时空三极环境大数据平台

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

英文标题：Significantly increased evapotranspiration reveals accelerated water cycle on the Tibetan Plateau during 1982–2018

1、摘要

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、关键词

主题关键词：地表蒸散发,土壤,空间变化,水环境,陆地表层遥感,土壤属性
学科关键词：陆地表层
地点关键词：青藏高原
时间关键词：1982-2018

3、数据细节

1.比例尺：None

2.投影：

3.文件大小：115.0MB

4.数据格式：None

4、空间范围

|  |  |  |
| --- | --- | --- |
| - | 北：42.0 | - |
| 西：73.0 | - | 东：106.0 |
| - | 南：24.0 | - |

5、时间范围1981-12-31 16:00:00+00:00--2018-12-30 16:00:00+00:00

6、引用方式

数据的引用:

袁令. Significantly increased evapotranspiration reveals accelerated water cycle on the Tibetan Plateau during 1982–2018. 时空三极环境大数据平台, DOI:10.11888/Terre.tpdc.271913, CSTR:18406.11.Terre.tpdc.271913, 2021.[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.271913, CSTR:18406.11.Terre.tpdc.271913, 2021]

文章的引用:

7、资助项目信息

西风-季风断面上陆气相互作用和水热变化及其对周边的影响(XDA20060101)
泛第三极地区多圈层地气相互作用过程及其影响区域能量和水分循环的机制研究(91837208)
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江河源区陆-气相互作用与水汽输送过程的互馈研究(2019QZKK0105)

8、数据资源提供者

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