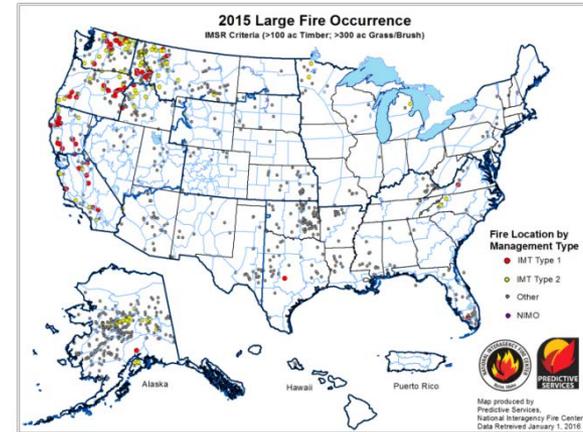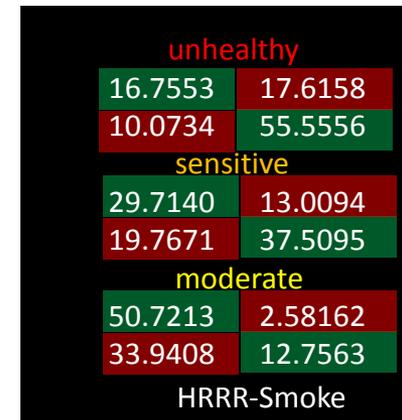# GOES-R High Impact Weather Research Theme: Fires Component

o **Improved NWS IMET and WFO situational awareness during wildfire events**
- Development of techniques that can identify clusters of fire pixels in time and space.

o **Support NWS smoke forecasting and data assimilation**
- Include GOES-R Fire Radiative Power (FRP) and assimilation of GOES-R Aerosol Optical Depth (AOD) retrievals into the High Resolution Rapid Refresh (HRRR) model that includes smoke (HRRR-smoke)

o **Support NWS fire behavior forecasting**
- Implement capabilities to predict fire behavior (WRF-fire) into HRRR-Smoke, and then incorporate the probabilistic lightning ignition source into WRF-Fire to account for interactions between the atmosphere and fire and predict fire growth and movement.

Comparisons with Idaho AIRNow aerosol measurements during August 17-31, 2015 Pacific North West wildfire outbreak show that HRRR-Smoke does a good job of predicting the frequency of "unhealthy" and "unhealthy for sensitive groups" air quality

2015 Large Fire Occurrence

August 2015 HRRR-Smoke vs AIRNow - Idaho

	AIRNow		HRRR-Smoke	
unhealthy	25.7754		16.7553	17.6158
		74.2246	10.0734	55.5556
sensitive	47.9202		29.7140	13.0094
		52.0798	19.7671	37.5095
moderate	84.3712		50.7213	2.58162
		15.6288	33.9408	12.7563

True Positive	False Positive
False Negative	True Negative

Improved situational awareness and smoke forecasting during wildfire events, forecasting fire behavior.

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