



Development of JPSS VIIRS Global Gridded Vegetation Index products for NOAA NCEP Environmental Modeling Systems

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The first Joint Polar Satellite System (JPSS) mission, the Suomi National Polar-orbiting Partnership (S-NPP) satellite, was successfully launched in October, 2011, and it will be followed by JPSS-1, slated for launch in 2017. JPSS provides operational continuity of satellite-based observations and products for NOAA's Polar Operational Environmental Satellites (POES). Vegetation products derived from satellite measurements are used for weather forecasting, land modeling, climate research, and monitoring the environment including drought, the health of ecosystems, crop monitoring and forest fires. The operationally produced S-NPP VIIRS Vegetation Index (VI) Environmental Data Record (EDR) includes two vegetation indices: the Top of the Atmosphere (TOA) Normalized Difference Vegetation Index (NDVI), and the Top of the Canopy (TOC) Enhanced Vegetation Index (EVI). For JPSS-1, the S-NPP Vegetation Index EDR algorithm has been updated to include the TOC NDV. The current JPSS operational VI products are generated in granule style at 375 meter resolution at nadir, but these products in granule format cannot be ingested into NOAA operational monitoring and decision making systems. For that reason, the NOAA JPSS Land Team is developing a new global gridded Vegetation Index (VI) product suite for operational use by the NOAA National Centers for Environmental Prediction (NCEP). The new global gridded VIs will be used in the Multi-Physics (MP) version of the Noah land surface model (Noah-MP) in NCEP NOAA Environmental Modeling System (NEMS) for plant growth and data assimilation and to describe vegetation coverage and density in order to model the correct surface energy partition. The new VI 4km resolution global gridded products (TOA NDVI, TOC NDVI and TOC EVI) are being designed to meet the needs of directly ingesting vegetation index variables without the need to develop local gridding and compositing procedures. These VI products will be consistent with the already operational SNPP VIIRS Green Vegetation Fraction (GVF) global gridded 4km resolution. The ultimate goal is a global consistent set of global gridded land products at 1-km resolution to enable consistent use of the products in the full suite of global and regional NCEP land models. The new JPSS vegetation products system is scheduled to transition to operations in the fall of 2017.