



Wildfire Mitigation Advisory Committee Meeting

March 21, 2023

CAL FIRE -

Office of the State Fire Marshal



Call to Order

Welcome!

- ▶ If you have technical difficulties during this meeting, please contact Kara Garrett at:
 - (916) 201-5539 or Kara.Garrett@fire.ca.gov



Roll Call / Quorum Established

- ▶ The Acting State Fire Marshal
 - **Daniel Berlant**

- ▶ Department of Forestry and Fire Protection
 - **Curtis Brown**

- ▶ Department of Conservation
 - **Keali'i Bright**

- ▶ Office of Energy Infrastructure Safety
 - **Caroline Thomas Jacobs or Sandy Cooney**

- ▶ State Board of Forestry and Fire Protection
 - **J. Lopez**

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Roll Call / Quorum Established

- ▶ Governor's Office of Emergency Services
 - **Ryan Buras or Robert Troy**
- ▶ California Department of Insurance
 - **Deborah Halberstadt or Mike Peterson**
- ▶ Governor's Office of Planning and Research
 - **Neil Matouka**
- ▶ California Fire Safe Council
 - **Jacy Hyde**
- ▶ Insurance Institute for Business & Home Safety
 - **Roy Wright**

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Roll Call / Quorum Established

- ▶ California Fire Chiefs Association
 - Dave Winnacker or Todd Lando

- ▶ California Building Industry Association
 - Christopher E. Ochoa or Nick Cammarota

- ▶ University of California Cooperative Extension
 - Lenya N. Quinn-Davidson

- ▶ California Fire Science Consortium
 - Yana Valachovic

- ▶ Department of Housing and Community Development
 - Maziar Movassaghi or Clay Kerchof

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Roll Call / Quorum Established

- ▶ Rural County Representatives of California
 - **Staci Heaton**

- ▶ California Association of Resource Conservation Districts
 - **Sophia Lemmo**

- ▶ League of California Cities
 - **Sean McGlynn**

- ▶ California State Association of Counties
 - **Catherine Freeman**

- ▶ A representative from tribal government
 - **Don Hankins**



Approval of Past Meeting Minutes Motion Required

- ▶ Scan the QR Code Below to Access the Complete Meeting Minutes Document!



WILDFIRE MITIGATION ADVISORY COMMITTEE MEETING *Meeting Minutes – Tuesday, February 21, 2023* *Posted: 3/10/2023*



Committee Members Present

Daniel Berlant, Office of the State Fire Marshal
Curtis Brown, Department of Forestry and Fire Protection (Virtual)
Caroline Thomas Jacobs, Office of Energy Infrastructure Safety
J. Lopez, State Board of Forestry and Fire Protection
Robert Troy, California Office of Emergency Services (Virtual)
Michael Maguire, Office of Planning and Research (Virtual)
Roy Wright, Insurance Institute for Business & Home Safety
Dave Winnacker, California Fire Chiefs Association (Virtual)
Christopher Ochoa, Representative from the Building Industry
Clay Kerchof, Department of Housing and Community Development (Virtual)
Staci Heaton, Rural County Representatives of California
Sophia Lemmo, California Association of Resource Conservation Districts (Virtual)
Sean McGlynn, League of California Cities
Catherine Freeman, California State Association of Counties
Don Hankins, Professor, CSU Chico (Virtual)

Members Absent

Keali'i Bright, Department of Conservation
California Department of Insurance
Jessica Martinez, California Fire Safe Council
Lenya N. Quinn-Davidson, University of California Cooperative Extension (Virtual)
Yana Valachovic, California Fire Science Consortium (Virtual)

CAL FIRE Staff in Attendance

Wendy Collins, Assistant State Fire Marshal (Virtual)
Matt Damon, Staff Chief
John Morgan, Deputy Chief (Virtual)
Scott Witt, Deputy Chief
Andrew Henning, Assistant Deputy Director
Jaemie Allen, Administrative Assistant II
Daniel Bluford, Staff Services Analyst
Kara Garrett, Associate Governmental Program Analyst
Chris Keithley, Assistant Deputy Director - Fire & Resource Assessment (Virtual)
Jamie Sammut, Staff Counsel (Virtual)
Steve Hawks, Retired Annuitant (Virtual)
Tony Andersen, Deputy Director (Virtual)
Josh Mott, Information Officer I (Virtual)

1. CALL TO ORDER 1:00 PM

A. Welcome

The meeting was called to order at 1:00 PM by Daniel Berlant.

Daniel Berlant



Approval of Meeting Agenda Motion Required

- ▶ Scan the QR Code Below to Access the Complete Meeting Agenda Document!



WILDFIRE MITIGATION ADVISORY COMMITTEE MEETING *Meeting Agenda – Tuesday, March 21, 2023, 1:00 PM – 3:00 PM* *Posted March 07, 2023*



Location:
CNRA Building, 715 P Street, 2nd Floor Conference Room 2-310
Sacramento, CA 95814

Zoom Meeting Information –
Please click the link below to join the webinar:
<https://us06web.zoom.us/j/85192423489?pwd=dnZYaUhXVFliUTFmT21nMzJYYVlxQT09>
Passcode: 462073

- 1. CALL TO ORDER**
 - A. Welcome
 - B. Roll Call/Quorum Established
 - C. Approval of Past Meeting Minutes (*Motion Required*)
 - D. Agenda Review (*Motion Required*)
- 2. OLD BUSINESS**
 - A. Risk Modeling
 - 1) Work Group Update
 - B. Division Report
- 3. NEW BUSINESS**
 - A. Caltrans – Roadway Vegetation Presentation.
 - B. ALERTCalifornia – Detection Cameras Presentation.
- 4. ROUNDTABLE**
- 5. PUBLIC COMMENT**
- 6. UPCOMING MEETING DATES FOR 2023**
 - A. Third Tuesday of each month starting at 1 PM and ending at 3 PM.
 - a. April 18, 2023, we will be in a different conference room, same building.
 - i. CNRA Building, 715 P Street, 2nd Floor Conference Room **2-221 (A)**
Sacramento, CA 95814
- 7. MEETING ADJOURNMENT (*Motion Required*)**



Risk Modeling Advisory Workgroup Update

- ▶ More information will be shared as the workgroup moves forward.

- ▶ Contacts for the workgroup are listed below:
 - Jim McDougald
 - Jim.McDougald@fire.ca.gov
 - Celeste Jovanovic
 - Celeste.Jovanovic@fire.ca.gov





Community Wildfire Preparedness and Mitigation Division Report



Wildfire Preparedness

2022 Fire Prevention Efforts (July 2022 - Mar 21, 2023)

- ▶ **Defensible Space Inspections:**
 - **175,933** inspections, 70.37% of the goal
 - Approximately **35,000** ahead of this time last fiscal year
 - Program has inspected over **18,400** properties since the new year started.
- ▶ **Burn Permits:**
 - New burn permit application launched - Over **11,000 permits** have been issued since January 3rd.



Wildfire Planning and Statistics

2022 Fire Prevention Efforts (July 2022 - Feb 28, 2023)

- ▶ **Fuel Reduction Projects:**
 - **403** projects, 80.6% of the goal
- ▶ **Combined Fuel Reduction:**
 - **37,168.4** acres treated, 37.2% of the goal
 - Unit Projects - **23,468.1** acres
 - Grant Projects - **13,700.4** acres
- ▶ **Prescribed Fire (also counted in fuel reduction):**
 - **17,491.0** acres treated, 35.00% of the goal

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Wildfire Planning and Statistics

Pre-Fire Plan (Fire Plan)

- ▶ Reminders:
 - Staff held the pre-fire workshop the week of March 6, 2023
 - Public comment period for SRA FHSZ ends April 4, 2023.
 - Will begin mapping Local Responsibility Area, following the conclusion of the SRA process.



Community Wildfire Mitigation Assistance

Land Use Planner Training

- ▶ Land Use planner training in the Wildland Urban Interface classes continue with the Community Wildfire Planning Center (CWPC).
- ▶ Target audience is local planners, fire marshals and building officials as well as consultants and other interested stakeholders.
- ▶ Focuses on relationship building, basic fire behavior and building and planning concepts and regulations.
- ▶ Will be held through April 2023.
- ▶ More information:
 - <https://www.communitywildfire.org/>



Community Wildfire Mitigation Assistance

Subdivision Review (SDR)

- ▶ Program staff have completed over **1300** surveys and have been forwarded to the Board of Forestry and Fire Protection for approval.
- ▶ These surveys have been approved for release to the public.

Firewise

- ▶ California continues to lead the nation with **661** National Fire Protection Association (NFPA) Firewise USA Communities in good standing, equating to over **25%** of all NFPA Firewise USA Communities nationwide.



Community Wildfire Mitigation Assistance

Wildfire Prevention Grants

- ▶ FY22-23 Wildfire Prevention grants solicitation is closed on March 15, 2023.
 - Available total grant funding of \$115 million.
- ▶ New for this solicitation, we offered virtual office hours to assist applicants with their grant applications.
- ▶ The virtual office hours were a huge success with around 100 participants at each Office Hour, and we will continue offering them in the future.





Caltrans – Roadway Vegetation on State Highways

Wildfire Mitigation Advisory Committee March 21, 2023

Lisa Ann Worthington
Caltrans HQ Division of Maintenance
Chief, Vegetation and Wildfire Management
state cell: 916.531.2646
Lisa.Worthington@dot.ca.gov

Caltrans Strategic Plan (2020-2024)



- **Vision** – A brighter future for all through a world-class transportation network.
- **Mission** – Provide a safe and reliable transportation network that serves all people and respects the environment.

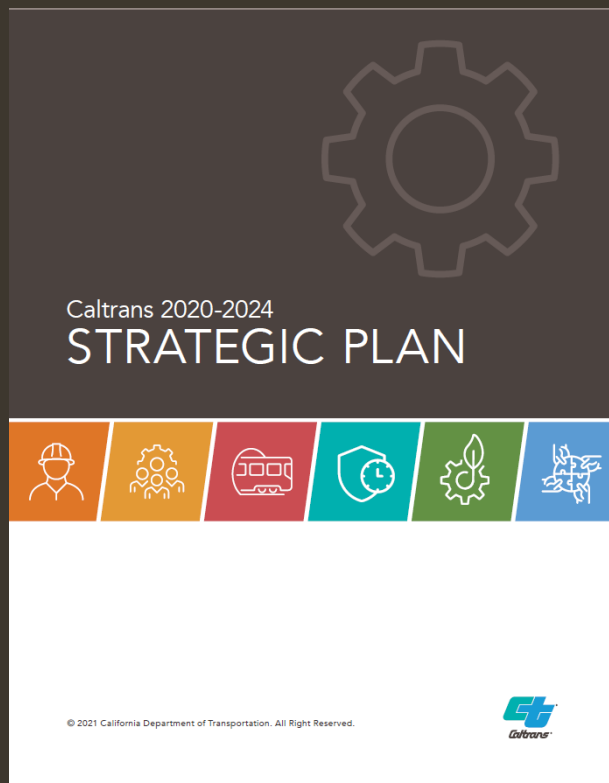


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Caltrans Commitment to People and the Planet

“Our energies will be focused on actions woven throughout our Strategic Plan to promote sustainability and equity....”



California Wildfire and Forest Resilient Action Plan (2021-2025)

An aerial photograph of a dense forest with a winding road. A single car is visible on the road. The forest is lush green, and the road is paved.

Roadmap to 1M Acres
Goal = 50,000 acres treated per year

Shift workforce mindset

Corridor-scale planning

Optimize field crews, award service contracts, and enable Partnerships



GOAL 1 Increase Pace and Scale of Projects

Resilient State Lands Working Group

- Action 1.17 Develop a State Lands Joint Strategy

Looking Forward: How to Sign-up for Planscape? Hand-on training to utilize Regional Resource Toolkits

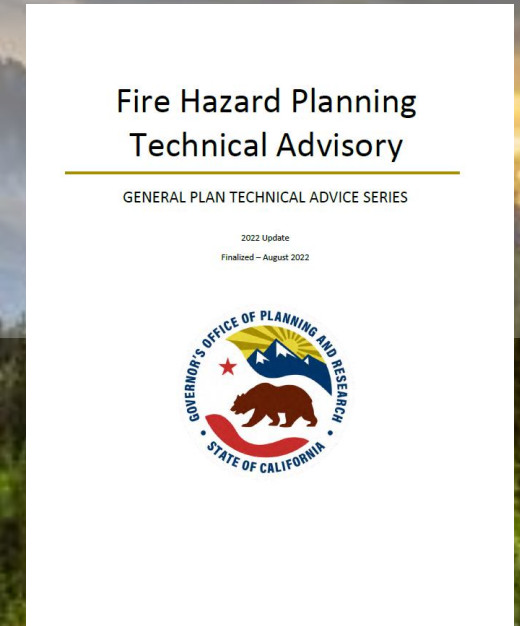
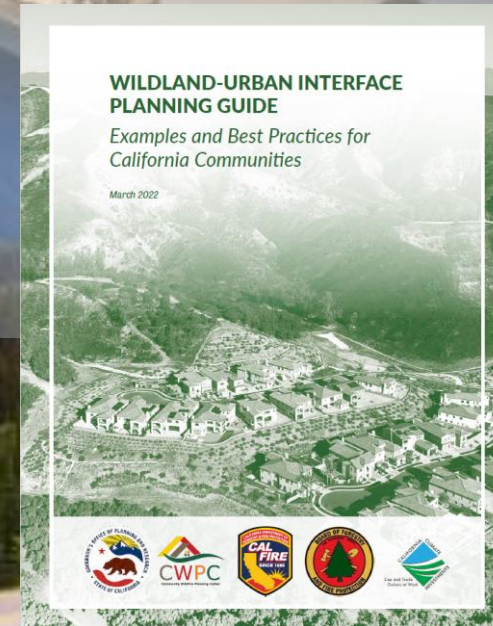
Partnership: Methodology discussion to establish baseline conditions for roadways that function as primary evacuation routes

Need: Share planning, environmental and implementation workflow and rolled-up costs for initial treatments and re-entry

GOAL 2 Strengthen Protection of Communities & Fire-Safe Roadways

Fire Adapted Communities (FAC) Working Group

- 2.25 Develop Framework for Winter Workshops
- 2.26 Assist Counties with General Plans
- 2.27 Expand Highway Treatments
- 2.28 Develop GNA with USFS R5
- 2.29 Expand Messaging Campaign with CALFIRE



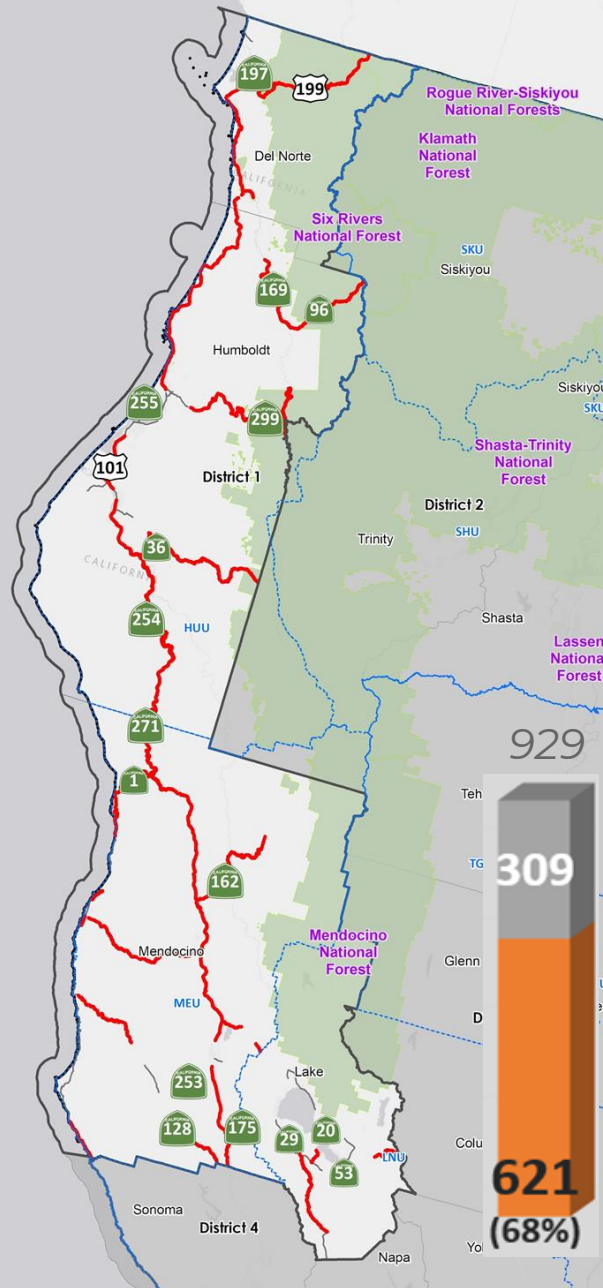
Looking Forward: Expand messaging campaign with CALFIRE describing benefit of public infrastructure fuel reduction projects

Partnership: 2022 Winter Workshops

Need: Better understand how to apply the FAC guidance to linear roadways

Need: Corridor-scale fire behavior information and *prescriptions* (Foresters/Local PFE) to reduce ignition probability from vehicle use

District 1 Priorities



Total Highways: 17

Total Segments: 118

Total Priority Centerline Miles: 621 mi

District Average Weighted Score: 76

Counties Impacted: Del Norte, Humboldt, Lake, Mendocino

Routes	Miles	Weighted Score	
SR-1	40	73	0-9.9, 57.7-59.8, 63.2-66.3, 79.3-105.6
SR-128	27	73	18-40.3, 41.1-50.9
SR-162	28	75	27-59.3
SR-169	23	77	0-3.5, 13.2-33.84
SR-175	20	73	8.3-28
SR-197	7	75	0-7.1
SR-20	37	75	0.8-32.6, 30.8-37.7, 38-46.5, 42.3-44.1
SR-254	32	77	0-46.5
SR-271	13	78	0-16.4, 17-22.7
SR-281	3	70	14-17
SR-299	36	75	6.2-43
SR-36	36	76	9.3-45.7
SR-96	32	72	0-8.7, 0-33.8
US-101	246	87	3.4-26.2, 26.7-31.7, 59.6-106.7, 91.2-106.7, 26.9-90.5, 0.4-2.6, 61.9-74.7, 97.4-137.4, 89.6-96.8, 0.2-21.9
US-199	35	90	0-36.3

Coastal routes in the northwest corner in the state of California are as high of a risk even though rainfall amount are the greatest compared to other counties throughout the state.

