

Fireweather Surveillance and Risk Reduction

Wind, temperature and humidity are fundamental Fireweather parameters. Continuous surveillance of these parameters with mobile wind and thermodynamic profilers can improve fire suppression operations and reduce risk. A mobile wind and thermodynamic profiler deployed by San Diego Gas & Electric (SDG&E) for Fireweather risk mitigation is shown in Figure 1; details of its use are summarized in Figures 2 and 3.



Figure 1. One of two mobile Fireweather profilers deployed by SDG&E.¹

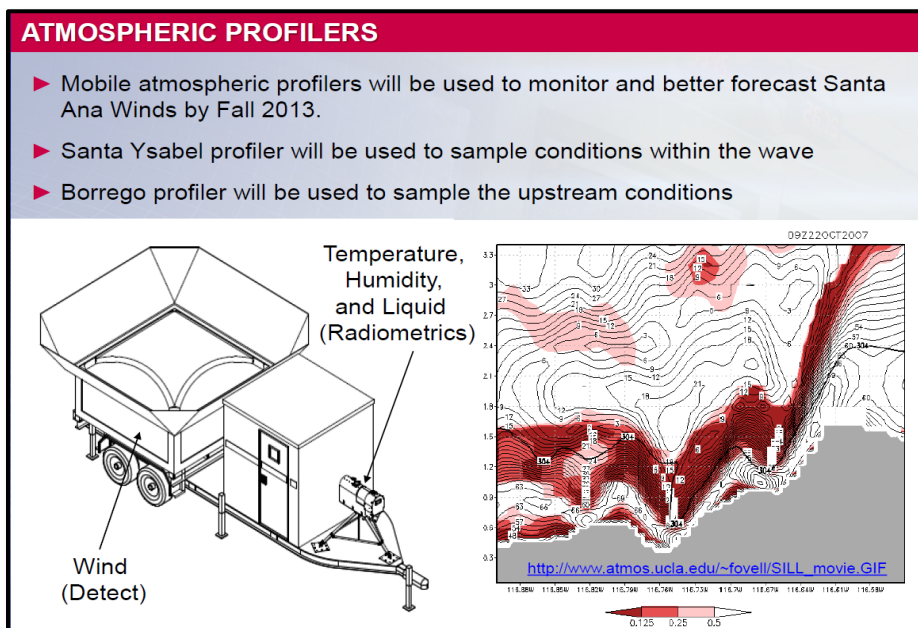


Figure 2. SDG&E high resolution forecasting using mobile profile observations.¹

¹ San Diego Gas & Electric, 2013.

Hi-Res Modeling using WRF

Hardware:

- PSSC Labs PowerWulf Vortex Cluster
- 344 total processor cores (320 Compute Cores / 640 Threads based on the Intel E5-2690), 1,408GB System RAM 1,280GB RAM for Compute Nodes) and 28TB Accessible 6Gbps RAID Storage, 28TB Accessible 6Gbps Backup RAID Storage

Weather modeling is being done in collaboration with UCSD, UCLA, Multiple Fire Agencies and the National Weather Service

Using WRF fluid dynamics calculations to generate forecasts of:

- Wind Speed
- Temperature
- Humidity
- Cloud Cover
- Solar Radiation
- And many more...

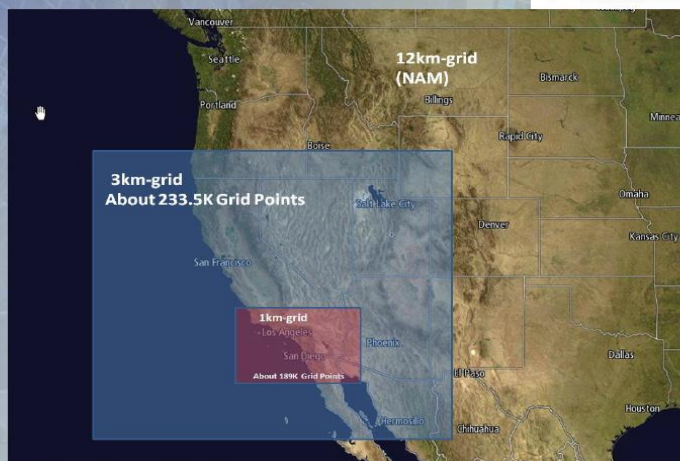


Figure 3. SDG&E high resolution Fireweather forecasting.¹

California State University (CSU) operates a mobile wind and thermodynamic profiler for Fireweather research and support operations (Figures 4 and 5).



Figure 4. CSU mobile wind and thermodynamic profiler for Fireweather research and support.²

² Clements and Oliphant, 2014.



Figure 5. CSU mobile profiler support for the 2017 Yosemite fire.

The University of Alabama at Huntsville developed and operates mobile integrated profiling systems (MIPS)³ for local high impact weather research (Figure 6).



Figure 6. MIPS includes sodar, wind radar and thermodynamic profilers.

³ Knupp et al, 2009; [University of Alabama at Huntsville, Mobile Integrated Profiling System.](#)

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