Fire Weather Research to Application

NOAA Data Used for Coupled Fire Weather/Fire Behavior Model

Atmospheric Forecast Data

NOAA: 3 km HRRR CONUS forecast

NPP VIIRS

Active fire detection

NOWI live fuel moisture

Downscaled Modeling

NOAA Fire Weather
900 km (domain) ~8 km (grid cell)
1 km (domain)

NIST Fire Behavior (WFDS)
~1 m (grid cell)

Current Gap

regional

community

residence

basic fire spread components

Forecast Decision Support Systems

NSF Center for Unmanned Aircraft Systems (C-UAS)

Ground Control Station

Small UAV (SAV)

Micro UAVs (MAV)

5 km

Micro UAVs (MAV)

USFS & NWS Decision Support
Joint Research, Planning, and Execution – Cont.

NOAA/United States Forest Service Memorandum of Understanding August, 2012

NOAA/USFS Fire Weather Collaboration: Improving Essential Services

Research Benefits and Impacts

Fire Weather Operations of the Future

- Improved Decision Support
- Extended Evacuation Lead Times
- Improved Fire Fighter Safety
- Resource Allocation Time and Money Saved

Model Output: Fire Scale Wind Analysis (500 meters), Coupled Fire Weather/Fire Behavior/Smoke Forecasts

Model Products: Hourly Fire Scale Wind, Temp, Smoke Plume and Dispersion, RH, Critical Scene Wind Profiles, Uncertainty Guidance

IMET Briefing
Incident Command
Fire Analyst (FBAN)
Fire Fighter Crew Chiefs

Fire Perimeter Forecast Map
GIS Smoke Dispersion Map
Severe Weather Impacts Map

Fire Weather Operations
- Fire Mapping
- Communications
- Fire Scene Weather Obs

Tactical Decision Products

- Increase # and Frequency of Observations over Fires

Public Safety, Economic Benefit, Supports Federal Fire Use and Suppression Policies

Coupled Fire Scale Weather/Fire Behavior models, 100 Meters Smoke Pollution Forecast System

New and Improved Fire Weather and Fire Behavior Decision Support Products

Services Proving Ground

More Accurate Fire Weather Forecasts
Improved Wind Forecasts
GIS-Layered Model Outputs
Decision Support Tools for Incident Management
Targeted Fire Potential Information

Emerging Observing Systems: UAS, GPS-Met, Added RAWS

Leverage Fire Community Research, Joint Fire Sciences, University, NIDIS

Observations and Databases of Forest Fuels, Fire Spread, Fire Behavior, Smoke Dispersion

Coupled Fire Scale Weather/Fire Behavior models, 100 Meters Smoke Pollution Forecast System

National Hi-Res Rapid Refresh 1 Km Model

Stake Holders: US Forest Service, BLM, Fire-Prone States

Firefighter Operational Impacts

- Targeted Fire Potential Information
- New and Improved Fire Weather and Fire Behavior Decision Support Products

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