CoreLogic®

OASIS LOSS MODELLING FRAMEWORK

Approaches to Modelling Wildfire Risk

3 May 2023

Agenda

Complexities surrounding wildfire

Wildfire risk management solutions

US Wildfire CAT Model

Exploring Sonoma and Napa County

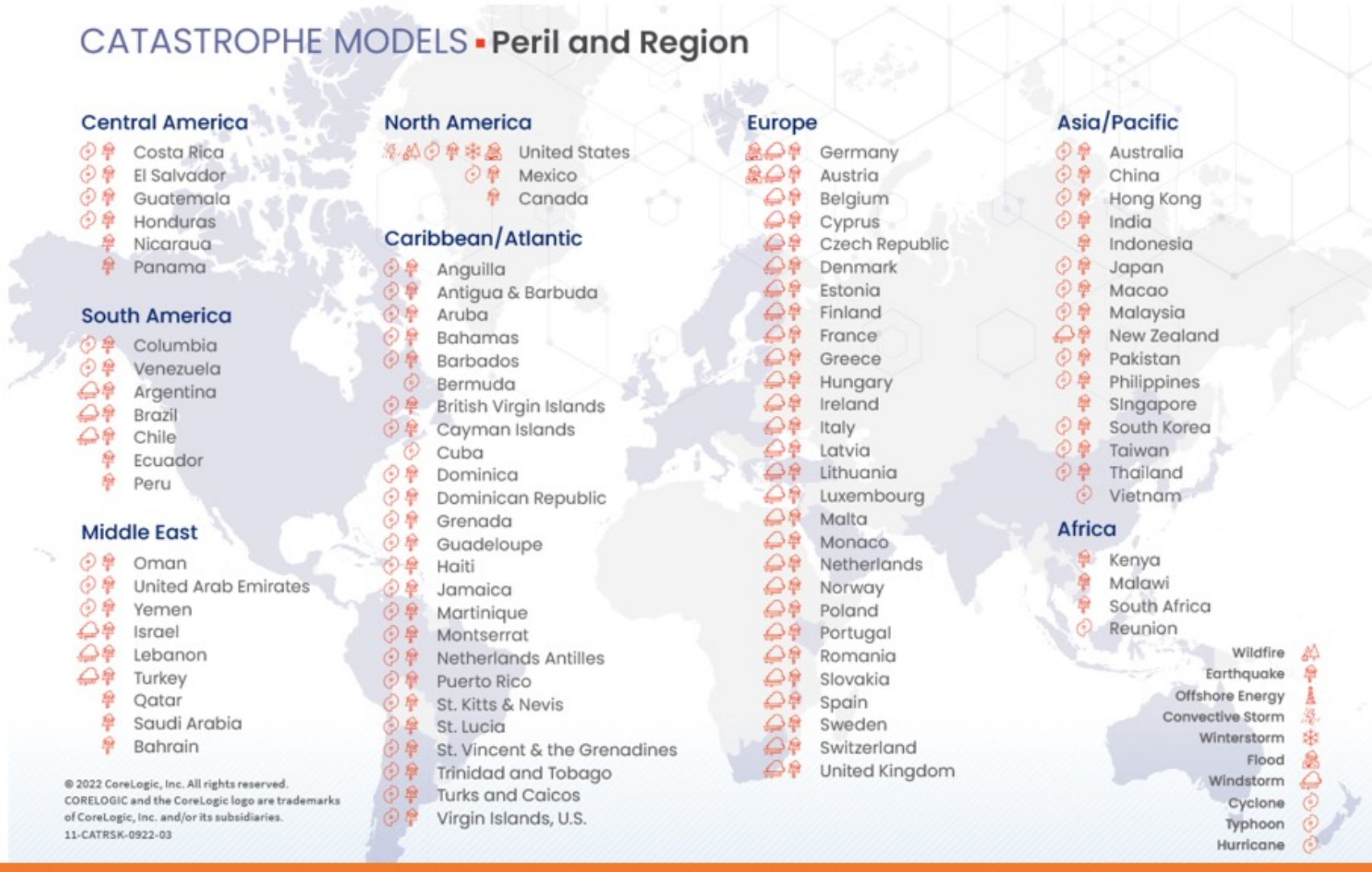
Q&A

The Future of CAT Risk is Here

CoreLogic catastrophe models incorporate the latest scientific research, deep engineering knowledge, and a breadth of claims and exposure data to product a unique and innovative view of global catastrophe risk.

6 Continents
96+ Territories
180+ Models

CATASTROPHE MODELS ▪ Peril and Region



Central America
- Costa Rica
- El Salvador
- Guatemala
- Honduras
- Nicaraua
- Panama

South America
- Columbia
- Venezuela
- Argentina
- Brazil
- Chile
- Ecuador
- Peru

Middle East
- Oman
- United Arab Emirates
- Yemen
- Israel
- Lebanon
- Turkey
- Qatar
- Saudi Arabia
- Bahrain

North America
- United States
- Mexico
- Canada

Caribbean/Atlantic
- Anguilla
- Antigua & Barbuda
- Aruba
- Bahamas
- Barbados
- Bermuda
- British Virgin Islands
- Cayman Islands
- Cuba
- Dominica
- Dominican Republic
- Grenada
- Guadeloupe
- Haiti
- Jamaica
- Martinique
- Montserrat
- Netherlands Antilles
- Puerto Rico
- St. Kitts & Nevis
- St. Lucia
- St. Vincent & the Grenadines
- Trinidad and Tobago
- Turks and Caicos
- Virgin Islands, U.S.

