

2014 SPoRT/NWS Partnership Virtual Workshop

Abstract

Paul Nutter, WFO Great Falls, Montana

Using MODIS/VIIRS Night-Time Microphysics RGB Imagery with Proximity Soundings to Diagnose Low-Topped Precipitation Events

Forecasters at the National Weather Service (NWS) Forecast Office (WFO) in Great Falls, Montana are motivated by their ongoing collaboration with the NASA Short-term Prediction, Research and Transition (SPoRT) program to explore the use of new satellite imagery in operational applications. In particular, the MODIS/VIIRS Night-Time Microphysics (Nt-M) RGB imagery has shown added value through the autumn transition to mixed-phase and winter precipitation types. The Great Falls forecast area is a large and sparsely populated region encompassing rolling grasslands and rugged mountains. Radar sampling of shallow precipitation is inhibited by distance and beam blocking. Two recent cases demonstrate the potential for Nt-M imagery to add value to forecast operations involving low-topped precipitation events. On 25 September 2013 the weather station at Havre, MT reported a heavy rain shower having a minimal radar reflectivity signature at a distance of 93 nm. On 9 October 2013, radar indicated elevation dependent rain or snow was occurring with shallow upslope flow and a low freezing level relative to the regional terrain. In both events, the Nt-M imagery provided enhanced detail in cloud elevation, opacity and spatial coverage that aided diagnosis of precipitation processes. The use of proximity soundings is demonstrated as a recommended practice to maximize utility of the Night-Time Microphysics RGB imagery.