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Next Generation LEO Hyperspectral Sensor IFOV Size Impact on the High-Resolution NWP Model Forecast Performance – An OSSE Study

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Major operational Numerical Weather Prediction (NWP) centers throughout the world are moving in the direction of high spatial resolution forecasts. Spatial resolution of satellite observations needs to increase to maintain its positive influence on forecast improvements. Impact of IFOV size for CrIS on NWP will be assessed through satellite data assimilation using the NCEP Global Forecast System (GFS) in the presence of existing observing network. As CrIS with a smaller IFOV is not yet available, impact assessment will be performed in a simulated environment, also known as an Observing System Simulation Experiment (OSSE). CrIS observations at both the current and increased resolution are simulated from a known state of the atmosphere or the Nature Run. The control run assimilates CrIS observations at the current resolution (14km @ nadir) and the experiment run assimilates CrIS observations that have a smaller IFOV. The quantitative assessment of the smaller IFOV of the next generation CrIS impact on forecasts will be presented to support NOAA JPSS program in the optimization of sensor specification.