

Testing and Evaluation for JPSS-1 Algorithms using Algorithm Development Library Block 2.1

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The Joint Polar Satellite System 1 (JPSS-1) is the next generation polar-orbiting operational environmental satellite which was launched on November 18, 2017. It carries advanced versions of the instruments Advanced Technology Microwave Sounder (ATMS), Cross-track Infrared Sounder (CrIS), Ozone Mapping and Profiler Suite (OMPS) and Visible Infrared Imaging Radiometer Suite (VIIRS) that are on board of Suomi National Polar-Orbiting Partnership (S-NPP) satellite which was launched on October 28, 2011. All the Sensor Data Record (SDR) algorithms for the instruments are processed in the Interactive Data Processing Segment (IDPS) system designed and maintained by Raytheon. The Algorithm Development Library (ADL) Block 2.1 is an updated offline test system developed by Raytheon to mimic the operational system. Current version of the algorithm has gone through many recent code updates as well as Look-up-Table (LUT) updates for improving product quality. The center for Satellite Applications and Research (STAR) Algorithm Scientific Software Integration and System Transition Team (ASSISTT) uses ADL Block 2.1 to test and integrate updates to JPSS-1 algorithms, both code and the Lookup Tables (LUTs). Weekly updates are made to Dark tables for both OMPS Nadir Mapper (NM) and Nadir Profiler (NP) instruments and for both SNPP and JPSS-1 (J01) satellites. These are tested, integrated and submitted as packages with inputs, outputs and guide documents for further verification by the Data Products Engineering and Services (DPES) team and final integration by Raytheon in the operational system IDPS. Updates are also made to bi-weekly Wavelength and Solar tables for OMPS NP for SNPP satellite. They are tested and submitted in the package for operational implementation. We have created scripts to automate the staging and processing of weekly and bi-weekly updated LUTs in ADL Block 2.1. Details of the process of integration and application of the scripts for testing and integration of LUTs for OMPS as well as other instruments will be discussed.

Keywords: JPSS, Algorithm Integration, STAR ASSISTT, Algorithm Development Library