

VIIRS Active Fire Quick Guide



What is the VIIRS Active Fire Product?

The VIIRS Active Fire (VIIRS-AF) product provides detections of thermal anomalies across the globe on a daily basis. For those anomalies that can be linked to fires, whether manmade or tied to natural causes. The VIIRS-AF product can provide information about fire location and intensity which can be used to help in operational response decisions. The product consists of 6-minute granules in an unprojected segment of the VIIRS orbital swath. Distributed from the NOAA CLASS data archive in NetCDF format, the data consists of numerous fields that characterize the fire detections including latitude and longitude, brightness temperature, and fire radiative power (FRP), expressed in megawatts.

What is the VIIRS-AF Algorithm? Which spectral bands make up the algorithm?

The standard VIIRS-AF product is based on the same algorithm that Moderate Resolution Imaging Spectroradiometer (MODIS) uses. The current algorithm is referred to as “Collection 6”. This algorithm is a hybrid thresholding and contextual algorithm using radiometric signals from 4 and 11 micron bands (M13 and M15, respectively). Additional bands and a suite of tests are used to generate an internal cloud mask and reject false alarms.

Available in AWIPS-II for National Weather Service Forecasters

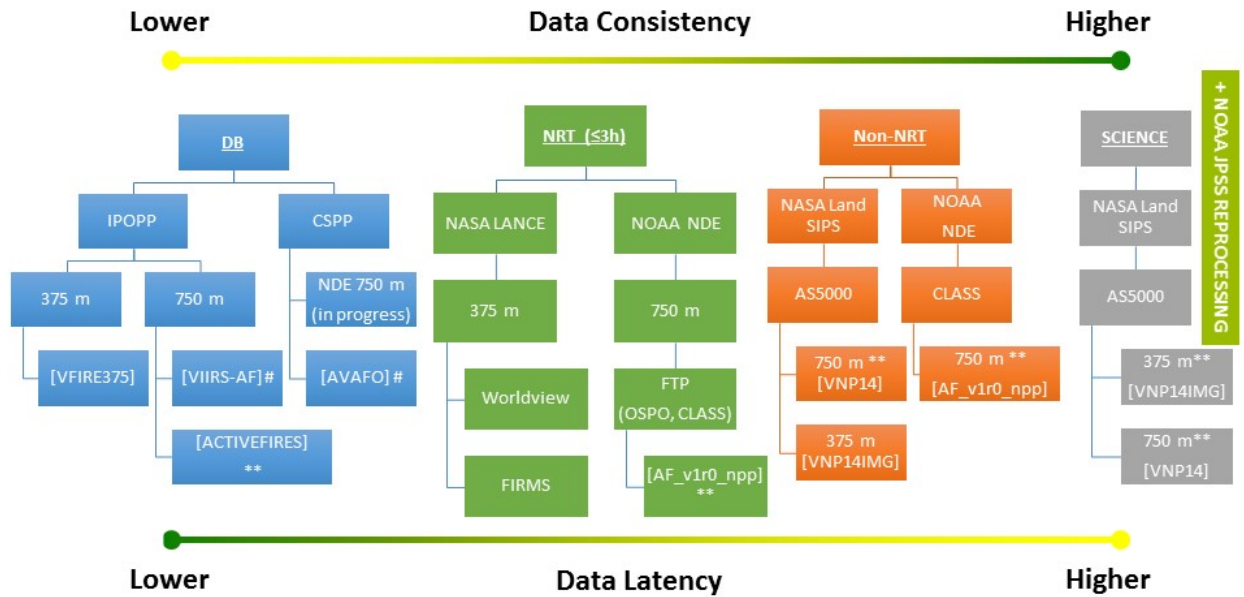
VIIRS-AF product data will be able to be retrieved from the Satellite Broadcast Network (SBN) over the experimental feed into AWIPS-II, version 16.4.1, in Summer 2017. VIIRS-AF will transition to a baseline product at a future date.

