

Energy Management Stakeholder Ideation Workshop: Electric Grid Operation/Smart Grid



SDG&E's Service Territory



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- San Diego and South Orange Counties
 - Coastal, mountain, valley, and desert terrains
 - 4,100 square miles
- 1.4 million electric meters
- 870,000 electric gas meters
- 4,890 MW peak load
- 166 electric substations
- Awarded PA Consulting Group's ReliabilityOne "Best in the West" **ten years running**

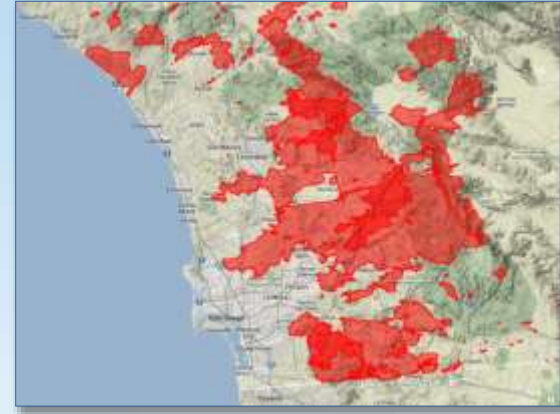


Identifying Risk: Wildfire Activity



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KEY SAN DIEGO FIRE EVENTS 2000 - PRESENT



| | 2003 (Cedar Fire) | 2007 (Major Fires) | 2014 (Major Fires) |
|--|--|--|--|
| Acres Burned | 280,278 | 368,566 | 26,000+ |
| Residential structures lost | 2,232 | 1331 | 65 |
| Electric Facilities Damaged or Destroyed | 3423 | 2,882 | 135 |
| Vehicles destroyed | 148 | 239 | Unknown |
| Deaths | 14 | 7 | 1 |
| Injuries | 104 | 127 | Unknown |
| | 4 Ignitions: <u>No SDG&E overhead lines implicated</u> | Some wildfires attributed to <u>SDG&E overhead lines</u> | 8 Ignitions: <u>No SDG&E overhead lines implicated</u> |

Meteorology: Resources



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SDG&E Weather Stations



State-of-the-art Forecasting



**Collaboration with
SDG&E Fire Coordination and outside weather
agencies, scientific community**

**These resources have been leveraged to develop
situational awareness/intelligence products**



**Two
Computing Clusters**

Risk Mitigation Tools: Fire Potential Index



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$$\text{Fire Potential Index} = \text{Weather} + \text{Fuels}$$



