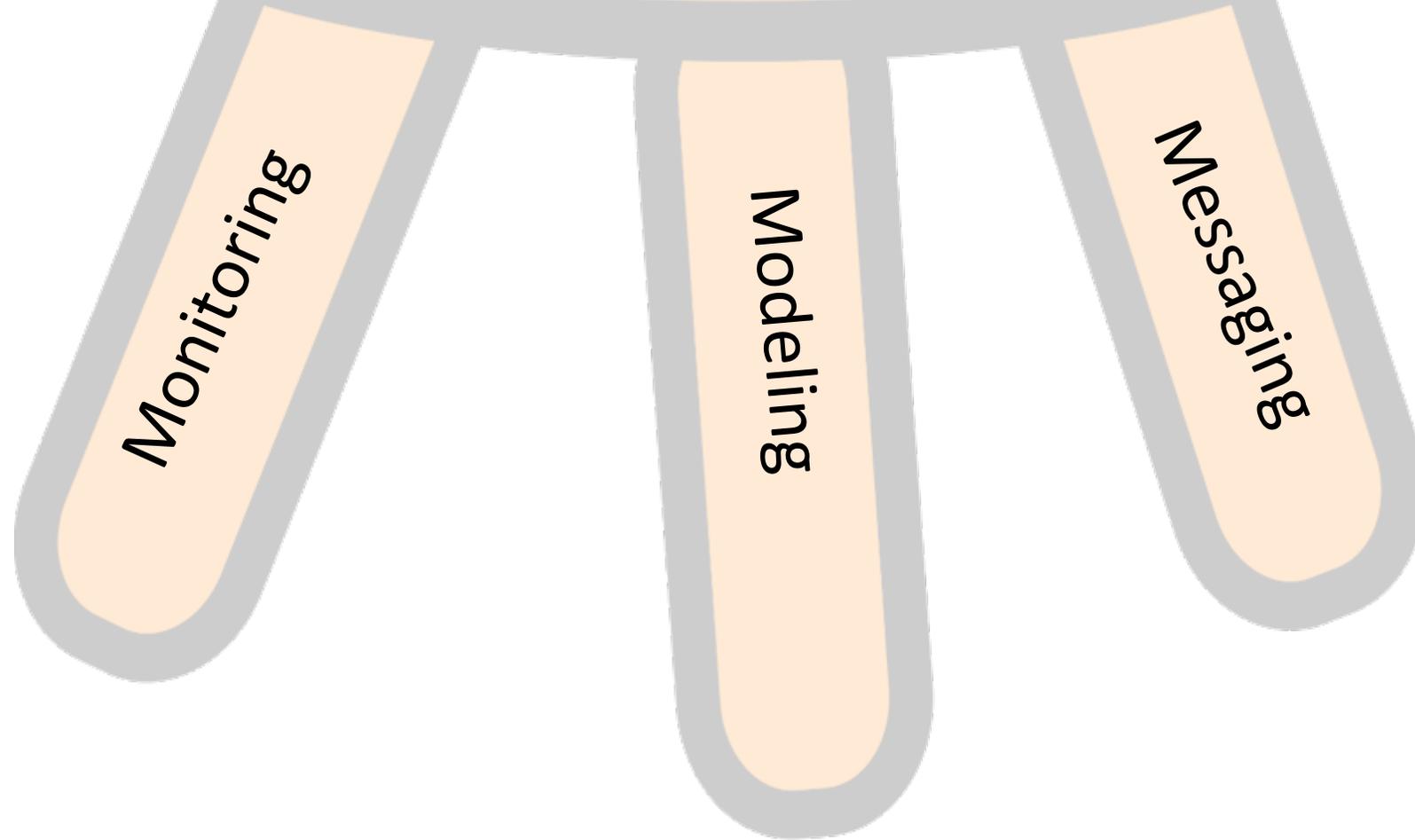


Effective Smoke Management Takes Time

for both Rx and resource objective wildfires



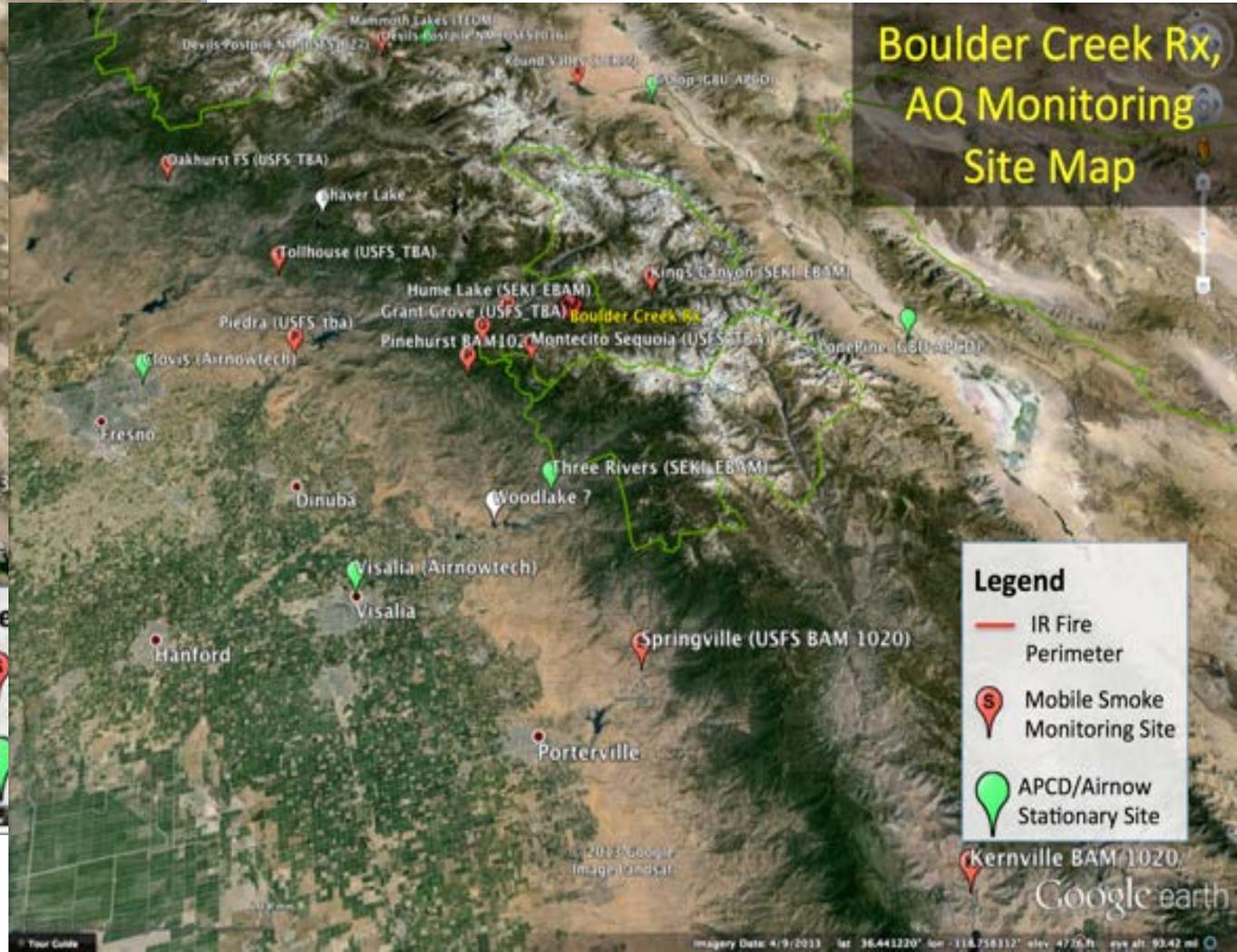
1) Monitoring both Wildfires and Resource Objective/Rx Fires