Europe
- Germany
- Austria
- Belgium
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Greece
- Hungary
- Ireland
- Italy
- Latvia
- Lithuania
- Luxembourg
- Malta
- Monaco
- Netherlands
- Norway
- Poland
- Portugal
- Romania
- Slovakia
- Spain
- Sweden
- Switzerland
- United Kingdom

Asia/Pacific
- Australia
- China
- Hong Kong
- India
- Indonesia
- Japan
- Macao
- Malaysia
- New Zealand
- Pakistan
- Philippines
- Singapore
- South Korea
- Taiwan
- Thailand
- Vietnam

Africa
- Kenya
- Malawi
- South Africa
- Reunion

Wildfire
Earthquake
Offshore Energy
Convective Storm
Winterstorm
Flood
Windstorm
Cyclone
Typhoon
Hurricane

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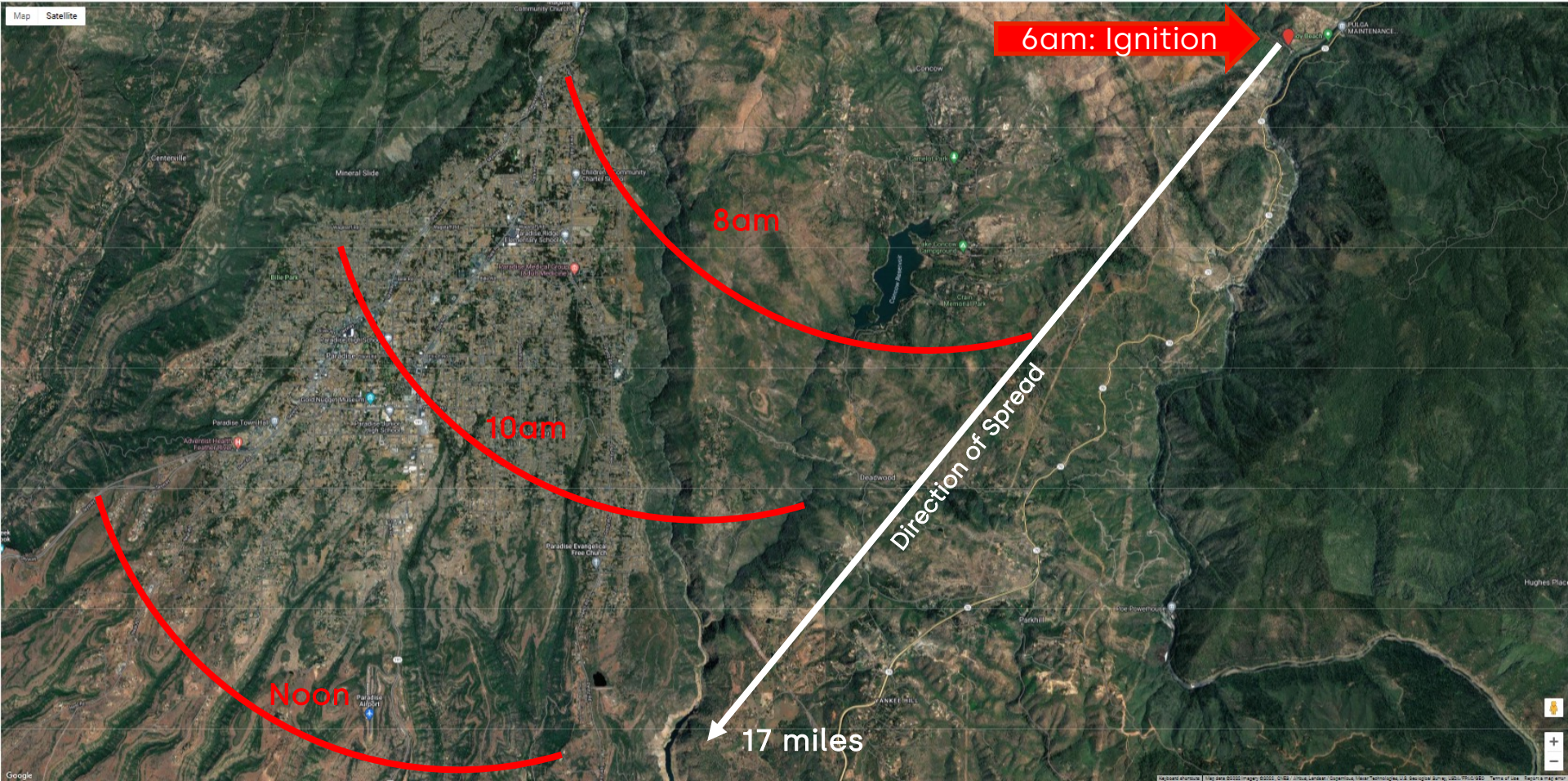
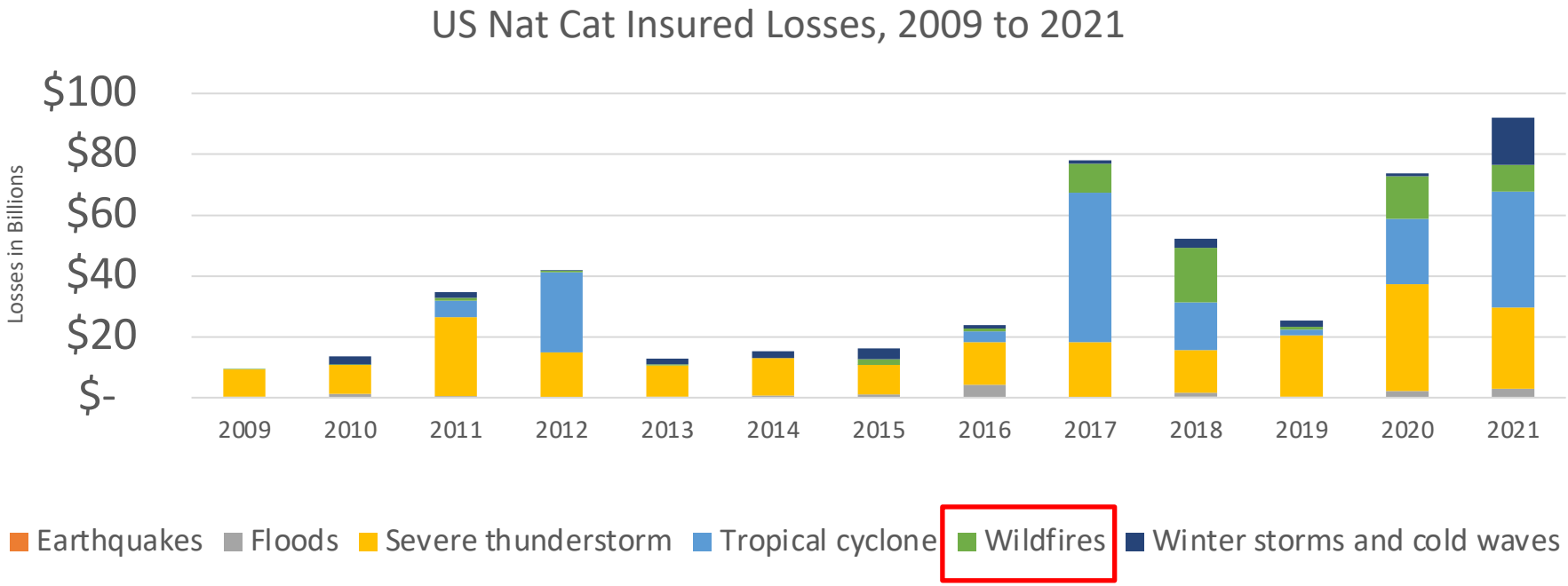
Fire progression, path, and spread

