A Big Earth Data Platform for Three Poles

**Mass balance (2008-2018) on Naimona’nyi Glacier and related meteorological data (2011-2018)**

1、Description

The data set includes annual mass balance of Naimona’nyi glacier (northern branch) from 2008 to 2018, daily meteorological data at two automatic meteorological stations (AWSs) near the glacier from 2011 to 2018 and monthly air temperature and relative humidity on the glacier from 2018 to 2019.
In the end of September or early October for each year , the stake heights and snow-pit features (snow layer density and stratigraphy) are manually measured to derive the annual point mass balance. Then the glacier-wide mass balance was then calculated （Please to see the reference).
Two automatic weather stations (AWSs, Campbell company) were installed near the Naimona’nyi Glacier. AWS1, at 5543 m a. s.l., recorded meteorological variables from October 2011 at half hourly resolution, including air temperature (℃), relative humidity (%), and downward shortwave radiation (W m-2) . AWS2 was installed at 5950 m a.s.l. in October 2010 at hourly resolution and recorded wind speed (m/s), air pressure (hPa), precipitation (mm).
Data quality: the quality of the original data is better, less missing. Firstly, the abnormal data in the original records are removed, and then the daily values of these parameters are calculated.
Two probes (Hobo MX2301) which record air temperature and relative humidity was installed on the glacier at half hour resolution since October 2018. The observed meteorological data was calculated as monthly values.
The data is stored in Excel file.
It can be used by researchers for studying the changes in climate, hydrology, glaciers, etc.

2、Keywords

Theme：Visibility,Hydrology,Glacier(Ice Sheet)
Discipline：Atmosphere,Terrestrial Surface,Cryosphere
Places：Tibetan Plateau, Naimona’nyi Glacier
Time：2008-2018, 2011-2018

3、Data details

1.Scale：None

2.Projection：

3.Filesize：0.5MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：30.49 | - |
| west：81.27 | - | east：81.39 |
| - | south：30.43 | - |

5、Time frame:2010-09-30 16:00:00+00:00--2018-11-29 16:00:00+00:00

6、Reference method

References to data:

ZHAO Huabiao. Mass balance (2008-2018) on Naimona’nyi Glacier and related meteorological data (2011-2018). A Big Earth Data Platform for Three Poles, doi:10.11888/Meteoro.tpdc.2716062021

References to articles:

Yao, T., Thompson, L., Yang, W., Yu, W., Gao, Y., Guo, X., Yang, X., et al. (2012). Different glacier status with atmospheric circulations in Tibetan Plateau and surroundings. Nature Climate Change, 2(9), 663–667. https://doi.org/10.1038/nclimate1580

Zhao, H., Yang, W., Yao, T., Tian, L., & Xu, B. (2016). Dramatic mass loss in extreme high-elevation areas of a western Himalayan glacier: observations and modeling. Scientific reports, 6, 30706. https://doi.org/10.1038/srep30706

Zhu, M., Yang, W., Yao, T., Tian, L., Thompson, L. G., & Zhao, H. (2021). The influence of key climate variables on mass balance of Naimona'nyi glacier on a north-facing slope in the western Himalayas. Journal of Geophysical Research: Atmospheres, 126, e2020JD033956. https://doi.org/10.1029/2020JD033956

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

8、Data resource provider

name: ZHAO Huabiao
unit: Institute of Tibetan Plateau Research, CAS
email: zhaohb@itpcas.ac.cn