A Big Earth Data Platform for Three Poles

**Datasets of changes in water storage area time series, lakeside ecosystem structure and salt dust (1911-2017)**

1、Description

The data include the datasets of temporal changes in water level, water storage and area of the Aral sea (1911−2017), the inter-decadal change of ecosystem structure (NDVI—Normalized Difference Vegetation Index) of the Aral sea (1977−2017), and dust intensity (EDI—Enhanced Dust Index) in the Aral sea (2000−2018).
Using data fusion technology in the construction of a lake basin terrain, terrain based on remote sensing monitoring and field investigation, on the basis of the analysis of the Aral sea terrain data, generalized analyses the water - area - the changes of water content, the formation of water - water - area of temporal variation data set, can clearly reflect the Aral sea water change process and the present situation, provide basic data for the Aral sea environmental change research.
The NDVI was used to reflect the vegetation ecology in the receding area. Landsat satellite data, with a spatial resolution of 30 m, was used for NDVI analysis in 1977, 1987, 1997, 2007, and 2017. Based on ENVI and GIS software, remote sensing image fusion, index calculation, and water extraction were used to determine the lake surface and lakeshore line of the Aral sea. The lakeside line in the south of the Aral sea is taken as the starting point, and it extends for 3 km to the receding area. The variation characteristics of vegetation NDVI in the lakeside zone within 0-3 km are obtained to reflect the structural changes of the lakeside ecosystem.
EDI was extracted from MODIS image data. This index is introduced into the dust optical density to enhance the dust information to form the enhanced dust index. Based on remote sensing monitoring, the use of EDI, established the Aral sea area-EDI index curve, the curve as the construction of the Aral sea dry lake bed dust release and meteorological factors, quantitative relationship laid the foundation of soil physical and chemical properties, in order to determine the control of sand/salt dust in the reasonable area of the lake.

2、Keywords

Theme：vegetation index,Surface Water,Vegetation,Hydrologic characteristic value,Hydrology,Lake ecosystem
Discipline：Terrestrial Surface
Places：Aral Sea
Time：1911-2017

3、Data details

1.Scale：None

2.Projection：

3.Filesize：9250.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：47.2 | - |
| west：57.8 | - | east：61.6 |
| - | south：42.2 | - |

5、Time frame:1911-01-12 08:00:00+00:00--2018-01-11 08:00:00+00:00

6、Reference method

References to data:

JILILI Abuduwaili, LUO Yi, ZHENG Xinjun, HUANG Yue. Datasets of changes in water storage area time series, lakeside ecosystem structure and salt dust (1911-2017). A Big Earth Data Platform for Three Poles, doi:10.11888/Hydro.tpdc.2704532020

References to articles:

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

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