Weather



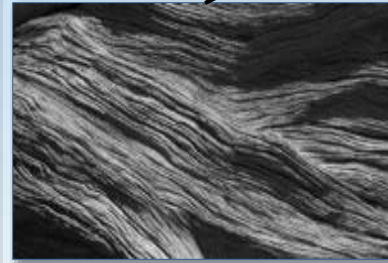
Model Output Statistics



Grasses



NDVI Satellite Data



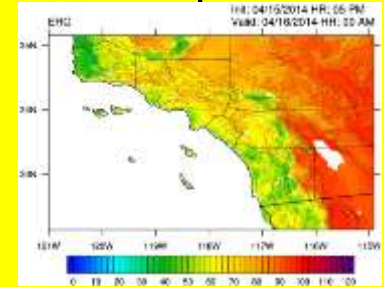
Dead Fuel



WRF Model



Live Fuel



Fuel Sampling Program

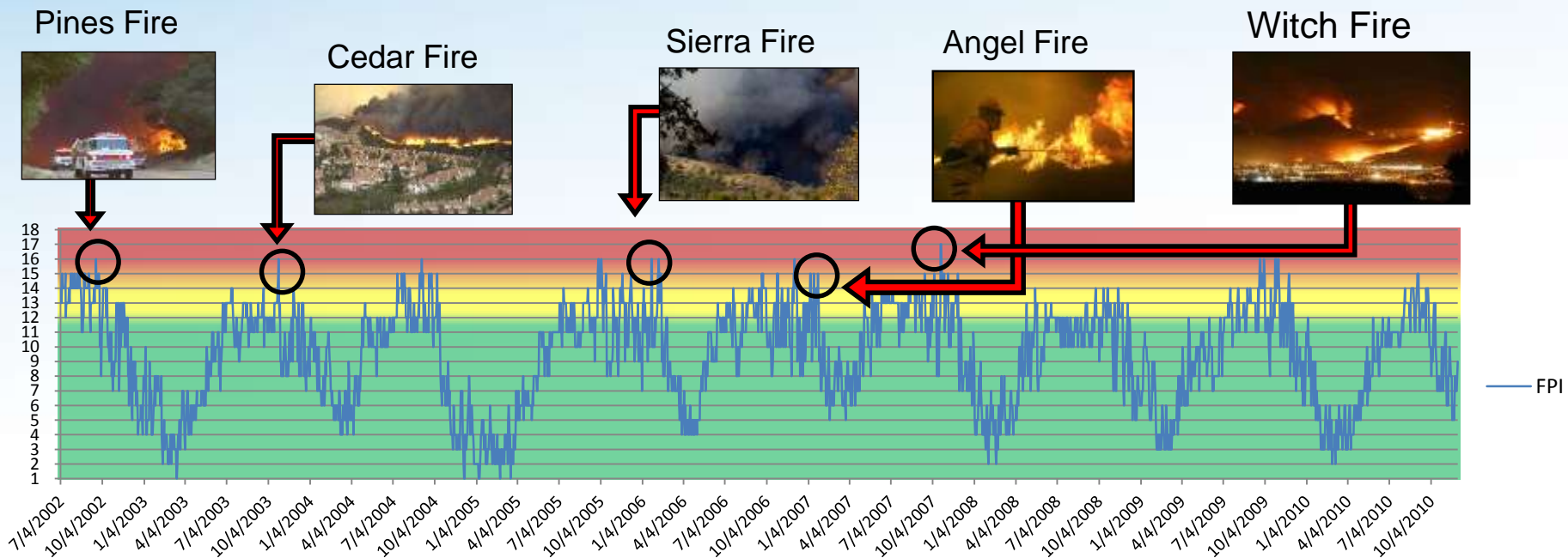
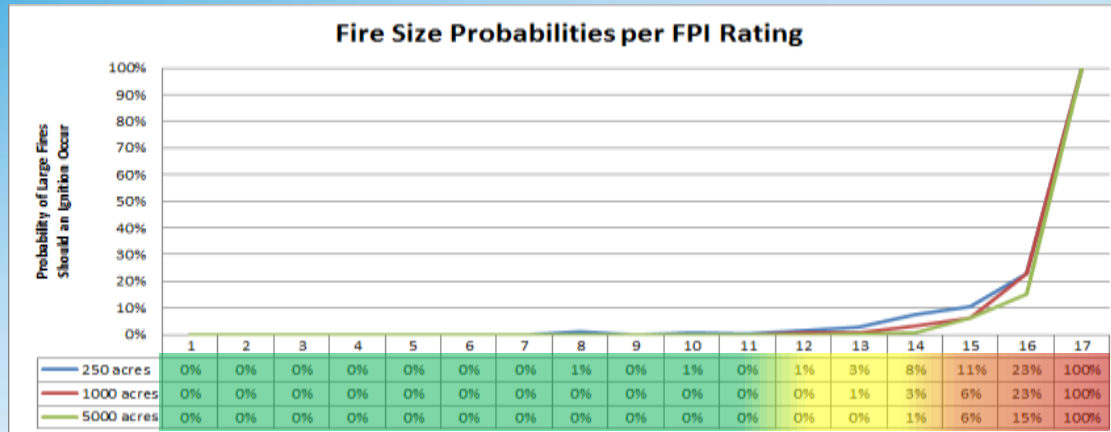
Accessed through vendor

Downloaded from NLDAS

Fire Potential Index: Verification



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Archived data has been very valuable

Santa Ana Wildfire Threat Index (SAWTI)