Summary Fuel Reduction Service **Contract #1** ACCOUNTING

AP09-Open as of 03-09-2023

District	Legal Name	Procurement Type	Contract ID	Contract Award	Progress	Status
01	CTL FOREST MANAGEMENT	Service Contract	01A6156	3,590,005.75	D1 completed, disencumbered the remaining funds \$2,492.25	✔
02	KINGSBOROUGH ATLAS TREE SURGERY INC	Service Contract	02A2068	1,917,650.00	D2 no field work started due to snow cover	
03	P31 ENTERPRISES INC	Service Contract	03A3340	2,305,261.60	D3 in progress On 12/14/2022 CT was reduced by \$500,000.00	
04	THE PROFESSIONAL TREE CARE CO	Service Contract	56A0698	6,975,760.00	D4 in progress	
05	ASOMEQ ENVIRONMENTAL RESTORATION INDUSTRY LLC	Service Contract	05A2406	4,104,657.00	D5 in progress	
06	KINGSBOROUGH ATLAS TREE SURGERY INC	Service Contract	06A2782	2,037,825.00	CT terminated as of 01/20/2023 Invoice paid on 03/07/2023. District to disencumber the funds.	
07	BAY AREA TREE SPECIALIST	Service Contract	07A5347	630,050.00	D7 in progress	
07	BAY AREA TREE SPECIALIST	Service Contract	07A5512	594,250.00	D7 no field work started due to winter flooding	
08	COMMUNITY TREE SERVICE	Service Contract	08A3462	3,299,646.00	D8 in progress	
09	PARK PLACE BUSINESS INC	Service Contract	09A0900	2,376,908.05	D9 in progress	
10	SIERRA MOUNTAIN CONSTRUCTION INC	Service Contract	10A2338	3,107,688.00	D10 completed, disencumbered the remaining funds \$672.00	✔
11	UTILITY TREE SERVICE INC	Service Contract	11A3419	2,677,739.75	D11 completed, disencunbered the remaining funds \$331,600.25.	✔
12	CTL FOREST MANAGEMENT	Service Contract	12A2006	1,243,750.00	D12 in progress	

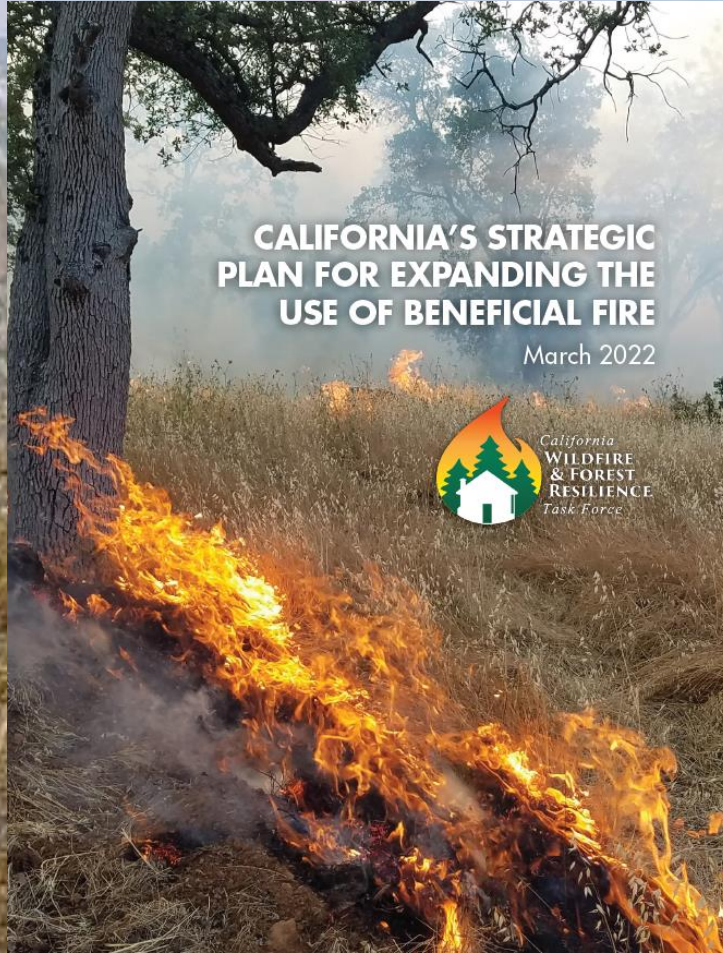
34,861,191.15



GOAL 3 Manage Forests to Achieve the State's Economic and Environmental Goals

Need: Pathway for technical fuels training (without fire academy requirements) for entry-level Caltrans Vegetation Management Crews (VMC). Mentorship by existing Fuels Crews? Curriculum at Community Colleges?

2021 Pilot Calendar Year Activities and *Categories* within the Task Force Tracking System



Partnership: Encourage more beneficial fire treatments in grasslands along state highways (Encroachment Permits) by qualified partner agencies to reduce unwanted invasive plant & weed growth, which will assist Caltrans in meeting herbicide reduction goals (SPM) and provide a co-benefit of expanding statewide prescribed fire targets on public lands.

Task Force System Categories	CNRA	CalMAPPER	CalTrans	USFS	DOI
Forest Health/Fuels Reduction	✓	✓	✓	✓	✓
• Mechanical & Hand Fuels Reduction	✓	✓	✓	✓	✓
• Prescribed Grazing	✓	✓	✓	Some	✓
• Sanitation & Salvage	✓	✓	✓	✓	
• Timber Harvest	✓	✓	✓	✓	
Beneficial Fire	✓	✓		✓	✓
Land Protection	✓	✓			
Tree Planting	✓	✓		✓	Some
Watershed & Habitat Improvement	✓				Some

Categories	Caltrans Veg Mgmt	2021 Acres
Beneficial Fire		
Prescribed Grazing	✓	0
Mechanical & Hand Fuels Reduction	✓	~92,000
Sanitation & Salvage	✓	0
Land Protection		
Timber Harvest	✓	0
Tree Planting		
Watershed & Habitat		
Total		~92,000



ALERTCalifornia

BIG DATA -THE PATH TOWARD HAZARD RESILIENCE

ALERTCalifornia provides state-of-the-art sensor technology to support data-driven decisions before during and after hazards

prepare, respond, recover

IT TAKES

A VILLAGE



A dense collage of logos representing various organizations and agencies in California, including:

- Government & Public Agencies:** LA DWP (Los Angeles Department of Water & Power), NIVIS GEOSPATIAL, California Department of Parks and Recreation, U.S. Department of the Interior Bureau of Land Management, U.S. Forest Service, U.S. Department of Agriculture, California State Parks, UCDavis Tahoe Environmental Research Center, Sonoma State University, San Diego State University, UC San Diego, Scripps Institution of Oceanography, Douglas.
- Utilities & Energy:** PG&E, SDGE, Southern California Edison, Western Digital, Western Digital.
- Telecommunications & Internet Service Providers:** digitalpath.net, GEOLINKS, HPWREN, InfoWest, Grapevine Wireless, Frazier Mountain Internet Service, Iron (Idaho Regional Optical Network), Conifer Communications, Volcano Communications Group, Arroyo Seco Internet, Coastside.net, MSites West, Ranch WiFi, Black Mountain Communications, Lone Pine Communications, Unwired Ltd, Ridge Wireless, Mountain High, Heavenly, Mt. Rose, Sugar Bowl.
- Local Governments & Counties:** Kern County Fire Dept., Marin County Fire Dept., Napa County California, North County Fire, Orange County Fire Authority, San Diego Fire County, San Francisco Water Power Sewer, Stanislaus County, Santa Clara County, Sonoma County, Tehama County, Yuba County.
- Other Organizations:** Axis Communications, Simtable, Fence Factory, PTS Professional, Wifire, Applied Technology, Cruzio Internet, Creative Wireless, Inc., Ubb Utah Broadband, Jasper Ridge Biological Preserve, Stanford Humanities & Sciences, CENIC, NSHE SCS, Douglas.

ALERTCalifornia

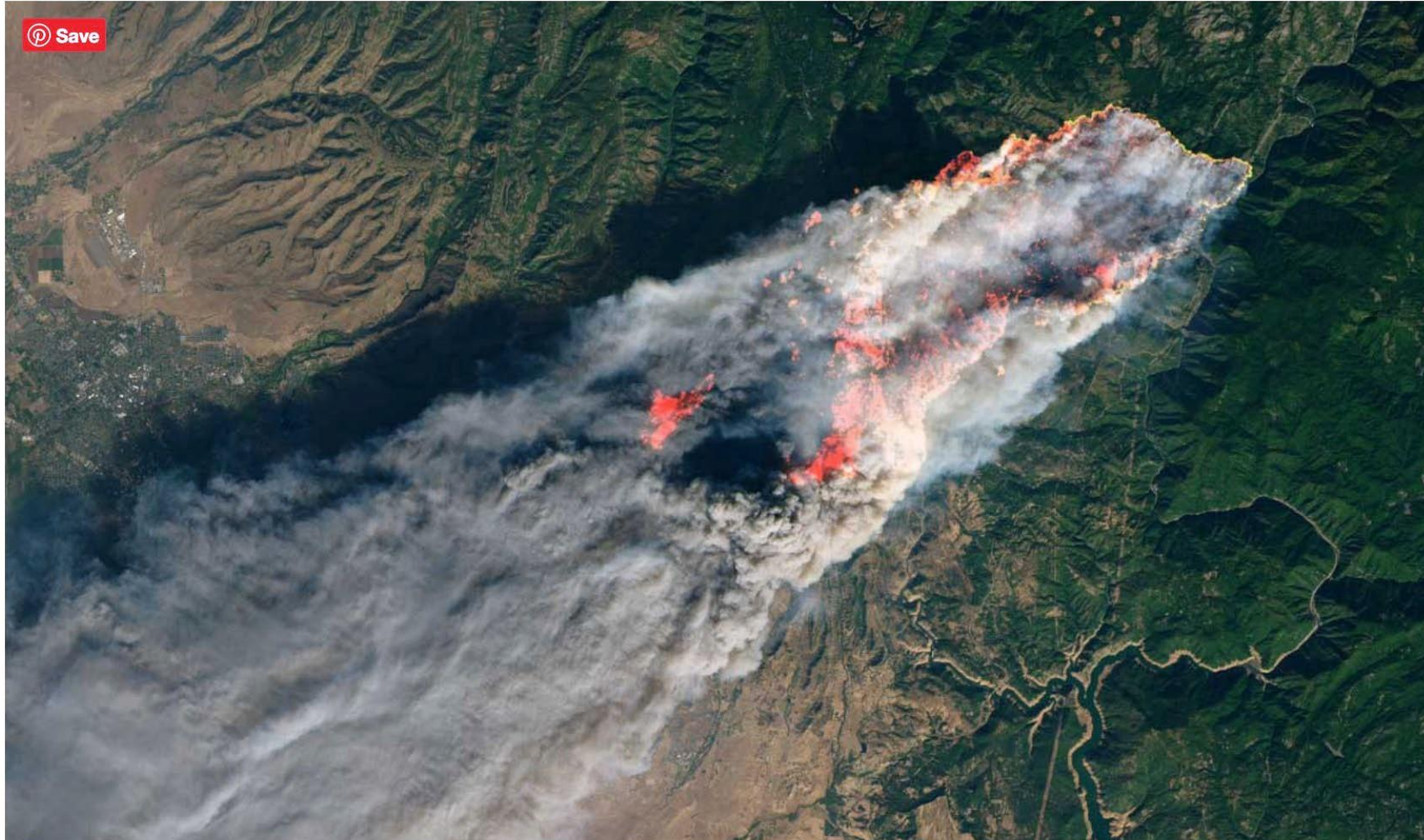
Largest fires in California history

FIRE	YEAR	ACRES BURNED
1 August Complex	2020	1m
<i>Counties affected: Mendocino, Humboldt, Trinity, Tehama, Glenn, Lake, Colusa</i>		
2 Dixie	2021	922.2k
<i>Butte, Plumas, Lassen, Tehama</i>		
3 Mendocino Complex	2018	459.1k
<i>Colusa, Lake, Mendocino, Glenn</i>		
4 SCU Lightning Complex	2020	396.6k
<i>Stanislaus, Santa Clara, Alameda, Contra Costa, San Joaquin</i>		
5 Creek	2020	379.9k
<i>Fresno, Madera</i>		
6 LNU Lightning Complex	2020	363.2k
<i>Napa, Solano, Sonoma, Yolo, Lake, Colusa</i>		
7 North Complex	2020	318.9k
<i>Butte, Plumas, Yuba</i>		
8 Thomas	2017	281.9k
<i>Ventura, Santa Barbara</i>		
9 Cedar	2003	273.2k
<i>San Diego</i>		
10 Rush	2012	271.9k
<i>Lassen</i>		

\$1.3 B

Estimated **TOTAL** cost of the Camp Fire was about **\$422 billion**

Bill Gabbert March 12, 2022 Uncategorized Camp Fire, statistics



The **Carr Fire**, which broke out on July 23 in Northern California, is the 8th [most destructive](#) fire in the state's history. Eight fatalities are attributed to the fire, and 1,614 structures have been destroyed. Loss estimates are not yet available from the Property Claims Services (PCS) unit of ISO. The Insurance Information Institute estimates that insured losses from the Carr Fire will total between \$1 billion and \$1.5 billion in dollars when it occurred.

Carr Fire \$1 - \$1.5B

Insured residential, commercial and auto losses from the Mendocino Complex and Carr Fires topped \$845 million, according to the [California Department of Insurance](#). The two fires resulted in 8,900 homes, 329 businesses, and 800 private autos, commercial vehicles, and other types of property damaged or destroyed. More than 10,000 claims have been filed.