Data Access for Non-AWIPS-II users

For non-AWIPS-II users, refer to the ‘VIIRS Data Tutorial’ Link on the following website, (http://viirsfire.geog.umd.edu/docs/VIIRS_data_tutorial_2017a.pdf). The tutorial will highlight four different options to obtain VIIRS-AF data, and involves diagrams to assist users in deciding their preferred method of access via step-by-step process. Tutorial will also cover data latency and data consistency in relation to each option. The four options are depicted in the Figure 1 and are listed below:

1. Direct Broadcast
 2. Near Real Time (NRT)
 3. Non-NRT
 4. Science
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VIIRS Active Fire Product Lineage



pattern indicates this directory is outdated
 ** marked products include FRP retrieval
 # marked products describe discontinued algorithm
 [] indicate official product name

More details available at:
<http://viirsfire.geog.umd.edu/>

Figure 1. Describes the four options of acquiring VIIRS-AF data via Direct Broadcast (DB), Near Real Time (NRT), Non-NRT, and Science. The data consistency and data latency are also provided to help users decide their preferred method of access.

Examples of the VIIRS-AF Product

Rim fire, CA: 8/17 - 9/8

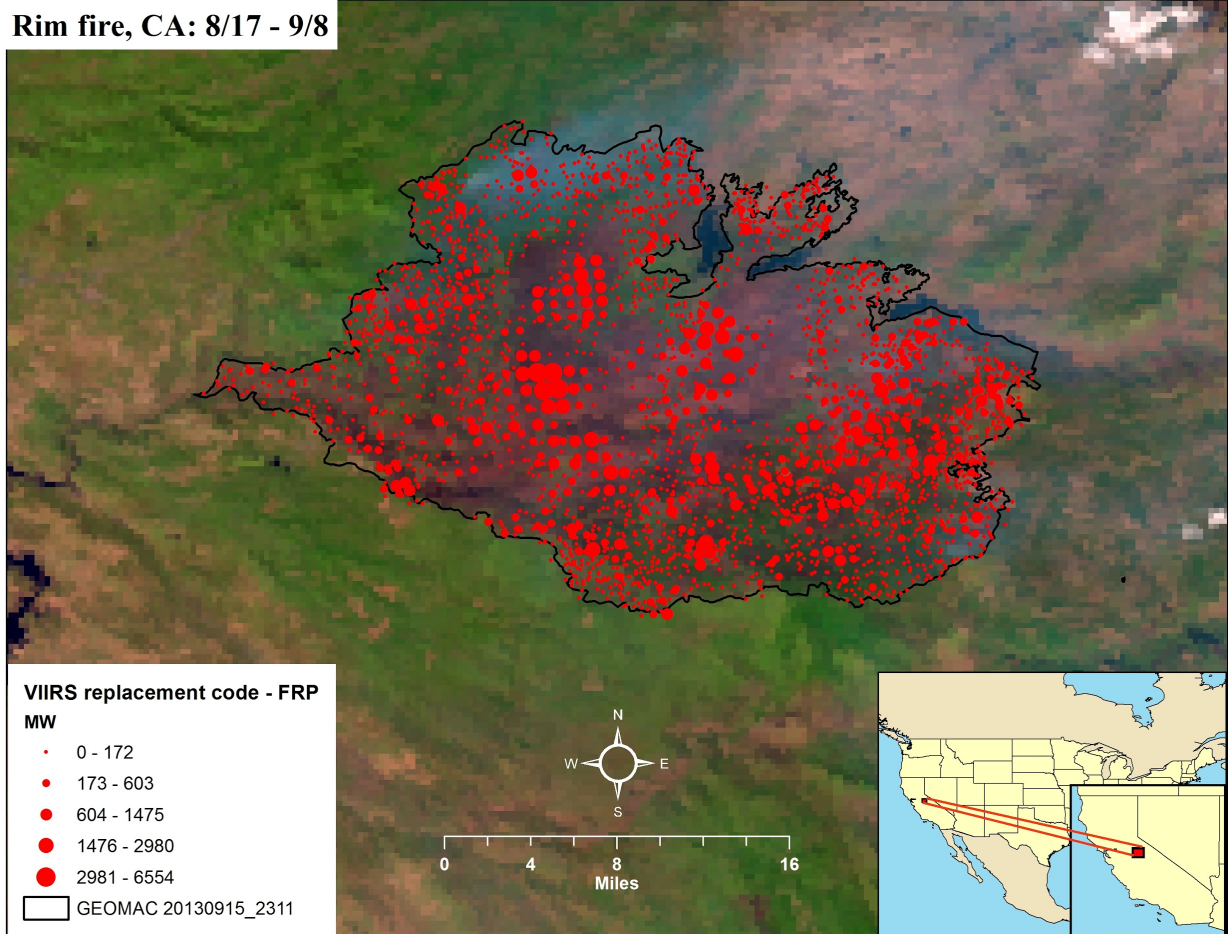


Figure 2. Rim Fire, 2013 California. The above image shows the fire progression between August 17th and September 9th. The size of the red circles indicates the level of the detections intensity in megawatts, referred to as fire radiative power (FRP).

