A Big Earth Data Platform for Three Poles

**Long term (1982-2018) dataset of terrestrial evapotranspiration over the Asian water tower region**

1、Description

Evapotranspiration (ET) is an very important water balance component for the “Asia water tower”, Tibetan Plateau (TP). However, accurately monitoring and understanding the spatial and temporal variability of ET components (soil evaporation-Es, canopy transpiration-Ec, and intercepted water evaporation-Ew) over the TP remains very difficult, due to the scarcity of observational data for this remote area. Here, the 37 years (1982-2018) monthly ET components on the TP were produced using the MOD16-STM model, which uses the recently available datasets of soil properties, meteorological conditions, and remote sensing. The estimated ET correlates very well with measurements from 9 flux towers, with low root mean square errors (RMSE=13.48 mm/month) and mean bias (MB=2.85 mm/month), and the coefficient of determination (R2=0.83) and the index of agreement (IOA=0.92). The annual averaged ET for the whole TP (specified with an elevation higher than 2500m) is about 0.93±0.037 Gt/year. The main contribution of ET on the TP comes from the soil, with Es accounted for more than 84% of ET. The ET showed a significantly increasing trend with rates of about 1 to 4 mm/year (p<0.05) over most parts of the central and eastern TP, while a significantly decreasing trend with rates of -3 to -1 mm/year was shown in the northwestern TP. The increasing rate of ET in TP over the past 37 years is around 0.96 mm/year. The increase in ET over the entire TP from 1982 to 2018 can be explained by warming and wetting during the same period. MOD16-STM ET exhibited acceptable performance at TP, which was demonstrated by comparison with previous studies. It can adequately represent the actual ET and can be used in research on water resources management, drought monitoring, and ecological change, for example.

2、Keywords

Theme：Land-surface evapotranspiration,Soil,Space Variation,Water Environment,Terrestrial Surface Remote Sensing,soil property
Discipline：Terrestrial Surface
Places：Tibetan Plateau
Time：1982-2018

3、Data details

1.Scale：None

2.Projection：

3.Filesize：115.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：42.0 | - |
| west：73.0 | - | east：106.0 |
| - | south：24.0 | - |

5、Time frame:1981-12-31 16:00:00+00:00--2018-12-30 16:00:00+00:00

6、Reference method

References to data:

CHEN Xuelong, MA Yaoming. Long term (1982-2018) dataset of terrestrial evapotranspiration over the Asian water tower region. A Big Earth Data Platform for Three Poles, doi:10.11888/Terre.tpdc.2719132022

References to articles:

7、Supporting project information

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8、Data resource provider

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