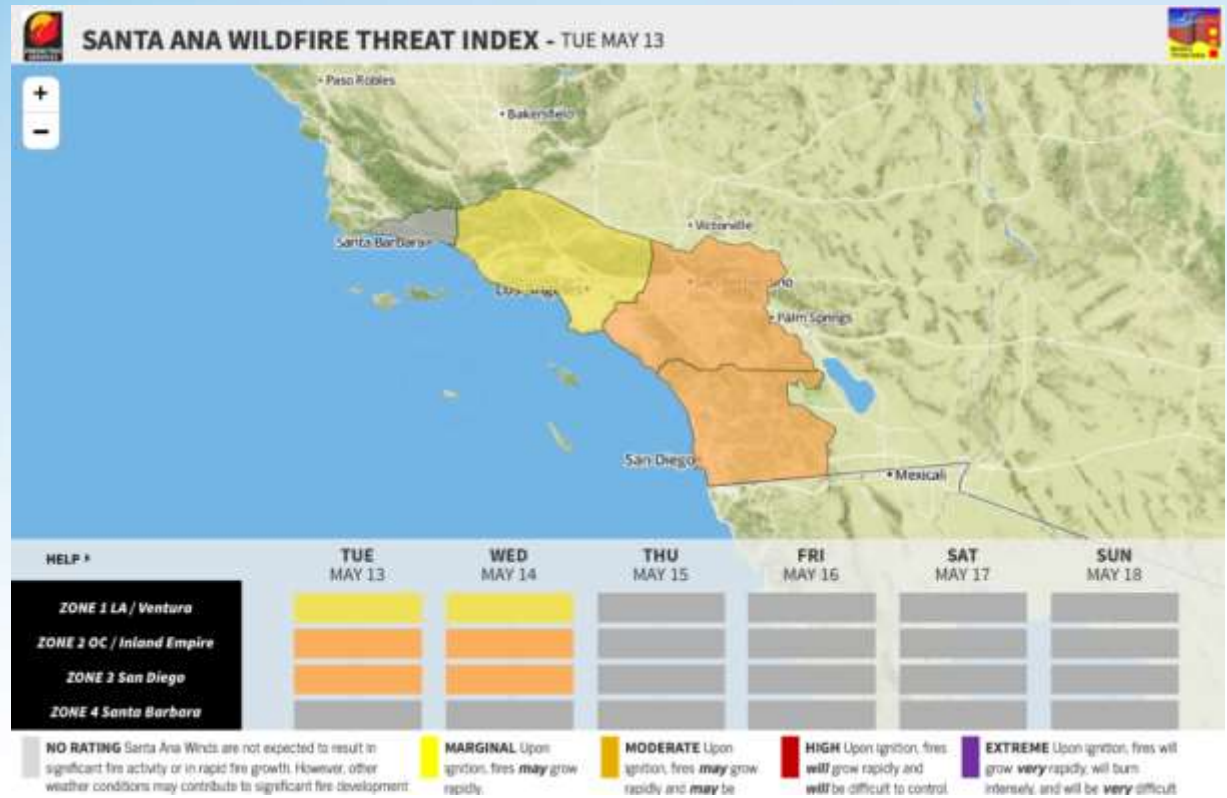


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Our Mission: Develop a tool to mitigate risks associated with extreme fire potential during Santa Ana Winds.



We drove this multi-agency collaborative effort to provide a decision support tool to fire agencies and the general public, increasing public safety and overall preparedness.



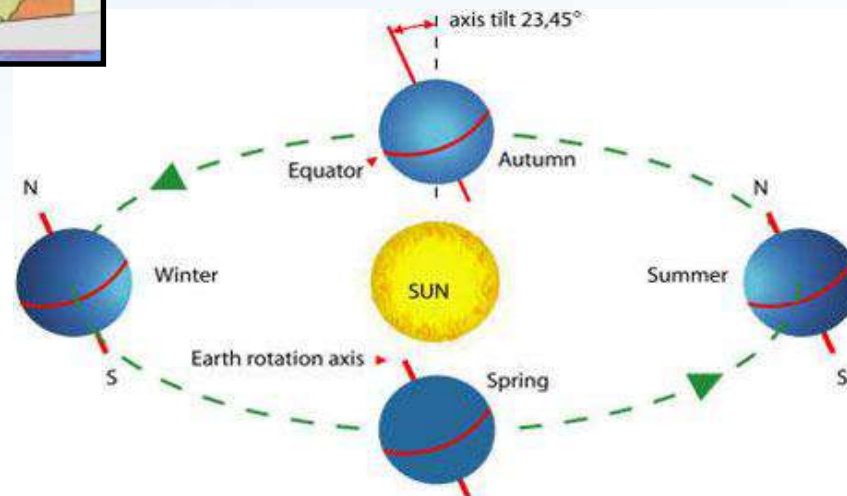
California Solar Initiative and EPIC Funded



