A Big Earth Data Platform for Three Poles

**Significantly increased evapotranspiration reveals accelerated water cycle on the Tibetan Plateau during 1982–2018**

1、Description

Previous studies suggest an accelerated water cycle over the Tibetan Plateau (TP) in recent decades, mainly based on observed precipitation. However, the exact changes to evapotranspiration (ETa) over this period remain largely unknown. Although multiple ETa products for the TP region report that ETa experienced a significant increasing trend of around 8.4 ± 2.2 mm/10 a during 1982–2018, there exist large uncertainties in the annual ETa estimates over different climate zones. Here, we quantified and explained the ETa trend using a comprehensive process-based ETa model refined on ground-based observations from nine stations over the TP. Attribution analysis revealed that a large part of the increasing ETa trend was caused by higher temperature (53.8%) and more soil moisture (23.1%) caused by the melting cryosphere and increased precipitation. The increasing rate of ETa on the TP was approximately twice that of the global ETa, providing strong and independent evidence for an accelerated hydrological cycle. The dominant role of increased temperature in ETa implies a continued acceleration of the water cycle in the future.

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:

Significantly increased evapotranspiration reveals accelerated water cycle on the Tibetan Plateau during 1982–2018. A Big Earth Data Platform for Three Poles, doi:10.11888/Terre.tpdc.2719132021

References to articles:

7、Supporting project information

The National Natural Science Foundation of China  
the Second Tibetan Plateau Scientific Expedition and Research (STEP) program  
the Strategic Priority Research Program of Chinese Academy of Sciences

8、Data resource provider