Snow cover distribution dataset in Mongolia

Data Documentation

I. Dataset/atlas content features

i. Abstract

Using MOD10A1/A2 snow satellite data products with a spatial resolution of 500 m (https://modis.gsfc.nasa.gov/data/dataprod/mod10.php). The original data is obtained by the image set screening function according to the time and space range. Considering that the image is disturbed by clouds, it is necessary to use its quality control band, mask to eliminate low confidence pixels and combine cloud mask to assist the product data to remove clouds. Secondly, Savitzky-Golay (S-G) smoothing is performed on the vector-clipped data (S-G filter can fit smooth curve based on adjacent valid observations, fill data gaps, reduce errors caused by cloud interference), eliminate noise in time series data, and improve continuity and accuracy of snow cover monitoring. The normalized difference snow index (NDSI) method based on reflection characteristics is used to extract snow information, and the error correction is carried out by combining with auxiliary data such as elevation and slope (such as SRTM DEM). Finally, GeoTIFF files of snow images from 2000 to 2024 can be exported through Export module.

ii. Elements (content fields)

The MOD10A2 data product raster value range is {0,1, 50,200}, where 0 is missing, 1 is pending, and 200 is snow.

iii. Temporal cover

2000 - 2024

iv. Spatial cover

87° E -119° E, 41° N-52° 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

Month.

ii. Spatial reference, accuracy, and granularity

Spatial reference: GCS_WGS_1984;

Spatial resolution: 500 m.

IV. Dataset/atlas storage management

i. Data quantity

479 MB

ii. Type format

TIF

iii. Update management

Irregular updating

V. Quality control of the dataset/atlas

i. Production mode

Using MODIS 10A1 image data and DEM data, the normalized difference snow index (NDSI) method based on reflection characteristics was used to obtain the 500-meter snow distribution dataset in Mongolia. The data processing environment is mainly Google Earth Engine.

ii. Data sources (condition selection)

MODIS10A1 images and NASA DEM data

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

MODIS 10A1 surface observation image data obtained by GEE, combined with digital elevation model and image quality evaluation band, need to use its quality control band, mask to eliminate low confidence pixels and cloud mask auxiliary product data to remove clouds, and then Savitzky-Golay smoothing of vector clipped data to eliminate noise in time series data, improve continuity and accuracy of snow cover monitoring. Finally, under the support of GEE cloud platform, cloud platform analysis and download.

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)

Online link address:

Contact Information for Service：

Name: Service group of Disaster Risk Reduction Knowledge Service System of IKCEST

Address：11A, Datun Road, Chaoyang District, Beijing, 100101, China, Institute of Geographic Sciences and Natural Resources Research, CAS.

Zip Code：100101

E-mail: ikcest-drr@lreis.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 Institute of Geographic Sciences and Resources, Chinese Academy of Sciences.

ii. Reference method of the dataset/atlas

Snow cover distribution dataset in Mongolia. Disaster Risk Reduction Knowledge Service of International Knowledge Centre for Engineering Sciences and Technology (IKCEST) under the Auspices of UNESCO, 2022.06

iii. Usage contacts of the datasets/atlas

Name: Service group of Disaster Risk Reduction Knowledge Service System of IKCEST

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Zip Code：100101

E-mail: ikcest-drr@lreis.ac.cn

VIII. Others (optional)

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

Data documentation author information

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