A Big Earth Data Platform for Three Poles

**The reconstructed mass balance and meteorological data on Guliya ice cap during 1970-2019**

1、Description

The data set includes the reconstructed long-term annual, ablation-season, and cold-season glacier-wide mass balance and its components for Guliya Ice Cap and the reconstructed daily meteorological data on the glacier from 1969 to 2019. The reconstructed meteorological data includes air temperature (℃), relative humidity (%), wind speed (m s-1), air pressure (hPa) and downward shortwave radiation (W m-2) at an elevation of 6004 m a.s.l. and precipitation (mm) at an elevation of 5491 m a.s.l. ERA5 data from the grid point (35°N, 78°75′E) around AWS2 were calibrated by the measured meteorological data. The exact method has been described in the reference. The long-term mass balance of Guliya Ice Cap during 1970-2019 was reconstructed using an energy and mass balance model and calibrated ERA5 data, which was calibrated and validated by in-situ measurements and geodetic mass balances. Please see the reference.  
The data is stored in an Excel file.  
It can be used by researchers for studying the changes in climate, hydrology, glaciers, etc.

2、Keywords

Theme：Glacier type,Precipitation,Radiation,Temperature,Mean temperature,Radiation,Surface energy balance,Glacier melt,Surface mass balance,Mass balance,Precipitation,Glacier(Ice Sheet),Glacier climate  
Discipline：Atmosphere,Cryosphere  
Places：Guliya ice cap of Tibatan Plateau, West Kunlun  
Time：1970-2019

3、Data details

1.Scale：None

2.Projection：

3.Filesize：1.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：35.32861111 | - |
| west：81.30916667 | - | east：81.59472222 |
| - | south：35.205 | - |

5、Time frame:1969-09-30 16:00:00+00:00--2019-09-29 16:00:00+00:00

6、Reference method

References to data:

ZHAO Huabiao. The reconstructed mass balance and meteorological data on Guliya ice cap during 1970-2019. A Big Earth Data Platform for Three Poles, doi:10.11888/Cryos.tpdc.2722032022

References to articles:

Zhu, M., Yao, T., Yang, W., Wu, G., Li, S., Zhao, H.\*, & Thompson, L.G.\* (2022). Possible causes of anomalous glacier mass balance in the western Kunlun Mountains. online  
  
Zhu, M., Thompson, L.G., Zhao, H., Yao, T., Yang, W., & Jin, S. (2021). Influence of atmospheric circulation on glacier mass balance in western Tibet: an analysis based on observations and modeling. Journal of Climate, 34(16), 6743-6757.

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program  
Second Tibetan Plateau Scientific Expedition Program  
A comparative study on the spatial and temporal differences of the mass balance changes of typical glaciers on the Tibetan Plateau and their mechanisms  
Study on temperature variations since the mid-Holocene inferred from air content and δ18O of atmospheric O2 in ice cores on the Tibetan Plateau

8、Data resource provider

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