

COMMON GROUND: PRESCRIBED FIRE, VINEYARDS, AND COMMUNITY RESILIENCE

APRIL 14, 2026



CLIMATE & WILDFIRE INSTITUTE



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This convening is supported by the generosity of our sponsors:



AGENDA

8:45am Opening Remarks

9:00am Opening Panel

9:45am Wine Industry Panel

10:30am Coffee Break

11:00am Tech Spotlight: Prescribed Fire
Near Vineyards

12:00pm Lunch

1:00pm Tech Spotlight: Smoke Science

1:40pm Tech Spotlight: Fire & Smoke
Modeling

2:20pm Coffee Break

2:40pm Closing Discussion

3:10pm Closing Remarks

3:30pm Programming Ends +
Happy hour reception



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APRIL 14, 2026

WELCOME & OPENING REMARKS



Len Nielson
Staff Chief, Prescribed
Fire and Environmental
Protection, CAL FIRE



Dawnine Dyer
Owner, Dyer Vineyard
and Dyer Straits Wine
Co.



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APRIL 14, 2026

OPENING PANEL: Statewide Perspectives



Moderated by:
Jonathan Pangburn
Prescribed Fire
Coordinator,
CAL FIRE



Len Nielson
Staff Chief,
Prescribed Fire
and
Environmental
Protection, CAL
FIRE



Brian Peterson
Fire Ecologist, All
Hands Ecology -
Fire Forward



Arran Rumbaugh
Research Chemist,
UC Davis



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WINE INDUSTRY PANEL:

Navigating Risk, Resilience, And Innovation



Moderated by:
Noelle Cremers
Director of
Environmental
and Regulatory
Affairs, Wine
Institute



Caleb Mosley
Executive
Director, Napa
Valley
Grapegrowers



Chris Howell
Wine-Grower/GM,
Cain Vineyard &
Winery



Ashley Egelhoff
Winemaker, Honig
Vineyard and
Winery



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APRIL 14, 2026

Coffee & Networking

10:30-11:00 AM

TECHNICAL SPOTLIGHT:

Prescribed Fire Near Vineyards



Marshall Turbeville
Battalion Chief,
CAL FIRE



Alan Viader
Director of Operations
& Winemaking,
VIADER Vineyards &
Winery



Danielle Ashton
Forest Health and
Restoration Project
Manager, Napa
County RCD



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APRIL 14, 2026

Prescribed Burn Planning

Common Ground: Prescribed Fire, Vineyards,
and Community Resilience

Marshall Turbeville
April 14, 2026



CAL FIRE Prescribed Burn Involvement

- Prescribed Burn Roles
- Prescribed Burn Prescription
- Fire Behavior Predictions
- Smoke Management Plan
- Prescribed Burn Variables
- Future



Prescribed Burn Roles

- CAL FIRE can enter into an up to 10-year agreement with a property owner to assume liability and provide resources to implement prescribed burning
 - Agreement contains the burn prescription



Prescribed Burn Roles

- CAL FIRE can serve as the lead environmental agency for CEQA compliance OR utilize another lead environmental agency's CEQA compliance
 - The Cal VTP is one CEQA compliance pathway



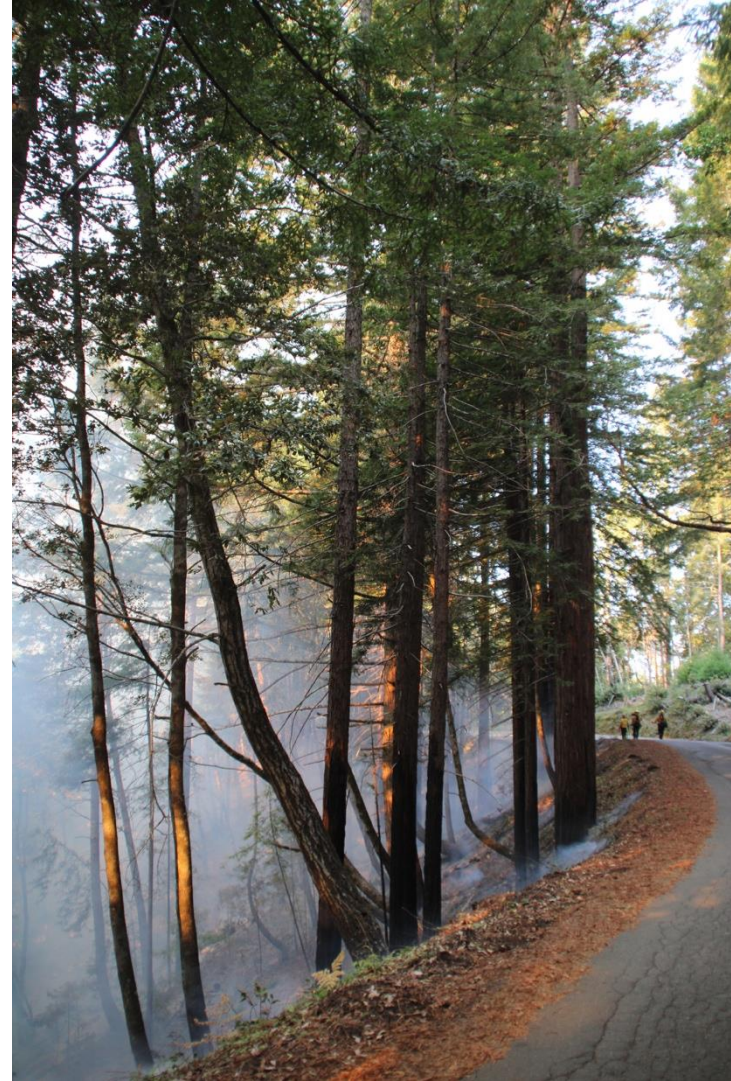
Prescribed Burn Roles

- CAL FIRE can assist beneficial fire practitioners without an agreement or CEQA compliance
 - CAL FIRE cannot assume liability and cannot supply a “preponderance of resources” to enable the prescribed burn



Prescribed Burn Roles

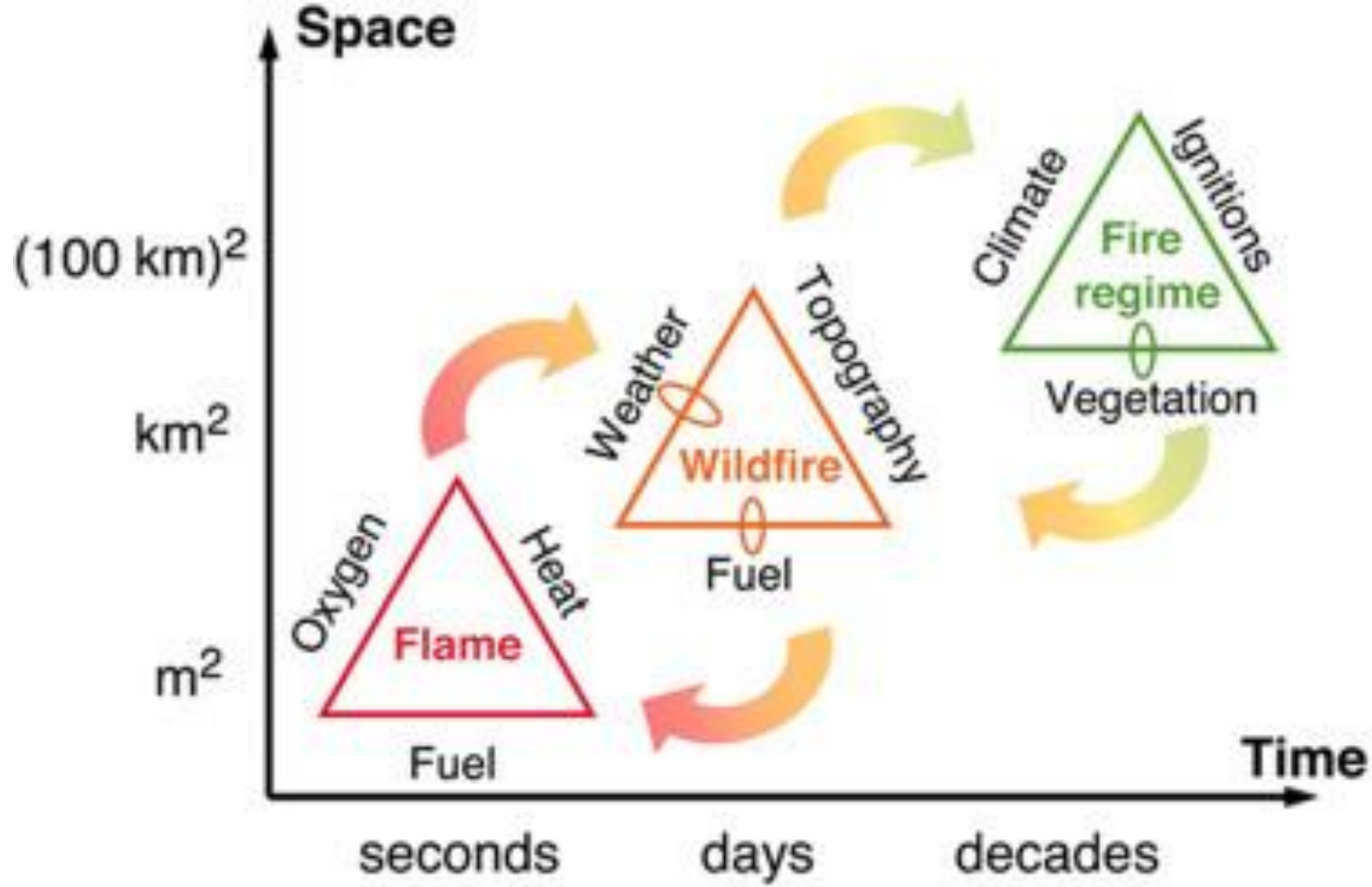
- CAL FIRE may issue a burn permit and have no other involvement
 - A CAL FIRE burn permit is separate from an air quality “burn permit”
 - CAL FIRE burn permits are not required year round
 - Permit is for safe burning



Prescribed Burn Prescription

- Environmental parameters to meet objective(s)
 - Weather
 - Air temperature
 - Relative humidity
 - Wind Speed and Direction
 - Vegetation
 - Fuel Moisture
 - Horizontal Continuity
 - Vertical Arrangement





Narrow or Wide Prescription?



Prescribed Burn Prescription

CAL FIRE Agreement

- Schedule
- Fuel Description
 - Fuel Type and Characteristics
 - Fuel Loading
 - Fuel Consumption Planned
 - Fuel Treatment Planned
 - Narrative
- Weather and Fuel Moisture
 - Weather Data Collection
 - Prescription for Fuel Moisture, Weather, and Soils

10/28

FIRE - WEATHER INFORMATION

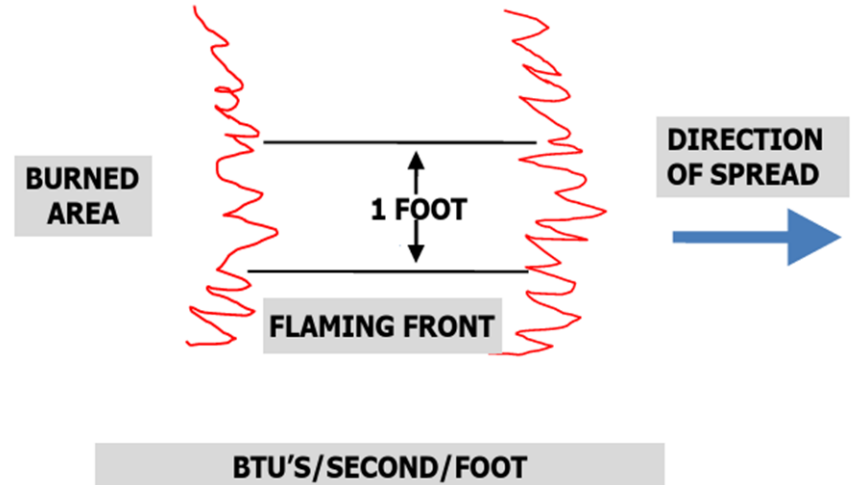
Date Time	Location	Elev.	Wind		Temp		RH	Remarks	By
			Sp	Dir	Dry	Wet			
0958	Pepperwood VMP DP 50	1100	0	8	59	48	43	Direction is where	
1058	300 ft North DP 50	1036	0	8	62	48	33	the wind is coming from	
1200	700 ft North of DP 50		0	8	66	52	37	W = wind	
1300	1200 ft North of DP 50		W 8		68	51	28	G = gust	
1327	Division Delta / Division Range break		W 6	8 / N	69	52	29	wind S / SW	
1357			W 4		70	52	27		
1427			W 2	N	71	52	24		
1457			W 2	N	71	52	24		
1530	400 ft North of drop point 50		2	W / NW	69	52	29		
1600	DP 50	1100	0	8	66	51	33		

Forestry Suppliers, Inc. Stock No. 89294

Fire Behavior Predictions

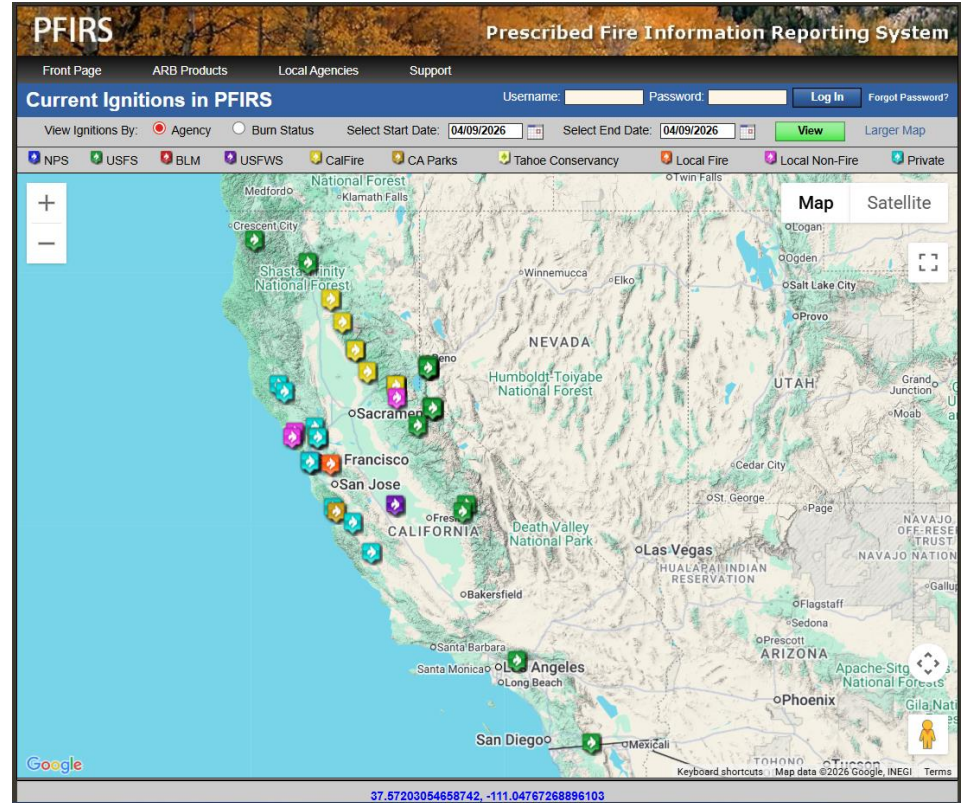
CAL FIRE Agreement

- Fire Line Intensity (BTUs/foot/second)
- Rate of Spread (chains/hour)
- Flame Length (feet)
- Scorch Height (feet)
- Probability of Ignition (%)
- Burnout Time
- Fire Behavior Narrative



Smoke Management Plan CAL FIRE Agreement

- Affected Areas and Conditions
- Smoke Dispersal Plan



Prescribed Burn Variables

- Vegetation Type
- Time of Year
- Elevation
- Size
- Duration



Future

- Nimble and Flexibility
 - Notification Difficulty
- CAL FIRE Year Round Staffing
 - Beneficial Fire Goals



Future

- Burn Windows/Seasons
- “Slow” Burning







Top 20 Largest California Wildfires

FIRE NAME (CAUSE)	DATE	COUNTY	ACRES	STRUCTURES	DEATHS
1 AUGUST COMPLEX (Lightning)	August 2020	Mendocino, Humboldt, Trinity, Tehama, Glenn, Lake, & Colusa	1,822,648	935	1
2 DIXIE (Powerlines)	July 2021	Butte, Plumas, Lassen, Shasta & Tehama	963,309	1,311	1
3 MENDOCINO COMPLEX (Human Related)	July 2018	Colusa, Lake, Mendocino & Glenn	459,123	280	1
4 PARK FIRE (Arson)	July 2024	Butte, Plumas, Shasta & Tehama	429,693	709	0
5 SCU LIGHTNING COMPLEX (Lightning)	August 2020	Stanislaus, Santa Clara, Alameda, Contra Costa, & San Joaquin	396,623	225	0
6 CREEK (Undetermined)	September 2020	Fresno & Madera	379,835	858	0
7 LNU LIGHTNING COMPLEX (Lightning/Arson)	August 2020	Napa, Solano, Sonoma, Yolo, Lake, & Colusa	363,220	1,491	6
8 NORTH COMPLEX (Lightning)	August 2020	Butte, Plumas & Yuba	318,935	2,352	15
9 THOMAS (Powerlines)	December 2017	Ventura & Santa Barbara	281,893	1,060	2
10 CEDAR (Human Related)	October 2003	San Diego	273,246	2,820	15
11 RUSH (Lightning)	August 2012	Lassen	271,911 CA / 43,666 NV	0	0
12 RIM (Human Related)	August 2013	Tuolumne	257,314	112	0
13 ZACA (Human Related)	July 2007	Santa Barbara	248,297	1	0
14 CARR (Human Related)	July 2018	Shasta County & Trinity	229,631	1,614	8
15 MONUMENT (Lightning)	August 2021	Trinity	223,124	28	0
16 CALDOR (Under Investigation)	August 2021	Alpine, Amador, & El Dorado	221,835	1,005	1
17 MATILJA (Undetermined)	September 1932	Ventura	220,000	0	0
18 RIVER COMPLEX (Lightning)	July 2021	Siskiyou & Trinity	199,339	152	0
19 WITCH (Powerlines)	October 2007	San Diego	197,990	1,650	2
20 KLAMATH THEATER COMPLEX (Lightning)	June 2008	Siskiyou	192,838	0	2

There is no doubt that there were fires with significant acreage burned in years prior to 1932, but those records are less reliable, and this list is meant to give an overview of the large fires in more recent times.

