

NOAA ROSES Semi-Annual Report

Reporting Period: March 2021 – August 2021 (2nd report)

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Project Title: Improved Monitoring of the Rapidly-Evolving Wind Fields over the Core of Hurricanes from High Spatiotemporal Resolution Geostationary Satellite Observations.

Executive Summary

The overarching goals are to build upon recent advances in extracting enhanced tropospheric wind information from meso-scan sectors provided by new-generation GEO satellites in hurricane environments and complete the research needed to bring this advanced capability to NOAA's operational hurricane applications.

Progress toward FY20 Milestones and Relevant Findings

Milestone 1: During the current Atlantic hurricane season, we are completing the planned real-time demonstration of the GOES-16 meso-scan AMV product tailored to hurricanes. Being demonstrated are the maturity and quality of the data, as well as the real-time operability of the processing strategies. An example of a full-day of processing during the landfall of major Hurricane Ida can be found here:

<http://tropic.ssec.wisc.edu/archive/data/stettner/Ida/20210829/template.html>

Discussions are underway with the STAR AWG AMV Lead Jaime Daniels to transfer this processing strategy over to STAR for operational assessment. In addition to setting the table for operational transition of the enhanced AMV product and assimilation into the NCEP-EMC hurricane models, we have received significant interest from the research community about the availability of these enhanced AMV datasets. It is apparent through networking with colleagues that these datasets will also contribute significantly to ongoing and planned tropical cyclone research studies.

Milestone 2: We have engaged NWP collaborators at AOML-HRD and NCEP-EMC on the promising aspects of the enhanced meso-scan AMV data tailored to hurricanes. The real-time datasets noted in Milestone 1 are being disseminated to NCEP-EMC for inclusion in the experimental Hurricane Analysis and Forecast System (HAFS). A web site detailing the HAFS forecasts was set up by EMC, and an example for Hurricane Ida is here:

<https://www.emc.ncep.noaa.gov/HAFS/HAFSv0p2d/tcall.php>

Through this real-time trial we have started to define the optimal data dissemination and DA paths for this product. DA options are being explored in the operational HWRF model and the experimental HAFS system. Datasets are also being provided to AOML-HRD for inclusion in detailed hurricane analyses that complement the Hurricane Hunter aircraft observations and tail Doppler radar data.

Plans for Next Reporting Period

We plan to complete the real-time demonstration of the GOES-16 hurricane-enhanced AMV product. The evaluation will be synthesized in coordination with the HAFS impact analysis conducted by EMC. We will continue to work with our STAR colleagues to transfer the processing strategies and code mods to their working environment.