A Big Earth Data Platform for Three Poles

**China's high-quality natural streamflow gauge-based dataset (1961–2018)**

1、Description

China's high-quality natural gauge-based streamflow dataset (CNRD\_gauge) was developed from a well-trained and tested land surface model (VIC) that coupled to a routing model with flow direction correction. The dataset currently covers multiple hydrological stations for the period 1961–2018 , and will continue to update. The land surface model was trained by a comprehensive parameter uncertainty framework, including parameter sensitivity, optimization, and regionalization. The rooting model was corrected based on high-resolution river flowlines, as well the ascertained gauge locations and catchment areas. Supported by a well-trained model system, about 83% of the catchments across China exhibited NSE > 0.7, and about 56% of the catchments exhibited KGE > 0.7. The systematic bias of estimated natural streamflow from a calibrated land surface model was reduced by the statistical post-processing technique with the Pbias metric decreased from 17.13% to 2.27%. The reconstructed gauge-based streamflow dataset provides a reliable representation of natural hydrological processes in regions affected by intensive human activity.

2、Keywords

Theme：Runoff,Surface Water,Discharge/Flow,Hydrology,Hydrological models
Discipline：Terrestrial Surface
Places：China, Ten large river basin
Time：58 years, monthly

3、Data details

1.Scale：None

2.Projection：

3.Filesize：0.5MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：55.0 | - |
| west：70.0 | - | east：140.0 |
| - | south：17.0 | - |

5、Time frame:1960-12-31 16:00:00+00:00--2018-12-30 16:00:00+00:00

6、Reference method

References to data:

GOU Jiaojiao, MIAO Chiyuan. China's high-quality natural streamflow gauge-based dataset (1961–2018). A Big Earth Data Platform for Three Poles, doi:10.11888/Hydro.tpdc.2716442021

References to articles:

Gou, J. J., Miao, C. Y., Samaniego, L., Xiao, M., Wu, J. W. & Guo, X. Y. (2021). CNRD v1.0: a high-quality natural runoff dataset for hydrological and climate studies in China. Bulletin of the American Meteorological Society, 102(5), E929-E947.

Miao, C. Y., Gou, J. J., Fu, B. J., Tang, Q. H., Duan, Q. Y., Chen, Z. S., Lei, H. M., Chen, J., Guo, J. L., Borthwick, A. G. L., Ding, W. F., Duan, X. W., Li, Y. G., Kong, D. X., Guo, X. Y., Wu, J. W. (2021). High-quality reconstruction of China's natural streamflow. Science Bulletin. (Under Review)

Gou, J. J., Miao, C. Y., Duan, Q. Y., Tang, Q. H., Di, Z. H., Liao, W. H., Wu, J. W. & Zhou, R. (2020). Sensitivity analysis-based automatic parameter calibration of the VIC model for streamflow simulations over China. Water Resources Research, 56: 1-19.

7、Supporting project information

The second comprehensive scientific investigation of Tibetan Plateau
National Natural Science Foundation of China (No. 41877155)

8、Data resource provider

name: MIAO Chiyuan
unit:
email: miaocy@bnu.edu.cn

name: GOU Jiaojiao
unit:
email: jiaojiaogou@mail.bnu.edu.cn