This list does not include fire jurisdiction. These are the Top 20 regardless of whether they were state, federal, or local responsibility.



10/2/2024

Top 20 Deadliest California Wildfires

FIRE NAME (CAUSE)	DATE	COUNTY	ACRES	STRUCTURES	DEATHS
1 CAMP FIRE (Powerlines)	November 2018	Butte	153,336	18,804	85
2 GRIFFITH PARK (Unknown)	October 1933	Los Angeles	47	0	29
3 TUNNEL - Oakland Hills (Rekindle)	October 1991	Alameda	1,600	2,900	25
4 TUBBS (Electrical)	October 2017	Napa & Sonoma	36,807	5,643	22
5 EATON (Under Investigation) *	January 2025	Los Angeles	14,021	9,413	19
6 NORTH COMPLEX (Lightning)	August 2020	Butte, Plumas, & Yuba	318,935	2,352	15
7 CEDAR (Human Related)	October 2003	San Diego	273,246	2,820	15
8 RATTLESNAKE (Arson)	July 1953	Glenn	1,340	0	15
9 PALISADES (Arson)	January 2025	Los Angeles	23,707	6,833	12
10 LOOP (Unknown)	November 1966	Los Angeles	2,028	0	12
11 HAUSER CREEK (Human Related)	October 1943	San Diego	13,145	0	11
12 INAJA (Human Related)	November 1956	San Diego	43,904	0	11
13 IRON ALPS COMPLEX (Lightning)	August 2008	Trinity	105,855	10	10
14 REDWOOD VALLEY (Power Lines)	October 2017	Mendocino	36,523	544	9
15 HARRIS (Undetermined)	October 2007	San Diego	90,440	548	8
16 CANYON (Unknown)	August 1968	Los Angeles	22,197	0	8
17 CARR (Human Related)	July 2018	Shasta County, Trinity	229,631	1,614	8
18 LNU Lightning Complex (Lightning/Arson)	August 2020	Napa/Sonoma/Yolo/Stanislaus/ Lake	363,220	1,491	6
19 ATLAS (Powerline)	October 2017	Napa & Solano	51,624	781	6
20 OLD (Human Related)	October 2008	San Bernardino	91,281	1,003	6

** Fires with the same death count are listed by most recent. Several fires have had 4 fatalities, but only the most recent are listed.

***This list does not include fire jurisdiction. These are the Top 20 regardless of whether they were state, federal, or local responsibility.



10/2/2025

Top 20 Most Destructive California Wildfires

FIRE NAME (CAUSE)	DATE	COUNTY	ACRES	STRUCTURES	DEATHS
1 CAMP (Powerlines)	November 2018	Butte	153,336	18,804	85
2 EATON (Under Investigation)	January 2025	Los Angeles	14,021	9,413	19
3 PALISADES (Arson)	January 2025	Los Angeles	23,707	6,833	12
4 TUBBS (Electrical)	October 2017	Napa & Sonoma	36,807	5,636	22
5 TUNNEL - Oakland Hills (Rekindle)	October 1991	Alameda	1,600	2,900	25
6 CEDAR (Human Related)	October 2003	San Diego	273,246	2,820	15
7 NORTH COMPLEX (Lightning)	August, 2020	Butte, Plumas, & Yuba	318,935	2,352	15
8 VALLEY (Electrical)	September 2015	Lake, Napa & Sonoma	76,067	1,955	4
9 WITCH (Powerlines)	October 2007	San Diego	197,990	1,650	2
10 WOOLSEY (Electrical)	November 2018	Ventura	96,949	1,643	3
11 CARR (Human Related)	July 2018	Shasta County, Trinity	229,631	1,614	8
12 GLASS (Undetermined)	September 2020	Napa & Sonoma	67,484	1,320	0
13 LNU LIGHTNING COMPLEX (Lightning/Arson)	August 2020	Napa, Solano, Sonoma, Yolo, Lake, & Colusa	363,220	1,491	6
14 CZU LIGHTNING COMPLEX (Lightning)	August 2020	Santa Cruz, San Mateo	86,509	1,490	1
15 NUNS (Powerline)	October 2017	Sonoma	54,382	1,355	3
16 DIXIE (Powerline)	July 2021	Butte, Plumas, Lassen, & Tehama	963,309	1,311	1
17 THOMAS (Powerline)	December 2017	Ventura & Santa Barbara	281,893	1,063	2
18 CALDOR (Under Investigation)	September 2021	Alpine, Amador, & El Dorado	221,774	1,003	1
19 OLD (Human Related)	October 2003	San Bernardino	91,281	1,003	6
20 JONES (Undetermined)	October 1999	Shasta	26,200	954	1

Structures include homes, outbuildings (barns, garages, sheds, etc) and commercial properties destroyed.

This list does not include fire jurisdiction. These are the Top 20 regardless of whether they were state, federal, local or tribal responsibility.



10/9/2025

Top 20 Fires

- Largest
- Destructive
- Deadliest
- Ecological Damage?

Fire Dependent vs. Fire Adapted

- Fire dependent
 - A plant or ecosystem that REQUIRES fire to persist
 - Pyne: 54% of California's ecosystem
 - Is a forest there because of fire or is fire there because of the forest?
- Fire adapted
 - A plant or ecosystem type that has evolved to SURVIVE fire
 - Pyne: Most of the remainder of California's ecosystem







Community-Based Burning Napa Prescribed Burn Association

Alan Viader and Danielle Ashton



What we'll cover

- How local community and organizations are building capacity for more beneficial fire and the Napa Prescribed Burn Association (PBA).
- How Napa PBA supports beneficial fire projects
- Collaboration and partnership in good fire

A Brief History

Past

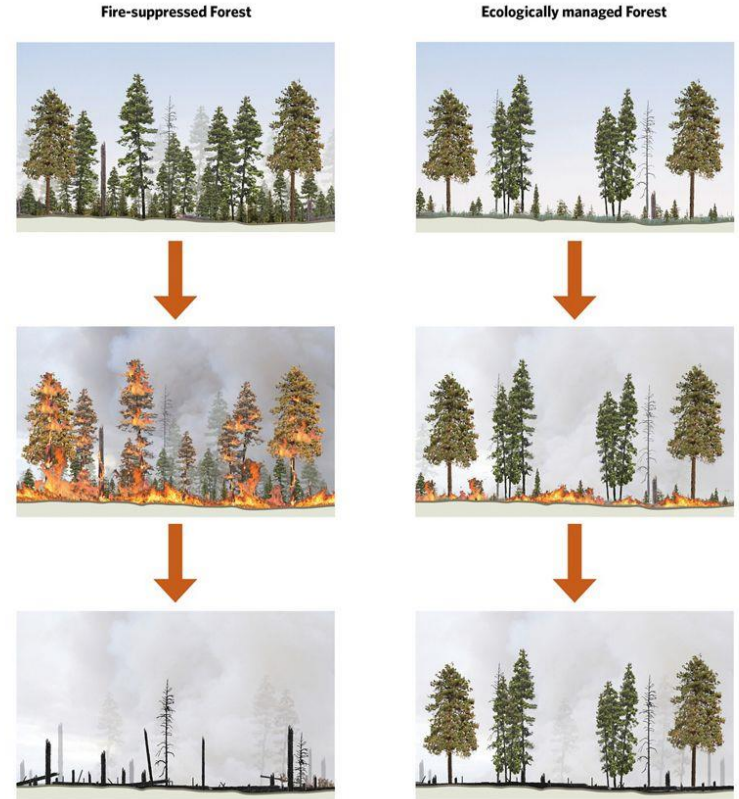
- Since time immemorial, fire has been part of the CA landscape.
- Small, frequent fires cleared out small trees, shrubs, and branches.
- Native species adapted to this regime through the development of physical traits and mechanisms of regeneration.
- Strict fire suppression has been the norm for 150+ years

Present

- Less resilient landscapes due to overgrown vegetation and changes in species composition.
- Growing recognition of the importance of “good fire”.

Future

- Enhance California fire-adapted ecosystems and increase resilience.



Prescribed Fire

- Prescribed fire is fire applied to the land in a predetermined area and under specific weather conditions to achieve specific management goals.
- “Good fire” is planned for specific outcomes, such as:
 - Wildfire resilience
 - Ecological health
 - Invasive species management
 - Tribal/cultural purposes
- An essential and cost-effective stewardship tool.



Napa RCD

Our Mission

- Help the community protect and restore natural resources in Napa County.

Four Pillars of Work

- Sustainable Agriculture
- Watershed Health
- Community and Youth Engagement
- Forest Health and Restoration

Napa RCD plays a key role in local and regional collaboration and coordination.



Prescribed Burn Associations (PBAs)



- PBAs are community based mutual aid networks that help landowners put good fire on the land.
- Although varying in style, PBAs have a shared goal of facilitating community-led burning that is ecologically minded, fun, and safe.
- PBAs build capacity by sharing knowledge, equipment, trainings, and other resources.
- During 2019-2022, 13 PBAs implemented 356 broadcast burns with no escapes or damages.
- In 2024, 33 PBAs across the state hosted over 2,500 hours of training and supported 622 burns (4,215 acres)

Sources: <https://calpba.org>, [CA Community-Based Beneficial-Fire Dashboard](#)

PBA Development in Napa County



Napa PBA – Community Meetings

Goals:

- Re-spark interest post-pandemic
- Education and outreach
- Gauge community concerns
- Start building the PBA community

Hosted 4 meetings:

- May 30, 2023 – In person at UCCE Napa Office
- June 28, 2023 – Virtual
- July 20, 2023 – In person at Seavey Vineyards
- August 30, 2023 – In person at Pope Valley Farm Center



Napa PBA Steering Committee

Established November 2023

Members & Partners:

- Fred Seavey
- Riley Cliff
- Peter Lecourt
- Alan Viader
- Leslie Lew
- Kili Osborne
- Alyx Howell
- John Bailey
- Tori Norville
- Danielle Ashton
- Napa Firewise Foundation
- CAL FIRE LNU

Our Committee

- Passionate about prescribed fire, community safety, and ecosystem health.
- Experience in fire and forestry, community organizing & education, equipment use and maintenance, land management.
- Varied representation from across Napa County.
- Connection to vintner community.
- Monthly meetings and Outreach sub-committee





Our Mission:

The mission of the Napa County PBA is to build a volunteer-based mutual aid group that empowers the community to use responsible burning to restore ecosystem health and reduce the risk of catastrophic fire by providing the education, training, and resources to conduct prescribed burns.

Building Local Prescribed Fire Capacity

- Community outreach and meetings
- Technical assistance
- Prescribed fire trainings
 - Firelighter series
 - Annual refresher RT-130
 - Looking ahead – Basic 32 training and TREX even (Prescribed Fire Training Exchange)
- Equipment and supplies cache
- Burning Opportunities
 - Pile burns and broadcast burns
 - Best way to learn is to burn!



Napa PBA Burning Support

Planning

- Suitability of burn project for the Napa PBA
- Additional support from fire professionals (Burn Boss, CAL FIRE)
- Needed plans and permits
- Alignment of weather, prescriptions, and air quality
- Timing and location of burns in relation to vineyards and grape growing

What we Bring

- Coordination and planning support
- Volunteers and equipment
- Education and training
- Community!

Growing collaboration between Napa PBA, landowners, fire professionals, & vintners/wine growers.



Napa PBA Highlights

- 5 pile burn projects with private landowners and Pacific Union College
 - Napa City Youth Fire Explorers
- 28-acre broadcast burn at Pacific Union College
 - Part of a Forest Health Grant led by NCCF
 - Yolo and Solano PBA support
 - First broadcast burn for Napa PBA!
- Firelighter Training Series
 - Regional effort with Solano and Yolo PBAs
 - 2 Zoom workshops, 1 field-day in each county
 - 135 total participants
- Annual RT-130 Refresher with Yolo & Solano PBAs and Watershed Research & Training Center
- Burn planning training for Committee members
- Smoke management webinar series and resources
- 15 site visits to provide prescribed fire technical assistance – pathways to burning and PBA support
- Community meeting at Tucker Farm Center





Burn with Napa PBA

Interested in burning with Napa PBA on your property?

Step 1:

- Reach out to Napa PBA coordinator or one of the Napa PBA Steering Committee members

Step 2:

- Set up a site visit

Step 3:

- Planning and coordination

Step 4:

- Acquire necessary permits

Step 5:

- Let's burn!

Napa PBA – Looking Ahead

- Upcoming trainings and burn projects with Napa PBA
 - Increasing interest from landowners for pile burning support & small-acreage broadcast burns
 - Recent funding from North Coast RCDs block grant with State Coastal Conservancy
 - Basic 32 training
 - Prescribed Fire Training Exchange event
- Opportunities for PBA volunteers to join CAL FIRE burns
- Considerations as the beneficial fire movement is growing in our region:
 - Narrowing burn windows
 - Weather variability and air quality concerns
 - Capacity and workforce limitations
 - Increasing state investment in beneficial fire and community-based burning
 - Expanding support for PBAs and trainings
 - Maximizing flexibility for when burning can happen
 - Building our Napa burning community





Collaboration & Partnership

- How our community works through challenges and achieves goals.
- How this is happening..
 - Locally
 - Napa PBA partnerships with Napa RCD, UCCE, Napa Firewise, CAL FIRE LNU
 - Regionally
 - Collaborating with neighboring PBAs, RCDs, and NGOs
 - Statewide
 - Working with Watershed Research and Training Center
 - Meeting and burning with other California PBAs
- Funding sources, donations, and volunteer time
 - CAL FIRE, Dept. of Conservation, Napa Valley Vintners, County of Napa, Napa Firewise, UCCE, community members



Thank You

LUNCH

12:00-1:00 PM

TECHNICAL SPOTLIGHT:

Smoke Science - What Matters For Grapes & Wine



Ann Hobbs

Associate Planner, Placer
County Air Pollution Control
District



Eric Kett

Compliance Division
Supervisor, Air Pollution
Control District, Santa
Barbara County



Joe Plaughter

Prescribed Fire
Program Manager,
Sonoma Land Trust



CLIMATE & WILDFIRE INSTITUTE

APRIL 14, 2026



air pollution control district
SANTA BARBARA COUNTY

SMOKE SCIENCE: SMOKE MANAGEMENT KNOWLEDGE

Ann Hobbs
Associate Planner – Retired Annuitant
Placer County APCD
ahobbs@placer.ca.gov

Eric Kett
Compliance Supervisor
Santa Barbara County APCD
Kette@sbcapcd.org



OVERVIEW

- Prescribed Fires and Smoke Management
- Air Districts Role
- Smoke Management Program
- Smoke Management Tools

WILDFIRE SMOKE > PRESCRIBED FIRE SMOKE

Wildfire Pyrocumulus Smoke Clouds



Prescribed Fire Reduced Smoke



In general, wildfire smoke impacts are wider and more significant relative to prescribed fire smoke.

AIR DISTRICT ROLE WITH PRESCRIBED FIRE



- Air Districts responsibilities cover many areas, one of which is prescribed burns
- Prescribed burning is the planned application of fire to vegetation to achieve a specific objective.
- Districts have robust Smoke Management Programs including:
 - Air Quality and Smoke Monitoring
 - Public Awareness Campaigns

PARTICULATE MONITORING



DISTRICT'S JURISDICTION

- **Title 17 California Code of Regulations - Section 80102**: Provides guidelines and flexibility for Air Districts to develop and implement Smoke Management Programs
- **Smoke Management Program**: Provides a structured program for regulating Rx Burning and specifies requirements for Burn Permits, Burn Registration, Smoke Management Plans, Burn Day Determinations, Ignition Authorization, and Burn Reporting

SMOKE MANAGEMENT PROGRAM OBJECTIVES

- Minimize smoke impacts to the public and the air shed
- Allow for the continuation of prescribed burning as a resource management tool
- Provide increased opportunities for prescribed burning
- Help in the prevention of catastrophic wildfires by reducing vegetation through burning

SMOKE MANAGEMENT PROGRAM ELEMENTS

- Smoke Management Plans
- Ignition Authorization Requests
- CARB Burn Day Determinations (Burn, Marginal, No Burn)
- Public Notification and Outreach
- Monitor Prescribed Burn/Smoke
- Burn Reports (Acreage)



