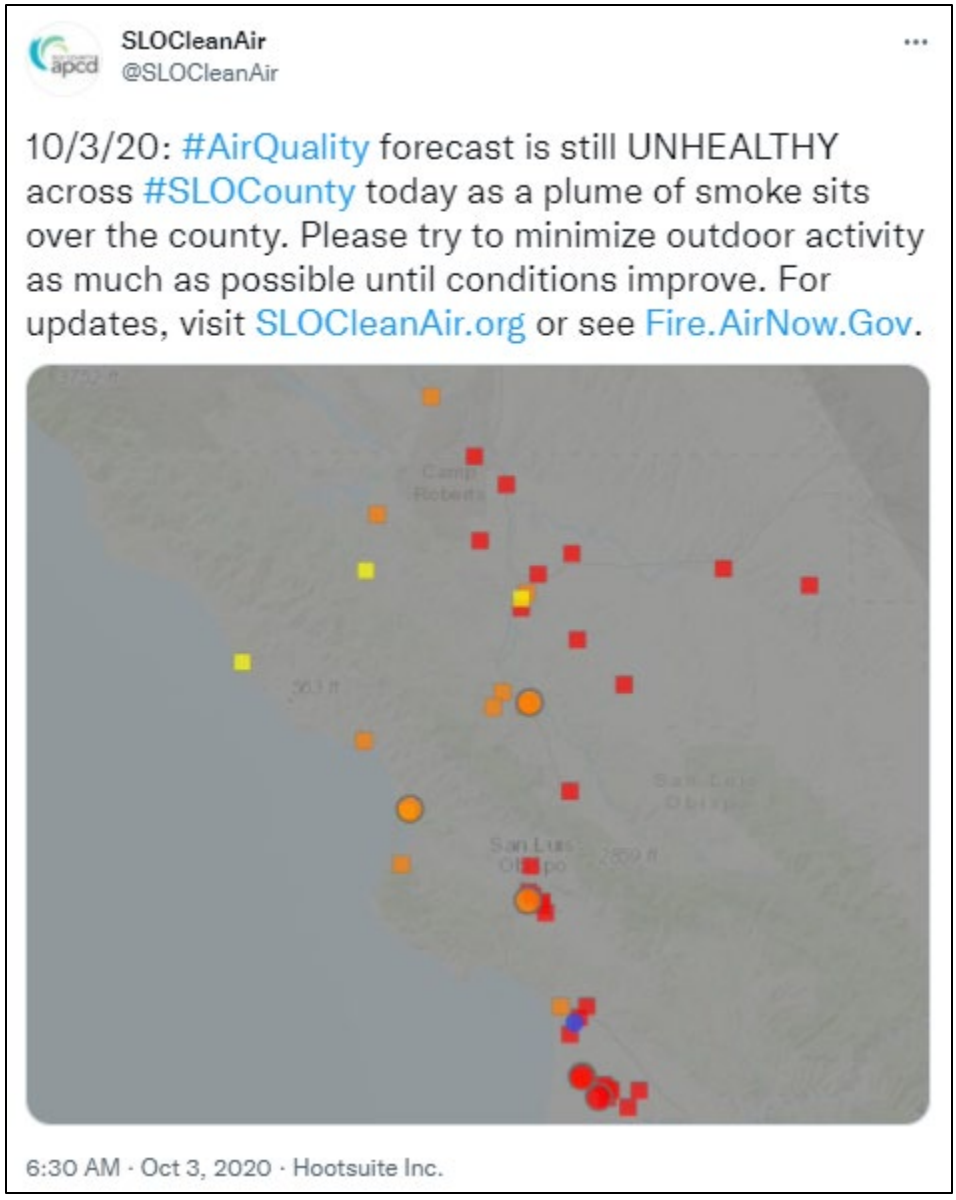

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