GOES-R Water Cycle Products and Services to Support the National Weather Service

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Abstract

The Cooperative Institute for Climate and Satellites at the University of Maryland (CICS-MD), in conjunction with its NOAA/NESDIS/Center for Satellite Applications and Research (STAR)/Cooperative Research Programs (CoRP)/Satellite Climate Studies Branch (SCSB) partner, will support the Geostationary Operational Environmental Satellite - R Series (GOES-R) Risk Reduction Program (GOES-R3) through this proposal focused on research and development (R&D) of water cycle products that will serve multiple users at NOAA's National Weather Service (NWS). The primary topical areas include: precipitation, land surface hydrology, water quality and high impact weather. The R&D will exploit the new capabilities from baseline and future products of the GOES-R satellite, mainly measurements (or proxies of them) from the Advanced Baseline Imager (ABI) and the Geostationary Lightning Mapper (GLM). Prior to GOES-R data availability, measurements from the Himawari-8, rapid scan operations of current GOES satellites and ground lightning networks will be exploited to advance water cycle products. The targeted end users within NWS include the National Water Center (NWC), the Weather, Ocean and Tropical Prediction Centers (WPC, OPC and TPC) and the NWS Pacific Regions, where collaborations are already underway. The NWC will require improved information on land surface forcings for the WRF-Hydro model with is the driver for the new National Water Model (NWM); this will include rapid update precipitation information, land surface temperature, soil moisture and surface state. WPC, OPC, TPC and the NWS Pacific Regions will require a variety of information to support their precipitation and off-shore hazard forecasts. Finally, the SCSB/CICS-MD Satellite Proving Ground will be used to test the new products in a near-real time capability and form the basis for testbed activities with the NWS users.