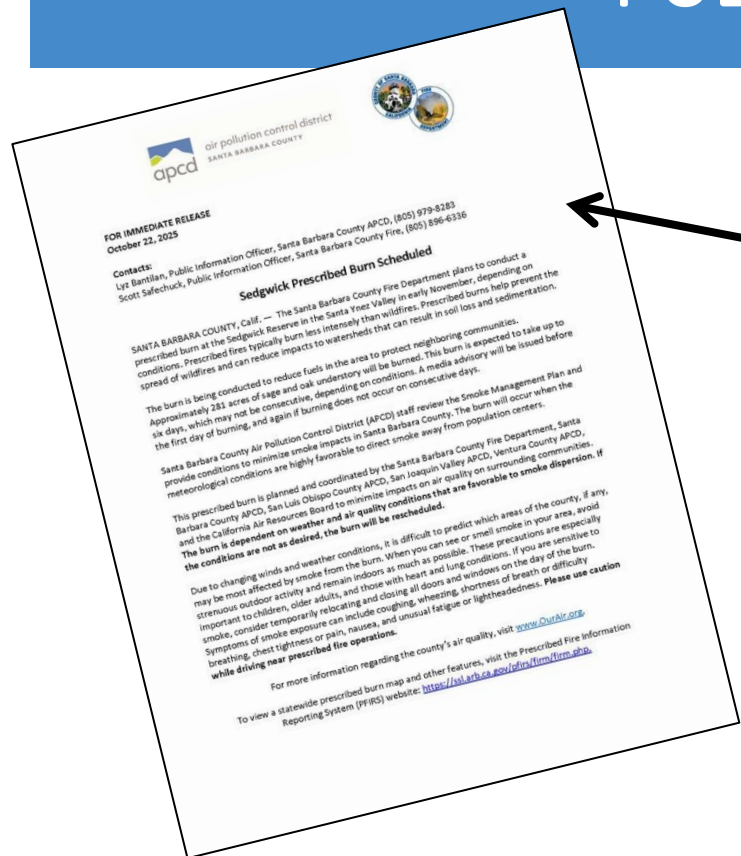
ASSESSING SMOKE DISPERSION



PUBLIC NOTICING

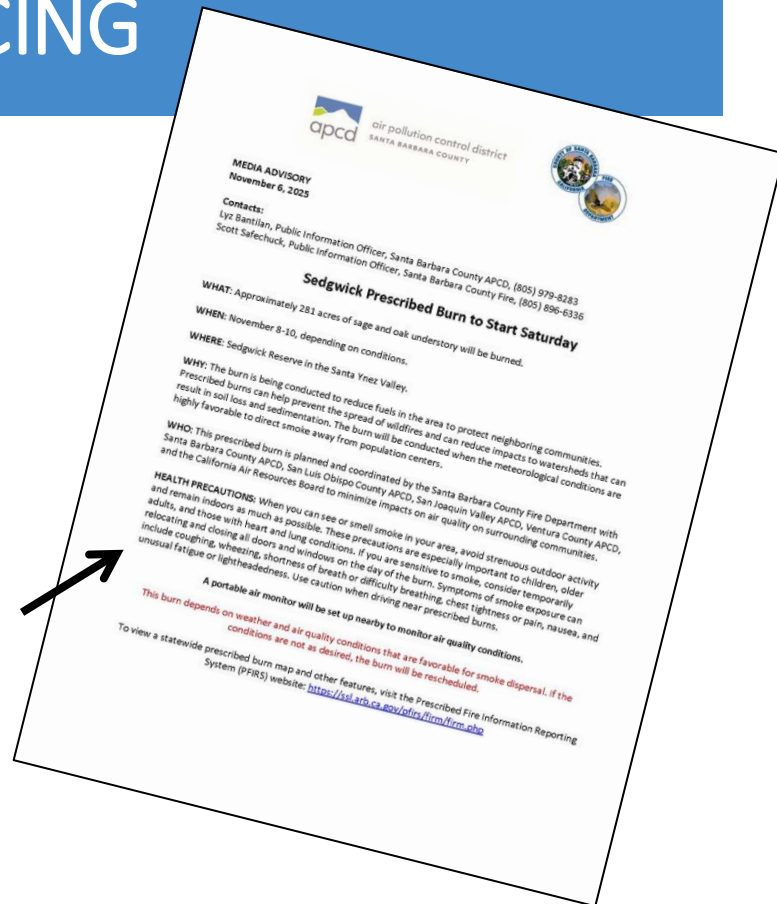
Step 1

News Release (2-3 weeks before burn)

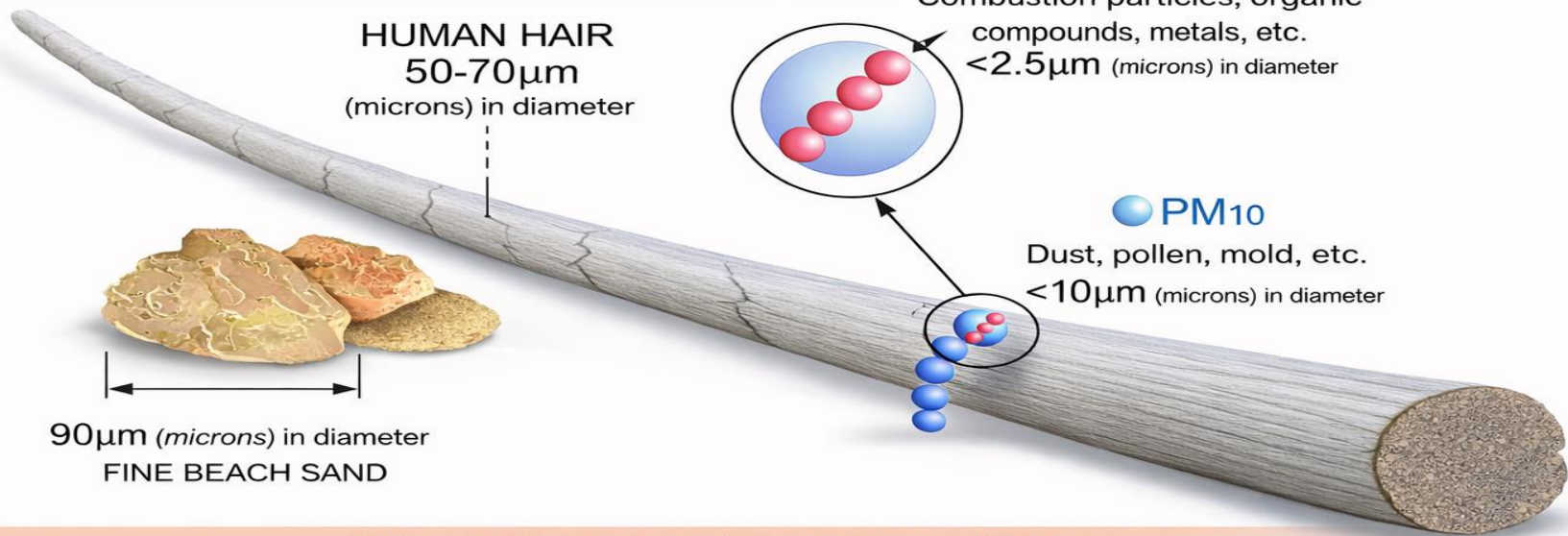


Step 2

Media Advisory (1 day before burn)



PARTICULATE MATTER

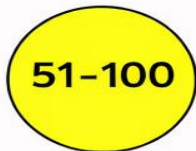


U.S. EPA Air Quality Index - AQI



0 - 50

Good



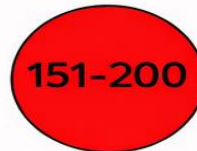
51-100

Moderate



101-150

Unhealthy
for Sensitive
Groups



151-200

Unhealthy



201-300

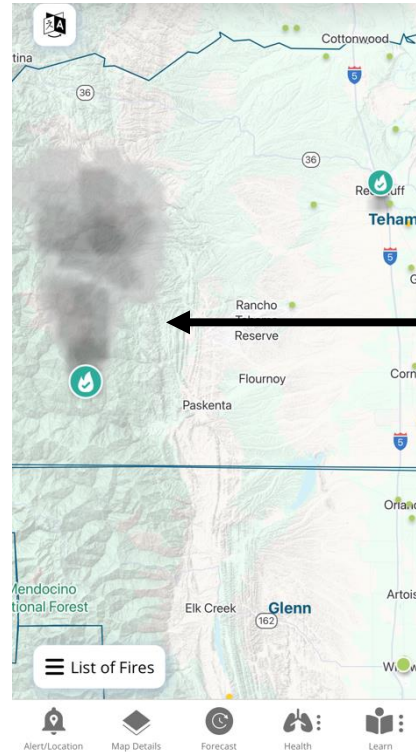
Very
Unhealthy



301 +

Hazardous

MONITORING SMOKE CONDITIONS

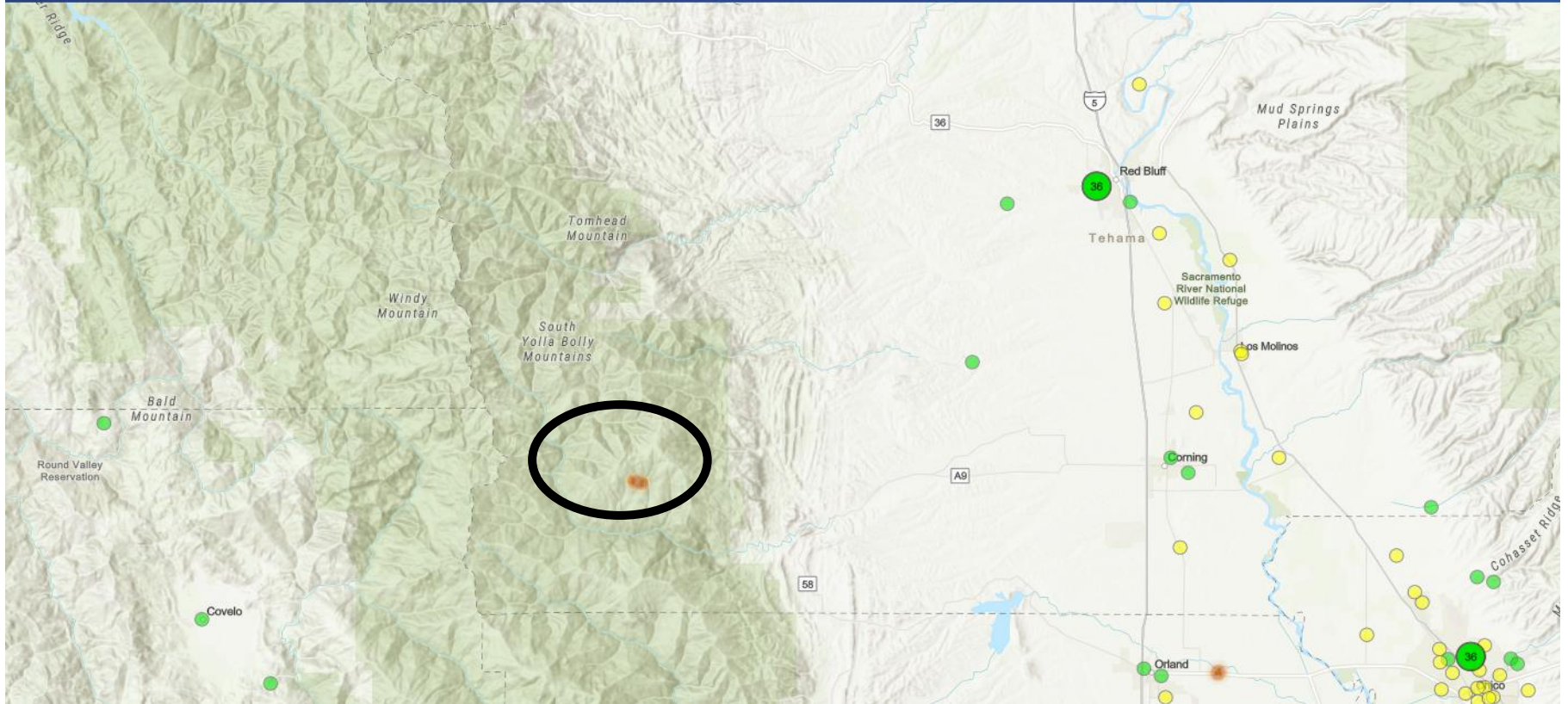


Smoke Forecast
352 Acres
Machine Piles

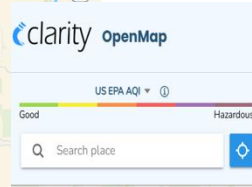
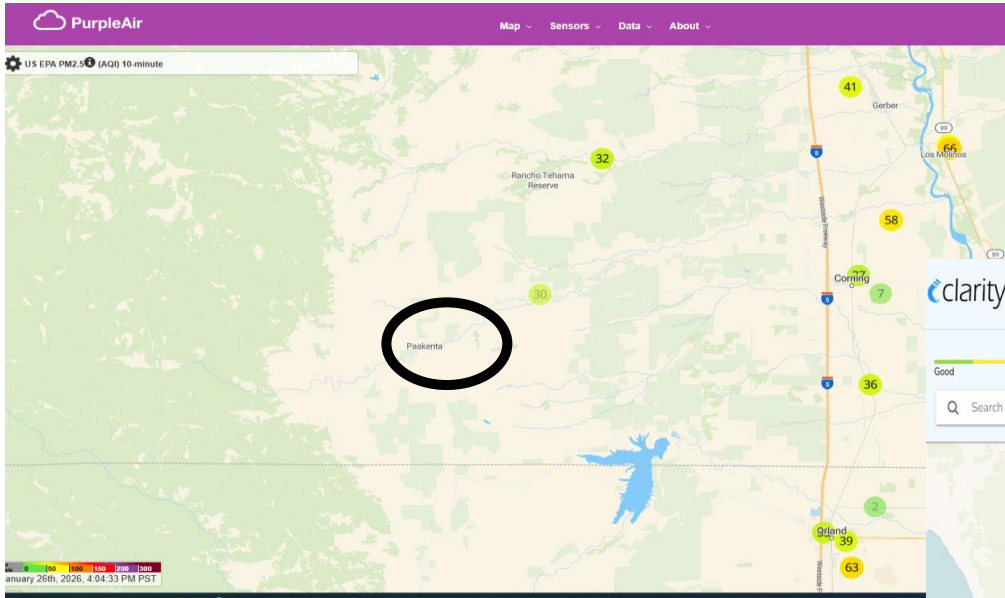
US EPA/USFS Fire and Smoke Map January 26, 2026



Fire and Smoke Map 4.2

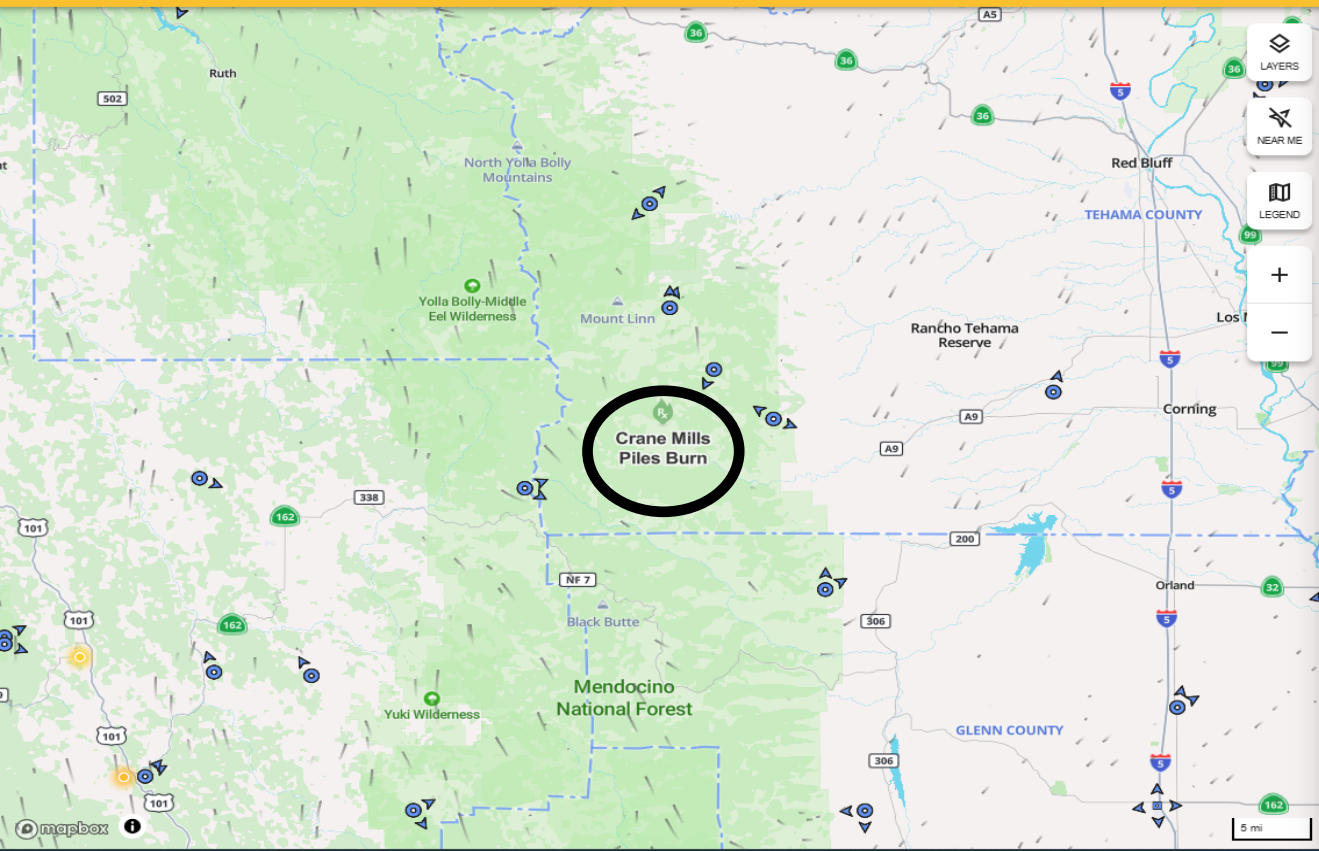


Purple Air & Clarity Sensor Maps January 26, 2026



Watch Duty Map January 26, 2026

WATCH DUTY



Crane Mills Piles Burn

Tehama County, CA

ACRES

-

CONTAINMENT

-

STATUS

Inactive

Created by WildCAD • Jan 23, 2026 at 9:23 AM

SHARE INCIDENT

All updates for this incident are automated and provided by: **WildCAD**.

Watch Duty reporters are **not actively monitoring this incident**.

LEARN MORE

UPDATES

INFO

WildCAD • Automated

Jan 26, 2026 at 9:41 AM

This incident is now being deactivated from the Watch Duty map. This will be the final update unless conditions change.

WildCAD • Automated

Jan 23, 2026 at 9:23 AM

New prescribed burn reported by WildCAD at 9:20 AM Fri Jan 23rd (PST).

BURNING

A VEGETATION MANAGEMENT TOOL

SMOKE MANAGEMENT AND PRESCRIBED BURNING



USFS Deadwood Prescribed Burn

Smoke Will be Visible



DO I NEED A PRESCRIBED BURN PERMIT AND/OR A SMOKE MANAGEMENT PLAN?

Is this Prescribed Burning being done for any of the reasons listed below?

- Prevention of high-intensity wildland fires
- Watershed management
- Range improvement
- Vegetation management
- Forest improvement/management
- Wildlife habitat improvement
- Air quality maintenance*
- Cultural burning



If none of those reasons apply:

Contact the PCAPCD at (530) 745-2330 to determine the right burn permit needed.

If this is residential backyard burning remember to contact your local fire agency and / or CAL FIRE for burn permit requirements.



Is the area of land to be burned

1. More than 10 acres; OR
2. Are the calculated PM10 emissions more than 1 ton (call the PCAPCD staff for calculation help); OR
3. In a smoke sensitive area?*



Complete a smoke management plan.



Obtain a PCAPCD year-round burn permit and if required a local fire agency/CAL FIRE burn permit.



No Smoke Management Plan Required.

* Air quality maintenance is burning with less smoke emissions occurring than a wildland fire (or wildfire), resulting in reduced air quality impacts.