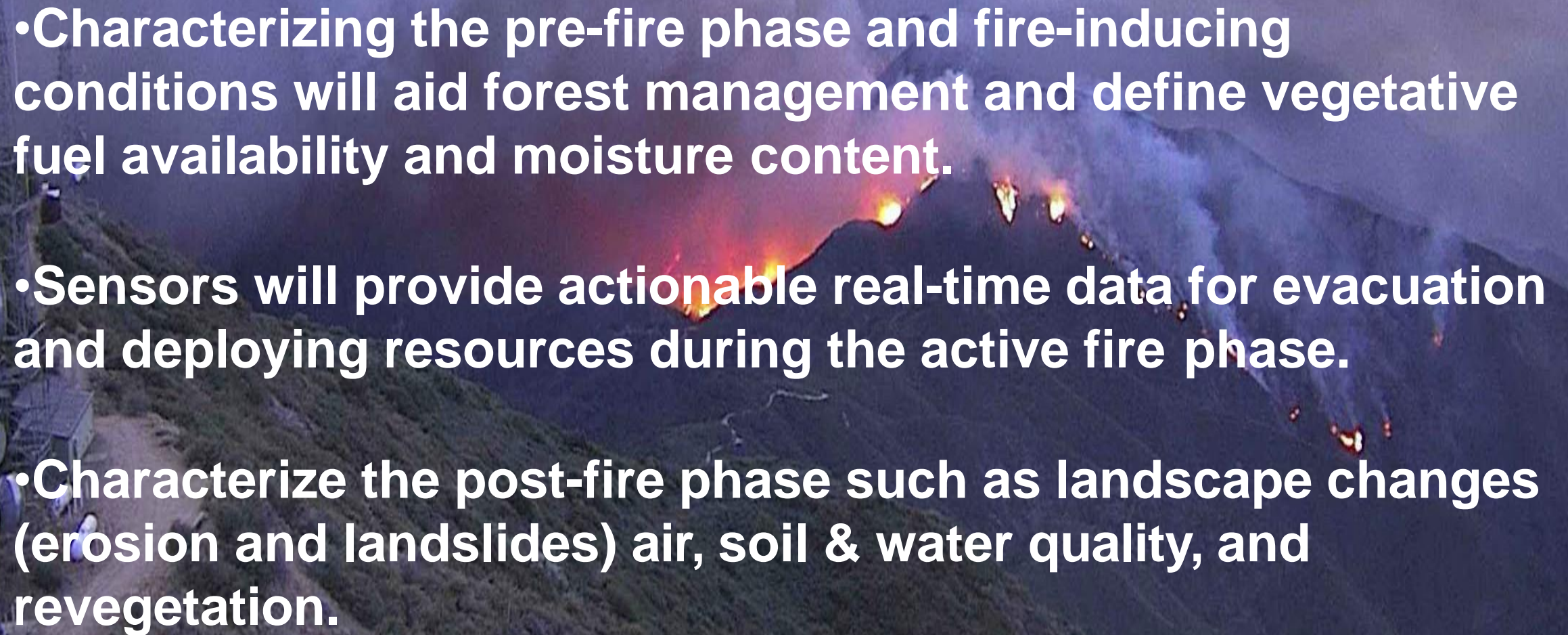
The **Camp Fire** broke out in Butte County, Northern California on November 8 and became the deadliest and most destructive fire on record in the state. At least 88 people perished. About 153,000 acres were burned and 18,800 structures have been destroyed, according to Cal Fire statistics. The fire burned almost 14,000 residences and about 530 commercial structures. The remainder were minor structures. Loss estimates are not yet available from the Property Claims Services (PCS) unit of ISO. The Insurance Information Institute estimates that insured losses from the Camp Fire will total between \$8.5 billion and \$10.5 billion in dollars when it occurred.

Camp Fire \$8.5 - \$10.5B

Further south two other major fires, the **Hill and Woolsey Fires**, also caused considerable damage. Both fires started on November 8. The Woolsey Fire burned about 97,000 acres according to Cal Fire. It destroyed about 1,600 structures and killed three people. Loss estimates are not yet available from the Property Claims Services (PCS) unit of ISO. The Insurance Information Institute estimates that insured losses from the Woolsey Fire will total between \$3 billion and \$5 billion in dollars when it occurred. The Hill Fire burned about 4,500 acres and destroyed four structures.

Hill and Woolsey Fire \$3 - \$5B

The California Department of Insurance [said](#) that as of April 2019 insurance claims from the Camp, Hill and Woolsey fires in November 2018 were already over \$12 billion.

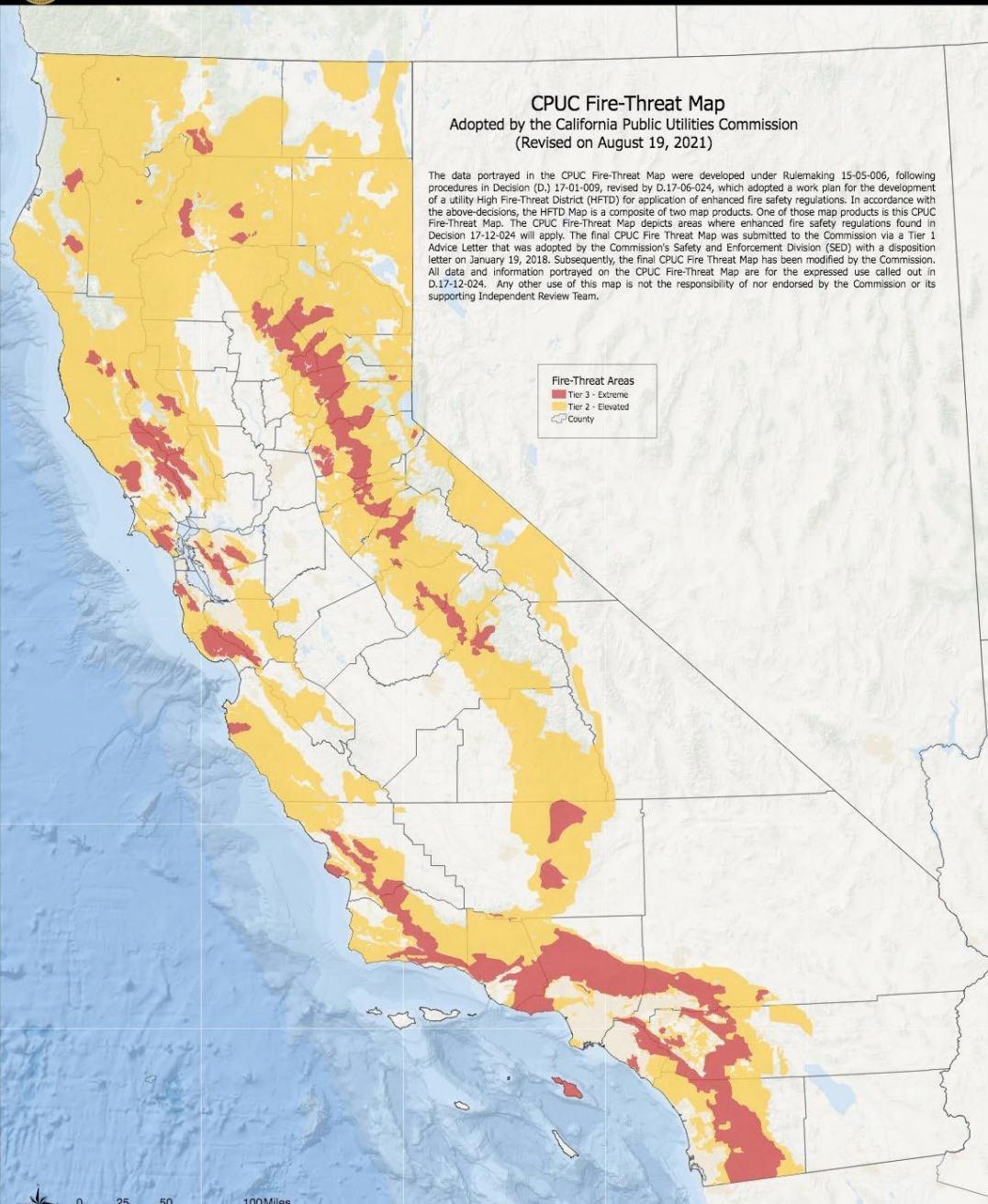
- 
- An aerial photograph of a wildfire at night. The fire is visible as bright orange and yellow flames against the dark landscape. In the foreground on the left, there is a tall communication tower with several satellite dishes. The sky is dark with some smoke or ash rising from the fire.
- **Characterizing the pre-fire phase and fire-inducing conditions will aid forest management and define vegetative fuel availability and moisture content.**
 - **Sensors will provide actionable real-time data for evacuation and deploying resources during the active fire phase.**
 - **Characterize the post-fire phase such as landscape changes (erosion and landslides) air, soil & water quality, and revegetation.**



CPUC Fire-Threat Map Adopted by the California Public Utilities Commission (Revised on August 19, 2021)

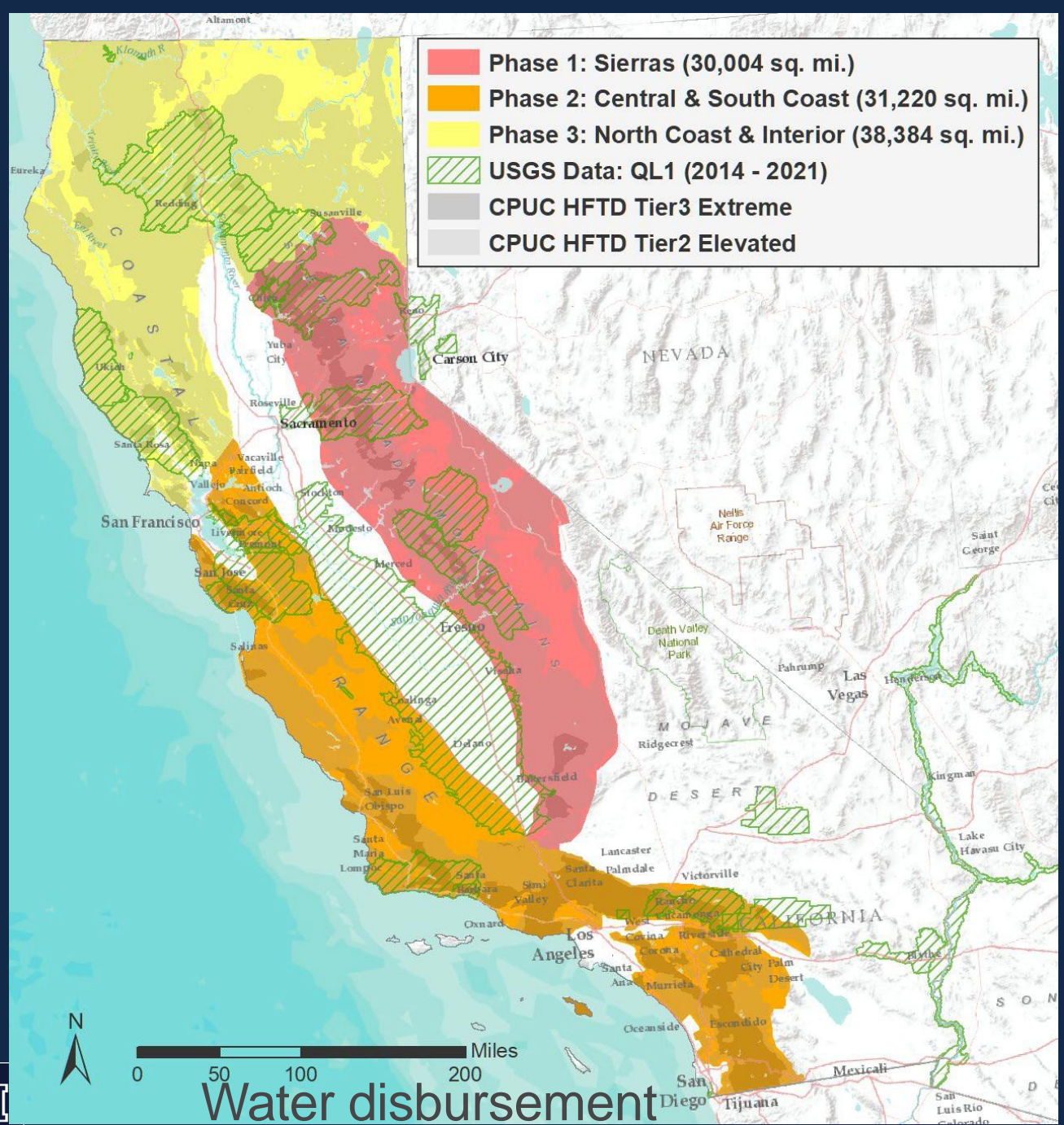
The data portrayed in the CPUC Fire-Threat Map were developed under Rulemaking 15-05-006, following procedures in Decision (D.) 17-01-009, revised by D.17-06-024, which adopted a work plan for the development of a utility High Fire-Threat District (HFTD) for application of enhanced fire safety regulations. In accordance with the above-decisions, the HFTD Map is a composite of two map products. One of those map products is this CPUC Fire-Threat Map. The CPUC Fire-Threat Map depicts areas where enhanced fire safety regulations found in Decision 17-12-024 will apply. The final CPUC Fire Threat Map was submitted to the Commission via a Tier 1 Advice Letter that was adopted by the Commission's Safety and Enforcement Division (SED) with a disposition letter on January 19, 2018. Subsequently, the final CPUC Fire Threat Map has been modified by the Commission. All data and information portrayed on the CPUC Fire-Threat Map are for the expressed use called out in D.17-12-024. Any other use of this map is not the responsibility of nor endorsed by the Commission or its supporting Independent Review Team.

Fire-Threat Areas
■ Tier 3 - Extreme
■ Tier 2 - Elevated
□ County



0 25 50 100 Miles

For more information about the data and map depicted, or other matters related to utility wildfire safety, please contact Terrie Prosper at Terrie.Prosper@cpuc.ca.gov or visit website at <https://www.cpuc.ca.gov/industry-and-topics/wildfire/fire-threat-maps-and-fire-safety-rulemaking>.
Basemap is sourced from Esri World Ocean.
Version 3 revised on August 19, 2021 is a result of Resolution SED-4 and an update to CAL FIRE's tier 1 of the High Hazard Zones.



■ Phase 1: Sierras (30,004 sq. mi.)
■ Phase 2: Central & South Coast (31,220 sq. mi.)
■ Phase 3: North Coast & Interior (38,384 sq. mi.)
▨ USGS Data: QL1 (2014 - 2021)
■ CPUC HFTD Tier3 Extreme
■ CPUC HFTD Tier2 Elevated



