A Big Earth Data Platform for Three Poles

**Central Asia Reanalysis dataset (1979-2017)**

1、Description

The Central Asia Reanalysis (CAR) dataset is generated based on the Weather Research and Forecast (WRF) model version 4.1.2 and WRF Data Assimilation (WRFDA) Version 4.1.2. Variables include temperature,, pressure, wind speed, precipitation and radiation. The reanalysis is established through cyclic assimilation, which performs data assimilation every 6 hours by 3DVAR. The assimilated data include conventional atmospheric observation and satellite radiation data. The main source of conventional data is Global Teleconnection System (GTS), including surface station, automatic station, radiosonde and aircraft report, and the observation elements include temperature, air pressure, wind speed and humidity. Satellite observations include retrievals and radiation data, The retrievals are mainly atmospheric motion vectors from polar orbiting meteorological satellites (NOAA-18, NOAA-19, MetOP-A and MetOP-B) and resampled to a horizontal resolution of 54km; the radiation data includes microwave radiation from MSU, AMSU and MHS and HIRS infrared radiation data. The simulation applies nesting with a horizontal resolution of 27km and 9km respectively, a total of 38 layers in the vertical direction and a top of the model layer of 10hPa. The lateral boundary conditions of the model are provided by ERA-Interim every 6 hours. The physical schemes used in the model are Thompson microphysics scheme, CAM radiation scheme, MYJ boundary layer scheme, Grell convection scheme and Noah land surface model. The data covers five countries in Central Asia, including Kazakhstan, Tajikistan, Kyrgyzstan, Turkmenistan and Uzbekistan, as well as lakes in Central Asia, such as Caspian Sea, Aral Sea, Balkash lake and Isaac lake, which can be used for the study of climate, ecology and hydrology in the region. Compared with gauge-based precipitation in Central Asia, the simulation by CAR shows similar performance with MSWEP ( a merged product) and outperforms ERA5 and ERA-Interim.

2、Keywords

Theme：Maximum/Minimum temperature,Precipitation,Temperature,Precipitation
Discipline：Atmosphere
Places：Central Asia
Time：1979-2017, Last 40 years

3、Data details

1.Scale：None

2.Projection：

3.Filesize：12082.9MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：58.0 | - |
| west：37.0 | - | east：102.0 |
| - | south：22.0 | - |

5、Time frame:1978-12-31 16:00:00+00:00--2017-12-31 03:59:59+00:00

6、Reference method

References to data:

YAO Yao. Central Asia Reanalysis dataset (1979-2017). A Big Earth Data Platform for Three Poles, doi:10.11888/Atmos.tpdc.2719172021

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

name: YAO Yao
unit:
email: yyao@nuist.edu.cn