Wildfire: Is Different

Camp Fire – Paradise, CA Nov 8, 2018



Wildfire Losses Now Top 3



Aligning with CAT Risk

CoreLogic Wildfire Solution Suite

Wildfire Risk Score

Assessing the hazard only at a 30x30m grid

Fuel

Type and density cause variability in intensity and rate of wildfire spread

Distance to Wildland

Large open expanses of undeveloped land can contribute to fire intensity and spread, especially in regards to ember propagation

Slope

Steep slopes can accelerate fire spread and contribute to a higher intensity burn

Aspect

South-facing slopes are drier and warmer. Wildfires can ignite and spread more easily

Firebreaks

The density of development reduces likelihood of wildfire encroachment due to a lack of viable fuels in areas of dense urban development

Surface Composition

Areas that have burned previously can burn again. This factor functions to estimate burn history and frequency

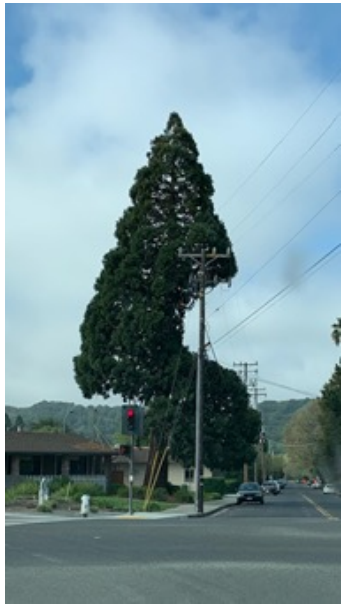
Wind

Wind contributes to fire intensity and ember spread that cause more ignitions and outpace suppression

Drought

Drought contributes to both the dead fuel load and dries out live fuels making them more susceptible to fire

