

# **Visible Infrared Imager Radiometer Suite (VIIRS) Active Fires Application Related Products (AFARP) Generation Using Community Satellite Processing Package (CSPP) Software**

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## **Abstract**

Every year in Indonesia happen forest and land fires, especially in dry season. One effort to monitor the fires is through early detection of burned areas using remote sensing satellite data. Indicator that is used to know the fires occur from the satellite data is Active Fires Application Related Products (AFARP) or that is recognized widely as hot spot. One of satellite data that currently be used to fires monitoring and detection activities is from Moderate Resolution Imaging Spectroradiometer (MODIS) data. However, as the MODIS instrumen age, a new generation of Earth-observing instrumens are poised to take over. Visible Infrared Imager Radiometer Suite (VIIRS) represents a critical first step in building this next-generation instrumen. VIIRS is one of five diverse payloads of scientific instrument that is carried by Suomi National Polar-orbiting Partnership (S-NPP) satellite. VIIRS, a radiometer similar to the MODIS, has 22 bands that will acquires visible and infrared views of Earth's dynamic surface processes, including wildfires. Indonesian National Aeronautics and Space Agency (LAPAN) remote sensing ground station receives S-NPP satellite data since May 2012 in Direct Broadcast (DB) mode. Data were received in rawdata level. In the previous activities, data have been processed to Raw Data Record (RDR) and Sensor Data Record (SDR) levels (including its associated quicklook and high resolution GeoTIFF files) and were stored in LAPAN's data center storage system. This paper present a novel VIIRS data processing system design to produce AFARP from the VIIRS SDR data level sets. Community Satellite Processing Package (CSPP) Environmental Data Record (EDR) software version 1.0 release was used as the processing core. The software was developed by Cooperative Institute for Meteorological Satellite Studies (CIMSS) to support the DB meteorological and environmental satellite community. Average processing time required by the system to produce AFARP from its associated SDR level data is 11 minutes 26 seconds. Total average processing time required by the system to produce AFARP from rawdata level is 46 minutes 27 seconds. Hence, the system can be considered to be developed in the future so it can process from rawdata level to AFARP automatically because the average processing time still less than two subsequent S-NPP satellite data acquisition time in one day (1 hour 39 minutes 21 seconds). Storage system volume that will be be needed to accomodate the whole AFARP files until the predicted satellite's mission life over is about 255 Gigabytes.

Key words – S-NPP satellite, VIIRS instrument, active fires, data processing system, CSPP.