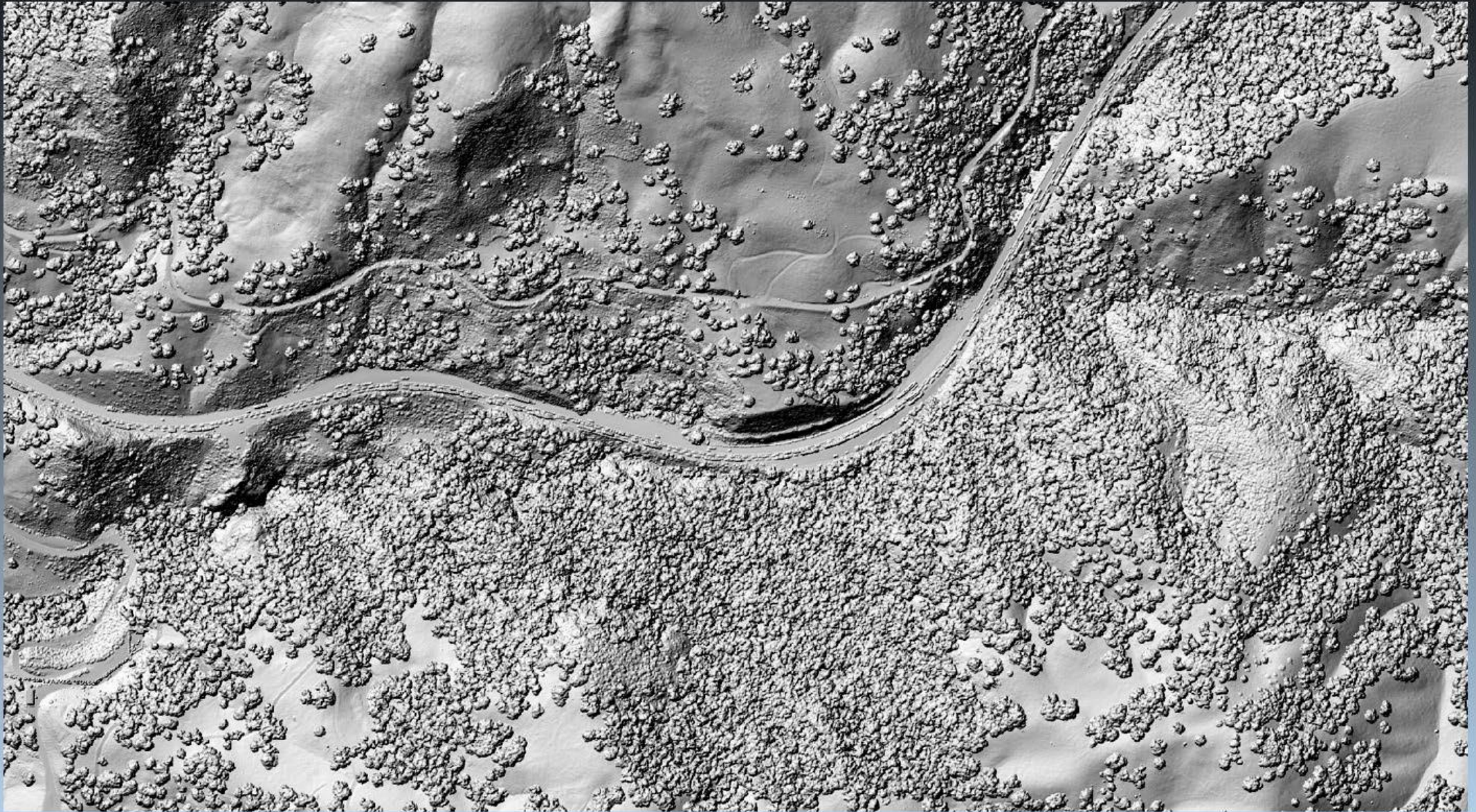
0 50 100 200 Miles

Water disbursement

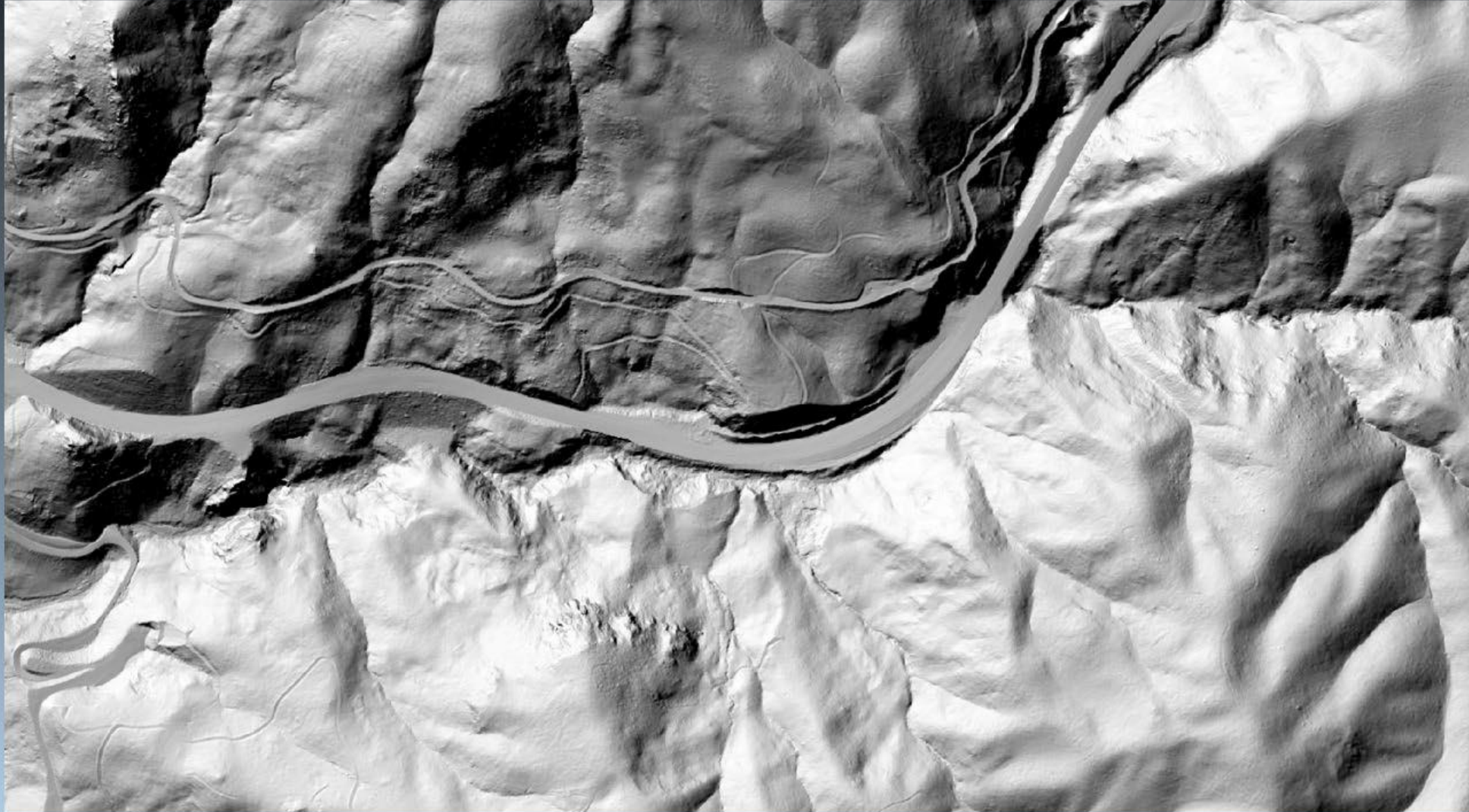
LiDAR Deliverables - Examples

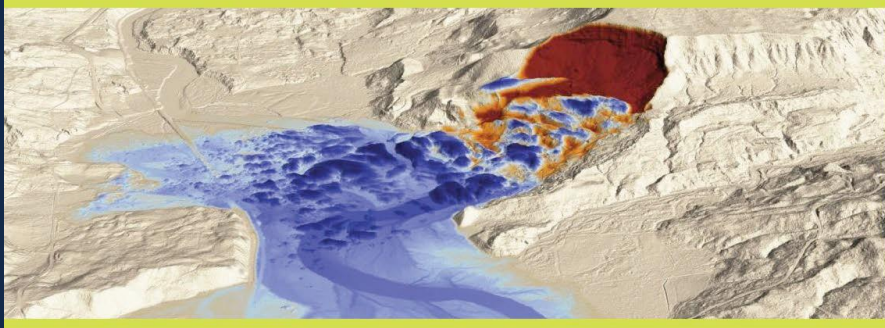
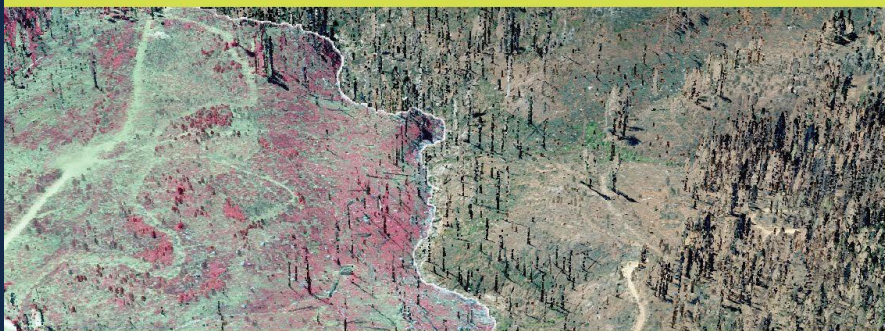
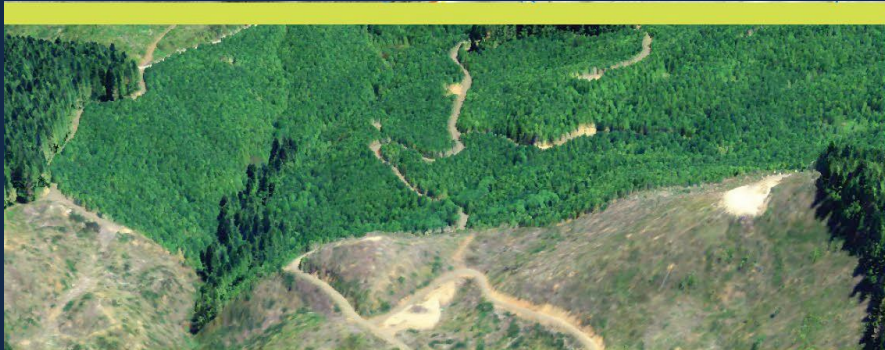


LiDAR Deliverables - Highest Hit



LiDAR Deliverables – Bare Earth





Biomass & Carbon Estimation

By exploring complex relationships between LiDAR metrics and allometry of tree species, forest biomass and carbon content can be quantified. In tandem with ground plot measurements, we develop regression models to estimate forest production parameters of large-scale or global significance.

Wildfire Modeling

Forest metrics from LiDAR and imagery provide valuable information for land use/land management practices, fire suppression planning, and fuel loading calculations. High-resolution LiDAR is instrumental in mapping slope and aspect, as well as road accessibility to better inform wildfire response and recovery.

Change Detection & Landslide Analysis

With the aid of recurring surveys and temporal comparisons, our analyses can quantify changes in vegetation growth/removal or in geomorphology to better monitor forest dynamics, and to evaluate and mitigate forest management risks associated with erosion or terrain failure.



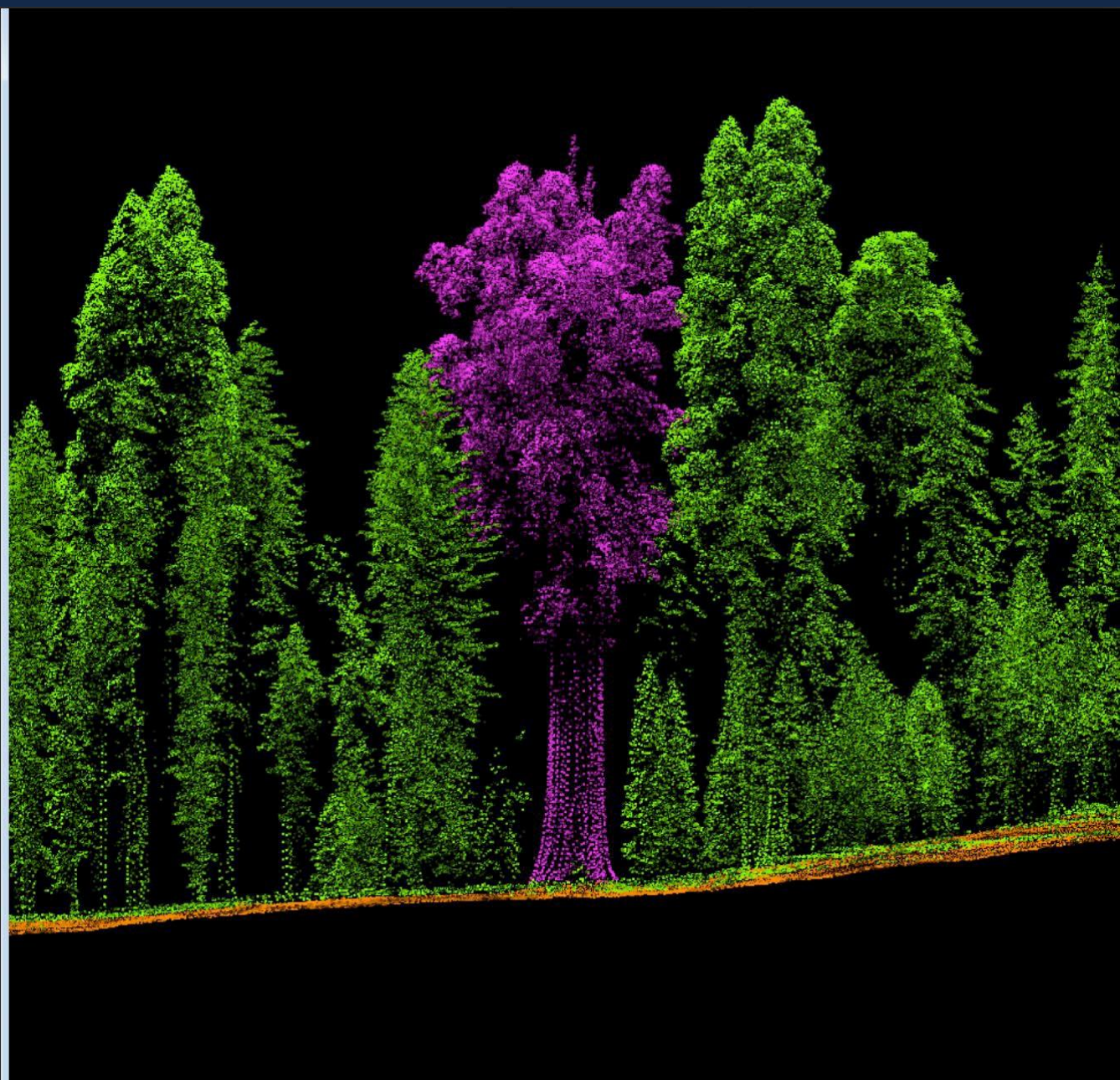
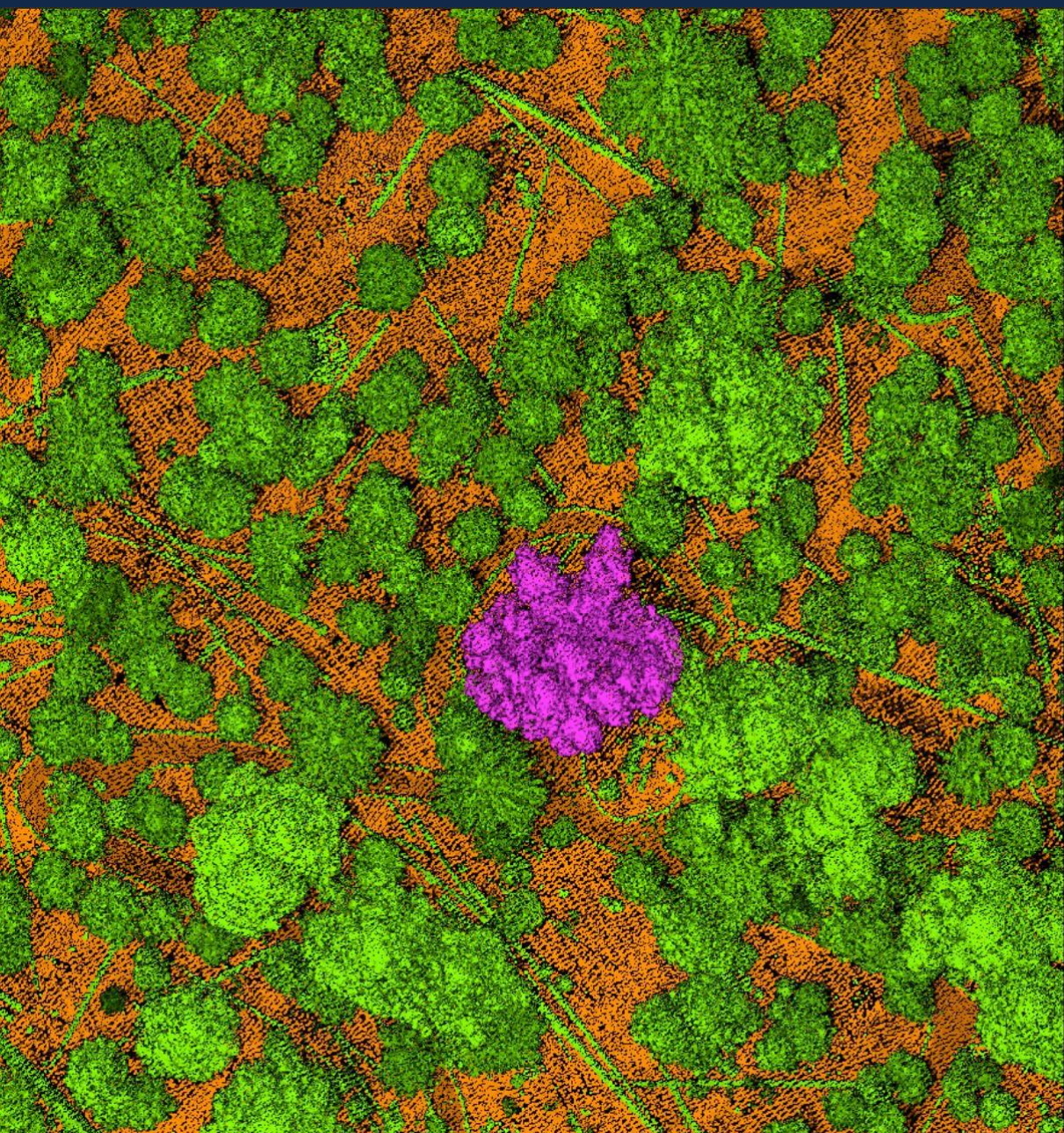
Forest Metrics

