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As of October 15, 2019, NCEI has ceased production of the following Earth Observation Group (EOG) products:

- VIIRS derived products and services
- Global Nighttime Lights: annual and monthly composites using VIIRS Day/Night Band
- VIIRS Nightfire - Nighttime detection and characterization of combustion sources
- VIIRS Gas flaring - Annual global and regional estimates of flared gas volumes
- VIIRS Boat Detection - Nighttime detection of lights from fishing vessels

These products, based on VIIRS observations, are now publicly available through the academic sector at the Colorado School of Mines, a public univers in Golden, Colorado. Ongoing data will be available through the university's Payne Institute for Public Policy.

The DMSP and VIIRS orbital swath data remain archived at NCEI and in NOAA's CLASS archive respectively. For more information on these data contact ncei.info@noaa.gov.

See also: Sunset for Nighttime Lights at NOAA

Version 1 VIIRS Day/Night Band Nighttime Lights

The Earth Observations Group (EOG) at NOAA/NCEI is producing a version 1 suite of average radiance composite images using nighttime data from the Visible Infrared Imaging Radiometer Suite (VIIRS) Day/Night Band (DNB).

Prior to averaging, the DNB data is filtered to exclude data impacted by stray light, lightning, lunar illumination, and cloud-cover. Cloud-cover is determined using the VIIRS Cloud Mask product (VCM). In addition, data near the edges of the swath are not included in the composites (aggregation zones 29-32).

Temporal averaging is done on a monthly and annual basis. The version 1 series of monthly composites has not been filtered to screen out lights from aurora, fires, boats, and other temporal lights. However, the annual composites have layers with additional separation, removing temporal lights and background (non-light) values.

The version 1 products span the globe from 75N latitude to 65S. The products are produced in 15 arc-second geographic grids and are made available in geotiff format as a set of 6 tiles. The tiles are cut at the equator and each span 120 degrees of latitude. Each tile is actually a set of images containing average radiance values and numbers of available observations.

In the monthly composites, there are many areas of the globe where it is impossible to get good quality data coverage for that month. This can be due to cloud-cover, especially in the tropical regions, or due to solar illumination, as happens toward the poles in their respective summer months. Therefore, it is imperative that users of these data utilize the cloud-free observations file and not assume a value of zero in the average radiance image means that no lights were observed.

The version 1 monthly series is run globally using two different configurations. The first excludes any data impacted by stray light. The second includes these data if the radiance vales have undergone the stray-light correction procedure (Reference). These two configurations are denoted in the filenames as "vcm" and "vcmsl" respectively. The "vcmsl" version, that includes the stray-light corrected data, will have more data coverage toward the poles, but will be of reduced quality. It is up to the users to determine which set is best for their applications. The annual versions are only made with the "vcm" version, excluding any data impacted by stray light.

Filenaming convention:
The version 1 composite products have 7 filename fields that are separated by an underscore "_". Internal to each field there can be an additional dash separator "-". These fields are followed by a filename extension. The fields are described below using this example filename:

SVDNB_npp_20140501-20140531_global_vcmcfg_v10_c201502061154.avg_rade9

Field 1: VIIRS SDR or Product that made the composite "SVDNB"
Field 2: satellite name "npp"
Field 3: date range "20140501-20140531"
Field 4: ROI "global"
Field 5: config shortname "vcmcfg"
Field 6: version "v10" is version 1.0
Field 7: creation date/time
Extension: avg_rade9

The annual products can have other values for the config shortname (Field 5). They are:

- "vcm-orm" (VIIRS Cloud Mask - Outlier Removed) This product contains cloud-free average radiance values that have undergone an outlier removal process to filter out fires and other ephemeral lights.
- "vcm-orm-ntl" (VIIRS Cloud Mask - Outlier Removed - Nighttime Lights) This product contains the "vcm-orm" average, with background (non-lights) set to zero.
- "vcm-ntl" (VIIRS Cloud Mask - Nighttime Lights) This product contains the "vcm" average, with background (non-lights) set to zero.

Data types/formats:
To reach the widest community of users, files are delivered in compressed tarballs, each containing a set of 2 geotiffs. Files with extensions "avg_rade9" contain floating point radiance values with units in nanoWatts/cm2/sr. Note that the original DNB radiance values have been multiplied by 1E9. This was done to alleviate issues some software packages were having with the very small numbers in the original units. Files with extension "cf_cvg" are integer counts of the number of cloud-free coverages, or observations, that went in to constructing the average radiance image. Files with extension "cvg" are integer counts of the number of coverages or total observations available (regardless of cloud-cover).

Credit:
When using the data please credit the product generation to the Earth Observation Group, NOAA National Centers for Environmental Information (NCEI).

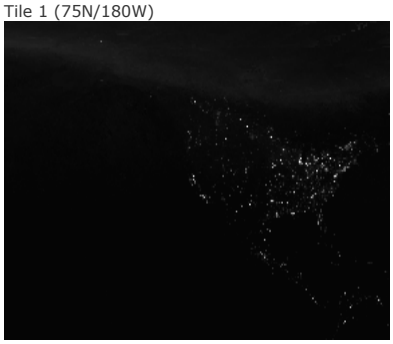
For questions contact kim.baugh(at)noaa.gov or kim.baugh(at)noaa.gov.

Download KML

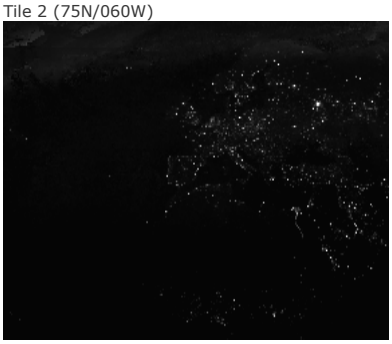
Index thumbnails for nighttime light image tiles

Showing thumbnails of Jan 2016

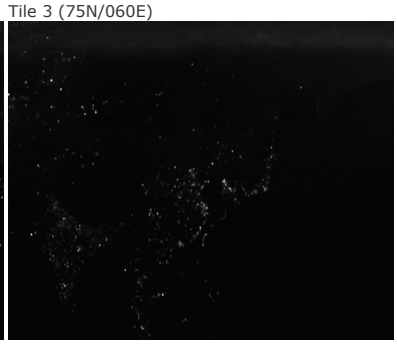
Tile 1 (75N/180W)



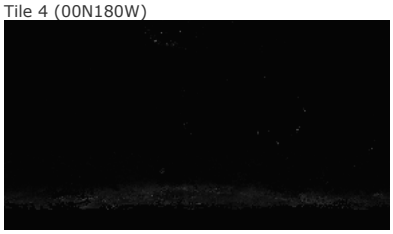
Tile 2 (75N/060W)



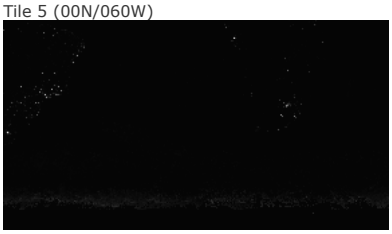
Tile 3 (75N/060E)



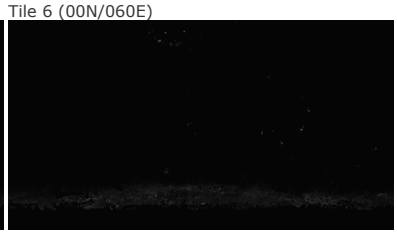
Tile 4 (00N180W)



Tile 5 (00N/060W)



Tile 6 (00N/060E)



Readme File: README

Last Update: 06/20/2019/09:41:29

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