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With the upcoming transition from the 13-km Rapid Refresh model to the 3-km Rapid Refresh Forecast System as input for FAA forecast products such as the Forecast Icing Product (FIP) and the Graphical Turbulence Guidance (GTG), the question of how well the underlying model is forecasting the location of clouds is getting increased attention. In the case of FIP, the increased resolution has led to a drastic decrease in the size of forecast objects (or, viewed differently, an increase in the variability of the field) making it possible to consider the question of whether forecast errors are due to errors within the icing algorithm or errors in the placement (or phase) of clouds in the model. For turbulence, the forecast upgrade accompanying the model change includes the addition of an in-cloud turbulence field to the output. Once again, the question of when the errors can be ascribed to the algorithm or the underlying model information is relevant.

In preparation for upcoming assessments of the FIP And GTG forecast products, we will be investigating how to define clouds from the available model data. There are five model variables capturing non-vapor water content in the atmosphere: ice, snow, graupel, rain drops, and cloud droplets. We will discuss our preliminary comparisons between these fields and satellite and radar data. We will also discuss our plans to use aircraft-based observations to validate the experimental aviation cross-section product developed by the Regional and Mesoscale Meteorology Branch of the Cooperative Institute for Research in the Atmosphere.
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