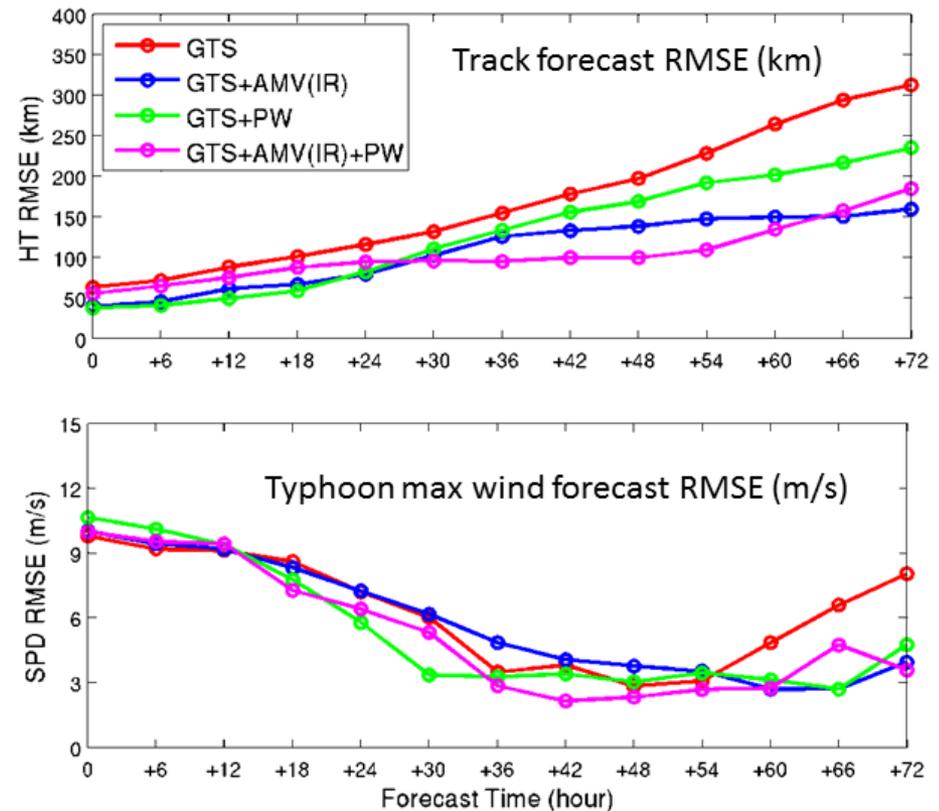


Improving the Assimilation of High-Resolution GOES-16 Water Vapor Variables and Atmospheric Motion Vectors in the HWRF Model

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This project is relevance to NOAA Weather-Ready Nation goal: Society is prepared for and responds to weather-related events such as hurricanes. This project aims to improve the assimilation of data from the new generation of U.S. geostationary satellite in NOAA operational HWRF, and thus has the potential on improving hurricane forecasts.

- Investigate different techniques on using the GOES-16 moisture information, including assimilating Advanced Baseline Imager (ABI) infrared (IR) radiances, or the three layered precipitable water (LPWs) with the NCEP hybrid GSI assimilation system;
- Improve assimilating high-resolution (density) atmospheric motion vector (AMV) datasets into operational Hurricane WRF (HWRF), with focus on observation sensitive regions;
- Examine the HWRF vortex initialization process in the context of optimizing the GOES-16 moisture and AMV data impacts;
- The final goal is to optimize the assimilation of high resolution moisture and AMV information into operational HWRF model for improving hurricane forecasts.



72-hour WRF/GSI forecasts of Typhoon Soudelor (9 forecast cases). Compared with assimilating conventional data from global telecommunication system (GTS) only, adding Advanced Himawari Imager (AHI, similar to ABI) AMVs and layered PW (from three LPWs of 0.3 - 0.7, 0.7 - 0.9, and 0.9 - 1.0 in sigma levels) in general improves the forecasts.