- 100s of Possible Metrics
- Plot vs Tree Based Approach
- Tree Segmentation Methods
- Ancillary Data - Imagery

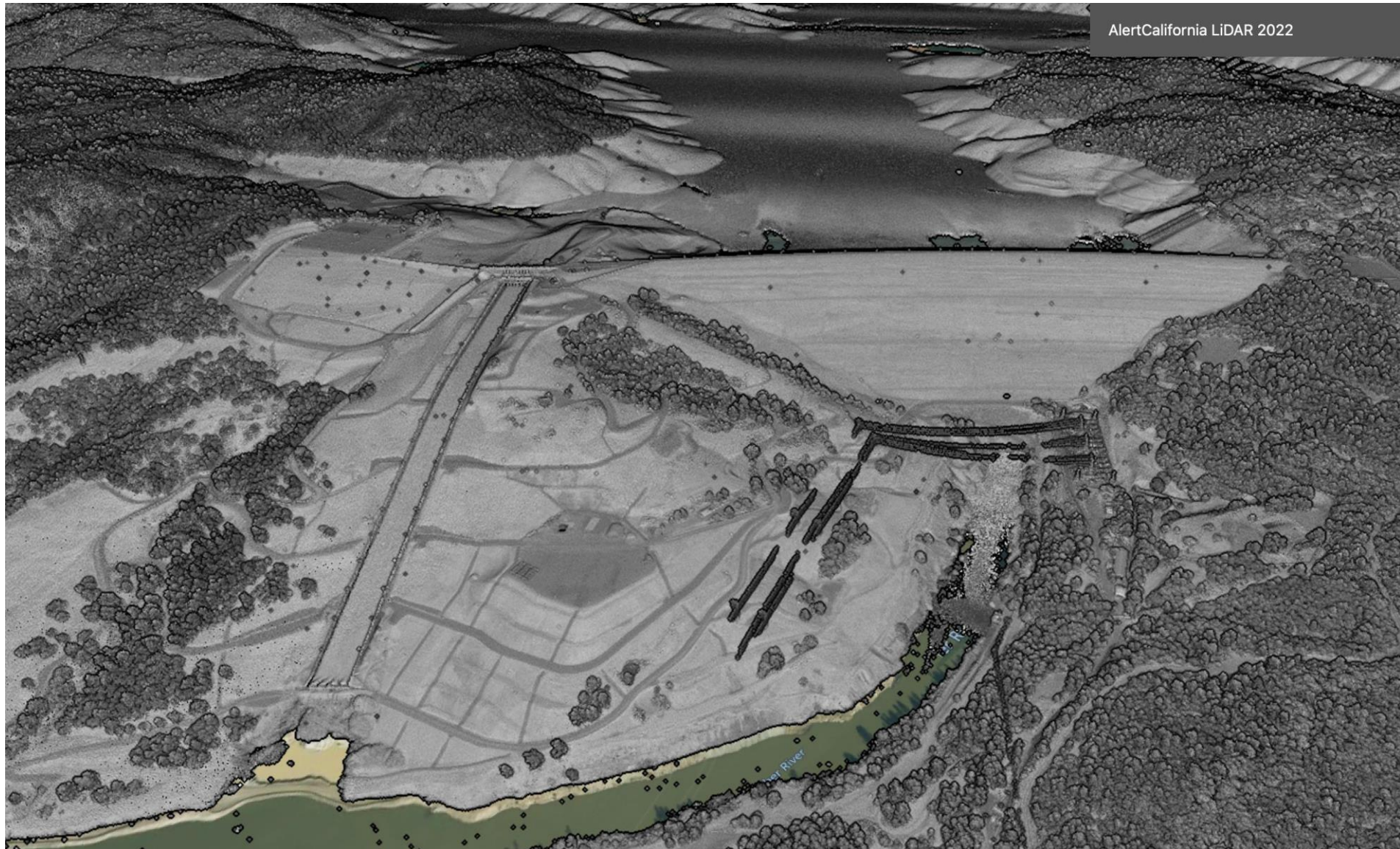


 UC San Diego

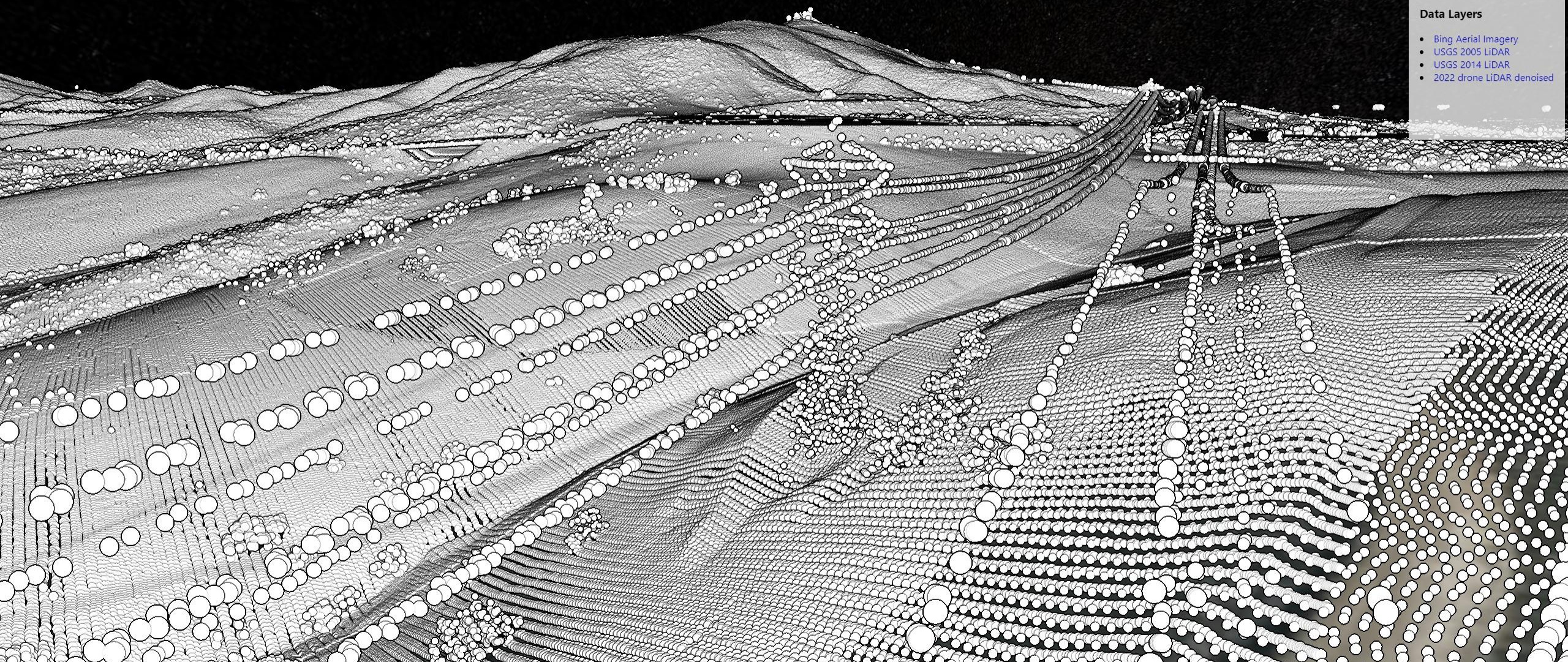
 SCRIPPS INSTITUTION OF
OCEANOGRAPHY



Oroville Dam



2018 – fixed wing



AlertCalifornia LiDAR 2022

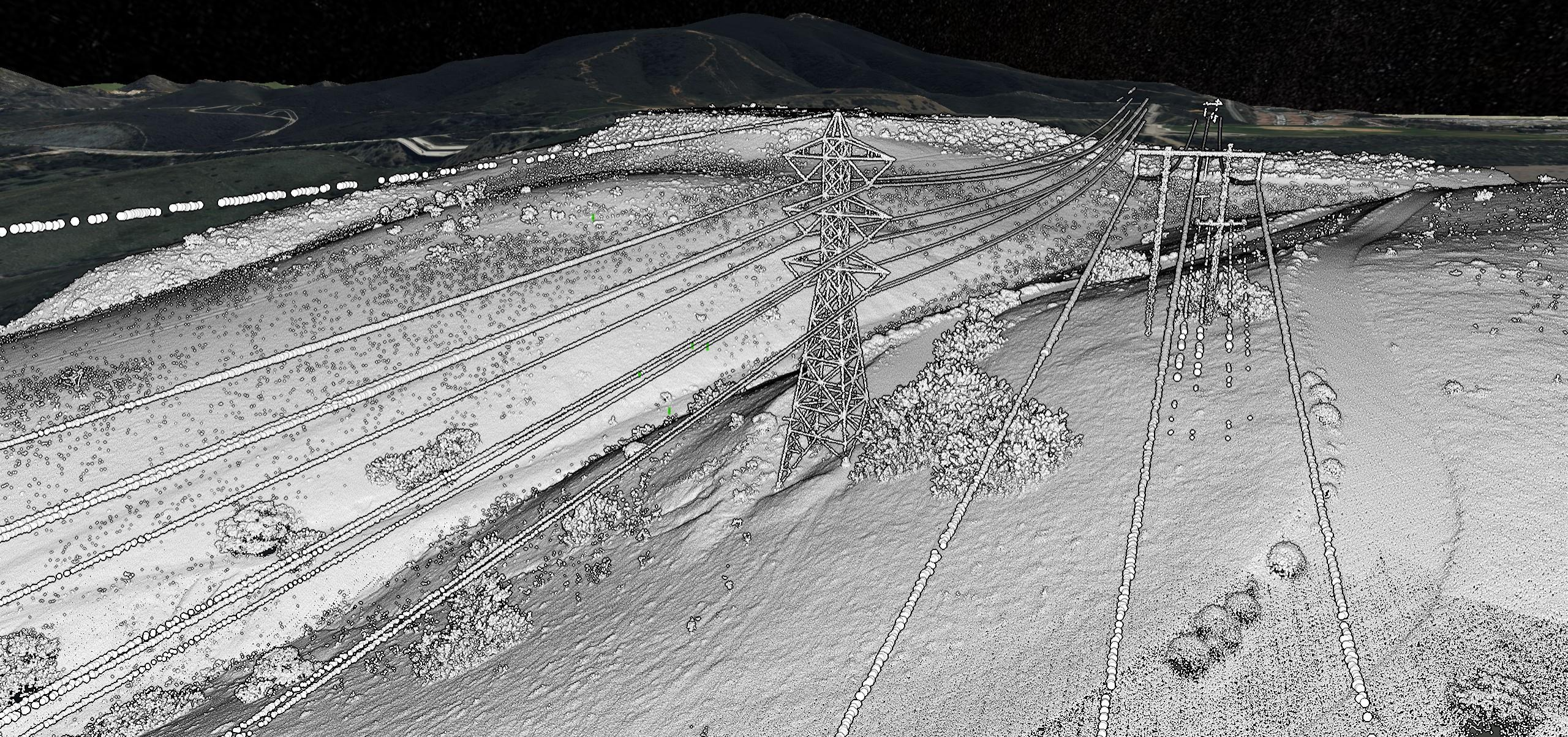
Measure

[Zoom to Full](#) | [Toggle Labels](#)

Data Layers

- Bing Aerial Imagery
- USGS 2005 LiDAR
- USGS 2014 LiDAR
- 2022 drone LiDAR denoised

2022 UC San Diego drone



During wildfires

- ALERTCalifornia together with CAL FIRE, SCE, SDG&E, and PG&E have deployed a network of high definition HD PTZ Axis cameras with near infrared fire detection
- Microwave communications network for increased resilience
- The network provides unparalleled ability to **confirm** 911 calls, improve situational awareness, and help sequence evacuations

