A Big Earth Data Platform for Three Poles

**The PANDA automatic weather station network between the coast and Dome A, East Antarctica (1989-2021)**

1、Description

Automatic weather stations have been proved to be a powerful tool for monitoring the near surface meteorological elements of glaciers/caps to determine the surface energy budget, so as to quantify glaciers/caps ablation and its response to climate change. This data set introduces the PANDA transect automatic weather station network, which includes 11 automatic weather stations (AWS), Zhongshan, Panda 100, Panda 200, Panda 300, Panda 400, Taishan, Eagle, Panda 1100, Dome A, Kunlun and Panda s. The transect network spans the Prydz Bay Amery ice shelf Dome A area, from the coast to the top of the southeast Antarctica ice sheet. The transect network is roughly along longitude ~77 ° e, and the latitude range is 69.37°S-82.33°S, covering all geographical and climatic units in the southeast polar region. All automatic weather stations in the network measure air temperature, relative humidity, air pressure, wind speed and direction every hour, and some automatic weather stations can also measure surface temperature and short/longwave radiation. All automatic station data is transmitted in real time through Argos system. The data quality is very reliable, and the data of Dome A and Eagle station have been widely used. At present, the data set has been updated by us to 2021. Except Zhongshan and Panda S, all other stations are multi-layer observations, mainly with four heights of 1/2/4/6m. The data has been subject to strict quality control. We plan to update it once a year. This data set is of great value to climate change estimation, extreme weather event diagnosis, data assimilation, weather forecasting, etc. in the Antarctic region.

2、Keywords

Theme：Surface radiation temperature,Temperature,Snow depth,Emissivity,Snow,Earth SurFace Processes,Winds,Surface pressure,Glacier(Ice Sheet),Near surface temperature,Albedo,Accumulation zones,Glacier climate,Pressure,wind speed
Discipline：Atmosphere,Terrestrial Surface,Cryosphere
Places：East Antarctica
Time：long time series, 1989-2021

3、Data details

1.Scale：None

2.Projection：

3.Filesize：46.3MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：-69.37 | - |
| west：75.99 | - | east：77.95 |
| - | south：-82.33 | - |

5、Time frame:1989-02-28 16:00:00+00:00--2021-06-30 16:00:00+00:00

6、Reference method

References to data:

HEIL Petra , XIAO Cunde , SUN Qizhen , DING Minghu, ZHANG Wenqian , BIAN Lingen , YANG Diyi , ZOU Xiaowei , LU Changgui , ALLISON Ian . The PANDA automatic weather station network between the coast and Dome A, East Antarctica (1989-2021). A Big Earth Data Platform for Three Poles, doi:10.11888/Atmos.tpdc.2727212022

References to articles:

Ding, M., Zou, X., & Sun, Q., et al. (2022). The PANDA automatic weather station network between the coast and Dome A, East Antarctica. Earth System Science Data.

7、Supporting project information

8、Data resource provider

name: ZOU Xiaowei
unit: Wuhan University
email: xiaoweizou14@163.com

name: SUN Qizhen
unit: National Marine Environmental Forecasting Center
email: sunqizhen@nmefc.cn

name: YANG Diyi
unit: Chinese Academy of Meteorological Sciences
email: yangdiyi@foxmail.com

name: ZHANG Wenqian
unit: Chinese Academy of Meteorological Sciences
email: zhangwq@cma.gov.cn

name: BIAN Lingen
unit: Chinese Academy of Meteorological Sciences
email: bianlg@cma.gov.cn

name: LU Changgui
unit: Chinese Academy of Meteorological Sciences
email: jidi@cma.gov.cn

name: ALLISON Ian
unit: University of Tasmania
email: ian.allison@utas.edu.au

name: HEIL Petra
unit: University of Tasmania
email: petra.heil@utas.edu.au

name: XIAO Cunde
unit: Beijing Normal University
email: cdxiao@bnu.edu.cn

name: DING Minghu
unit: Chinese Academy of Meteorological Sciences
email: dingminghu@foxmail.com