** A smoke sensitive area is where smoke or air pollutants may adversely affect public health or welfare (i.e. schools, hospitals, recreation areas, population areas).



Public awareness concerning the benefits of prescribed burning for ecosystem health is increasing. More prescribed burning means more visible and frequent smoke. Smoke is important to manage as one priority of a prescribed burn to help protect public health and welfare.

What Is Smoke Management and Why Is It Regulated?

Smoke management provides standards and conditions to manage smoke generation and minimize the emission of particulates and other air contaminants from burning.

Smoke management practices include:

- Burn on a burn day
- Burn dry vegetation to minimize smoke
- Consider the weather to minimize smoke impacts
- Stop burning when health or safety is at risk

The Placer County Air Pollution Control District (PCAPCD) has adopted a Smoke Management Program based on the California Air Resources Board's (CARB) smoke management guidelines. Managing smoke impacts can help protect public health and welfare by improving air quality and visibility.

Why Is Smoke a Health Concern?

Smoke is a complex mixture of particulate matter and gases. Particulate matter 2.5 microns or smaller in size (PM2.5) is a pollutant monitored by the PCAPCD. These particles can easily be inhaled into the



Placer County Prescribed Burn Following Mountain Treatment

respiratory system and cause respiratory health problems such as aggravating existing heart and lung diseases.

Not everyone exposed to smoke is affected. But those who are can reduce its impact by limiting smoke exposure.

The US EPA/USFS's Fire and Smoke Map at fire.smoke.gov is a useful resource for fire, smoke, and air quality data.

What Is Prescribed Burning / Prescribed Fire?

Prescribed burns include underburning, broadcast burning, and hand or machine pile burning. Prescribed burning also called prescribed fire is the planned and controlled application of fire to wildland fuels/vegetation on lands selected in advance to achieve any of the following objectives:

- Prevention of high-intensity wildland fires through the reduction of wildland fuels
- Watershed management
- Range improvement
- Vegetation management
- Forest improvement and/or management
- Wildlife habitat improvement
- Air quality maintenance

(CA-REG §38011, §38011.5 & Plac. Res. Code §4642, §4670)



CAL FIRE North Fork Prescribed Burn

Prescribed fire has a long history in California. Native American tribes have used cultural burning on their lands for centuries.

Cultural burning is the intentional application of fire to land by California Native American tribes, tribal organizations, or cultural fire practitioners to achieve cultural goals or objectives, including for subsistence, ceremonial activities, biodiversity, or other benefits. (CA Pub. Res. Code §38014)

How is a Prescribed Burn Planned?

A prescribed burn takes place under specific weather conditions to meet management objectives outlined in a burn plan. Burn plan information includes the amount and type of vegetation, burn location, conditions needed for burning, monitoring, contingencies, and immediate and long-term changes that will result from the burn.

Following a prescribed burn, future management should be considered because vegetation regrows and the effectiveness of the burn decreases.

What Is a Smoke Management Plan (SMP)?

Most prescribed burns are planned in advance and include a submittal of a PCAPCD SMP. If required.

An SMP can include all or some of the following:

- Owner's details and burn location
- Type of prescribed burn
- Type and amount of vegetation to burn
- Topography
- Weather conditions for smoke dispersion
- Identify smoke sensitive areas
- Smoke PM emissions calculations
- Mitigation of smoke if necessary
- Burn notifications

An SMP may be submitted for approval online using the Prescribed Fire Information Reporting System (PFIRS) or directly to the PCAPCD sai.arb.ca.gov/pfirs/index.php

The CARB Smoke Spotter App provides an overview on proposed prescribed burn, potential smoke impacts, and air quality. web2.arb.ca.gov/air-work/programs/prescribed-burning

Do I need a PCAPCD Burn Permit?

PCAPCD burn permits are required year-round. An SMP may also be required dependent upon the location, acreage, and emissions from the amount of vegetation to burn.

Contact PCAPCD staff for further information and guidance. Contact your local fire agency or CAL FIRE to find out if a fire agency burn permit is also required.



CAL FIRE Mt. Hood Prescribed Burn, Collier

Photo by PCAPCD

COLLABORATION

Collaboration, Understanding, and Sharing Knowledge and Information

- Maintain our working collaboration with partners to keep air quality in mind.
- Continue to understand and learn about prescribed burning and smoke management.
- Share our knowledge and information on the various tools that can be used for smoke movement and air quality.

Air Quality and Smoke Resources

- AirNow: <https://www.airnow.gov/>
- U.S. EPA Fire and Smoke Map: <https://fire.airnow.gov/>
- Purple Air Sensors: <https://www2.purpleair.com/>
- Clarity Sensors: <https://www.clarity.io/>
- Watch Duty: <https://app.watchduty.org/>
- Webcameras: <https://alertwildfire.org/>
- Webcameras: <https://ops.alertcalifornia.org/>



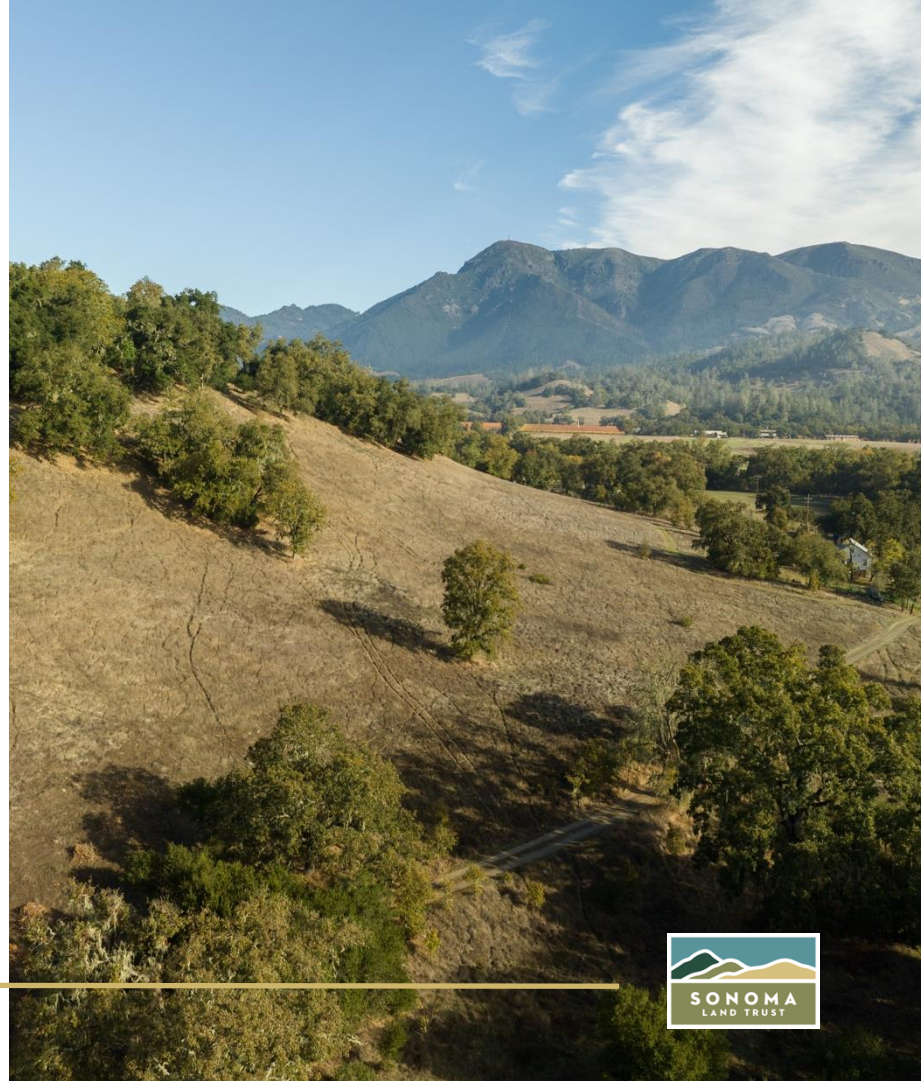
SMOKE SCIENCE

Prescribed Burning and Winegrapes



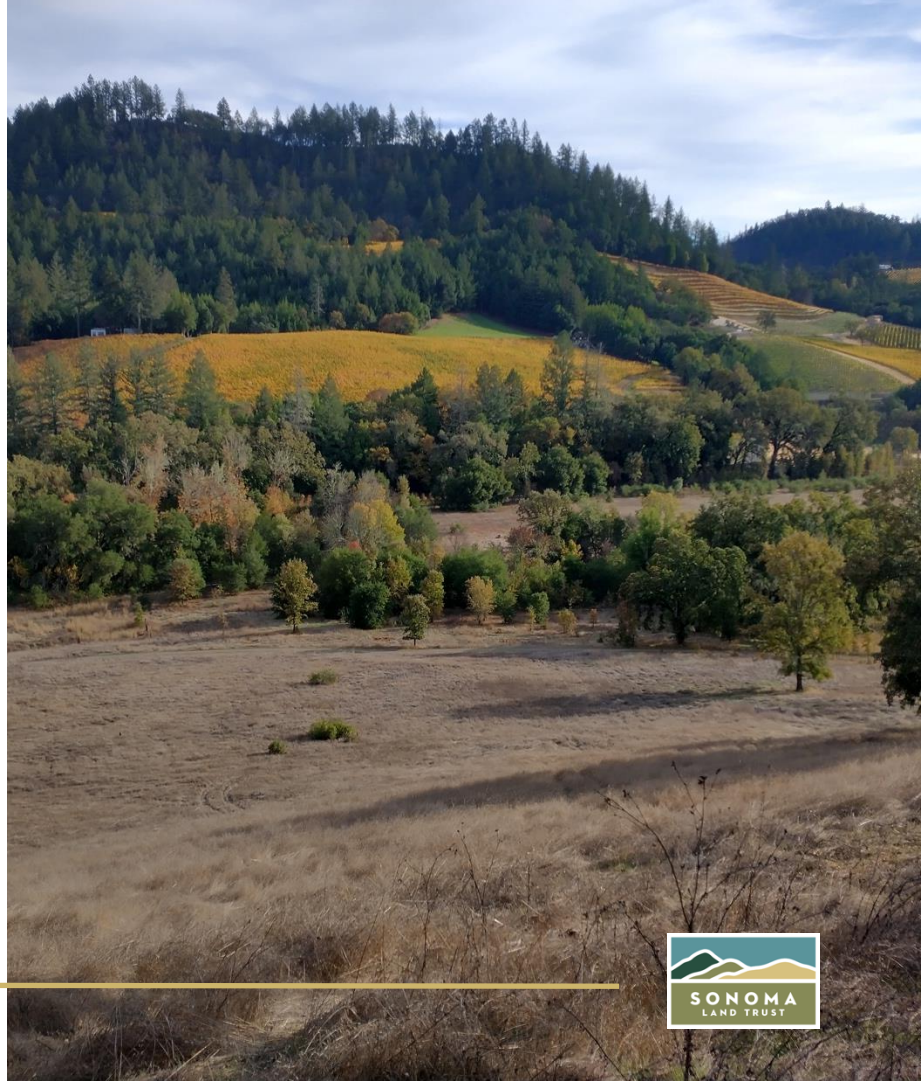
Why are we here?

- Fire is a fundamental process in California's ecosystems
- Wine is a major economic driver
 - Production, tourism, agricultural heritage
- Unanswered questions and interactions between the two more frequent in recent years



Drivers of Smoke Taint

- Burning vegetation creates:
 - particulate matter (PM)
 - volatile organic compounds (VOC)
- Subset of VOC are volatile phenols (VPs)
 - Guaiacol, syringol, and others
- Vines and berries take up VPs, both absorbed and adhered
 - Free and glucose-bound
- Naturally occurring: berries and barrel



Timing, Duration, Intensity

Timing is most well described in the literature

- Most susceptible 7 days post-veraison through harvest

Duration has a positive relationship

- More smoke equals more risk

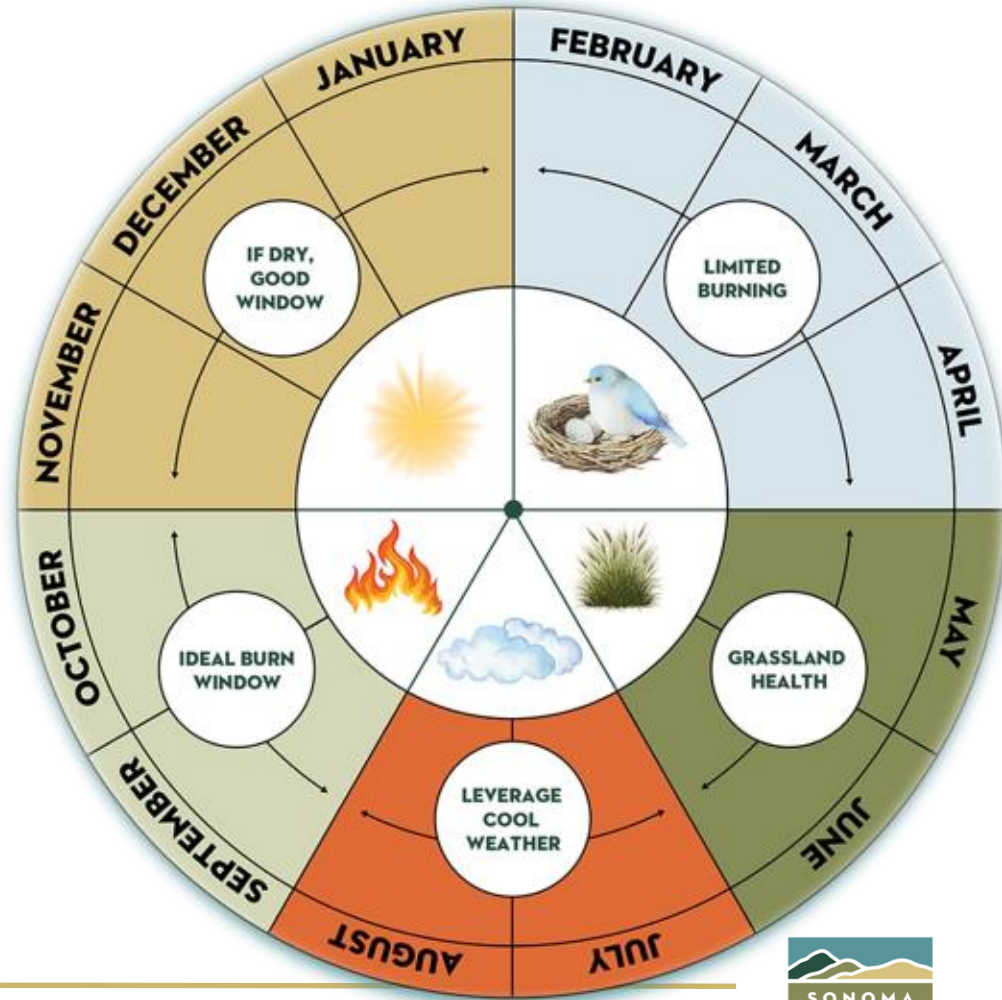
Intensity

- Greater concentration of VOCs result in higher VP levels in finished wine
 - age of smoke
 - type of fuel
 - burn temperature



SEASONALITY

- Seasonal patterns to when and why we burn
- Fire is often most impactful, productive, and ecologically appropriate in late Fall
 - Fuel moisture and weather align for cleaner burns



Risk Matrix

Timing	Smoke Intensity	Distance
Low: Jan-June	Low	Low: >500m, high mixing
Moderate: June-Aug	Moderate	Moderate: 200-500m downwind
High: Aug-Oct	High	High: 0-200m, low mixing





