A Big Earth Data Platform for Three Poles

**AERA5-Asia: A Long-Term Asian Precipitation Dataset (0.1°, 1-hourly, 1951–2015, Asia) Anchoring the ERA5-Land under the Total Volume Control by APHRODITE**

1、Description

In the context of global change, the spatio-temporal continuous high-quality high-resolution long time series precipitation data set is of great significance for understanding the global "water carbon energy" and biogeochemical cycle mechanism. The daily total volume controlled merging and disaggregation algorithm (DTVCMDA) proposed in this study effectively considers the characteristics of continuous space-time and high spatial and temporal resolution of reanalysed precipitation data, as well as the high quality of ground analysis data, A set of AERA5 Asia (0.1 °, hourly, 1951-2015, Asia) precipitation data set with high quality and high spatial and temporal resolution for more than 70 years of long time series in Asia has been produced. The main features of the dataset are as follows: (1) AERA5 Asia is a set of data sets with high resolution, high quality, space-time continuity and long time series; (2) AERA5 Asia is significantly better than IMERG Final and ERA5 Land precipitation data, especially in terms of system deviation. In general, the deviation of AERA5 Asia, IMERG Final and ERA5 Land compared with ground observation is~5%,~11% and~20% respectively; (3) In extreme heavy rainfall (such as typhoons "Tamei" and "Tiantu"), the quality of AERA5 Asia is also significantly better than ERA5 Land and IMERG Final.
AERA5 Asia will provide stable and reliable precipitation data support for relevant research in the weather, climate, hydrology and other fields in Asia, especially in China.

2、Keywords

Theme：Precipitation,Precipitation,Precipitation amount,Hydrology
Discipline：Atmosphere,Terrestrial Surface
Places：Asia
Time：1951-2015, long-term, Hourly

3、Data details

1.Scale：None

2.Projection：

3.Filesize：176128.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：55.05 | - |
| west：59.95 | - | east：150.05 |
| - | south：-15.05 | - |

5、Time frame:1950-12-31 16:00:00+00:00--2015-12-30 16:00:00+00:00

6、Reference method

References to data:

MA Weiqiang\*, MA Ziqiang, MA Yaoming, XU Jintao. AERA5-Asia: A Long-Term Asian Precipitation Dataset (0.1°, 1-hourly, 1951–2015, Asia) Anchoring the ERA5-Land under the Total Volume Control by APHRODITE. A Big Earth Data Platform for Three Poles, doi:10.11888/Atmos.tpdc.2729002022

References to articles:

Ma, Z.Q.\*, Xu, J.T., Ma, Y.M.\*, Zhu, S.Y., He, K., Zhang, S.J., Ma, W.Q., & Xu, X.D. (2022). AERA5-Asia: A long-term Asian precipitation dataset (0.1°, 1 hourly, 1951–2015, Asia) anchoring the ERA5-Land under the total volume control by APHRODITE. Bulletin of American Meteorological Society, 103 (4). DOI: 10.1175/BAMS-D-20-0328.1.

7、Supporting project information

Second Tibetan Plateau Scientific Expedition Program

8、Data resource provider

name: MA Weiqiang\*
unit: Institute of Tibetan Plateau Research, Chinese Academy of Sciences
email: wqma@itpcas.ac.cn

name: MA Yaoming
unit: Institute of Tibetan Plateau Research, Chinese Academy of Sciences
email: ymma@itpcas.ac.cn

name: MA Ziqiang
unit: Peking University
email: ziqma@pku.edu.cn

name: 许金涛
unit:
email: jintaox@zju.edu.cn

name: XU Jintao
unit:
email: jintaox@zju.edu.cn