Solar Potential Index (SPI):

The forecast amount of solar irradiance averaged across our forecast zones; given as a fraction of the peak solar irradiance at solar noon on the summer solstice under clear sky conditions.

GEOS-R Opportunity: Satellite based cloud tracking.

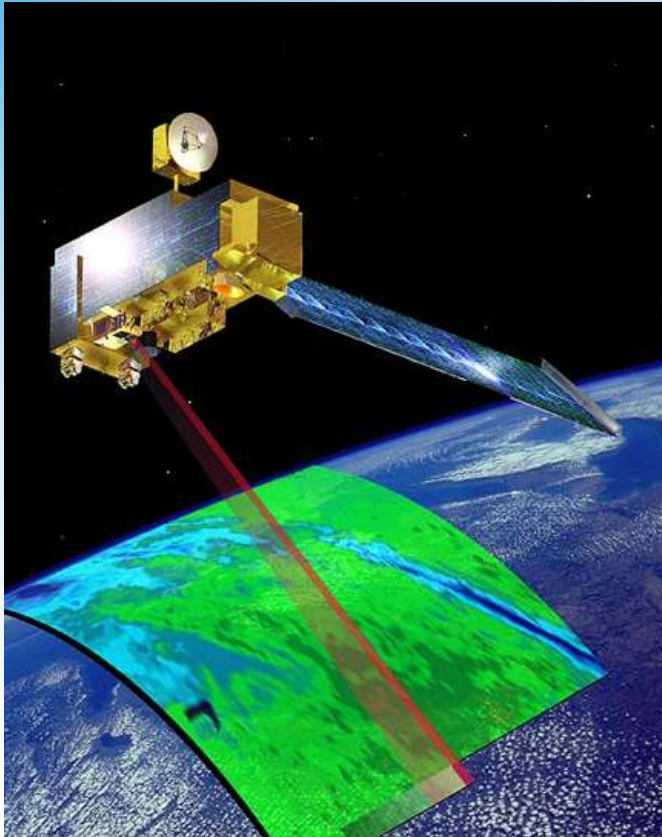


Current Operational Sources of Earth Observations

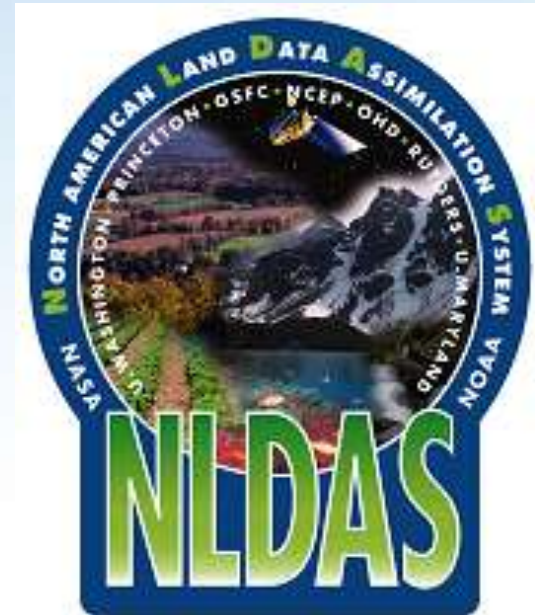


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Daily NDVI data are integrated into Fire Potential Models



Multiple variables for assessing vegetation moisture content



We are leveraging vendors and research partners to accessing the data...the needed data scientists are not currently part of our utility work-force

Thank You!

Questions?



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