Monitoring and Testing

Clarity AQI Sensors

- Recording PM2.5 concentration over time

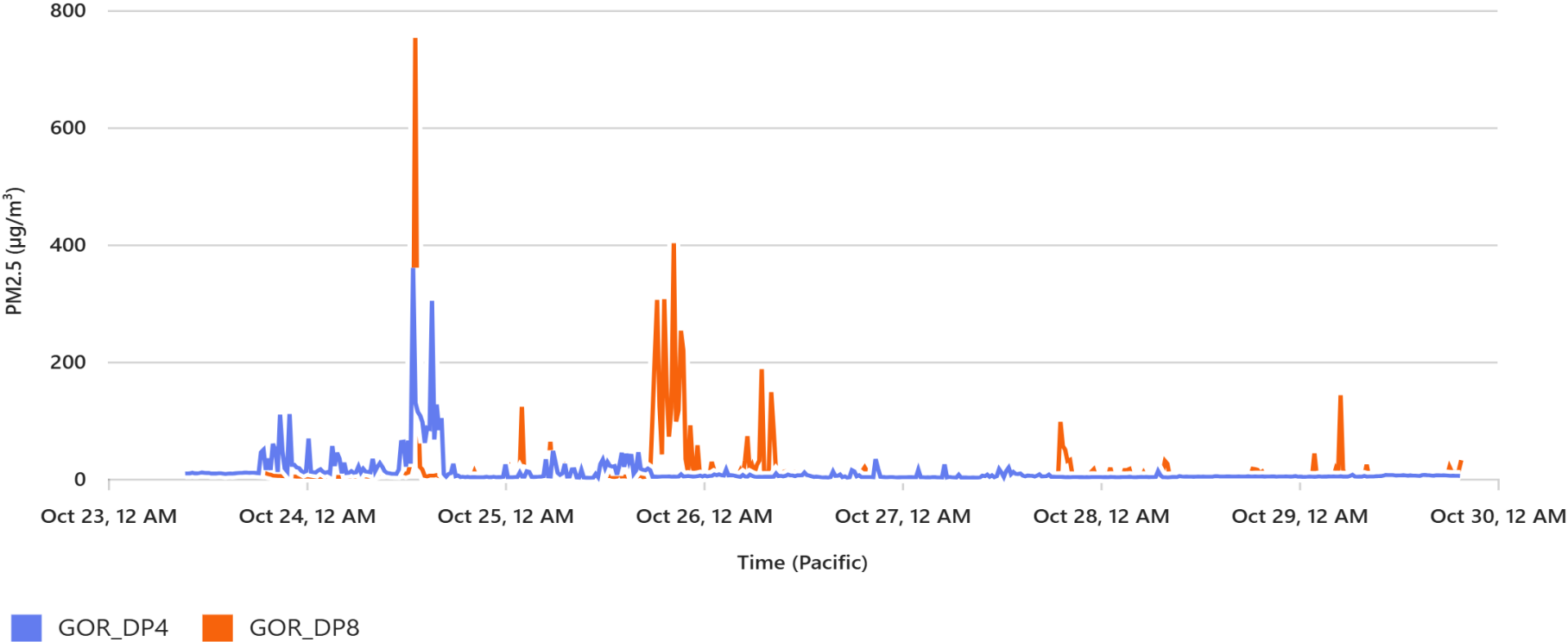
Grape samples tested by ETS Labs

- Pre exposure/control
- Post-wildfire and post-prescribed burn

Results

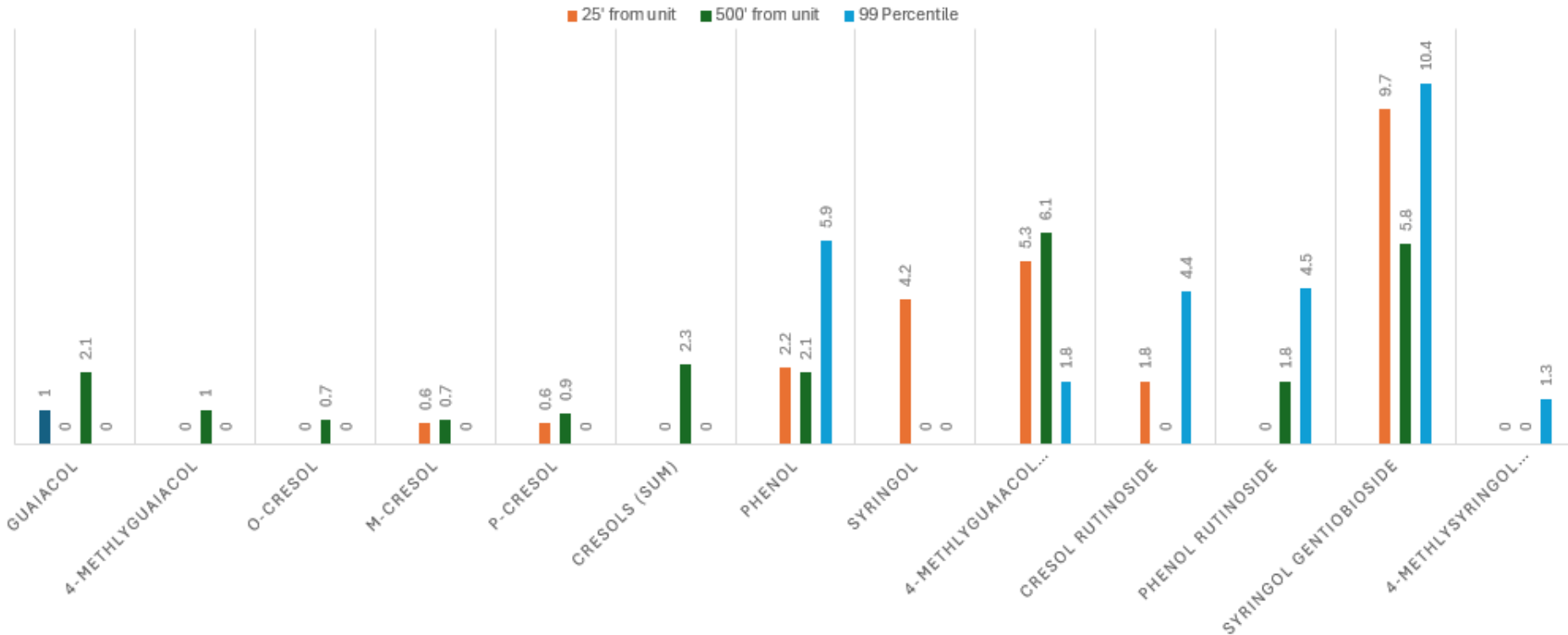


Results



Results

GOR SAMPLES VS BASELINE (UG/KG)



CONCLUSIONS

- Details matter
- Exposure occurs on a gradient
- Marginal conditions increase risk
- Low risk at normal levels of prescribed burning



TECHNICAL SPOTLIGHT:

Fire & Smoke Modeling: What the Tools Can (and Can't) Do



Melissa Floca
Director of Strategic
Partnerships, San Diego
Supercomputer Center



Sara Brambilla
Scientist, Los Alamos
National Laboratory



CLIMATE & WILDFIRE INSTITUTE

APRIL 14, 2026



BurnPro^{3D}

UC SAN DIEGO | ((WIFIRE)) Program

Common ground: Prescribed Fire, Vineyards, &
Community Resilience

April 14, 2026



**Societal Computing
and Innovation Lab**

- The Societal Computing and Innovation Lab (SCIL) is led by Dr. Ilkay Altintas and powered by a dedicated team of over 50 students, scientists, engineers, technologists, and practitioners.
- It is housed at the San Diego Supercomputer Center at the School of Computing, Information and Data Sciences.
- Informed by cutting-edge scientific discoveries, SCIL pioneers innovation pathways to address complex societal challenges.
- At the heart of SCIL's approach, is a commitment to moving from use-inspired problems to scalable, real-world solutions.

SCIL team members



Dr. Ilkay Altintas
SCIL Founding
Director



Melissa Floca
SCIL Chief
Innovation Officer



Dr. Leticia Lee
SCIL Researcher



Chris Anthony
SCIL Senior
Fellow

SCIL'S WIFIRE Program

WIFIRE Program

- Co-develop solutions with the fire management community
- Advance technologies using cutting-edge science and data
- Deliver tools that match the scale and complexity of wildland fire



WIFIRE Tools

Our platforms and products are fueled by over a dozen research projects and partnerships focused on moving science to practice

- **Beneficial Fire: *BurnPro3D platform*** for prescribed burn planning and implementation in collaboration with 3D fuel, fire and smoke modeling efforts at USFS and LANL
- **Wildfire Response: *Firemap platform*** in collaboration with CALOES and CAL FIRE through California's Fire Integrated Real-Time Intelligence System (FIRIS)
- **Fire Weather: *WxMap*** is an integrated fire weather intelligence platform for Southern California and beyond, developed in collaboration with SDG&E
- **Immersive Fire Environment: *Points2Pano*** leverages scientific data for new modes of training, decision-making, and public communication, in partnership with IntELiMon led by USGS



GORDON AND BETTY
MOORE
FOUNDATION

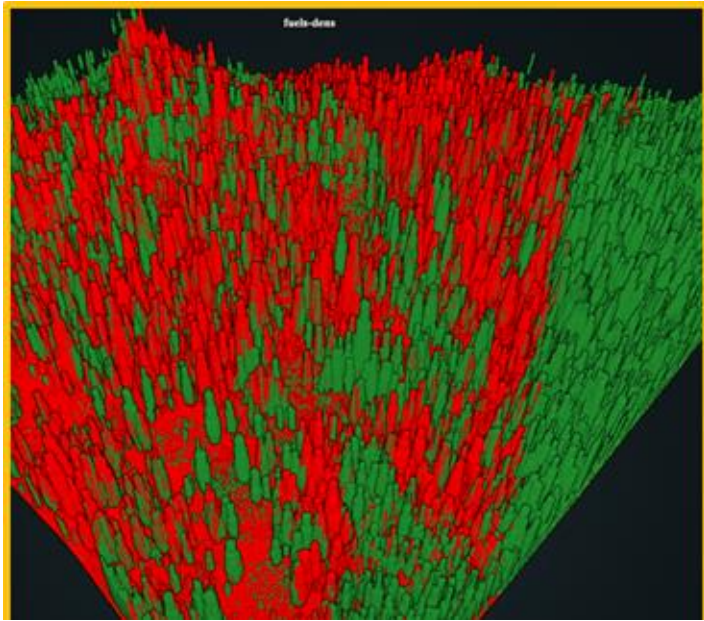
UNIVERSITY
OF
CALIFORNIA



Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES



BurnPro3D



The **BurnPro**^{3D} platform is designed to give users easy access to **next-generation fire science** to plan and implement prescribed burns at scale.



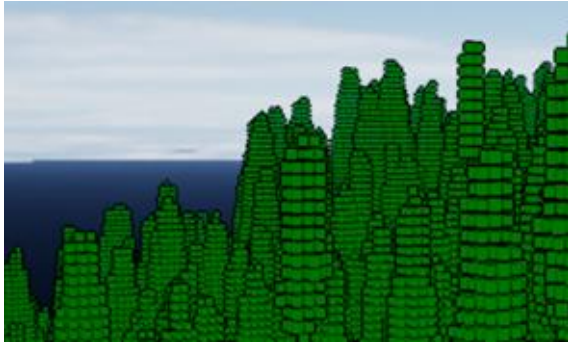
GORDON AND BETTY
MOORE
FOUNDATION

UNIVERSITY
OF
CALIFORNIA

Three Pillars of BurnPro3D

FastFuels

3D Fuels for Fire Models



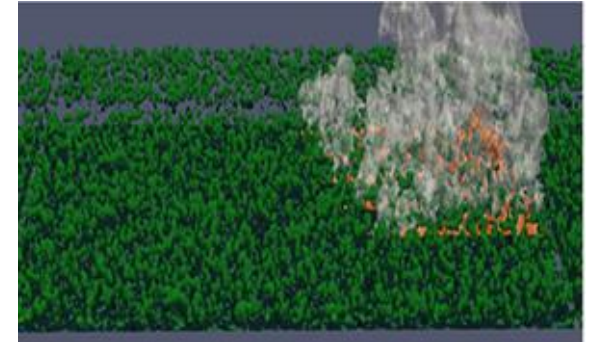
DripTorch

Custom Ignition
Patterns



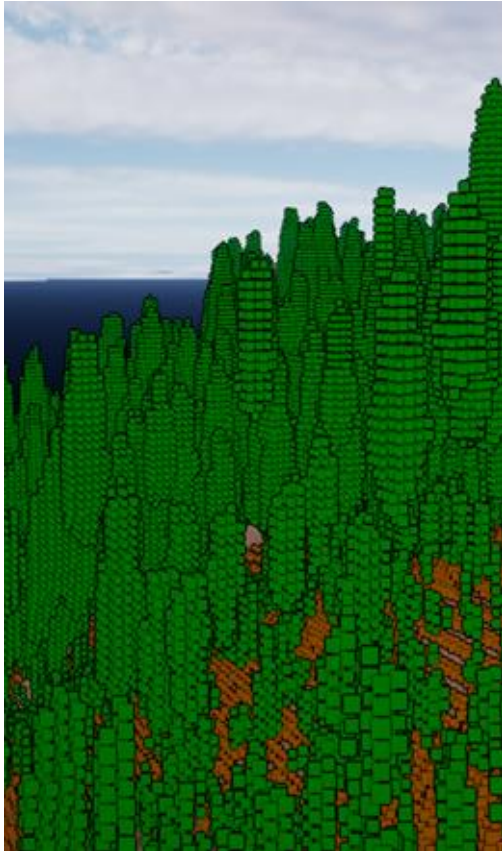
QUIC-Fire

Prescribed Fire
Simulator



FastFuels 3D Vegetation and Fuel Model

- Uses best-match Forest Inventory and Analysis (FIA) plot data and TreeMap data to predict trees and their sizes and high-resolution canopy height map
- Uses species-specific equations to model the canopy
- Creates voxels (volumetric pixels) for 3D representation of the forest

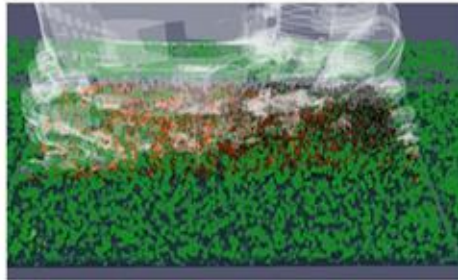
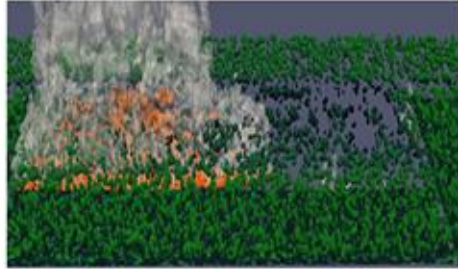
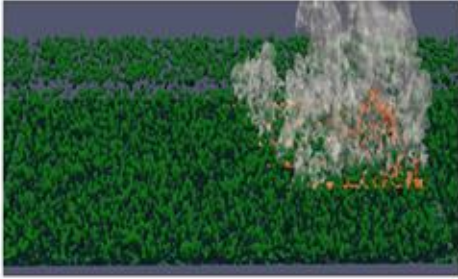


DripTorch Custom Ignition Pattern



- Generates spatiotemporal ignition patterns taking into consideration:
 - boundary of the burn unit
 - blacklining operations
 - ignition device configuration
 - ignition crew resources
 - desired firing technique

QUIC-Fire Prescribed Fire Simulator



- 3D fire model that accounts for the atmospheric response and feedback to fire
- Quantifies the impact of different ignition strategies on fire intensity and fuel consumption
- Smoke and emissions modeling
 - CO, PM 2.5



Welcome back to BurnPro3D Beta Testing!

Log in

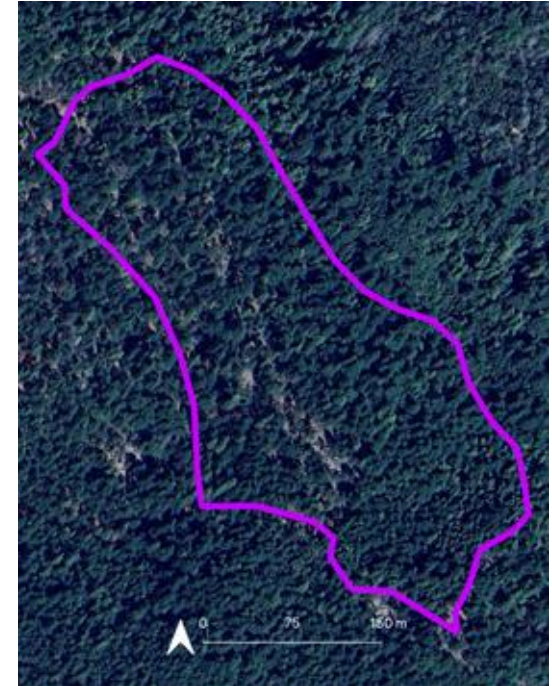
Forgot Password



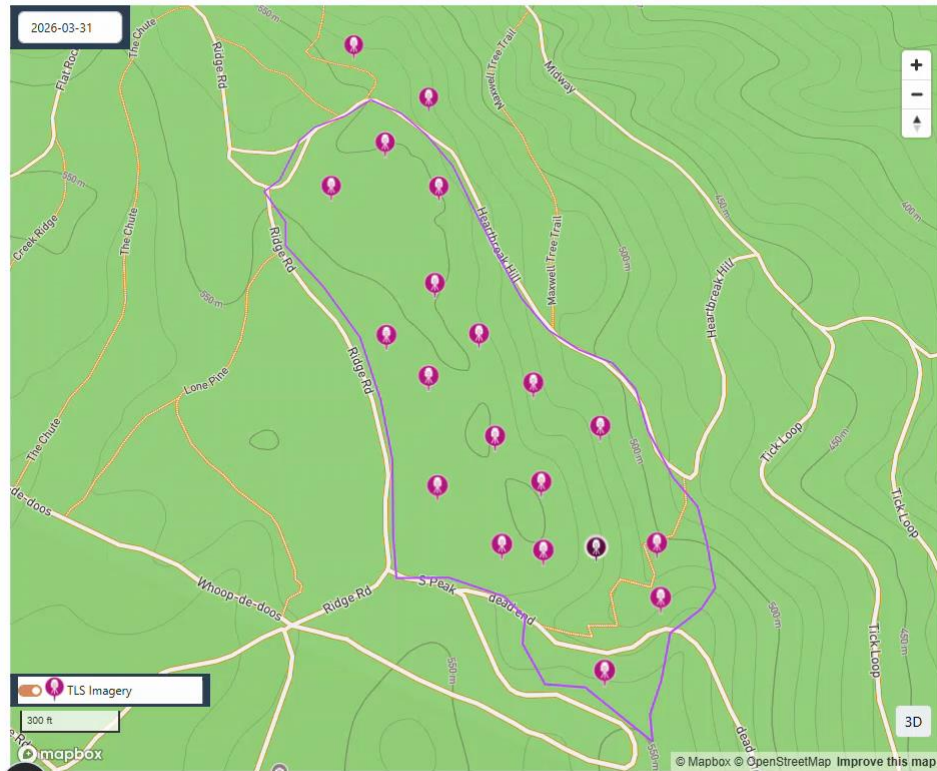
Pacific Union College

Pacific Union College

- Napa County
- **Ecosystem type:** Mediterranean California Mixed Evergreen Forest
- **Dominant tree species:** Douglas Fir, Redwood, and Pacific Madrone
- Burned in May 2025
- Data collection in November 2024 (pre-burn) August 2025 (post-burn)



pacific union nov 26 v1



Sensor Data

Imagery

Pacific Union College 0032 2024-11-10 vs 2025-08-08 Basal Area: -11.3 sq ft/acre (-7%) ↓



Location, Signal, Imagery, DBH, and other data icons.