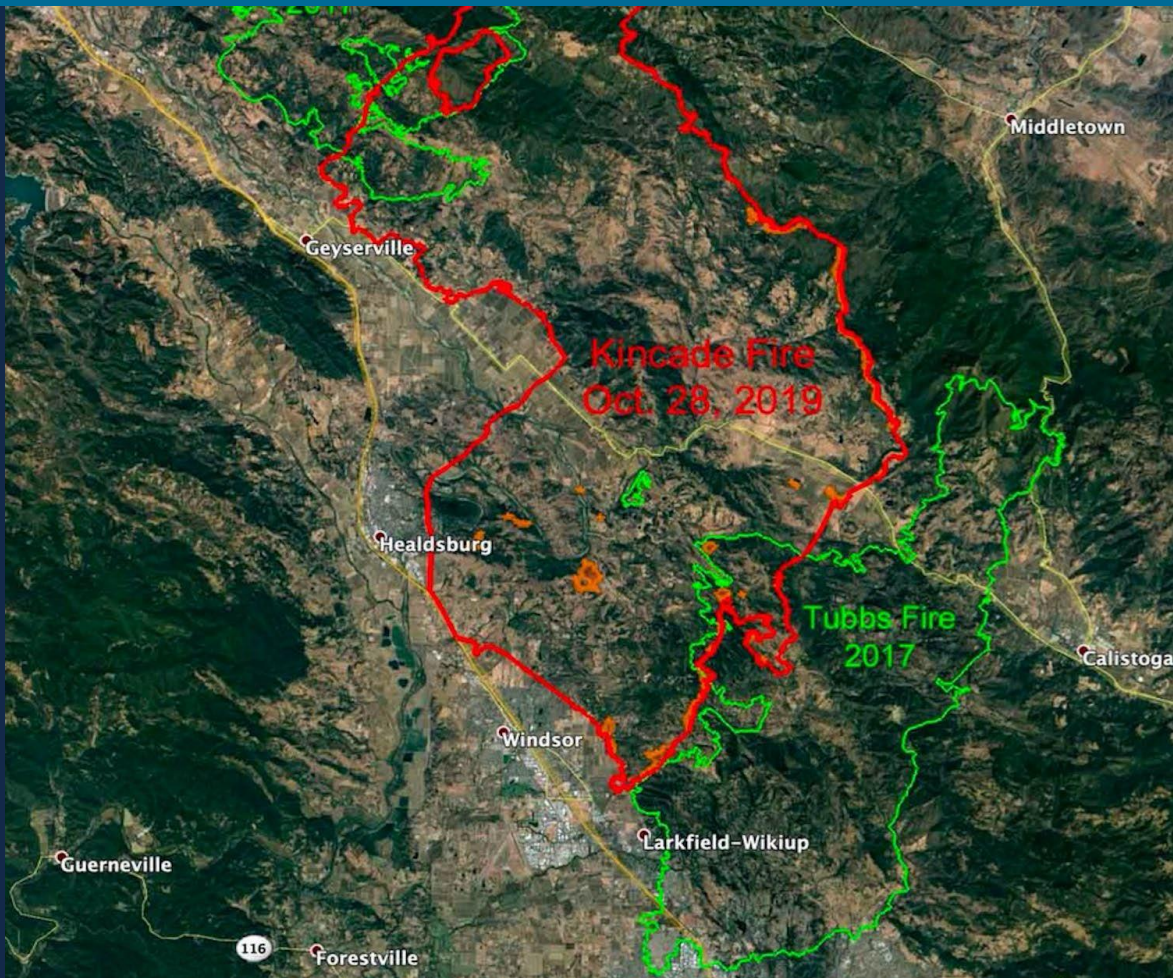


ALERT California

- Over 1000 near infrared PTZ cameras in CA



KINCADE FIRE – 77,000+ ACRES NO LOSS OF LIFE

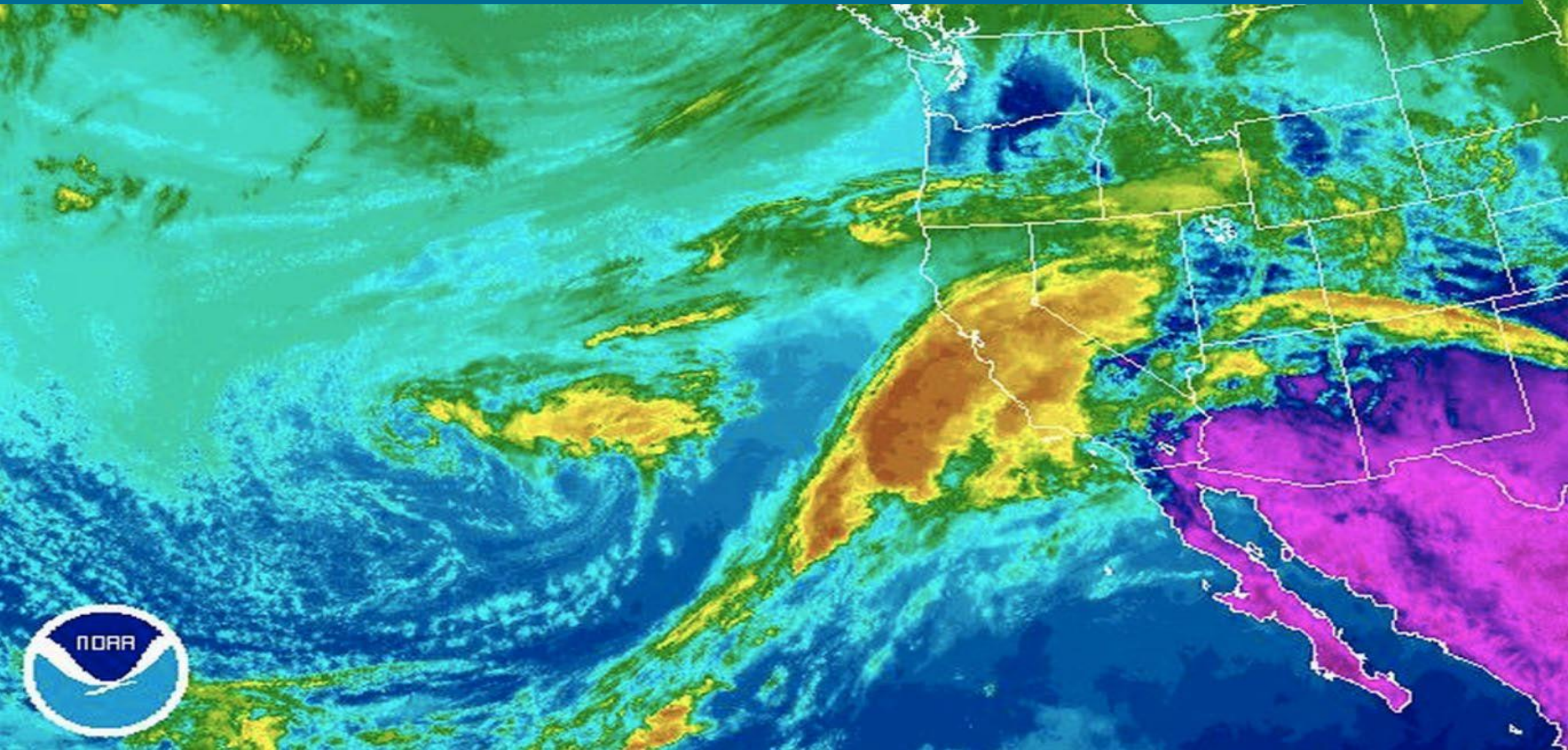


Axis-StHelenaN X: -119.18 Y: 37.57 Z: 1.0 REDCOM.aabbott.10-27T08:50 © Nevada Seismo Lab 2019/10/27 1

Preset positions ▲



CASCADING DISASTERS – ATMOSPHERIC RIVERS



MONTECITO DEBRIS FLOWS – JANUARY 8, 2018



CASCADING DISASTERS – AIR QUALITY, LUNG-RELATED DISEASE AND TOURISM



UC San Diego



SCRIPPS INSTITUTION OF
OCEANOGRAPHY

Ferguson Fire, 6/13/2018

Pollution from California's 2020 wildfires likely offset decades of air quality gains

Nationally, 29 of the top 30 counties with the highest level of particulate pollution in 2020 were in California, researchers say.



CASCADING DISASTERS – CAMP CREEK BEFORE AND AFTER CALDOR FIRE



The Camp Creek in El Dorado County, California, before the Caldor Fire.

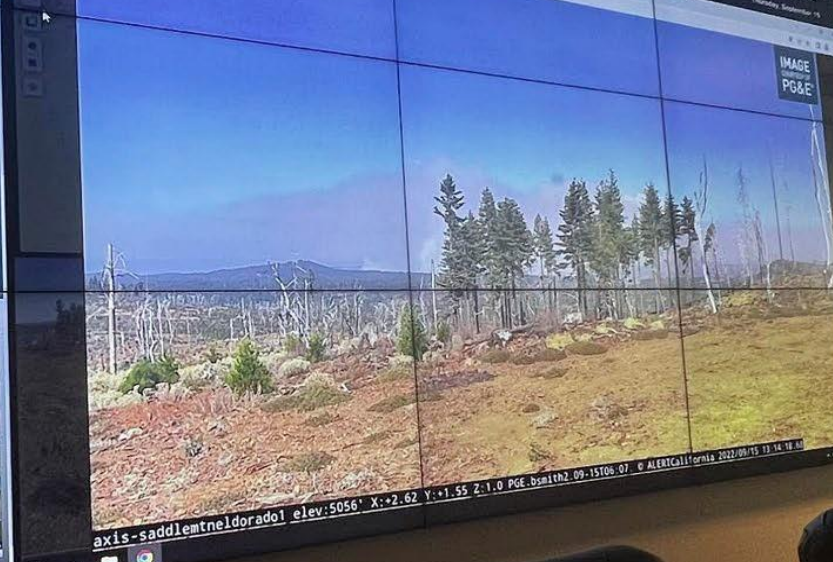


Camp Creek after the fire in a rain storm.

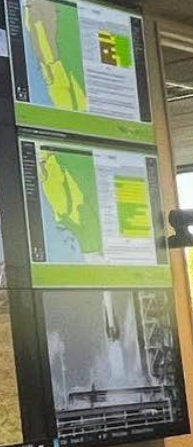




(UTC-08:00) Pacific Time (US & Canada) 13: 13:38 Thursday, September 15
(UTC-07:00) Mountain Time (US & Canada) 14: 13:38 Thursday, September 15
(UTC-05:00) Eastern Time (US & Canada) 16: 13:38 Thursday, September 15
(UTC) Coordinated Universal Time 20: 13:38 Thursday, September 15
13: 13:38 Thursday, September 15



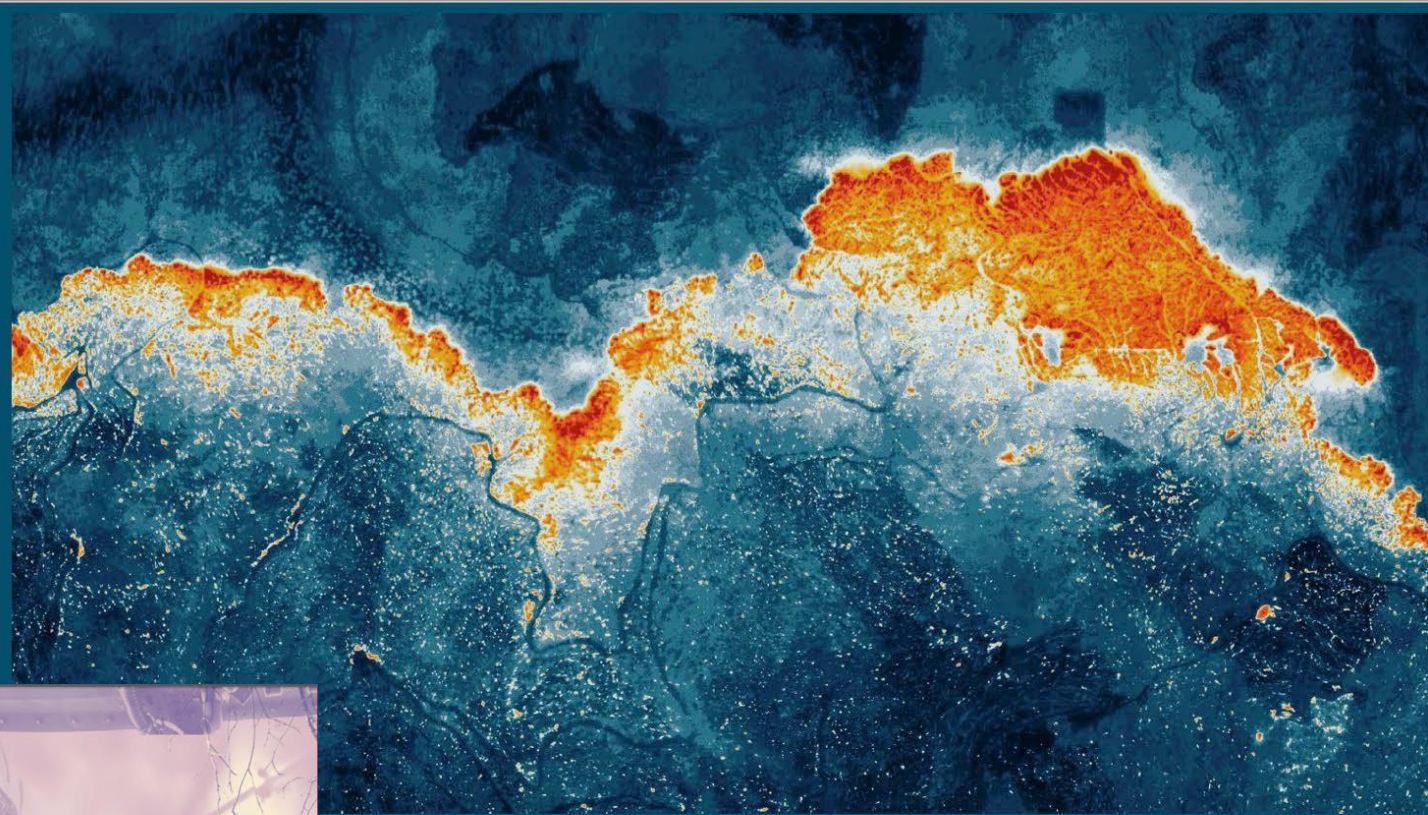
axis-saddlemtnedorado1 elev:5056' X:2.62 Y:1.55 Z:1.0 PGE.bsmit2.09-15108-07 © ALERTCalifornia 2022/09/15 13:14:18 AM



TK9 CAPABILITIES

CaFIRE 09-2021

INTELLIGENT SENSORS ON EVERYTHING THAT FLIES



CAL FIRE AVIATION PROGRAM



CALIFORNIA DEPARTMENT OF
FORESTRY & FIRE PROTECTION

AVIATION
PROGRAM



OPERATIONS



OVERWATCH IMAGING



ALERTCalifornia

PREPARE • RESPOND • RECOVER

Developing Technology to Stay Ahead of Wildfires

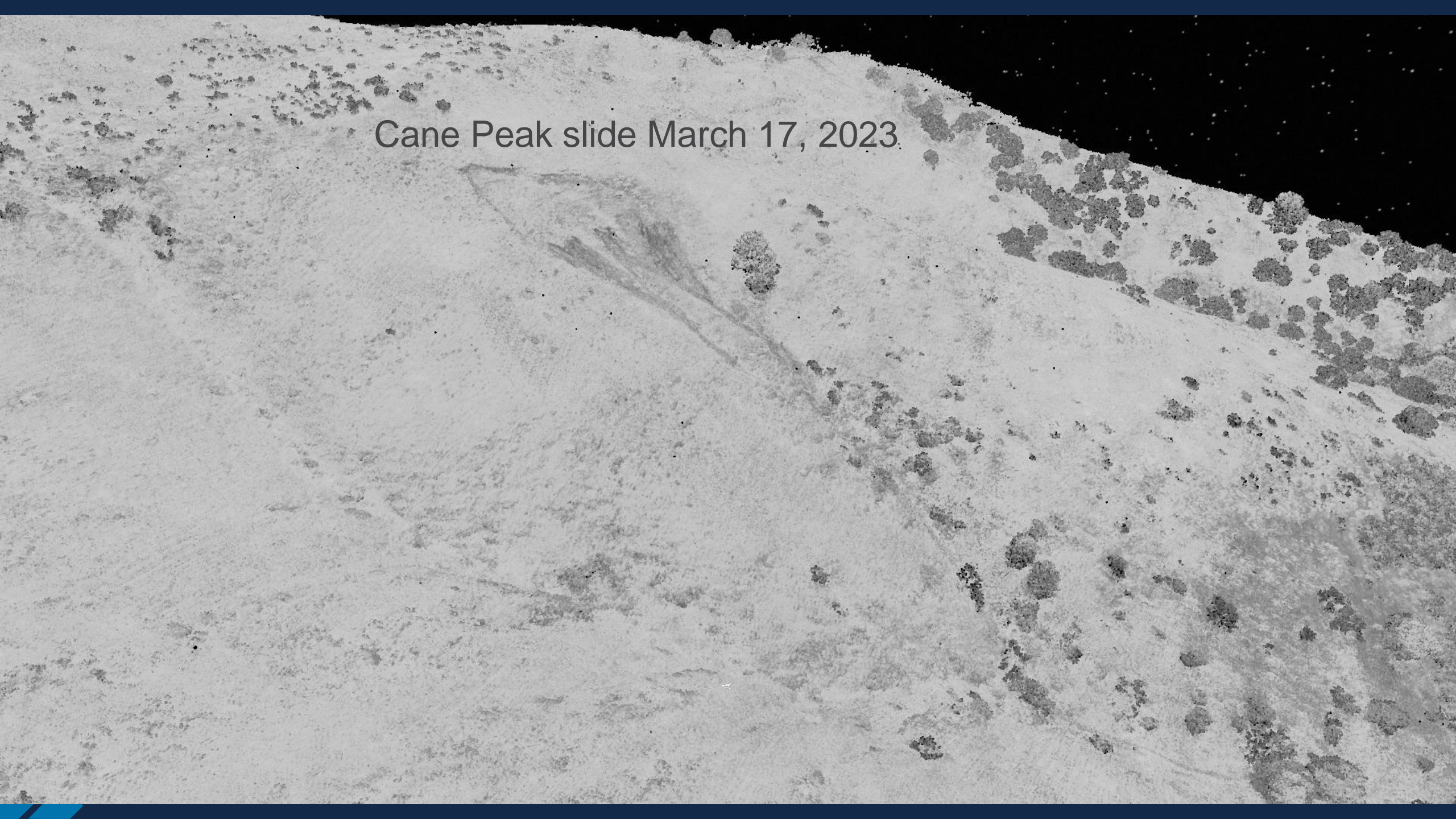
 [VIEW LIVE FEEDS](#)





Montecito Drone Lidar Footage – [\(Click here to watch\)](#)

Cane Peak slide March 17, 2023.



Cane Peak slide March 17, 2023



New ALERTCalifornia Command and Control Platform

ALERTCalifornia All Cameras Active Cameras AI Incidents CPU Usage: 6% Menu Tutorial Video Logout

Search address or coordinates

Seattle
Portland
OR ID
NV UT
San Francisco
Las Vegas
Los Angeles
Phoenix
Arizona

Mt Oso Last moved: 29m

Cuyamaca Peak South Last moved: 35m

Baldwin Lake 1 Last moved: 59m

Signal Peak NVCO 2 Last moved: 1h 43m

Alabama Hills 1

Alabama Hills 2

Alder Hill

Leaflet | © OpenStreetMap contributors, Map tiles by Stamen Design, under CC BY 3.0. Data by OpenStreetMap, under ODbL.

