A Big Earth Data Platform for Three Poles

**Geodetic glacier mass changes of Rongbuk glaciers in 1974-2000 and 2000-2016（V1.0)**

1、Description

The data involved three periods of geodetic glacier mass storage change of three Rongbuk glaciers and its debris-covered ice in the Rongbuk Catchment from 1974-2016 (unit: m w.e. a-1). It is stored in the ESRI vector polygon format. The data sets are composed of three periods of glacier surface elevation difference between 1974-2000，2000-2016 and 1974-2006, i.e. DHPRISM2006-DEM1974（DH2006-1974）、DHSRTM2000-DEM1974（DH2000-1974）、DHASTER2016-SRTM2000（DH2016-2000）. DH2006-1974 was surface elevation change between ALOS/PRISMDEM(PRISM2006) and DEM1974, i.e. the DEM1974 was subtracted from PRISM2006, DH2006-1974 =PRISM2006 – DEM1974. The PRISM2006 was generated from stereo pairs of ALOS/PRISM on 4 Dec. 2006. The earlier historical DEM (DEM1974, spatial resolution 25m) was derived from 1:50,000 topographic maps in October 1974(DEM1974,spatial resolution 25m). The uncertainty in the ice free areas of DHPRISM2006-DEM1974 was ±0.24 m a-1. DHSRTM2000-DEM1974（DH2000-1974）was surface elevation change between SRTM DEM(SRTM2000) and DEM1974. The uncertainty in the ice free areas of DHSRTM2000-DEM1974 was ±0.13 m a-1. DHASTER2016-SRTM2000（DH2016-2000）was the surface elevation change between ASTER DEM2016 and SRTM DEM(SRTM2000). The uncertainty in the ice free areas of DHASTER2016-SRTM2000 was ±0.08 m a-1. Glacier-averaged annual mass balance change (m w.e.a-1) was averaged annually for each glacier, which was calculated by DH2006-1974/DH2000-1974/DH2016-2000, glacier coverage area and ice density of 850 ± 60 kg m−3. The attribute data includes Glacier area by Shape\_Area (m2), EC2000-1974/EC2016-2000/EC2006-1974, i.e. Glacier-averaged surface elevation change in each period(m a-1), MB2000-1974/ MB2016-2000/MB2006-1974, i.e. Glacier-averaged annual mass balance in each period (m w.e.a-1), and MC2000-1974/ MC2016-2000/MC2006-1974,Glacier-averaged annual mass change in each period(m3 w.e.a-1), Uncerty\_EC is the maximum uncertainty of glacier surface elevation change（m a-1）、Uncerty\_MB, is the maximum uncertainty of glacier mass balance（m w.e. a-1），Uncerty\_MC, is the maximum uncertainty of glacier mass change（m3w.e. a-1）。 MinUnty\_EC，is the minimum uncertainty of glacier surface elevation change，MinUnty\_MB，is the minimum uncertainty of glacier mass balance（m w.e. a-1），MinUnty\_MC is the minimum uncertainty of glacier mass change（m3 w.e. a-1.The data sets could be used for glacier change, hydrological and climate change studies in the Himalayas and High Mountain Asia.

2、Keywords

Theme：Ice reserves,Glacier(Ice Sheet)
Discipline：Cryosphere
Places：Rongbuk catchment at Mt. Everest
Time：1974-2016

3、Data details

1.Scale：None

2.Projection：

3.Filesize：0.25MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：28.3 | - |
| west：86.4 | - | east：87.0 |
| - | south：27.5 | - |

5、Time frame:1974-10-01 08:00:00+00:00--2016-12-04 08:00:00+00:00

6、Reference method

References to data:

YE Qinghua. Geodetic glacier mass changes of Rongbuk glaciers in 1974-2000 and 2000-2016（V1.0). A Big Earth Data Platform for Three Poles, doi:10.11888/Glacio.tpdc.2707562020

References to articles:

叶庆华, 程维明, 赵永利, 宋继彪, 赵瑞. (2016). 青藏高原冰川变化遥感监测研究综述. 地球信息科学学报,18(7), 920-930.

Ye, Q., Bolch, T., Naruse, R., Wang, Y., Zong, J., Wang, Z., Zhao, R., Yang, D., & Kang, S. (2015). Glacier mass changes in Rongbuk catchment on Mt. Qomolangma from 1974 to 2006 based on topographic maps and ALOS PRISM data. Journal of Hydrology, 530, 273–280. doi:10.1016/j.jhydrol.2015.09.014

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

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