A Big Earth Data Platform for Three Poles

**Near-surface air temperature data of Antarctic ice sheet (2001-2018)**

1、Description

1) Data content: spatial and temporal dataset of near-surface monthly air temperature of Antarctic ice sheet from 2001 to 2018。
2) Data source and processing method: MODIS (MODerate resolution Imaging Spectroradiometer) Land Surface Temperature measurements in combination with in-situ air temperature records from 119 meteorological stations are used to reconstruct a monthly near-surface air temperature product over the Antarctic Ice Sheet (AIS) by means of a neural network model. The product is generated on a regular grid of 0.05°×0.05°, spanning from 2001 to 2018.
3) Data quality description: the accuracy is better than that of ERA5 reanalysis data.
4) Data application achievements and prospects: the database can be used to study the temporal and spatial distribution characteristics of near-surface air temperature of Antarctic ice sheet, and the impact of SAM and ENSO on the interannual variation of Antarctic temperature. In addition, the dataset has the potential application for climate model validation and data assimilation due to the independence of the input of a numerical weather prediction model.

2、Keywords

Theme：Temperature,Near surface temperature
Discipline：Atmosphere
Places：Antarctic Ice Shelf
Time：2001-2018

3、Data details

1.Scale：None

2.Projection：

3.Filesize：7116.8MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：-60.0 | - |
| west：-180.0 | - | east：180.0 |
| - | south：-90.0 | - |

5、Time frame:2000-12-31 16:00:00+00:00--2018-12-30 16:00:00+00:00

6、Reference method

References to data:

ZHANG Xueying . Near-surface air temperature data of Antarctic ice sheet (2001-2018). A Big Earth Data Platform for Three Poles, doi:10.11888/Atmos.tpdc.2722342022

References to articles:

Zhang, X., Dong, X., Zeng, J., Hou, S., Smeets, P., Reijmer, C. H., &Wang, Y. (2022). Spatiotemporal Reconstruction of Antarctic Near-Surface Air Temperature from MODIS Observations. Journal of Climate, 35(17), 5537-5553. DOI: https://doi.org/10.1175/JCLI-D-21-0786.1.

7、Supporting project information

CASEarth:Big Earth Data for Three Poles（grant No. XDA19070000）

8、Data resource provider

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