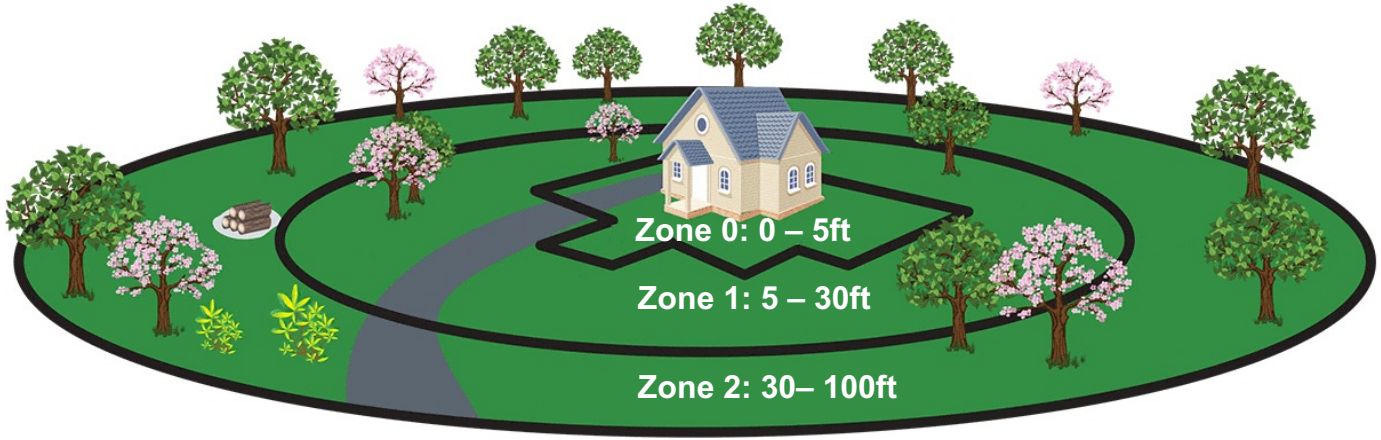
Mitigation Matters – Slow Fire Progression



Community level

Mitigation factors and their basis in research

- Zone 0: nothing flammable
- Zone 1: Lean, Clean, & Green
- Zone 2: Reduced Fuel Zone



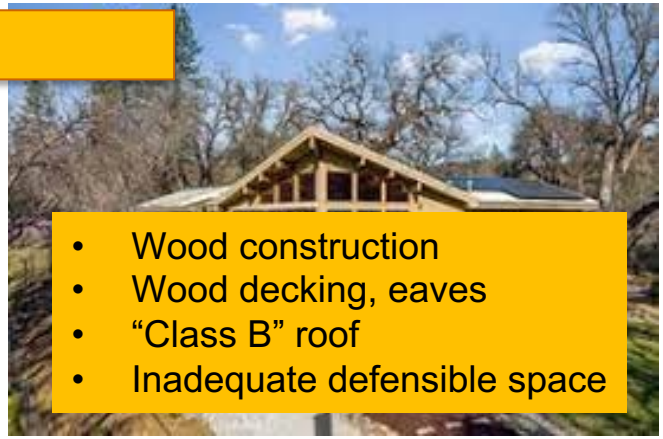
California Gold County – In the WUI

Wildfire Risk = High

California Gold County – In the WUI

Wildfire Risk = High

- Concrete and steel
- No combustible attachments
- “Class A” roof
- Defensible space



- Wood construction
- Wood decking, eaves
- “Class B” roof
- Inadequate defensible space

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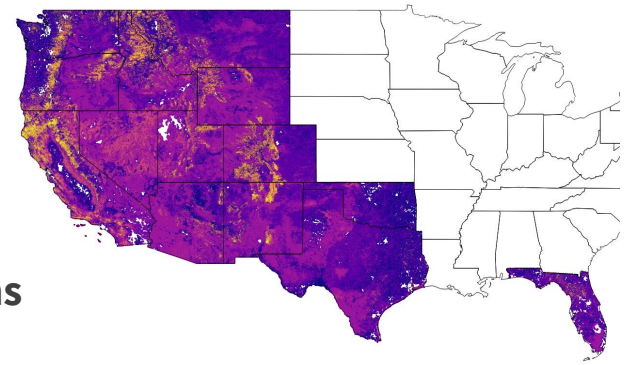
US Wildfire CAT Model