New ALERTCalifornia Command and Control Platform

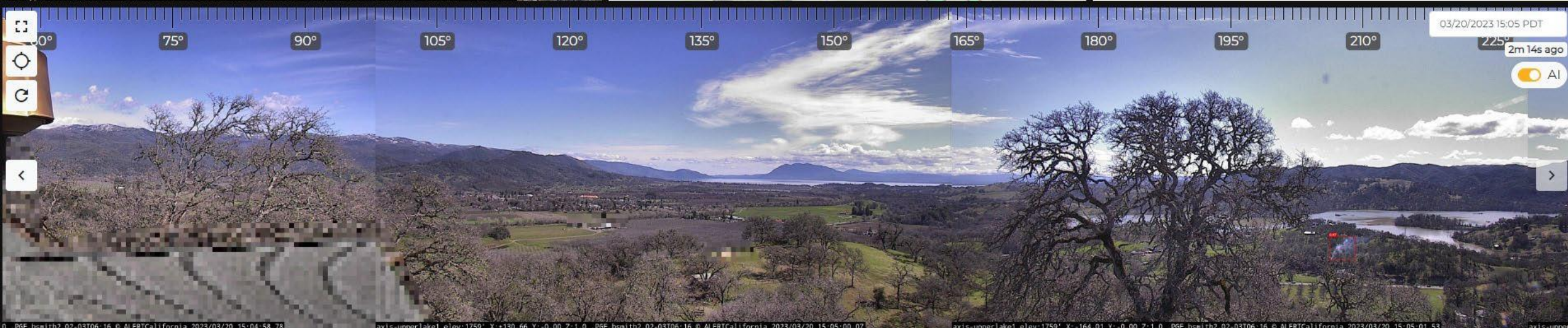
Camera Management > Upper Lake 1 Upper Lake 2 -clear- mm/dc Latest View



Camera Movement Log

User Name	Message	Phone #	Pan/Tilt/Zoom	Time Moved	Priority
ACOPS:Nora Cooper	looking for smoke	-	208.10° T/-9.30°/24.9%	3/20/2023 15:06:42 PT	Low

1



axis-upperlake1 elev:1759° X:-151.90 Y:-9.30 Z:11.6 .PGE.bsmlth2.02-03T06:16 © ALERTCalifornia 2023/03/20 15:06:45.75

axis-upperlake1 elev:1759° X:-130.66 Y:-0.00 Z:1.0 .PGE.bsmlth2.02-03T06:16 © ALERTCalifornia 2023/03/20 15:05:00.07

axis-upperlake1 elev:1759° X:-164.01 Y:-0.00 Z:1.0 .PGE.bsmlth2.02-03T06:16 © ALERTCalifornia 2023/03/20 15:05:01.53

axis-upper-

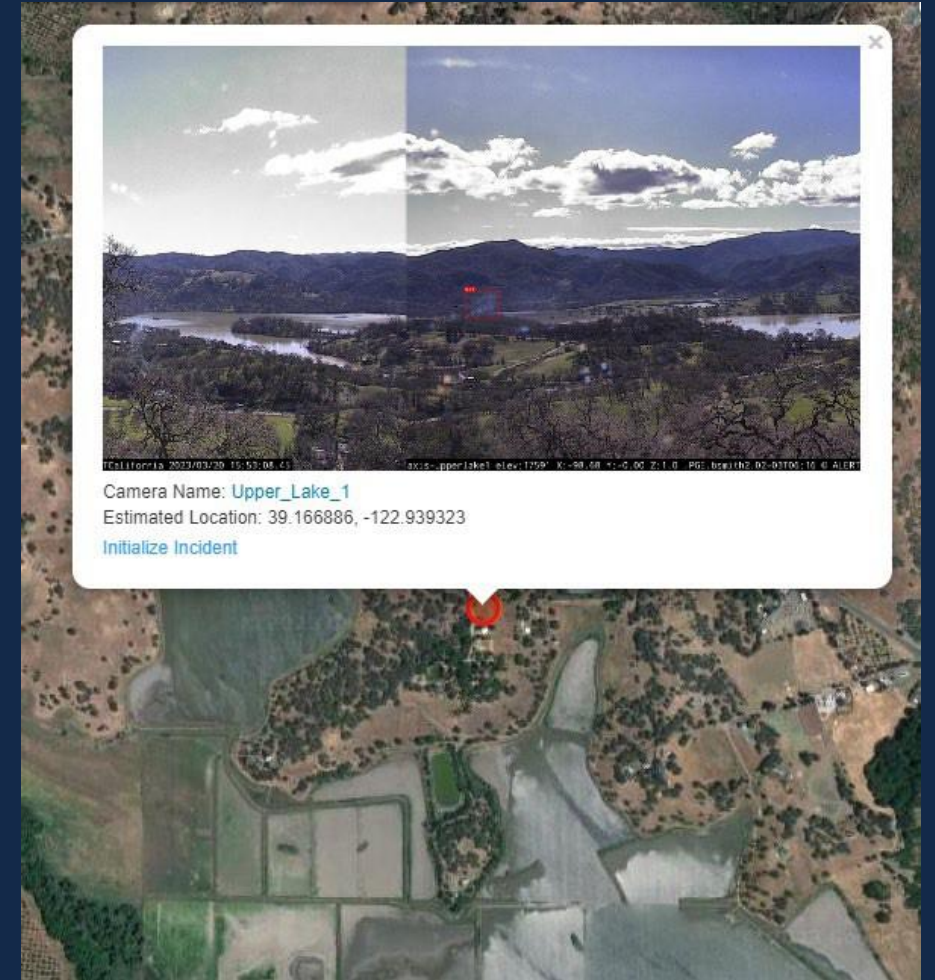
Used Across California

- 2,500 System Users
- 100+ agencies sharing a common camera operating platform



New AI Fire Detection System

- Going live on all 1,000+ Cameras - May 2023
- Integrated into C&C System
 - Trained on 1,000 cameras + 2,500 user's movements
- How it Works
 - Cameras spin 360 degrees every minute
 - Operations center confirms new ignition detections
 - Once validated, user alerts are sent out
 - User groups alerts based on incident location
 - Alerts customizable + API for easy integration



2022 AI Beta Results vs 2023

- 2022 Fire Season - Beta Results
 - Beating IRWIN 65% of time, avg 33 mins
 - Called in dozens of fires to CAL FIRE dispatch centers
- 2022 vs 2023 Fire Seasons
 - Beta system -> Fully functional AI
 - Cameras spun every 5 – 10 mins -> 1 min
 - AI Model #10 -> AI Model #14
- Performance Standards
 - Technicians confirm detections, alert users, move cameras onto fires and create shareable incident links

AI MODEL	Incident Name	Reported Date	IRWIN Report Time	AI HIT Time	Delta (H:MM)
10	Clear	10/19/2022	13:22	13:16	0:06
10	Cold	10/20/2022	12:37	12:13	0:24
10	Texas	10/20/2022	13:44	13:46	-0:02
10	SYLVANDALE	10/20/2022	16:18	16:04	0:14
10	Willow 8	10/20/2022	16:41	16:39	0:02
10	SKYLINE	10/21/2022	13:48	NO HIT	
10	PALERMO	10/21/2022	14:42	13:50	0:52
10	PYRAMID	10/21/2022	18:09	18:18	-0:09
10	FLORES	10/22/2022	15:54	15:53	0:01
10	PARK	10/23/2022	10:57	10:12	0:45
10	SONOMA	10/23/2022	12:12	12:16	-0:04
10	PLEASANT	10/23/2022	12:56	13:16	-0:20
10	SPANISH	10/23/2022	15:17	14:52	0:25
10	VALLEY	10/23/2022	14:34	14:03	0:31
10	Manton	10/25/2022	15:41	15:37	0:04
10	RANCH 5	10/25/2022	15:39	15:53	-0:14
10	SADDLE	10/26/2022	12:26	12:16	0:10
10	KELLY	10/26/2022	16:05	15:42	0:23
10	EMPIRE	10/26/2022	17:20	17:25	-0:05
10	FOX	10/29/2022	13:06	8:54	4:12
10	PROVIDENCE	10/29/2022	16:34	16:29	0:05
10	RUN	10/29/2022	10:52	11:03	-0:11
10	BUCKANAN	11/16/2022	10:43	10:39	0:04
Average time Beating IRWIN					0:22
Median Time Beating IRWIN					0:04
65% of time Beating IRWIN, by average of					0:33

2022 Nighttime AI Results

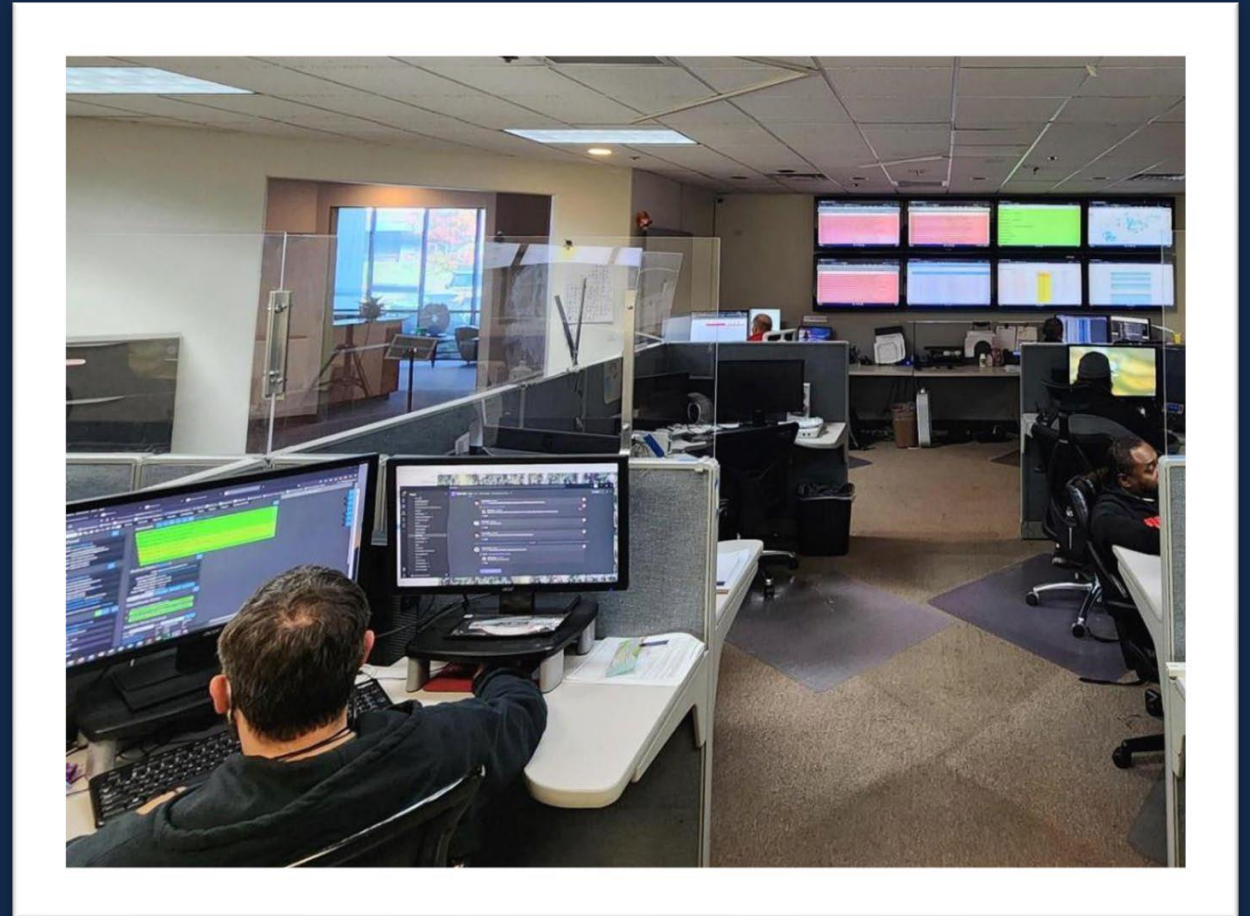
- Multiple fires burning for hours before initial 911 calls
- Example Fires
 - Ridge Fire – 7 Hours
 - Hill Fire – 6.5 Hours
 - Bridge Fire – 8 Hours
 - Fox Fire – 17 Hours



*Structure Fire Detected 50 Miles Away

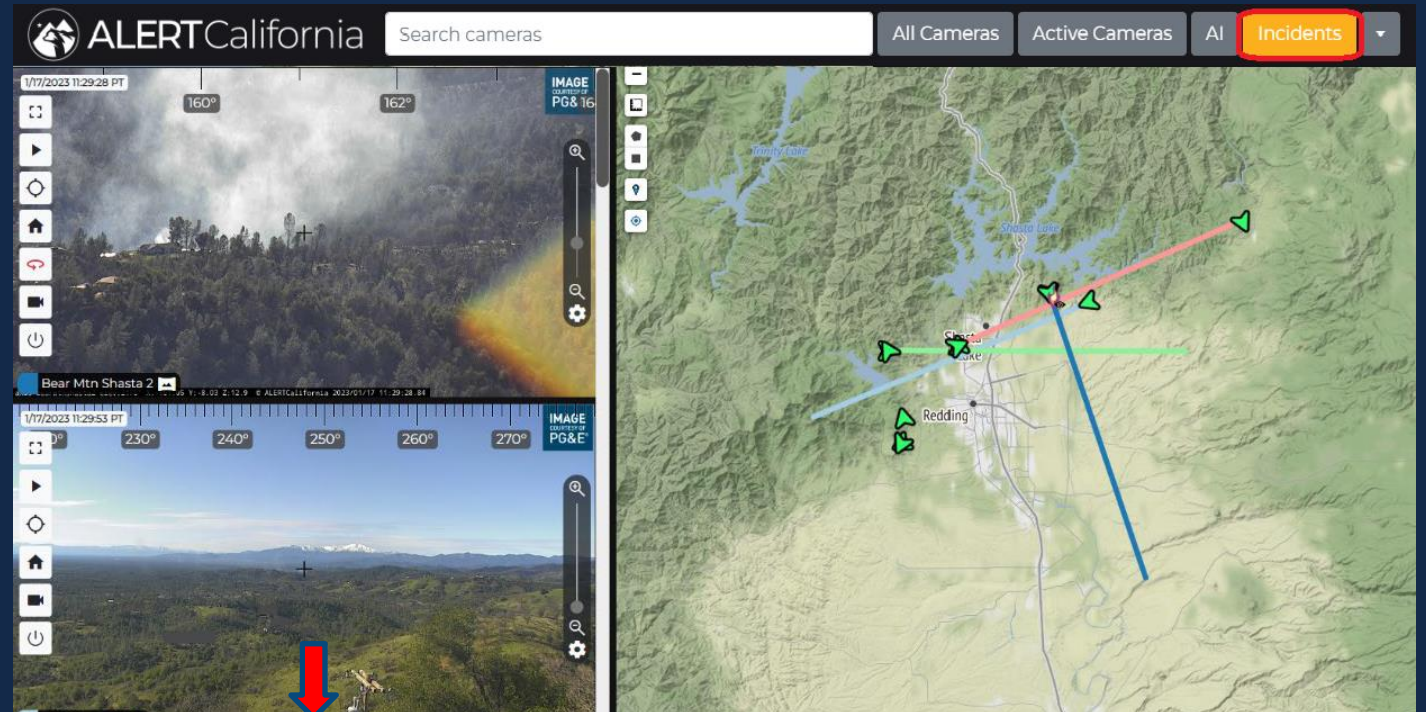
24/7 Operations Center Support

- User Training & Support
- AI Detection with Human Confirmation
- Create incidents and User Alerts within 90 Seconds
- Camera Installation
- Camera Maintenance



Shareable Incident Pages

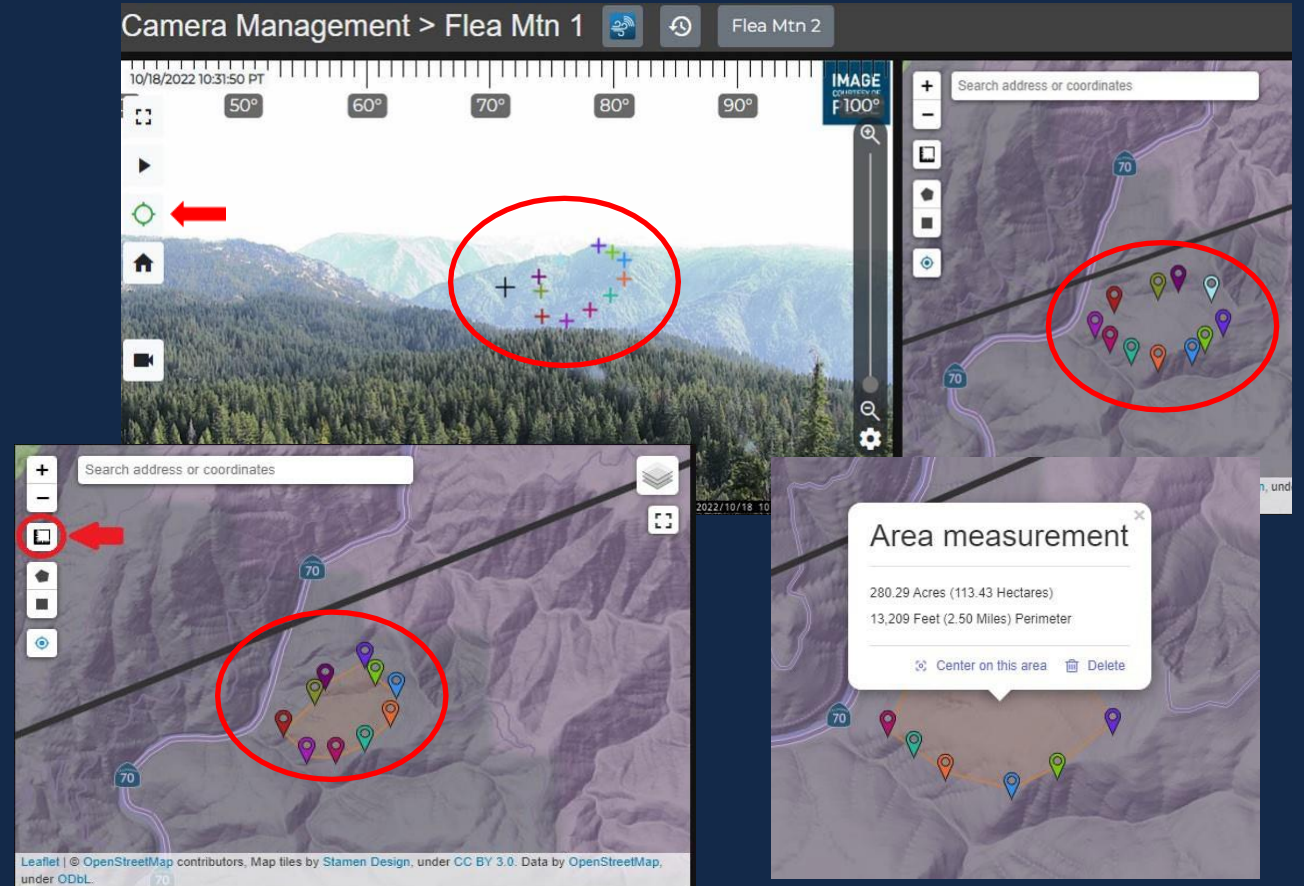
- Multiple camera viewing angles
- System determines which cameras can view the incident
- Toggleable between current camera view and panoramic modes
- Users can move all the cameras from incident page
- Incident locations displayed as flames on map



Scroll down to view incident from other cameras

Targeting Mode

- Digital elevation model ties camera images to map locations
- Click fire in image to display location
- Single camera fire start locations
- Quickly paste GPS into other systems
- Rough incident acreage estimations
- Highly dependent on camera calibration!



