

## **Can Thunderstorm Forecasts Predict Lightning-Ignited Wildfires?**

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This study was undertaken to evaluate the performance of the Short-Range Ensemble Forecast (SREF) Thunderstorm and Dry Thunderstorm probabilistic model guidance with the prospect of improving fire weather forecasts at the Storm Prediction Center (SPC). This analysis was divided into three components. The first component examined the association between lightning ignited wildfires greater than ten acres and all lightning strikes that occurred within the Pacific Northwest and Northern Rockies regions during the 1995-2015 summer months (June 1 to September 30). Wildfire starts and lightning strikes tend to increase and decrease similarly throughout each of the summers, but intraseasonal variability indicated when fuels are most likely to support lightning-ignited wildfires. The second component of this project analyzed the SREF Calibrated Thunder probability distributions from the summer months of 2013-2015. The probabilities were split into categories of whether or not a fire was included within the forecast. The probabilities were then evaluated on the day of the fire event and the preceding three days. Probability of detection (POD) and probability of false detection (POFD) were also calculated to determine the viability of using SREF Calibrated Thunder probabilistic model guidance to forecast lightning-ignited wildfires. The third component followed an identical approach to the second, but compared wildfires to the SREF Dry Thunderstorm probabilistic guidance. Ultimately, the analysis of these three components revealed that the SREF Calibrated Thunder and Dry Thunderstorm parameters best predict lightning ignited wildfires on the day of the event and the day prior to ignition. It was also found that the SREF Calibrated Thunderstorm forecast was capable of predicting lightning ignited wildfires overall, but further research is needed.