Over wide areas, it's important to show where smoke is, and is NOT

Rim and American Fire, AQ Monitoring Site Map



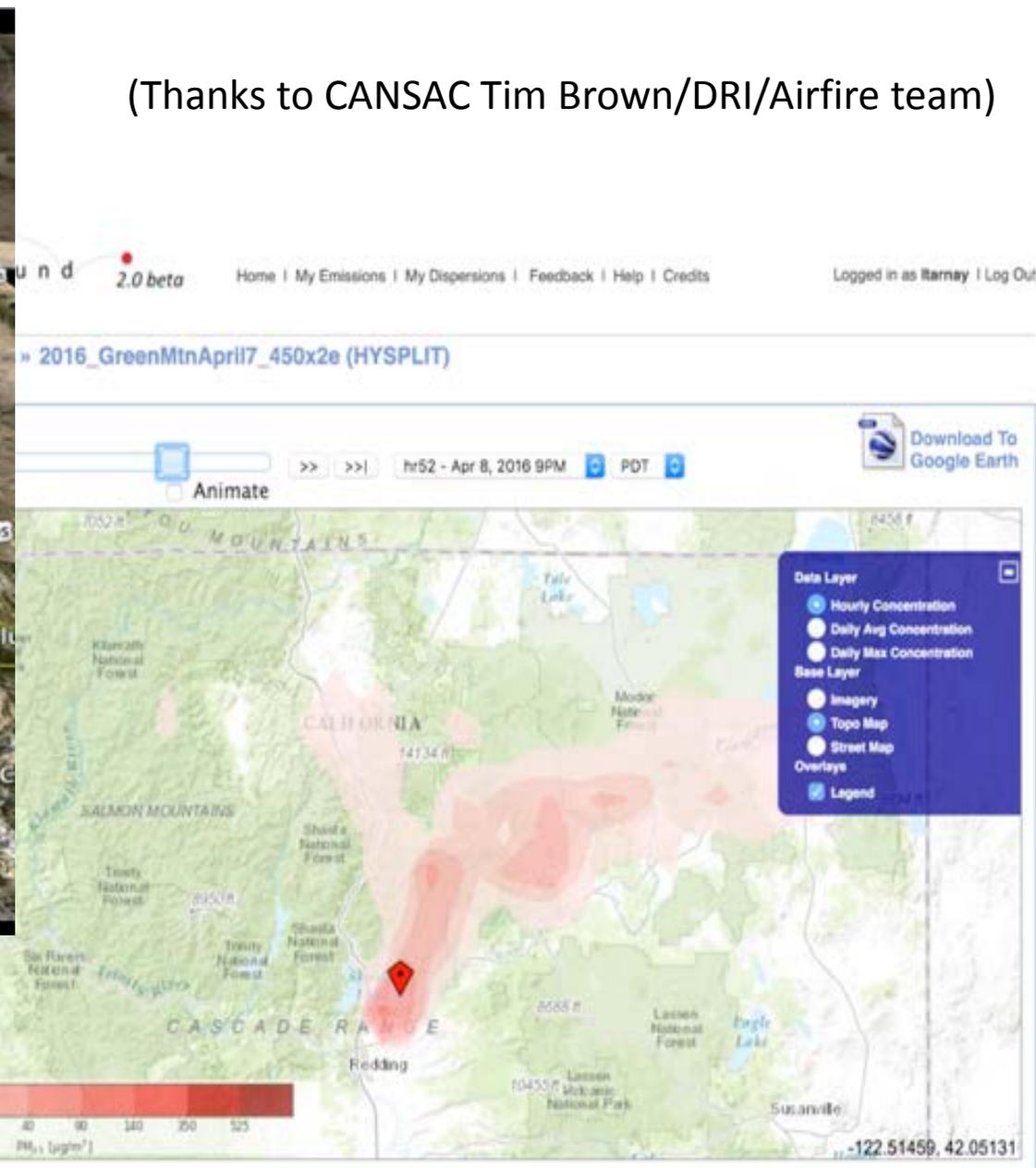
Boulder Creek Rx, AQ Monitoring Site Map



- Legend**
- IR Fire Perimeter
 - Mobile Smoke Monitoring Site
 - APCD/Airnow Stationary Site

2) Modeling for both Wildfires and Resource Objective/Rx Fires

(Thanks to CANSAC Tim Brown/DRI/Airfire team)



3) Messaging for both Wildfires and Resource Objective/Rx Fires

California Smoke Information

Saturday, September 17, 2016 #Soberanes Fire Air Quality Forecast #51

Air Quality Report
Soberanes Fire
Forecast #51

Issue Date: 09/17/2016
Time: 0700
Prepared by: Gary Curcio, ARA
& Kathleen Stewart, ARA (T)

Forecast conditions represent impacts from smoke from the Soberanes Fire wildfire and other fires. Contributions from ozone and other pollutants and other sources are generally not reflected.

Fire: Burnout operations lasted until 1:00 AM last night. Chews Lookout Tower and MIRS Observatory were secured for continued burning operation along Chews Ridge towards Los Padres Reservoir and eventually ignition (west to east) from the Tower eastward to ridge line parallel to Carmel River Rd.

Air Quality Today: Smoke impacts are expected to occur as residual smoldering combustion also increases. With transport winds less than 9 MPH smoke movement will be very slow out of the area. Local terrain will confuse and direct smoke movement through the drainages. Tassajara is expected to be very unhealthy while Carmel Valley, Cachagua and Arroyo Seco are unhealthy for sensitive groups. Big Sur, Carmel River School and Lockwood are expected to be Moderate. Salinas Valley is expected to be clear.

Air Quality Tomorrow: With active burning through the night degraded air quality is expected throughout the areas.

Particulate Matter (PM 2.5) Impacts from the Soberanes Fire (midnight to midnight)

Particulate Matter (PM 2.5) Impacts from the Soberanes Fire (midnight to midnight)

Site*	Yesterday Observed 24-Hr AQI September 16, 2016	Today's Forecast 24-Hr AQI September 17, 2016	Tomorrow Outlook 24-Hr AQI September 18, 2016	Best Time of Day September 17 24-Hr AQI
Carmel River School	Good	Moderate	Moderate	Morning
Carmel Valley	Good	Unsafe for Sensitive Groups	Moderate	Morning
Toro Park	Good	Good	Good	
Cachagua	Moderate	Unsafe for Sensitive Groups	Unsafe for Sensitive Groups	
Big Sur	Moderate	Moderate	Unsafe for Sensitive Groups	Afternoon
Tassajara	Unhealthy	Very Unhealthy	Unhealthy	Afternoon

<http://californiasmokeinfo.blogspot.com/>

Wednesday, October 12, 2016: Mariposa Grove Prescribed Fire Project Smoke Effects Forecast #3