Each terrestrial lidar scan is coupled with field data collection, including tree inventories, Brown's transects and destructive sampling



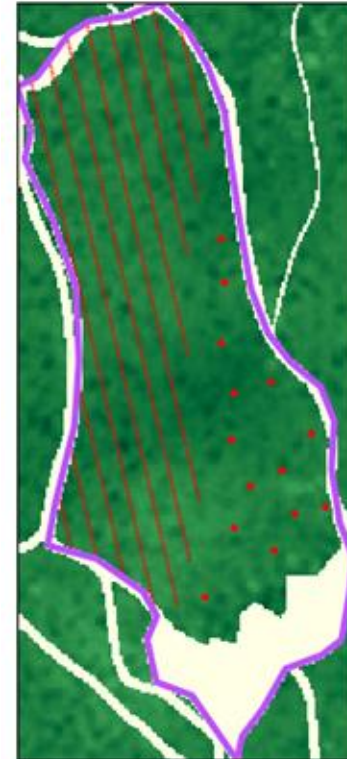


November 2024
Before Rx Fire

August 2025
After Rx Fire

Simulated ignition and weather from RAWS

- Blacklining operations on the south side (north facing slope)
- Strip firing
- Pistol ignitions on the west side, steep area
- Simulated winds and fuel moistures



FDFM: 6%

LFM: 106%

Wind Speed: 2 mph

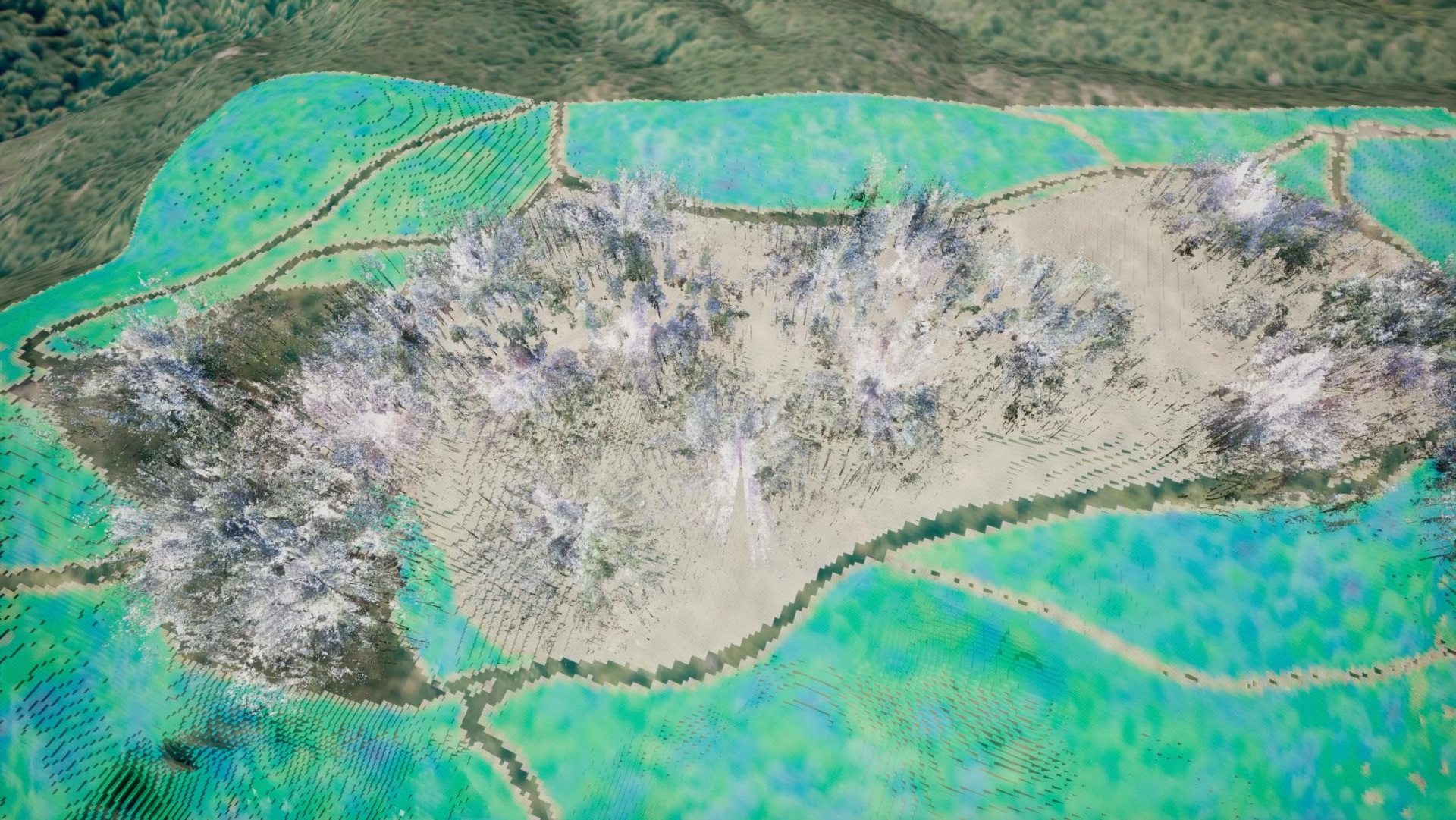
Wind Direction: West-Southwest

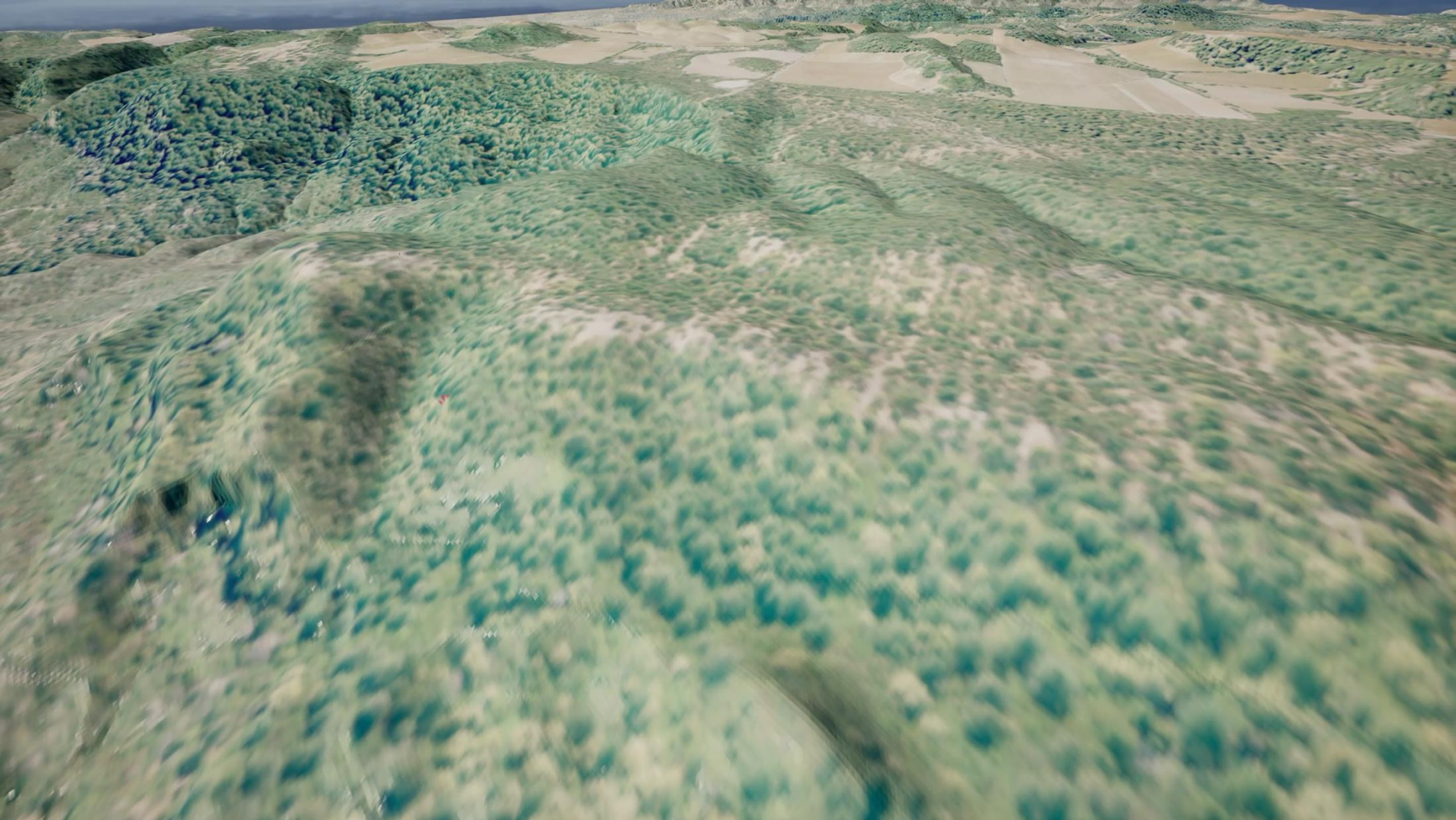
Tree species: Douglas Fir,

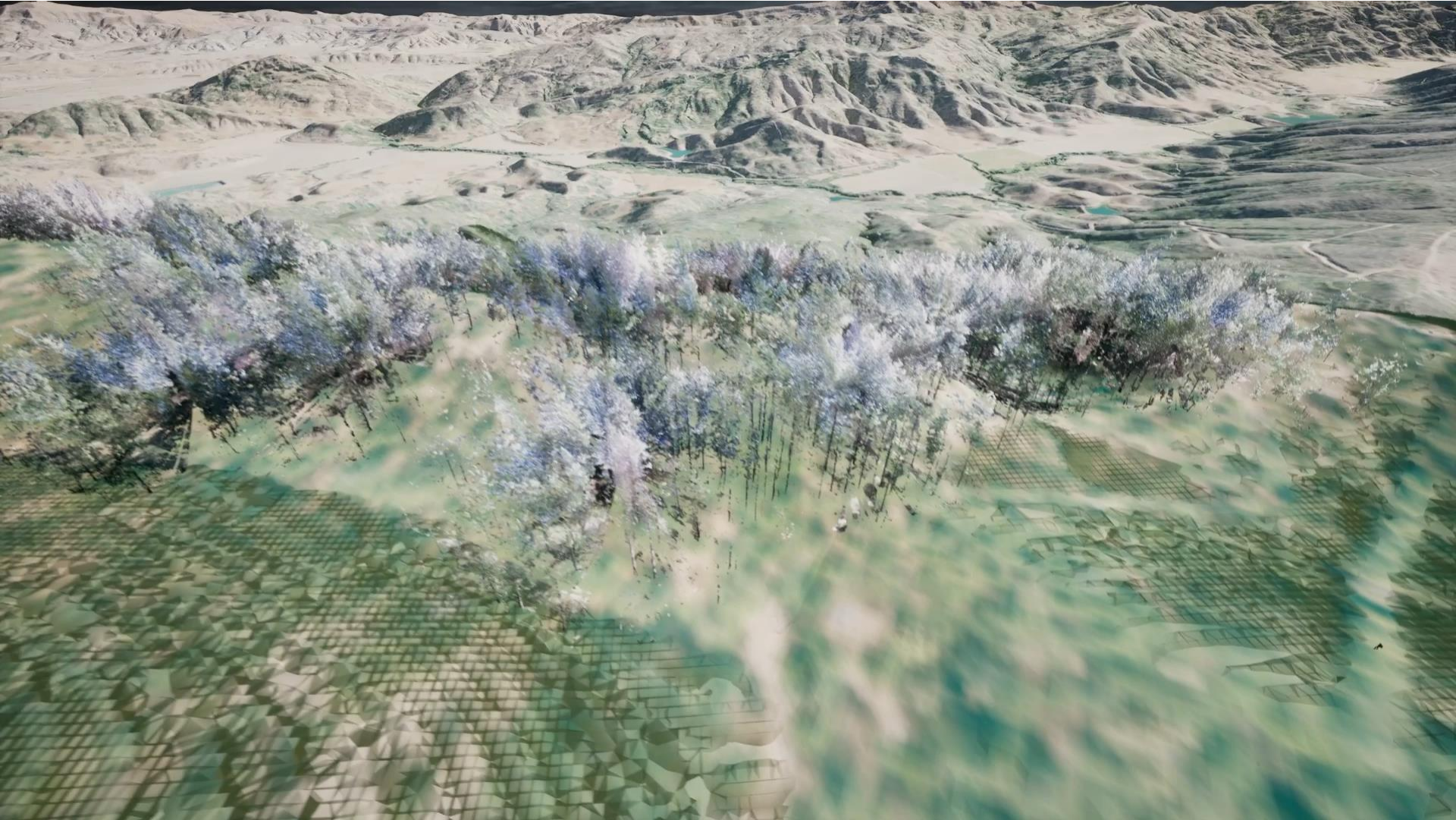
Redwood, and Pacific Madrone

Surface Fuels: from field data









Las Posadas

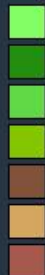


BurnPro3D

- ☒ Canopy
- ☒ Midstory
- ☒ Surface

Tree Species Groups

- ☒ Douglas-fir
- ☒ Ponderosa and Jeffrey pines
- ☒ Sugar pine
- ☒ Oak
- ☒ Other softwoods
- ☒ Pine
- ☒ Other hardwoods

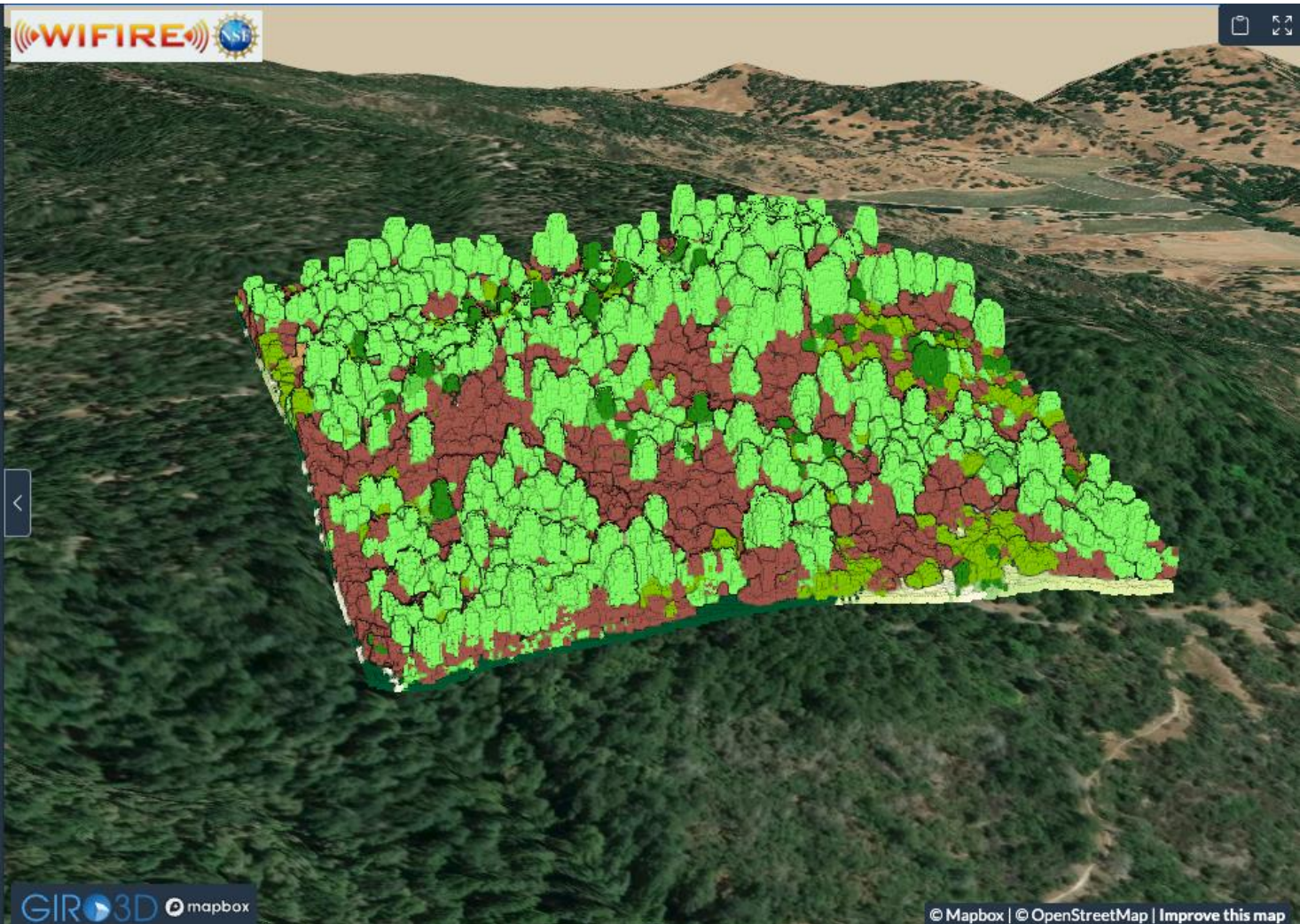


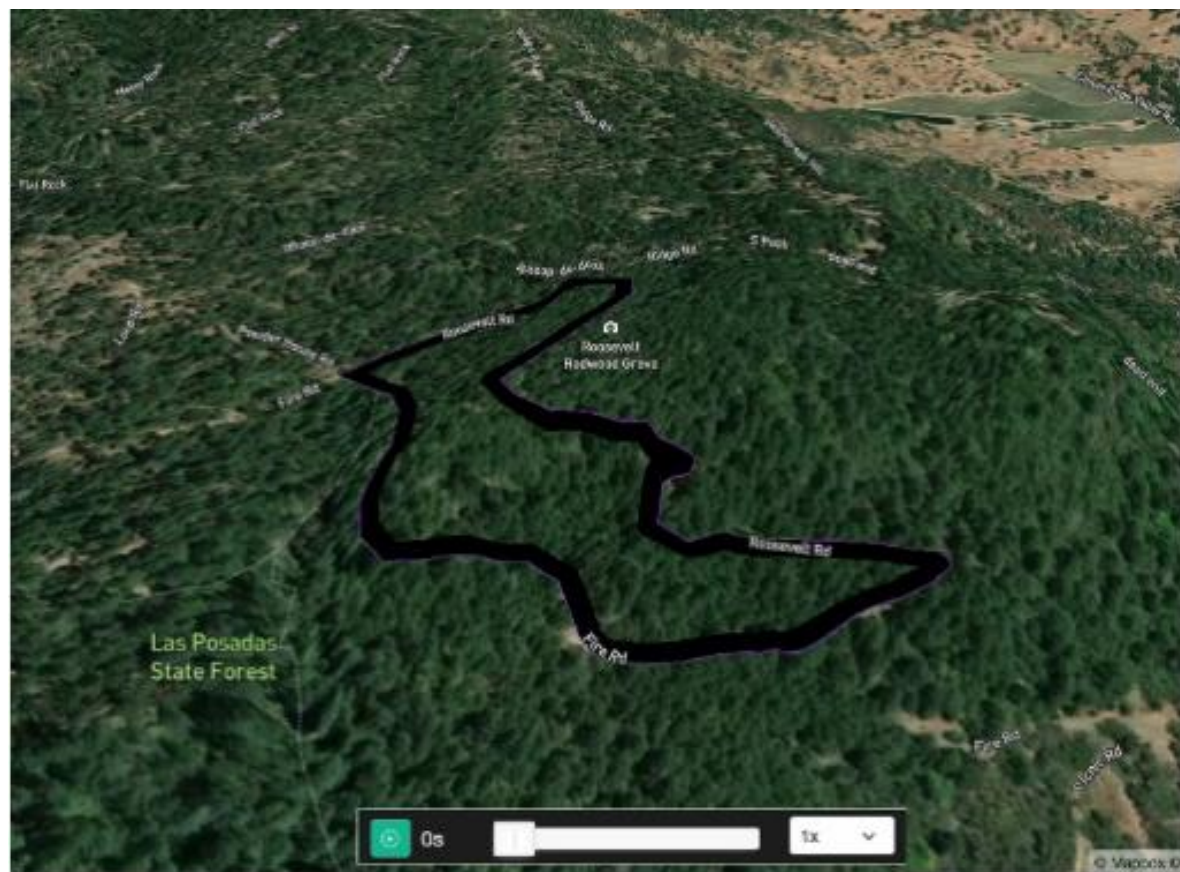
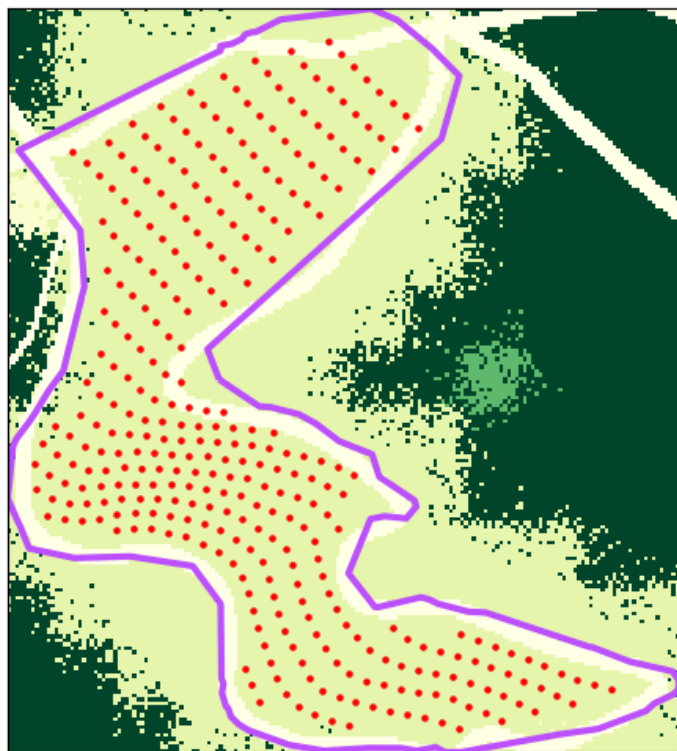
USGS 3DEP ALS