Historical Image Archive

- UCSD Seeker Archive
 - Select time and date to view previous fires
- Use Cases
 - Identify how fires started and developed
 - Post incident review & training
 - Investigations - cause and origin

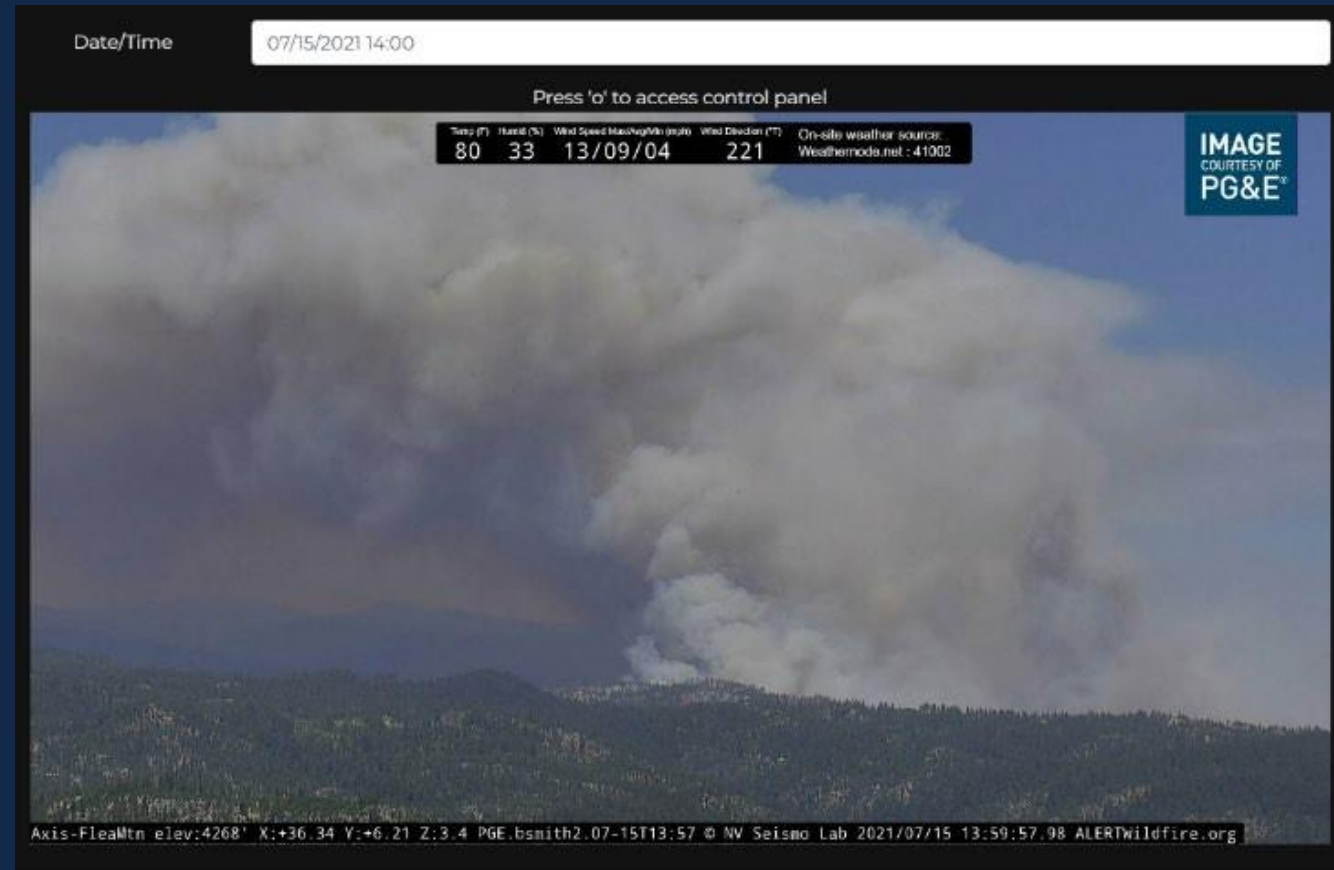
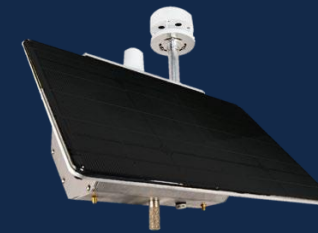


Image – Dixie Fire – July 15th, 2021 @ 13:59

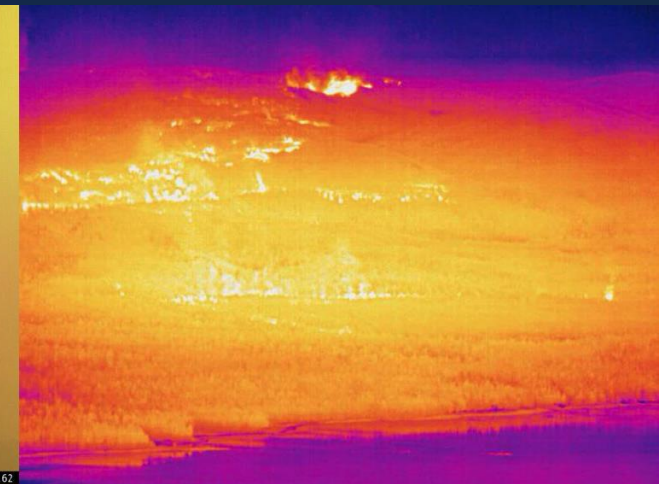
All Hazard Capabilities

- Weather Stations
 - System designed for all hazard sensor inputs including graphing data feeds
- FLIR Cameras
 - Provide increase situational awareness in smokey conditions allowing visibility where previously obstructed by smoke
- Mobile Camera Deployments
 - Can be deployed during active incidents and easily integrated into the system



Axis-DyerMtn1 elev:7477' X:-167.06 Y:+2.06 Z:1.0 PGE_bsmith2_07-22T09:30 © NV Seismo Lab 2021/07/23 17:48:43.62

Optical Camera
(200 – 300 foot visibility in heavy smoke)



FLIR Camera
(25+ mile visibility in heavy smoke)

ALERTCalifornia Platform Benefits

1

24/7 Immediate visualization of new fire ignitions to determine appropriate response

2

Earlier fire detection = faster response = lower suppression & recovery costs

3

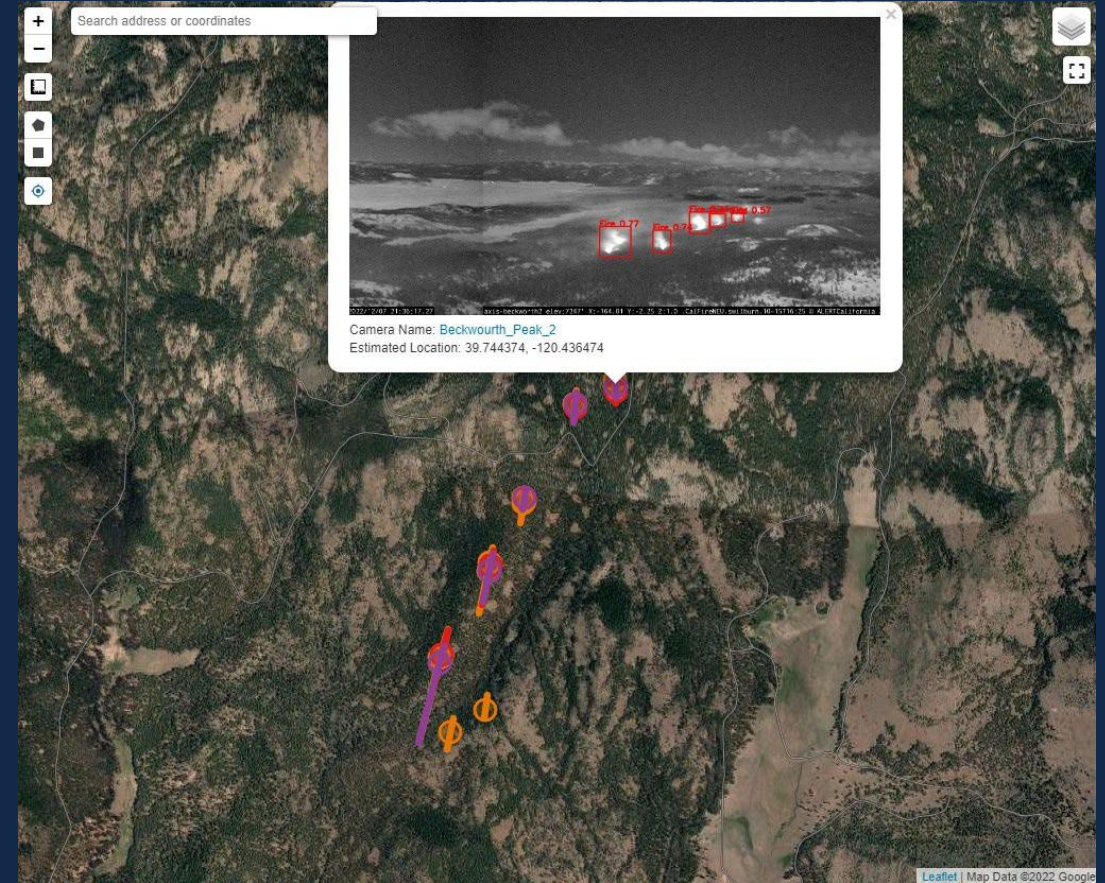
Better location accuracy shortens response times & improves fire spread models

4

Lower dispatcher workloads – ALERTCalifornia operations techs move cameras onto fires

5

All hazards situational awareness tool – weather conditions, PSPS, flooding/landslide/avalanche, vehicle accidents, and many other use cases





ALERT California

Future Directions:

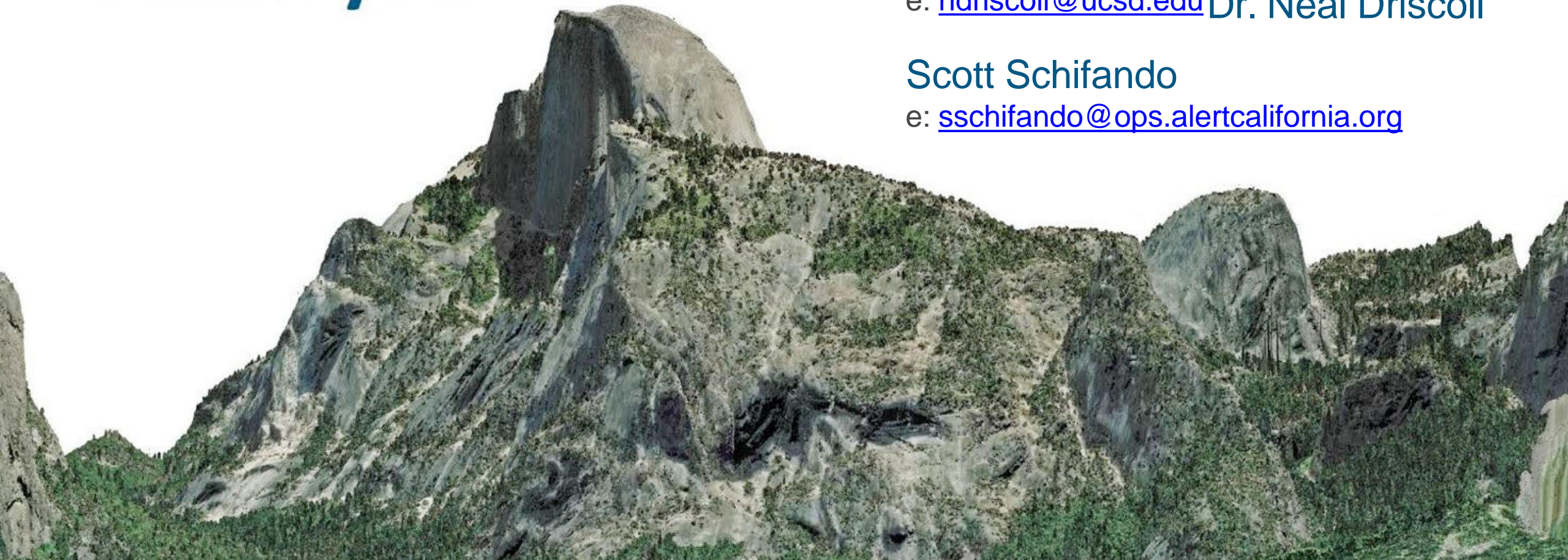
- Densify cameras in California to fill in view shed gaps as well as install camera networks in the other western states
- Continue AI research to improve fire detections and knock down false positives
- Acquire lidar and multispectral data in tier II and tier III fire threat regions to quantify the fuel loads, provide input to fire models and define forest health

Thank you

e: ndriscoll@ucsd.edu Dr. Neal Driscoll

Scott Schifando

e: sschifando@ops.alertcalifornia.org



Roundtable / Public Comment

- ▶ Roundtable
- ▶ Topic Suggestions for Next Meetings
 - <https://forms.gle/Wefg6YnrnUGYS8ua9>
- ▶ Public Comment





Next Meeting Information

April 18, 2023

CNRA Building, 2-221 (A) Conference Room
715 P St, Sacramento, CA

- CAL FIRE:
 - CAL FIRE Strategic Plan 2024 Development
 - Phyllis Banducci
- Rancho Mission Viejo:
 - Wildfire Safety Measures for Today's Master Planned Communities
 - Mike Balsamo and Jay Bullock





Meeting Adjournment (Motion Required)

- ▶ Copies of the written materials have been posted on the Office of the State Fire Marshal web site at <https://osfm.fire.ca.gov/>.
- ▶ For information concerning the Advisory Committee Meeting, please contact Kara Garrett at (916) 201-5539 or Kara.Garrett@fire.ca.gov.
- ▶ NOTE: Items designated for information are appropriate for committee action if the committee chooses to act. The agenda order is tentative and subject to change. Agenda items may be taken out of order to facilitate the effective transaction of business. The Committee may not discuss or act on any matter raised during the public forum period, except to decide whether to place the matter on the notice and agenda of a future committee meeting.