Prescribed Fire Project: Mariposa Grove
Yosemite National Park

Prepared: 10/12/16 Prepared by: Jim McNitt, Air Resource Specialist

Overview: The 2016 Mariposa Grove prescribed fire project is comprised of 148 acres. By maintaining fire in the Mariposa Grove, both fuels reduction and ecological goals can be achieved. The Mariposa Grove is closed to the public for the Mariposa Grove restoration project. **Operations Summary:** Ignitions started on Sunday, 10/2/16 when 31 acres were burned. Additional ignitions are planned for today (62 acres), tomorrow (29 acres), and Friday (6 acres). **Smoke Synopsis:** Smoke transport and dispersion will be fair during the day on Wednesday and Thursday and good on Friday. Smoke will be transported to the east during the day on Wednesday and to the northeast on Thursday. Smoke will settle downslope overnight, settling in drainages by the early morning. **Outlook:** A frontal system is expected to bring rain and stronger winds to the area on Friday.

Location	10/11/16 Observed*	Day 1 10/12/16 Forecasted	Day 2 10/13/16 Forecasted	Details for avoiding smoke during the worst hours of the day. Ignitions are planned for Days 1, 2, and 3.
Wawona	Good	Good	USG	Smoke from the Lakes Fire and Mariposa Grove will flow downslope overnight and settle in drainages by the early morning. People with heart or lung disease, children and older adults should reduce prolonged or heavy outdoor exertion on Thursday and during the morning they should avoid all physical outdoor activity. Highest levels of PM2.5 will be between 2 AM and noon. Smoke will disperse as the temperature inversion breaks down (by noon).
South Entrance	Monitor deployed	Good	Moderate	People with heart or lung disease, children and older adults should reduce prolonged or heavy outdoor exertion. Highest levels of PM2.5 will be between midnight and 10 AM.

Prioritizing WHERE to Burn?

2013 American (22,000+ acres)

2014 King Fire (98,000+ acres)

Rim (255,000+ acres)

2014 French (13,000+ acres)

2013 Aspen (22,000+ ac.)

Legend

- IR Fire
- Perimeter
- National Park Boundaries (for orientation)

- Use recent fires as anchors
- Coordinate with fuel reduction thinning treatments
- Apply landscape scale prescribed fires and managed wildfires to fill gaps and maintain treated areas

