A Big Earth Data Platform for Three Poles

**Dataset of reconstructed terrestrial water storage in China based on precipitation (2002-2019)**

1、Description

These datasets fill the data gap between GRACE and GRACE-FO, they contain CSR RL06 Mascon and JPL RL06 Mascon. They take China as the study area, and the dataset includes "Decimal\_time”, "lat”, "lon”, "time”, "time\_bounds”, "TWSA\_REC" and "Uncertainty" 7 parameters in total. Among them, "Decimal\_time” corresponds to decimal time. There are 191 months from April 2002 to December 2019 (163 months for GRACE data, 17 months for GRACE-FO data, and 11 months for the gap between GRACE and GRACE-FO. We have not filled the missing data of individual months between GRACE or GRACE-FO data). "lat" corresponds to the latitude range of the data; "lon" corresponds to the longitude range of the data; "time" corresponds to the cumulative day of the data from January 1, 2002. And "time\_bounds" corresponding to the cumulative day at the start date and end date of each month. “TWSA\_REC" represents the monthly terrestrial water storage anomalies from April 2002 to December 2019 in China; "Uncertainty" is the uncertainty between the data and CSR RL06 Mascon products. We use GRACE satellite data from CSR GRACE/GRACE-FO RL06 Mascon solutions (version 02), China Gauge-based Daily Precipitation Analysis (CGDPA, version 1.0) data, and CN05.1 temperature dataset. The precipitation reconstruction model was established, and the seasonal and trend terms of CSR RL06 Mascon products were considered to obtain the dataset of terrestrial water storage anomalies in China. The data quality is good as a whole, and the uncertainty of most regions in China is within 5cm. This dataset complements the nearly one-year data gap between GRACE and GRACE-FO satellites, and provides a full time series for long-term land water storage change analysis in China. As the CSR RL06 Mascon product, the average value between 2004.0000 and 2009.999 is deducted from this dataset. Therefore, the 164-174 months (i.e., July 2017 to May 2018) of this dataset can be directly extracted as the estimation of terrestrial water storage anomalies during the gap period. The reconstruction method for the gap of JPL RL06 Mascon is consistent with that of CSR RL06 Mascon.

2、Keywords

Theme：Gravity,Temperature,JPL Mascon,Precipitation,Terrestrial water storage anomaly,Tectonics,GRACE,Hydrology
Discipline：Terrestrial Surface,Solid earth
Places：China
Time：2002-2019

3、Data details

1.Scale：None

2.Projection：WGS84

3.Filesize：67.5MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：54.0 | - |
| west：72.0 | - | east：136.0 |
| - | south：18.0 | - |

5、Time frame:2002-04-05 08:00:00+00:00--2019-12-31 08:00:00+00:00

6、Reference method

References to data:

MING Zutao, FENG Wei, ZHONG Yulong, ZHONG Min. Dataset of reconstructed terrestrial water storage in China based on precipitation (2002-2019). A Big Earth Data Platform for Three Poles, doi:10.11888/Hydro.tpdc.2709902020

References to articles:

Zhong, Y., Feng, W., Humphrey, V., Zhong, M. (2019). Human-Induced and Climate-Driven Contributions to Water Storage Variations in the Haihe River Basin, China. Remote Sensing. 11, 3050.

7、Supporting project information

National Natural Science Foundation of China
Fundamental Research Funds for the Central Universities, China University of Geosciences (Wuhan)
2nd survey of Tibet plateau

8、Data resource provider

name: FENG Wei
unit: Innovation Academy for Precision Measurement Science and Technology Chinese Academy of Sciences
email: fengwei@whigg.ac.cn

name: ZHONG Min
unit: Innovation Academy for Precision Measurement Science and Technology Chinese Academy of Sciences
email: zmzm@asch.whigg.ac.cn

name: ZHONG Yulong
unit: School of Geography and Information Engineering, China University of Geosciences (Wuhan)
email: zhongyl@cug.edu.cn

name: MING Zutao
unit: School of Geography and Information Engineering China University of Geosciences (Wuhan)
email: mingzt@cug.edu.cn