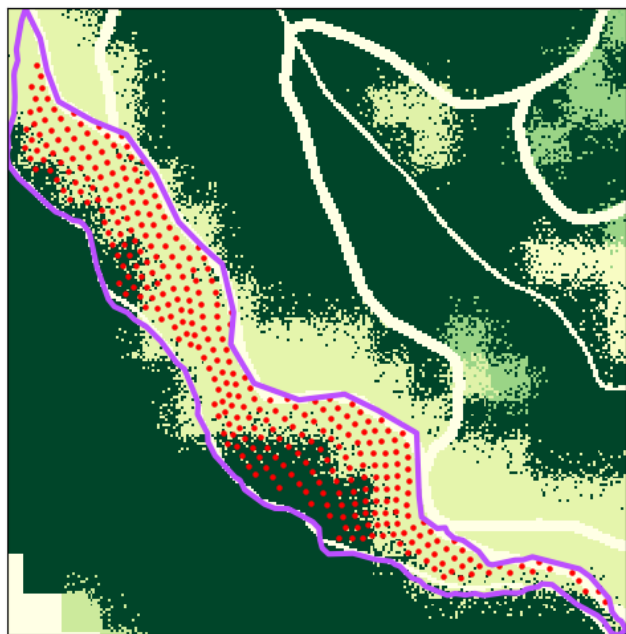
- ☐ USGS_LPC_CA_NoCAL_Wildfires_B5b_201

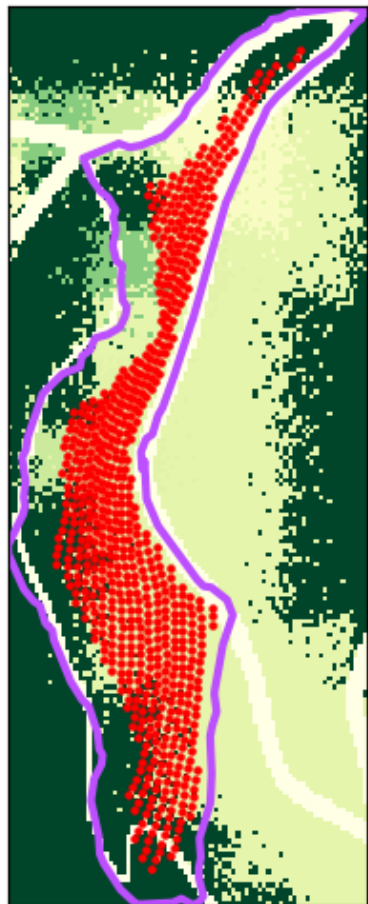
Scene

- ☒ Base













BurnPro3D

FastFuels

3D Fuels for
Fire Models



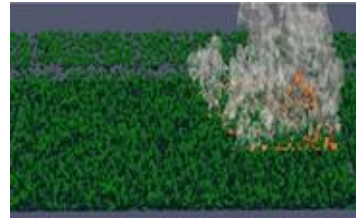
DripTorch

Custom Ignition
Patterns



QUIC-Fire

Prescribed Fire
Simulator



QUIC-Smoke

Smoke Modeling
Tool

Dr. Sara Brambilla,
LANL

Register here for BurnPro3D



4D Fuels Dashboard



Points2Pano Viewer



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Melissa Floca: mfloca@ucsd.edu

Leticia Lee: lxlee@ucsd.edu

Contact info

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Melissa Floca: mfloca@ucsd.edu

Leticia Lee: lxlee@ucsd.edu

Coupled fire and smoke modeling for prescribed fire applications

Sara Brambilla

Los Alamos National Laboratory

April 14, 2026

LA-UR-26-22963

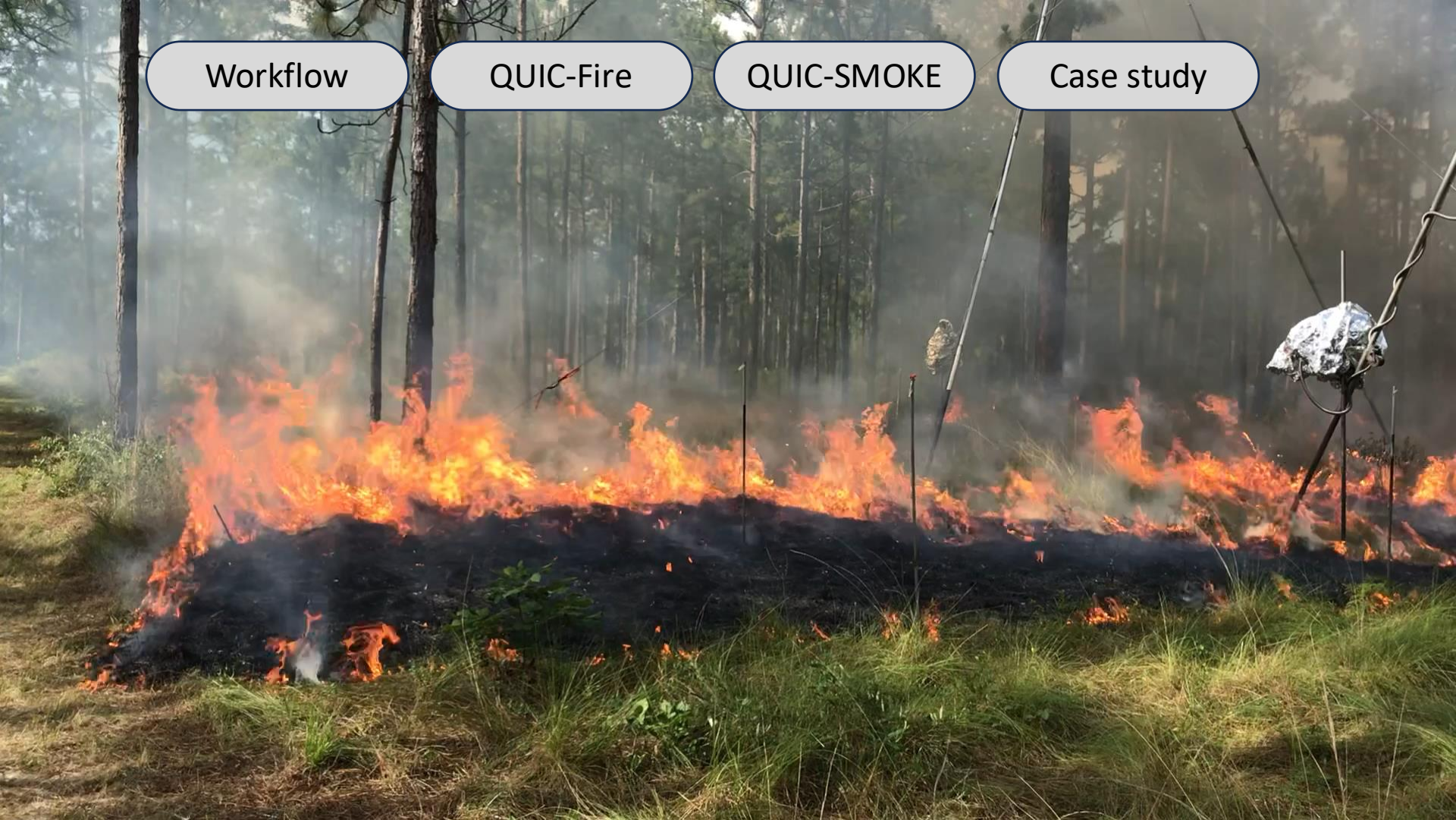


Workflow

QUIC-Fire

QUIC-SMOKE

Case study



THE FIRE ENVIRONMENT

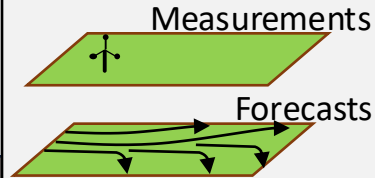
THE PRACTITIONER CHOICE

3D FUELS

Canopy
Surface fuel



3D WEATHER



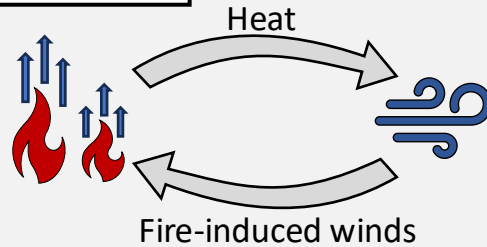
TOPOGRAPHY



IGNITIONS



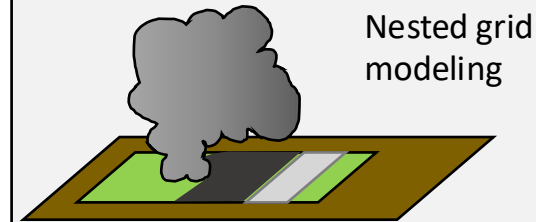
QUIC-FIRE



CO, PM_{2.5}
Water



QUIC-SMOKE



Fire effects

Ecological
objectives

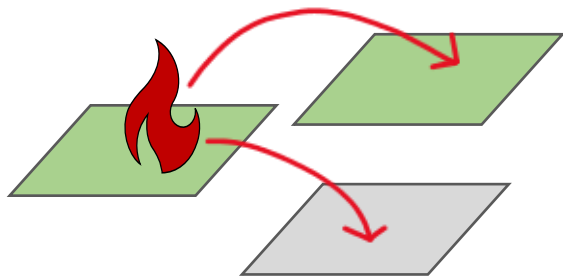
Wildfire
reduction
potential

Smoke effects

Population
exposure

Road
visibility

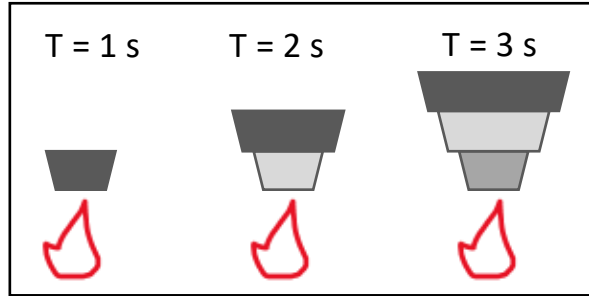
QUIC-Fire in a nutshell



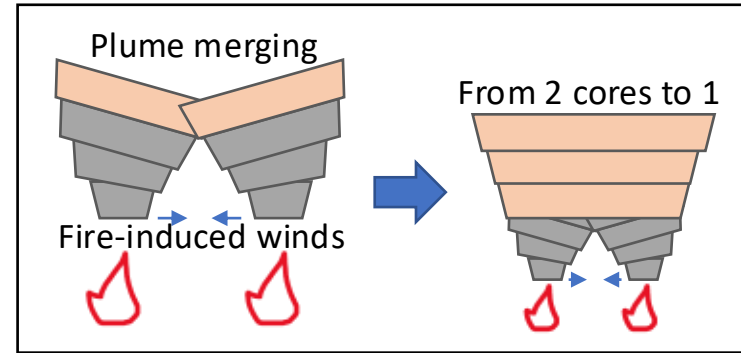
- ❖ Fire can:
 - Evaporate fuel moisture
 - Spread fire within a cell (wind driven + creeping)
 - Spread fire to another cell
- ❖ Complex ignition patterns
- ❖ Can use time and spatially varying winds
- ❖ Background winds are adapted to canopy drag
- ❖ Considers topography effects on winds and fire
- ❖ High-resolution: $Dx = 2-5\text{ m}$, $Dz = 1\text{ m}$, $Dt = 1\text{ s}$
- ❖ Fast-running (on a laptop)

QUIC-Fire in a nutshell

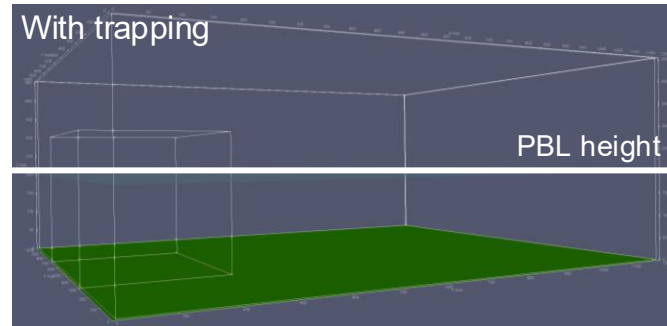
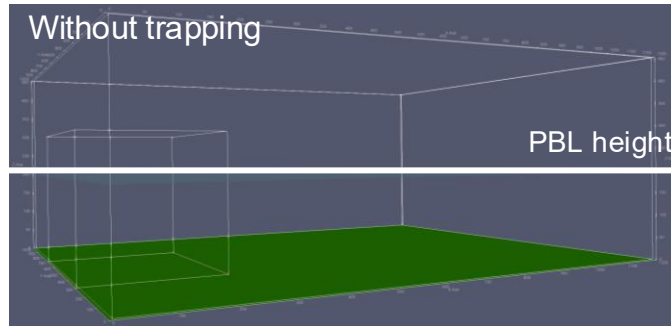
❖ Lagrangian elements for fire updrafts



❖ Effect of multiple fires of smoke

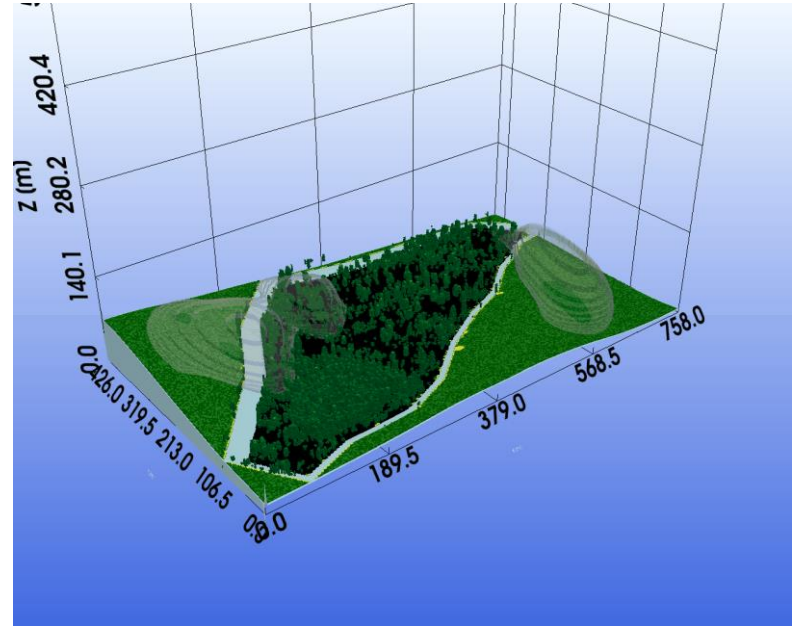


❖ Plume trapping by mixing height inversion



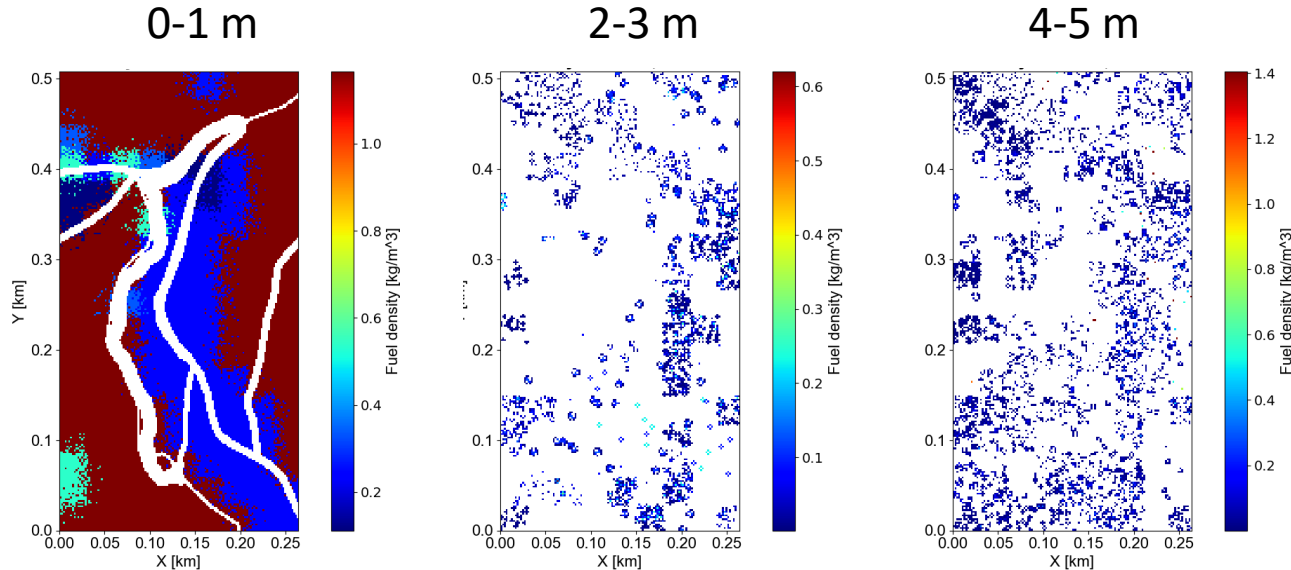
QUIC-SMOKE in a nutshell

- ❖ Lagrangian random walk model
- ❖ Atmospheric and fire-induced turbulence
- ❖ Dispersion of gasses (CO, water) and particulate ($PM_{2.5}$)
- ❖ Gravitational settling for particulate
- ❖ Varying (time and space) winds and emissions from QUIC-Fire
- ❖ Nested domain capability (high-resolution for burn plot, lower out to 100 km)