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat
Data MBARI

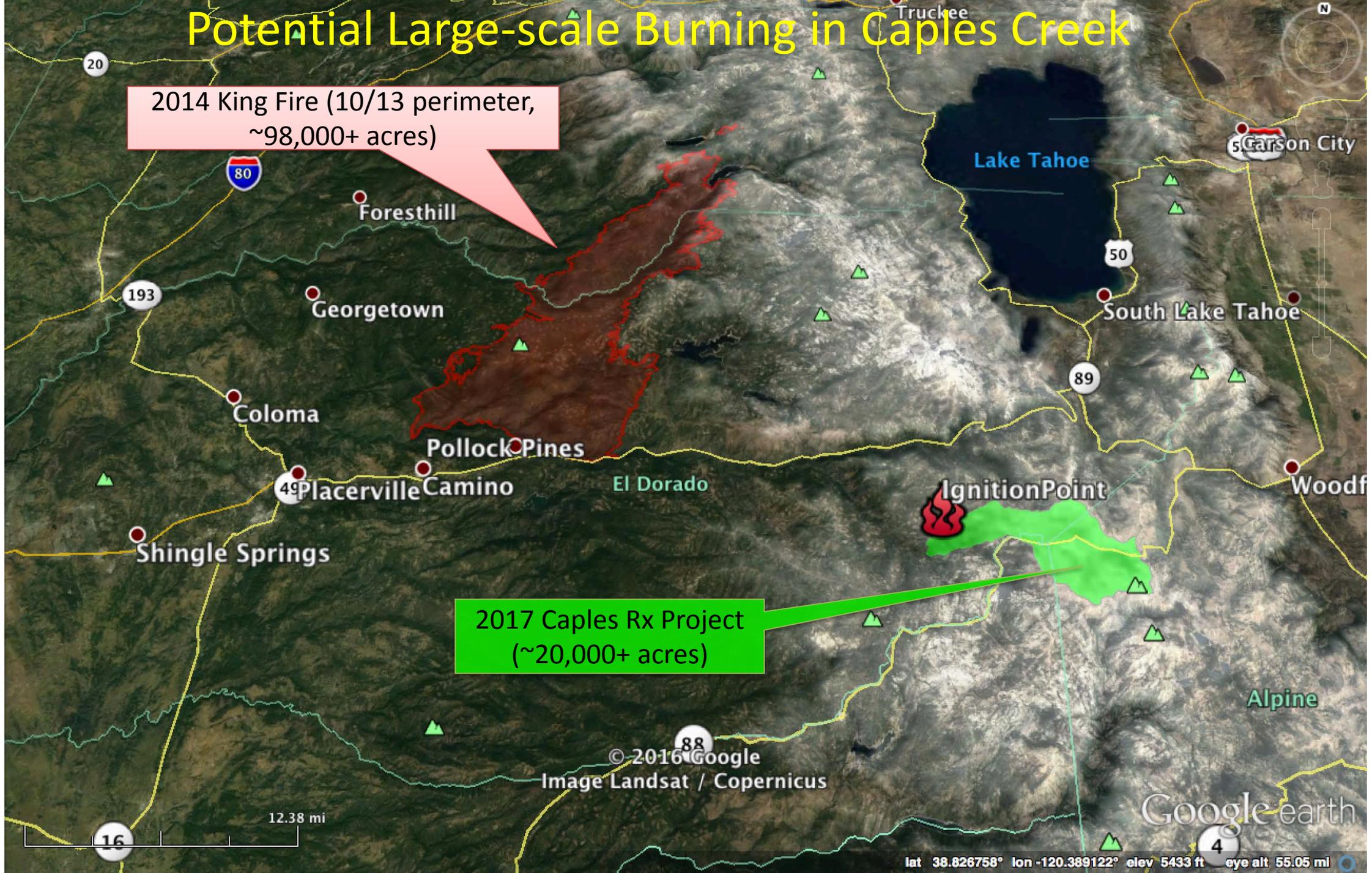
Google earth

Imagery Date: 4/9/2013 lat 37.474237° lon -119.768117° elev 3621 ft eye alt 219.99 mi

Potential Large-scale Burning in Caples Creek

2014 King Fire (10/13 perimeter, ~98,000+ acres)

2017 Caples Rx Project (~20,000+ acres)



Burning at scale takes extra time and preparation

(but can protect regional air quality from megafire by limiting daily fire spread)

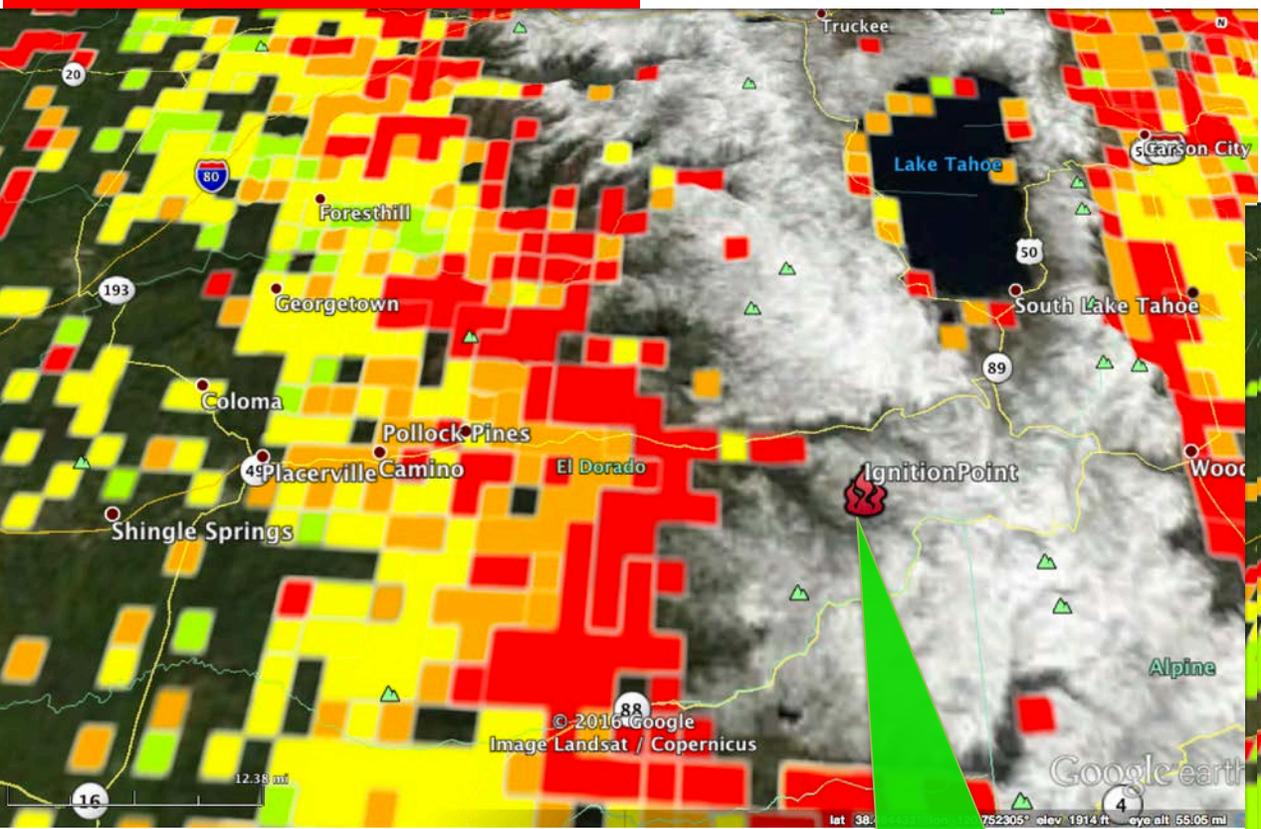
- Applying the smoke framework:
 - Smoke Monitors ordered and deployed
 - Modeling scenarios explored to guide monitor placement and public messaging
 - Messaging and communication with stakeholders (air districts, schools, public health officials, public and social media)
- We are working on regionwide planning tools to understand where and when during the year to target larger projects more effectively
 - Seasonal dispersion
 - Remote sensing of “snow-off” and seasonal fuels outlooks



