

Diagnosis of a dense fog event using MODIS and high resolution GOES satellite products with direct model output

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ABSTRACT

This paper presents an analysis of an evolving dense fog event that occurred within the United States central Gulf Coast region during the early morning hours of 17 February 2011. Seasonal climatology, pre-event synoptic conditions and a thorough diagnosis of ongoing processes in the hours leading up to the event all suggested dense fog formation was likely. Mesoscale model forecasts of outgoing longwave radiation between 200-300 W m⁻² and eventual sensible cloud heights <150 m yielded initial clues as to when the dense fog may form and how it may be distributed. Subsequent passes of the Moderate Resolution Imaging Spectroradiometer and the Geostationary Operational Environmental Satellite provided high spatial and temporal resolution observational confirmation regarding the development, timing and location of the fog and an ability to adjust the forecast based on the latest available fog product. Although polar orbiting satellite data are received relatively infrequently, it is shown how utilizing these during an evolving fog situation may either grant or dissuade a forecaster's confidence regarding the outcome.