Communicating Fire Weather Risks at Short Lead Times using the High-Resolution Rapid Refresh Forecast Modeling System

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The behavior and progression of wildfires throughout the United States are influenced by mesoscale atmospheric boundaries that arise from thunderstorm outflows, gust fronts, and other types of strong winds. These meteorological flows and boundaries can quickly exacerbate a wildfire, putting both firefighters and nearby residents at risk. In order to mitigate the damage to life and property that can result from these types of mesoscale boundaries, short-range forecasts (< 24 h) from the High-Resolution Rapid Refresh (HRRR) run separately over the continental United States and Alaska domains are being evaluated in the vicinity of selected major wildfires during the 2017 fire season. In addition to evaluating conventional meteorological parameters (stability, winds, etc.) in the vicinity of these fires, an indices for convective outflow potential influencing fire behavior are being examined. One metric being considered is the Rate of Spread Ratio (ΔROS), which characterizes the scale of the change in fire spread using environmental factors such as fuel type, wind speed and terrain. Such indices may help to convey complex model forecast information into simpler messages concerning fire danger for use by firefighters and emergency managers at lead times from 6-18 h.