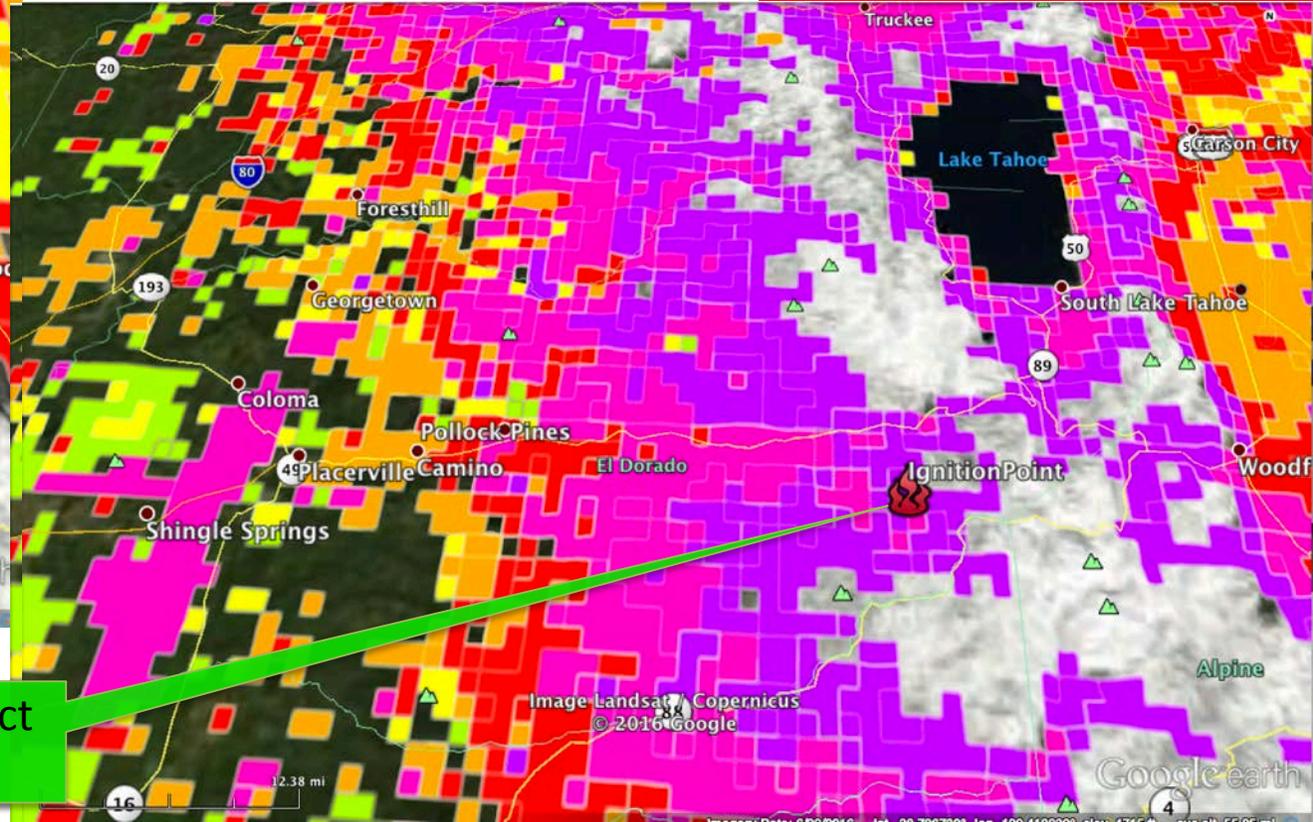
Fire and Ice: areas potentially burnable after the snow melts

(mapping the timing of areas that have been snow-free for 3-5 weeks)