US Wildfire Model

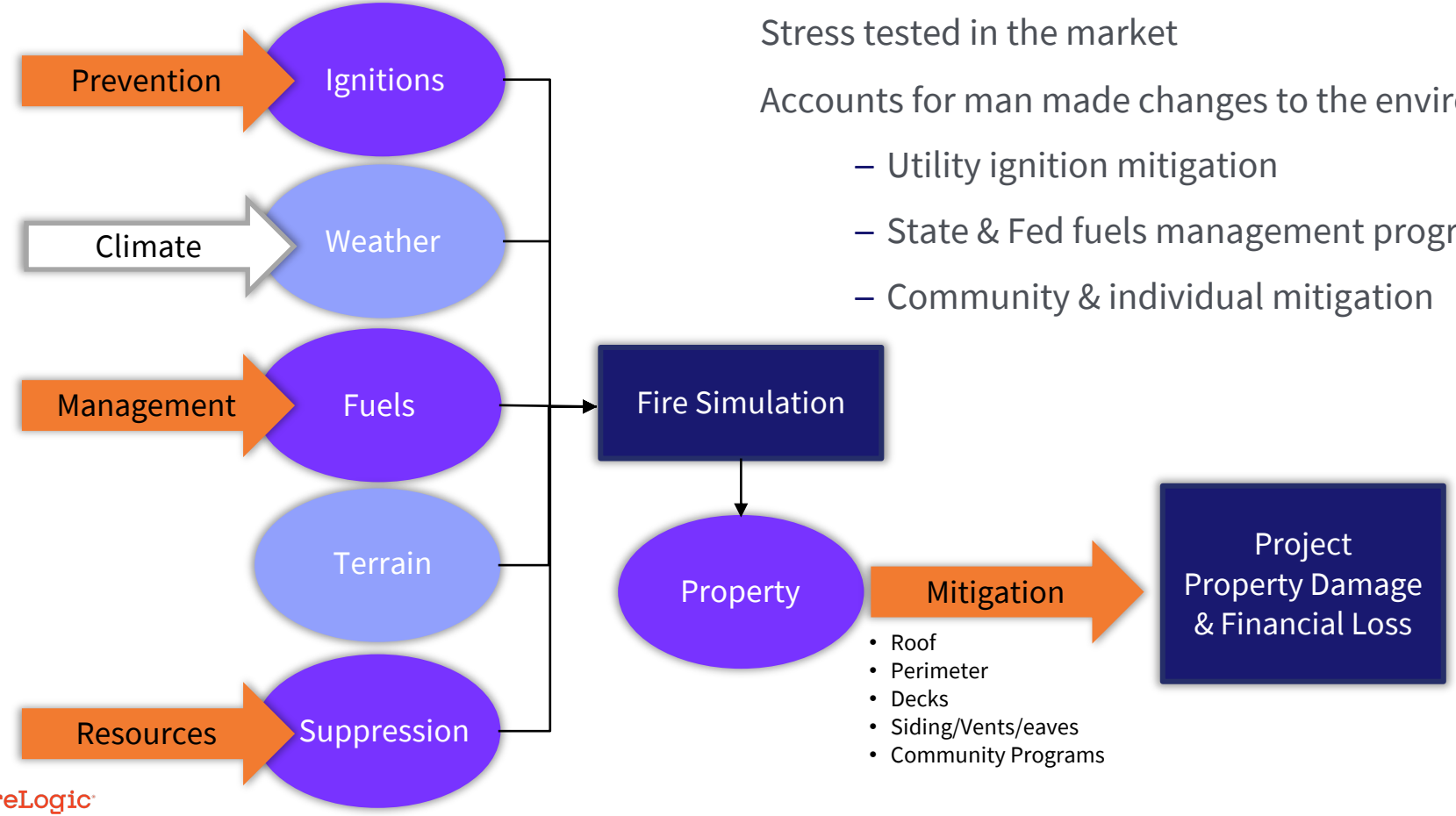
Industry-leading tool for managing wildfire risk in high-risk states

- Simulation-based spread model at **30-meter resolution**
- Includes **urban conflagration** modeling
- Distinct modeling for **fire and smoke**
- Integrates **surface and crown fire** spread
- Weather simulation captures **variability and extremes**
- **Long-term, low and high** views of risk
- Vulnerability parameters defined per **IBHS recommendations**
- Covers **14 states**: Western US + TX, OK, FL



