

**2012-2019 Annual Consistent Data Set of 500m NPP/VIIRS Night Lights across
Pakistan**

Data Documentation

I. Dataset/atlas content features

i. Abstract

This data set consists of the NPP/VIIRS noctilucent consistency data of 500m per year throughout Pakistan from 2012 to 2019. The original data is collected monthly from the data released by the National Oceanic and Atmospheric Administration (NOAA/NGDC), which is obtained after noise and error removal by the noctilucent data consistency processing algorithm. The data format is TIF and the spatial resolution is 500 meters.

ii. Elements (content fields)

The data folder is named "year", and the image is named "flint_YYYY", where YYYY represents the year. In this data set, the consistency processing algorithm of noctilucent data is adopted to deal with the difference of noise sources in high and low latitude areas, and different processing methods are adopted. Through the relationship fitting between time series, the missing data and outliers are interpolated smoothing for several iterations, and the consistency product is finally obtained. Dimensionless.

iii. Temporal cover

From 2012 to 2019.

iv. Spatial cover

60° E - 80° E, 23° N-37° N.

II. Subject/industry scope of dataset/atlas

i. Subject scope

Earth science, remote sensing, etc.

ii. Industry scope

Geographical information services, remote sensing surveying and mapping services, etc.;

iii. Other classifications (optional)

III. Accuracy of dataset/atlas

i. Time frequency

Annual.

ii. Spatial reference, accuracy, and granularity

Spatial reference: GCS_WGS_1984;

Spatial resolution: 500 m.

IV. Dataset/atlas storage management

i. Data quantity

275 MB

ii. Type format

TIF

iii. Update management

Irregular updating

V. Quality control of the dataset/atlas

i. Production mode

Using the monthly data released by the National Oceanic and Atmospheric Administration (NOAA/NGDC) of the United States, the NPP/VIIRS noctilucent data annual consistent data set of 500 meters across Pakistan was obtained after noise, error and other errors were removed by the consistency processing algorithm of noctilucent data. The data processing environment mainly includes Matlab and ArcGIS.

ii. Data sources (condition selection)

NPP/VIIRS Night-Light Remote Sensing Monthly Data from the National Oceanic and Atmospheric Administration (NOAA/NGDC).

iii. Methods of the data acquisition and processing (condition selection)

Data from the national oceanic and atmospheric administration (NOAA/NGDC) website (https://ngdc.noaa.gov/eog/viirs/download_ut_mos.html). The format is TIF, the spatial resolution is 500m, the whole of Pakistan.

In this study, NPP/VIIRS night light remote sensing data were used to synthesize and obtain annual 500-meter luminous products covering the whole of Pakistan from 2012 to 2020. Because the NPP/VIIRS noctilucent data is affected by the atmosphere, moonlight, polar daylight and other aspects, there are great fluctuations and inconsistencies in the time sequence. Therefore, this study developed a consistency processing model of noctilucent data using smoothing constraints and other methods. On the basis of ensuring the authenticity and accuracy of data, eliminate noise and error of NPP/VIIRS nocturnal remote sensing data to the maximum extent, improve consistency and continuity between annual and monthly data of long time series, and provide technical support for obtaining standard annual and monthly nocturnal remote sensing data sets. Its processing flow is shown in Figure 1.

VI. Sharing and usage method of the dataset/atlas

i. Sharing methods and restrictions

Fully opened sharing

ii. Contact information of the sharing service (condition selection)

Contact Information for Service:

Name: Ma Yong

Address: No. 9, South Dengzhuang Road, Haidian District, Beijing

Zip Code: 100094

E-mail: mayong@aircas.ac.cn

iii. Conditions and methods of usage

The dataset can be read by ArcGIS and ENVI software.

VII. Intellectual property rights of the dataset/atlas

i. Property rights (optional)

The property of the dataset belongs to the Aerospace Information Research Institute, Chinese Academy of Sciences.

ii. Reference method of the dataset/atlas

Chen Fu, Ma Yong, Erping Shang, Wutao Yao, Liyuan Jiang, Shiguo Shuyan and Chengzhou Jiang. Aerospace Information Research Institute, Chinese Academy of Sciences. Monthly Conformance Dataset of 500m NPP/VIIRS Night Lights over Pakistan, 2012-2019. 2020.07

iii. Usage contacts of the datasets/atlas

Name: Ma Yong

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VIII. Others (optional)

In addition to the above, other information must also be explained.

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