Current (April) Melt-out status

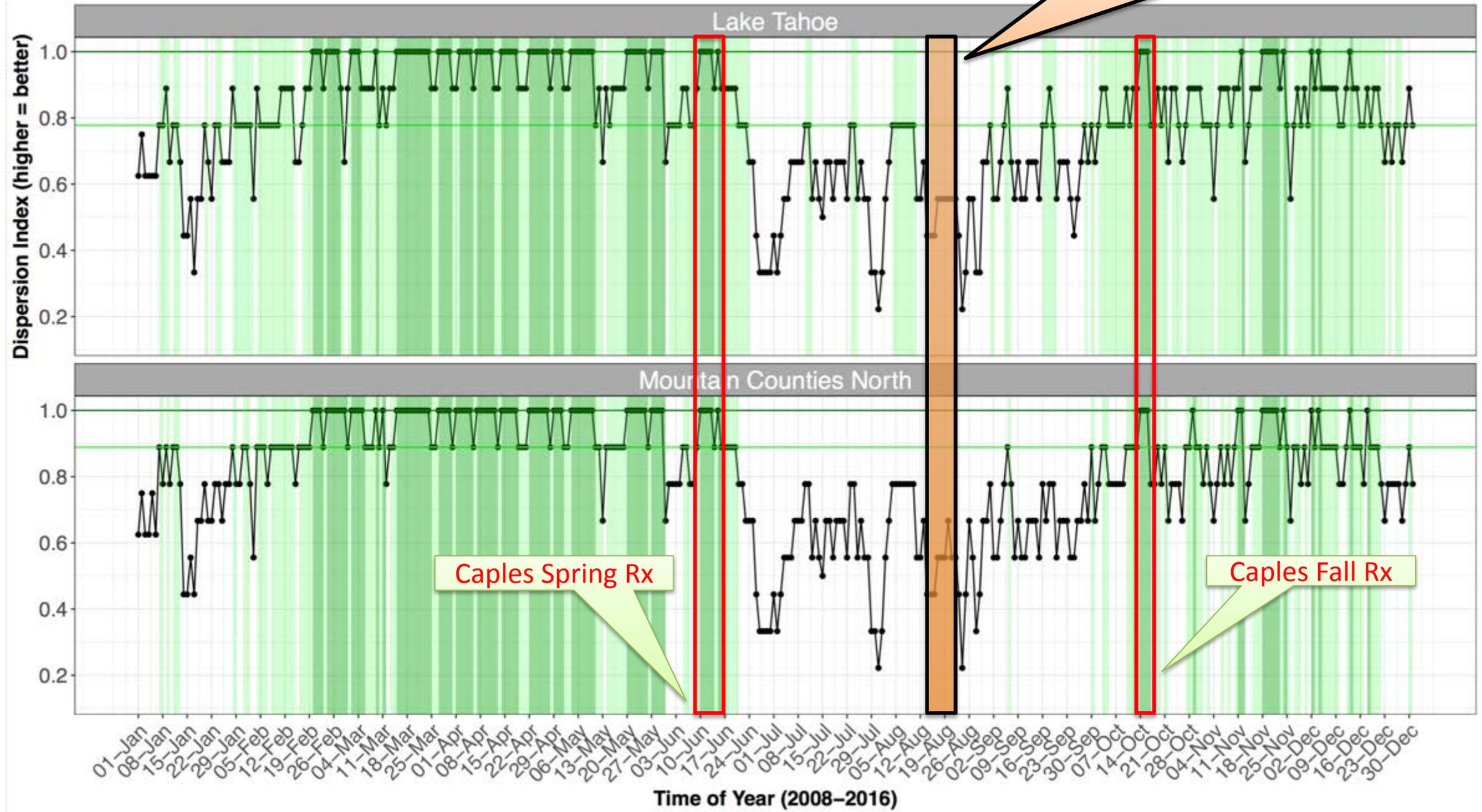


2006 Mid June Melt-out status
2006 April Melt-out status



2017 Caples Rx Project
(~20,000+ acres)

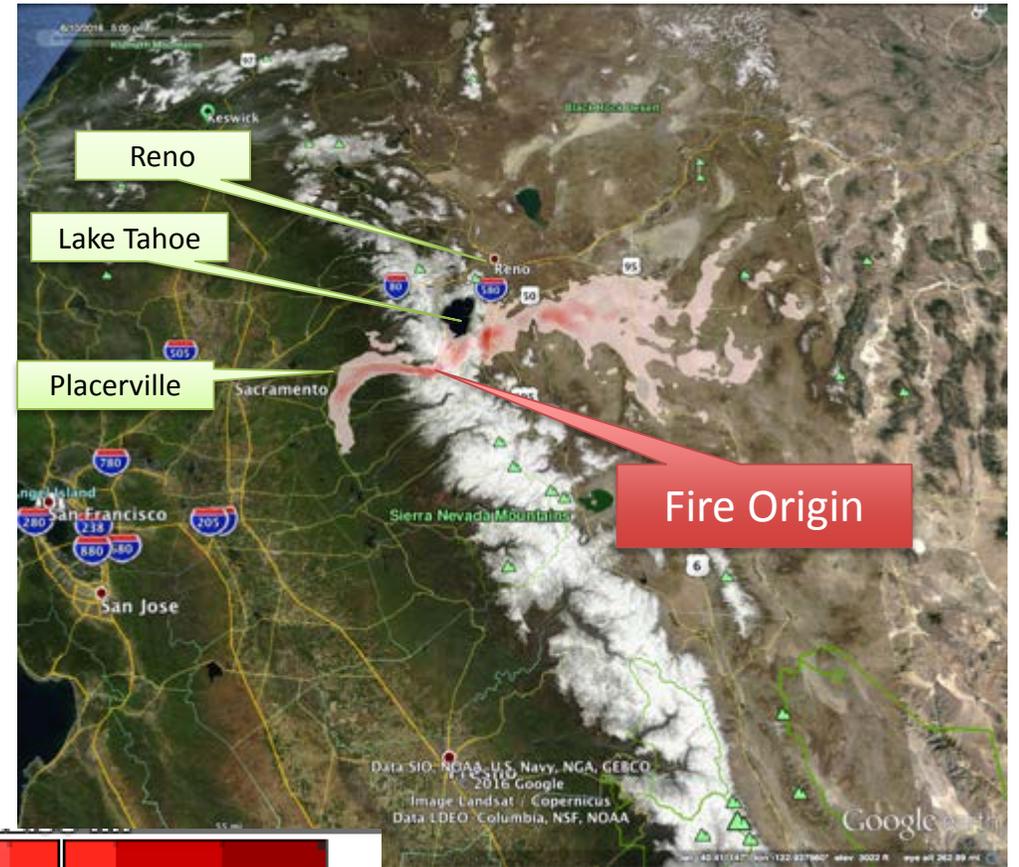
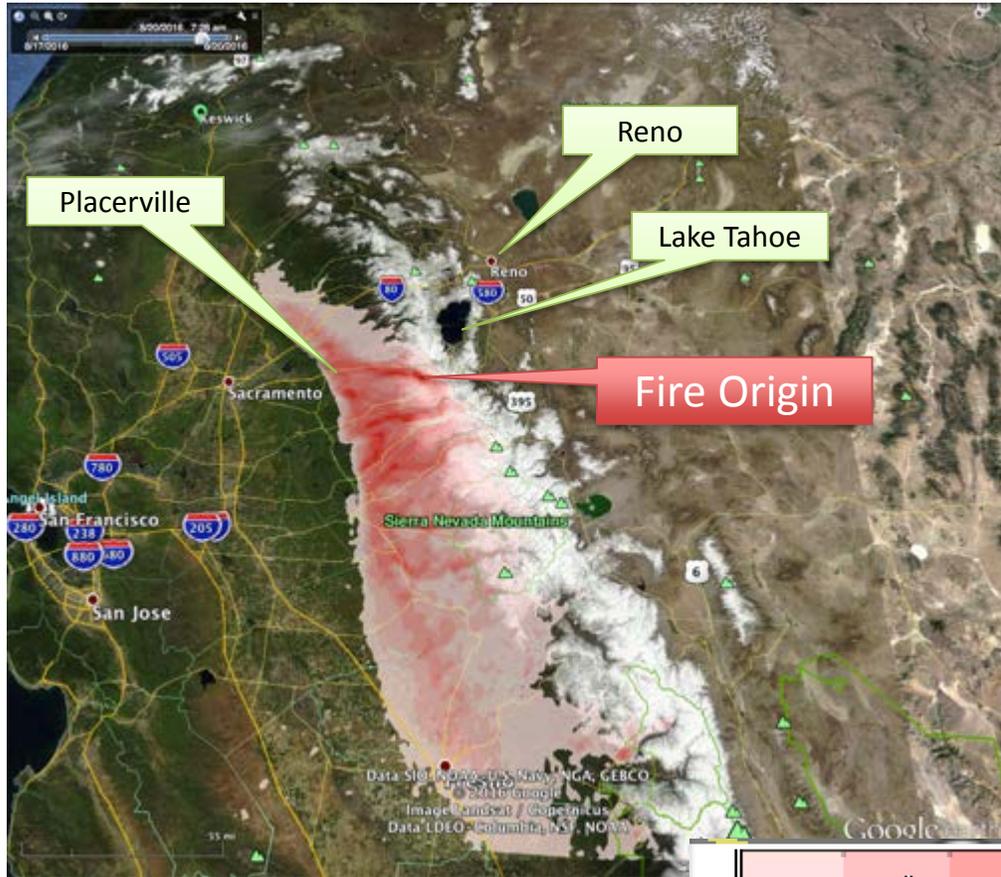
When to burn Caples Creek?



Potential (Modeled) Smoke from WF vs. a Proposed Rx fire in the Caples Creek watershed (Near Lake Tahoe)

August Wildfire (Aug 20, 2016, 1000 acres/day; 1100 tons PM_{2.5})

Spring Rx (June 9, 2016; 500 acres/day; 350 tons PM_{2.5})



*Note that BlueSky is an experimental computer model that tries to predict smoke at the surface from modeled fire—This used here for illustration purposes only. Degree of redness here represents a proxy for daily 24 hr average PM_{2.5} concentration at the surface. These colors should **not** be as taken as literal predictions of concentrations at monitors, but as indicators of relative intensity and probability of seeing additional PM_{2.5} at the surface from the fire being modeled. Areas that are more red are likely to see more smoke, all other things being equal, but look at the differences between scenarios, not the absolute concentrations.