Residential properties that are at High or Very High Risk

CoreLogic US Wildfire Probabilistic Model

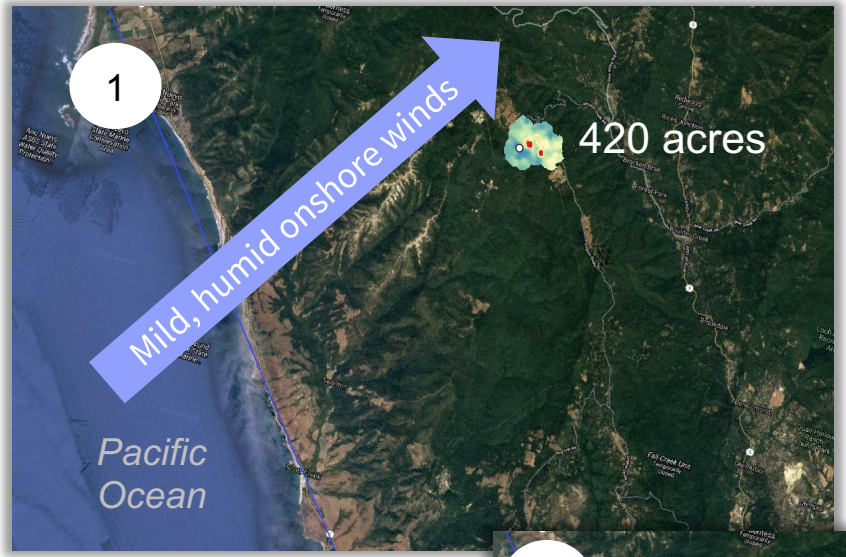


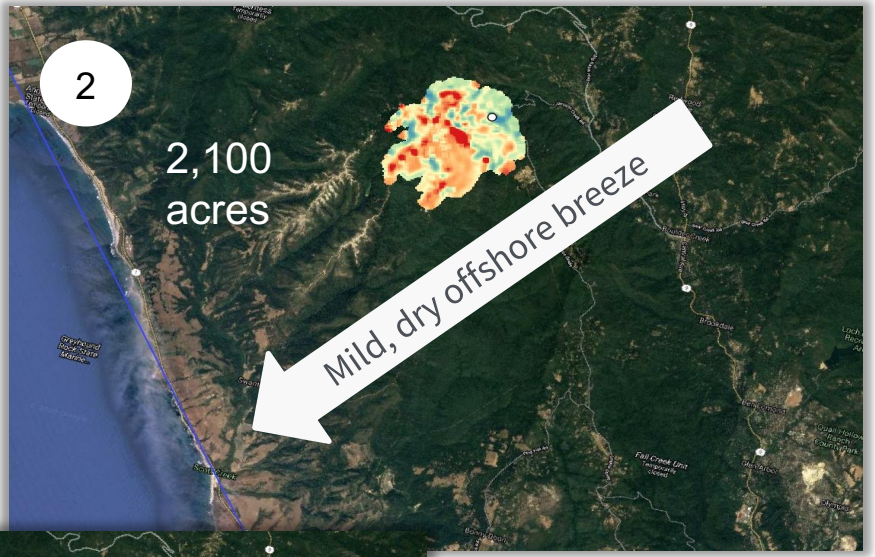
Stress tested in the market

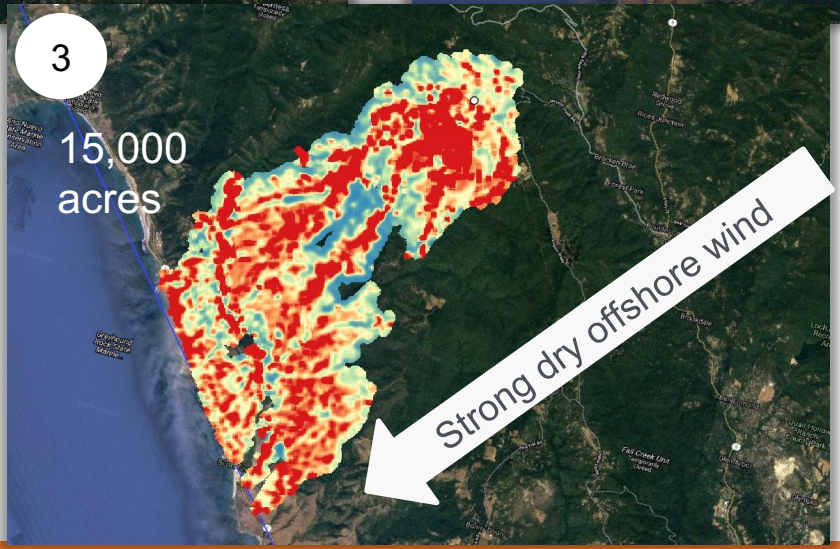
Accounts for man made changes to the environment

- Utility ignition mitigation
- State & Fed fuels management programs
- Community & individual mitigation

