

8.4 GOES R Algorithm Working Group GOES R Winds – Chris Velden

Proposed Work

The development and automated processing of wind vectors from satellites has its heritage at CIMSS. The work plan research objectives seek to continue this heritage by adapting current methods and algorithms to NOAA's next generation of geostationary satellites, starting with GOES-R. The ABI will provide both traditional and new spectral channels that the CIMSS winds team will employ to test, process and validate using simulated and proxy datasets provided by other members of the GOES-R AWG project. We plan to use locally-available hardware resources initially for software testing, with a phased transition to a collaborative testbed environment as it comes online. The proxy data will leverage off of existing imagery from GOES and MSG/SEVERI. We will also employ ABI simulated imagery for select case studies. The algorithm development, testing and validation will focus on heritage algorithms currently being used in NESDIS operations today to generate winds from satellite imagery. We will leverage and adapt current algorithms/software to expected ABI characteristics, focusing first on ABI heritage channels (VIS, IR-W, WV) for winds testing. We will then turn our attention to the new spectral capabilities afforded by the ABI for wind derivation. All software development will follow accepted AWG standards, and will be accompanied by documentation. This work will insure the readiness of the CIMSS/NESDIS automated winds algorithm for eventual operational implementation upon the deployment of GOES-R ABI.

Summary of Accomplishments/Findings

This study has only been activated for the past 5 months. We have begun to adapt and optimize the CIMSS/NESDIS automated feature tracking algorithm for deriving atmospheric motion vectors from sequential satellite imagery for applications to the GOES-R ABI. In addition, we are assembling proxy datasets to use as simulated ABI imagery. This project includes software code modifications, and will soon include testing on proxy datasets, validation, and documentation.

Publications

Velden, C., S. Wanzong, I. Genkova, D. A. Santek, J. Li, E. R. Olson, and J. A. Otkin, 2007: Clear sky atmospheric motion vectors derived from the GOES sounder and simulated GOES-R hyperspectral moisture retrievals. Ext. Abstracts Third Symposium on Future National Operational Satellites, AMS Annual Meeting.