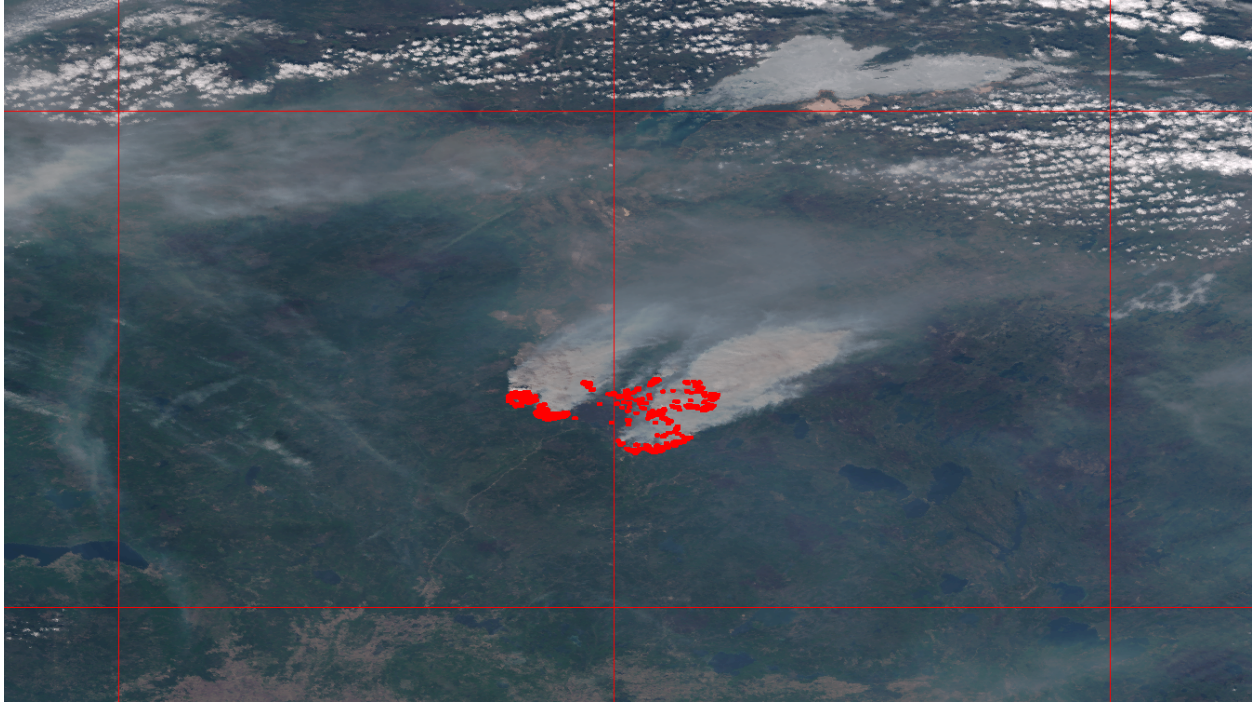


Figure 3. VIIRS-AF fire detections from the moderate resolution (750m) M-band product from the Ft. McMurray, Alberta, Canada, on May 16th, 2016.

Continued Evolution of the VIIRS-AF product

Currently, the VIIRS-AF product is a part of the Suomi-National Polar-orbiting Partnership (Suomi-NPP) satellite, a prototype for the forthcoming JPSS satellite series 1-4. Similar to MODIS, the VIIRS-AF product will be reprocessed periodically to make adjustments and improvements. These upgrades will ensure this product continues to be a valuable capability for use in support of the fire mission.

Supplemental Information and Links

1. VIIRS-AF Website: <http://viirsfire.geog.umd.edu/>
2. VIIRS-AF Maps (CONUS & GLOBAL): <http://viirsfire.geog.umd.edu/pages/mapsData.php>
3. Fire Blog: <http://viirsfire.geog.umd.edu/pages/worklog.php>
4. NOAA CLASS data archive link: <https://www.class.ncdc.noaa.gov/>

Contact information

Any questions about VIIRS-AF product, please contact with JPSS Program Office and CIRA/CSU:

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