The Core of Probabilistic Models are the Simulations







Weather is an Influence

Fire Intensity

High

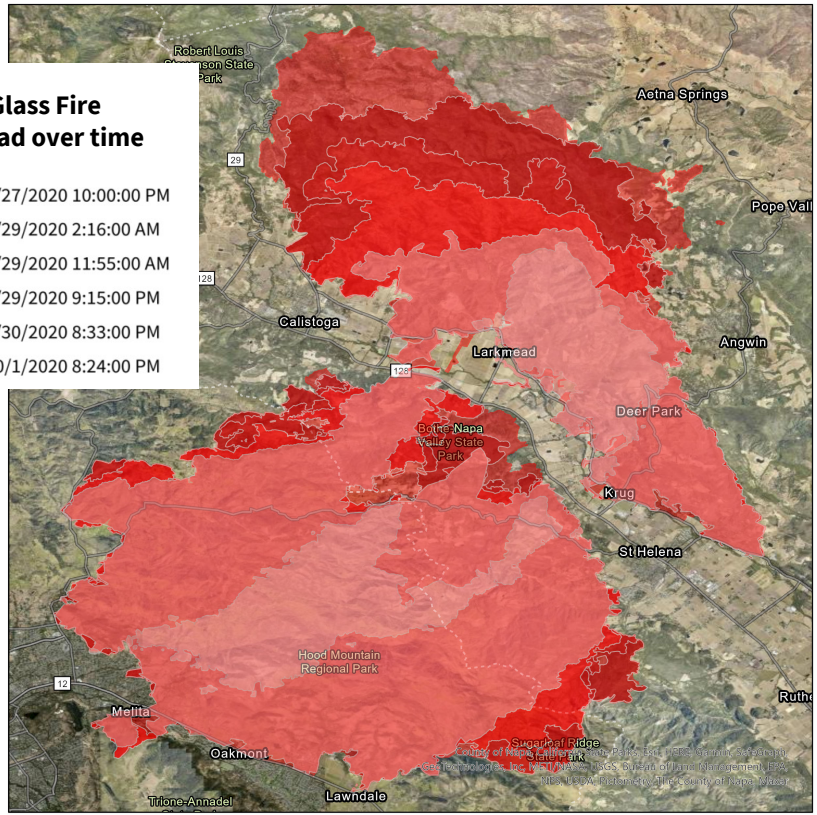
Low

Exploring Sonoma and Napa Valley

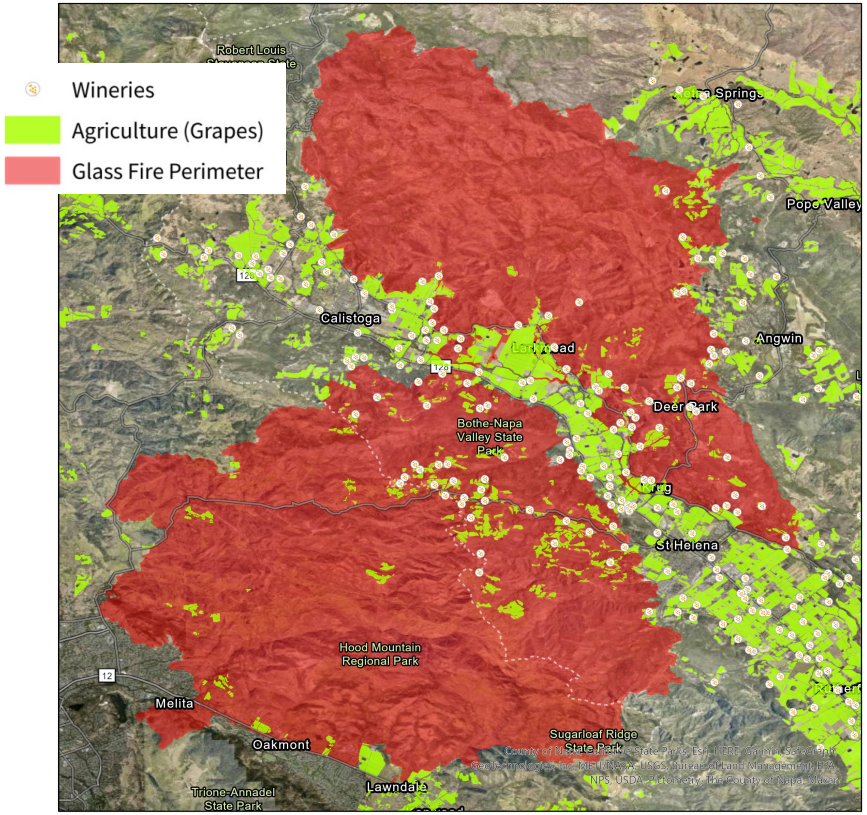
The Glass Fire

The Glass Fire

Progression

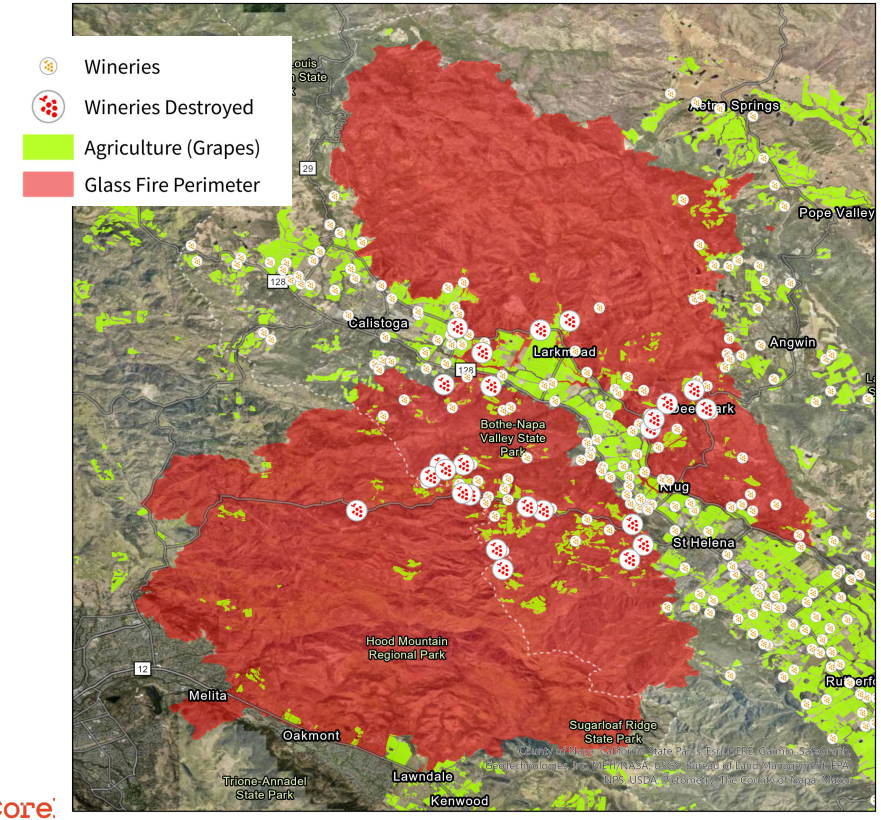


Wineries within Glass Fire

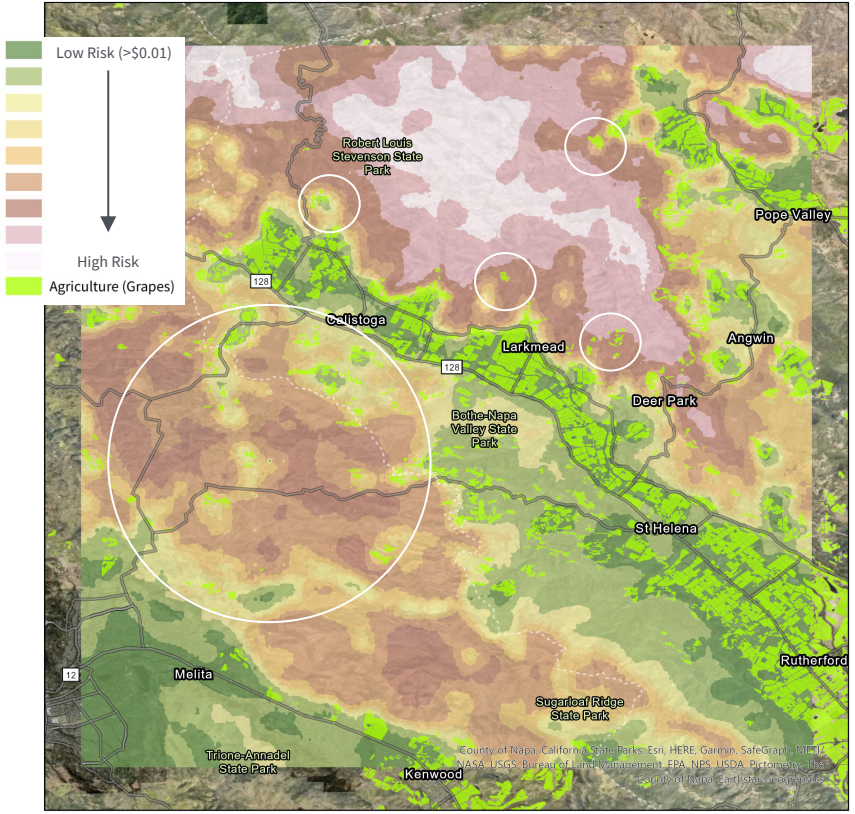


Model Fidelity

Wineries Destroyed



AAL – Fire Only



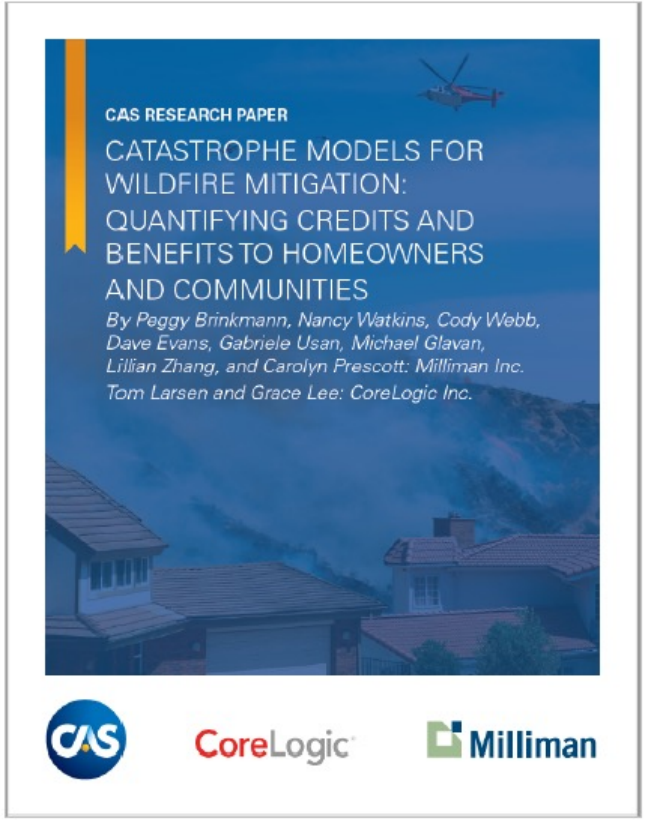
Making Models Work

Casualty Actuarial Society Research Paper

2 rate-making studies:

- Mitigation credits for as-is regional fuels
- Mitigation credits for mitigated fuels
- Fully mitigated *could* reduce rates ~35%
    - Much of this is already in-place
- De-risking (eliminating ladder-fuels in forested areas)
    - Additional 35% drop

- https://www.casact.org/publications-research/publications/cas-research-papers-and-briefs



Coming 2024

Oasis / CoreLogic Integration

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Thank you