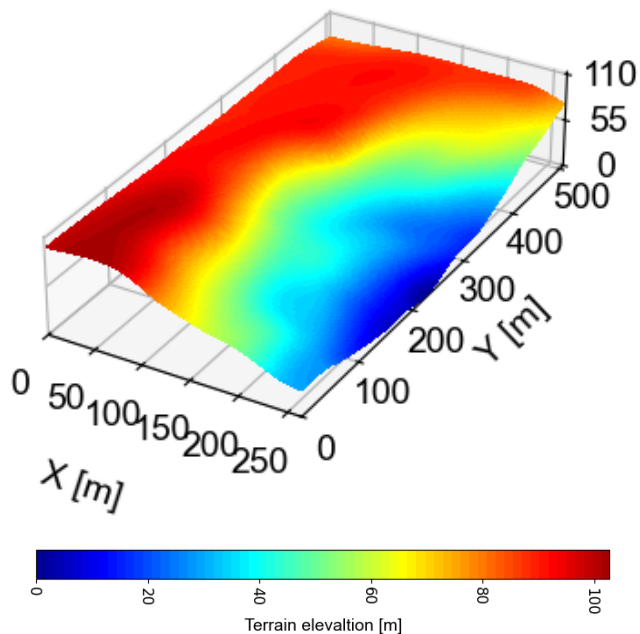
Napa case study: Fuels from USFS FastFuels

Fuel characteristics (density, moisture, drag) changes with space and height

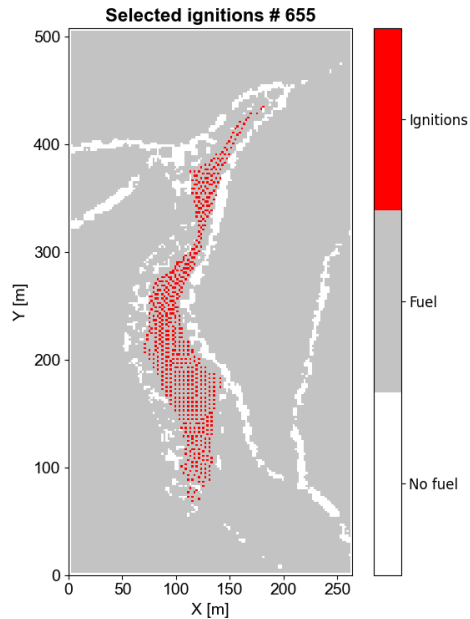


Topography & ignitions

Topography

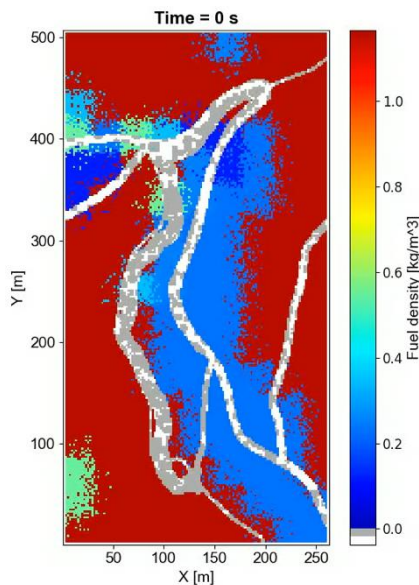


Ignitions

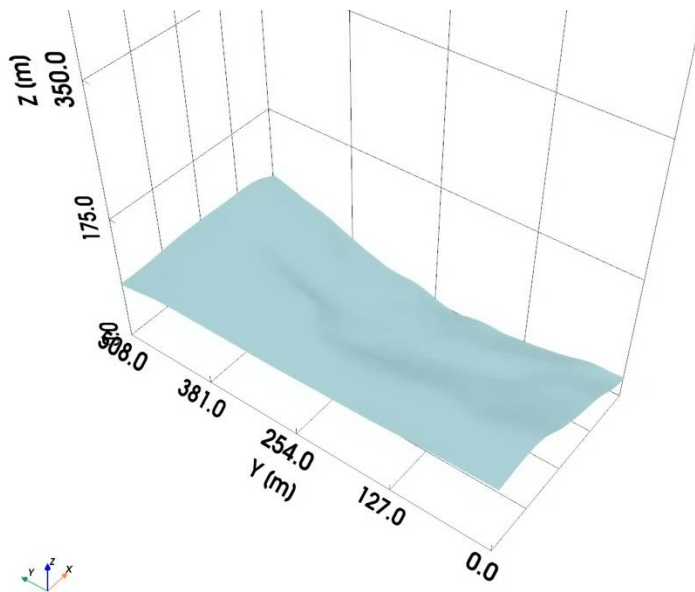


Fuel consumption and updrafts

Fuel density

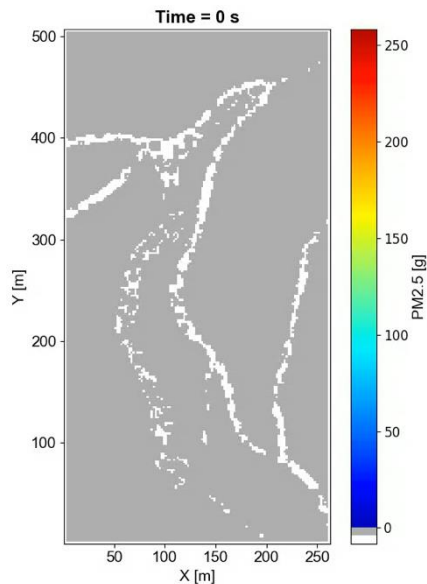


Resolves evolving (space and time) updrafts that modify winds and carry emissions downwind

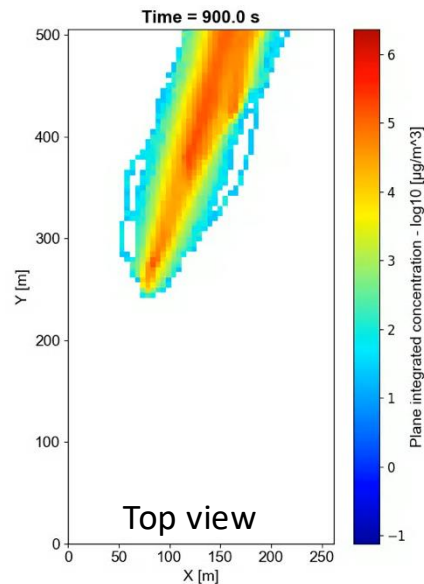
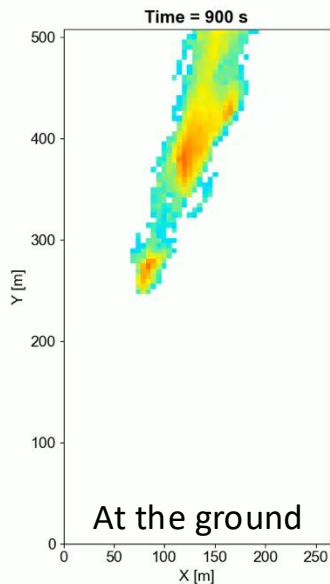


Emissions – PM_{2.5}

Amounts generated



Smoke transport

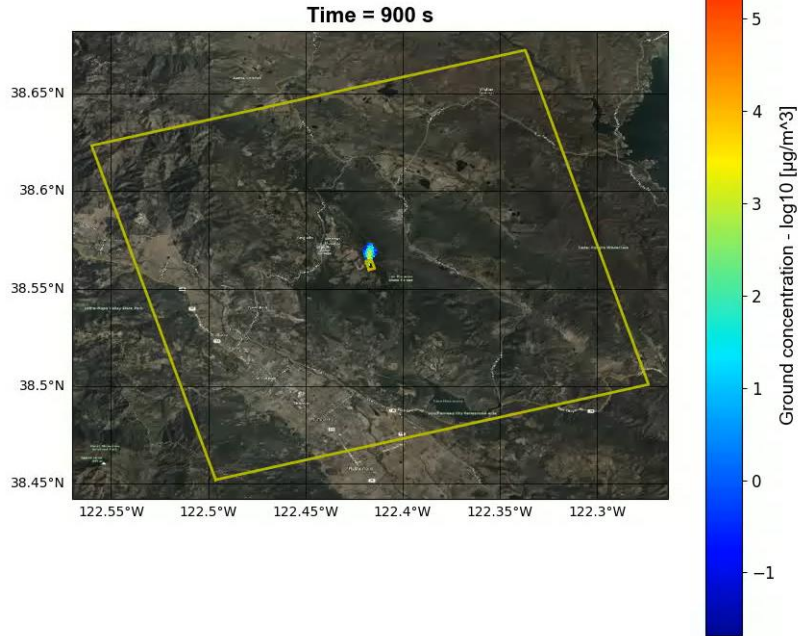


No need to
specify mean
emitted amounts

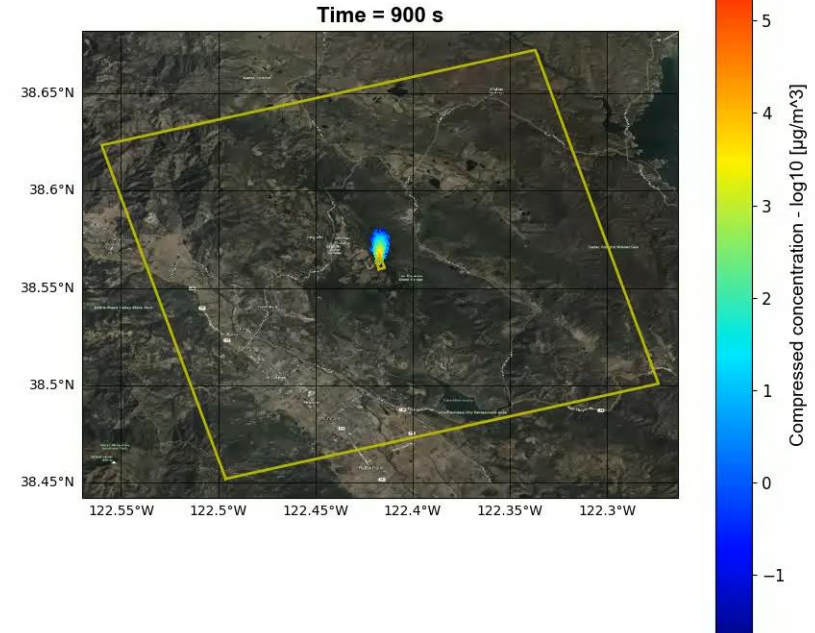
Includes
transients

Smoke dispersion – Outside the burn unit

Ground concentration



Top view

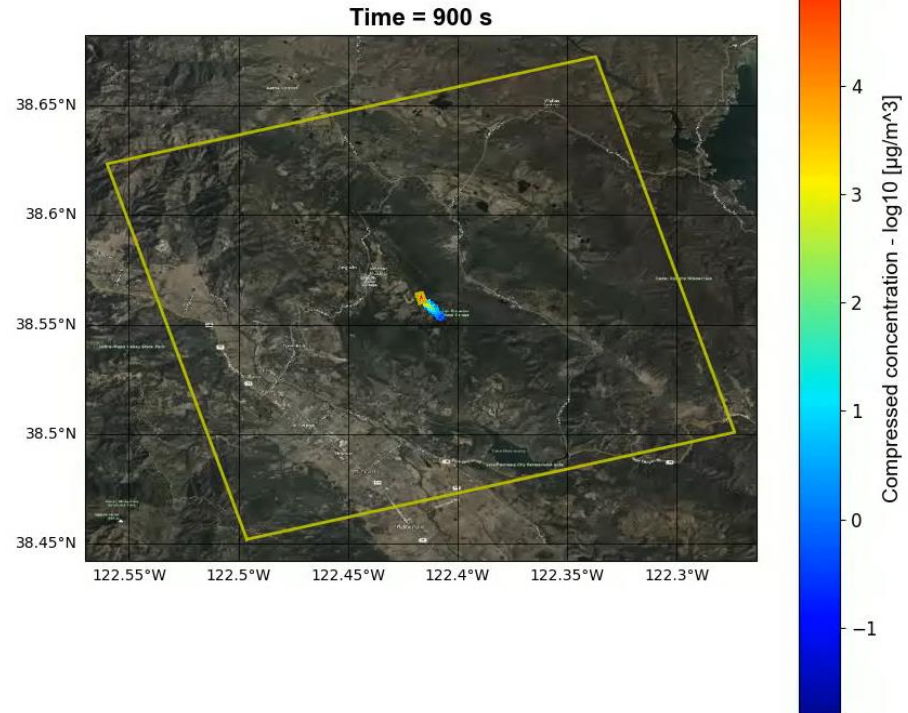


Smoke dispersion with real measurements

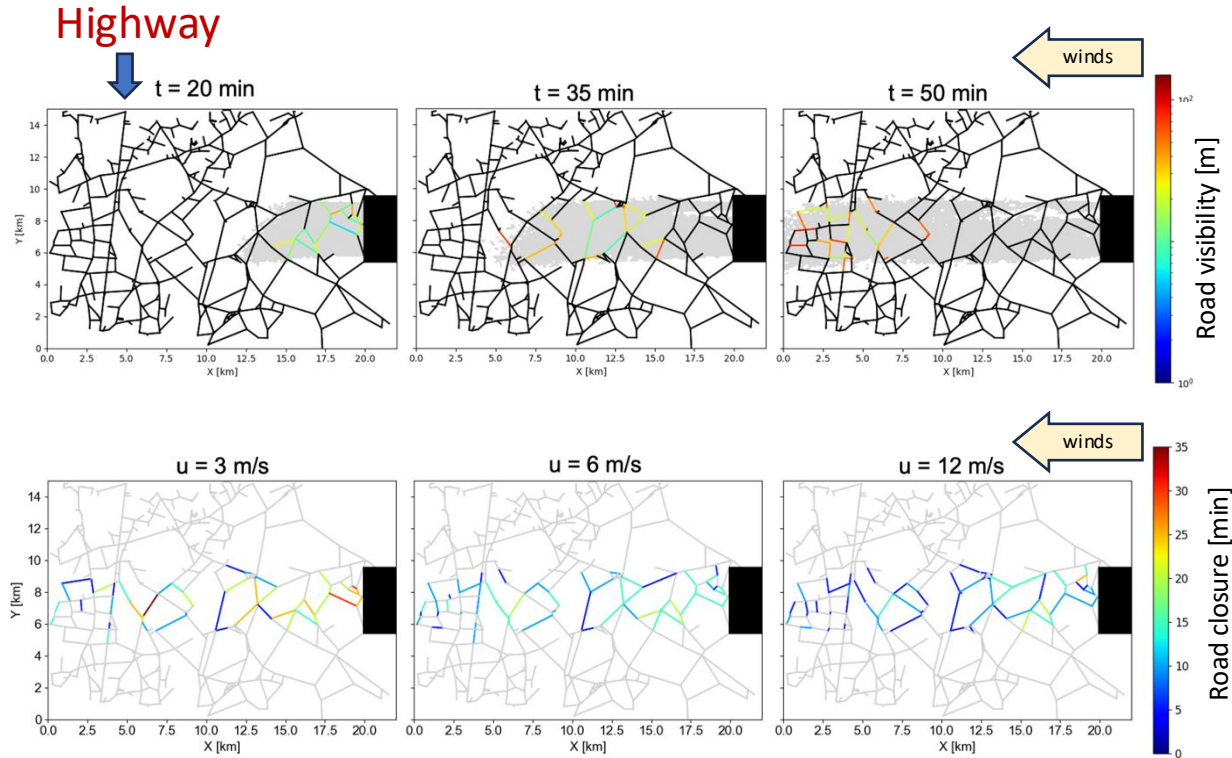
RAWS measurements

Local time	Wind speed	Wind direction
10:00	1.34 m/s	3 deg
11:00	1.79 m/s	46 deg
12:00	1.34 m/s	28 deg
13:00	0.9 m/s	27 deg
14:00	1.34 m/s	51 deg
15:00	0.9 m/s	7 deg

Top view



Application: Road visibility



Changes in visibility with time to determine if and when dangerous conditions are created

Persistence of hazardous conditions as function of wind speed



Thank you for your attention



Sara Brambilla
sbrambilla@lanl.gov

Coffee & Networking

2:20-2:40 PM

CLOSING DISCUSSION:

Reflections & Pathways Forward



Moderated by:
Rex Stults
Vice President
of Industry
Relations, Napa
Valley Vintners



Joe Nordlinger
CEO, Napa
Firewise



Ryan Isham
Deputy Chief of
Community Risk
Reduction, CAL FIRE
LNU



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CLOSING REMARKS



Chief Matt Ryan

CAL FIRE Sonoma-Lake-Napa – Unit Chief
Napa County Fire Department – Fire Chief



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