A Big Earth Data Platform for Three Poles

**A dataset of daily near-surface air temperature in China from 1979 to 2018**

1、Description

Ta (Near-surface air temperature) is an important physical parameter that reflects climate change. In order to obtain daily Ta data (Tmax, Tmin, and Tavg) with high spatial and temporal resolution in China, we fully analyzed the advantages and disadvantages of various existing data (reanalysis, remote sensing, and in situ data) ，Different Ta reconstruction models are constructed for different weather conditions, and we further improve data accuracy through building correction equations for different regions. Finally, a dataset of daily temperature (Tmax, Tmin, and Tavg) in China from 1979 to 2018 was obtained with a spatial resolution of 0.1°  
 For Tmax, validation using in situ data shows that the root mean square error (RMSE) ranges from 0.86 °C to 1.78 °C, the mean absolute error (MAE) varies from 0.63 °C to 1.40 °C, and the Pearson coefficient (R2) ranges from 0.96 to 0.99. For Tmin, RMSE ranges from 0.78 °C to 2.09 °C, the MAE varies from 0.58 °C to 1.61 °C, and the R2 ranges from 0.95 to 0.99. For Tavg, RMSE ranges from 0.35 °C to 1.00 °C, the MAE varies from 0.27 °C to 0.68 °C, and the R2 ranges from 0.99 to 1.00. Furthermore, a variety of evaluation indicators were used to analyze the temporal and spatial variation trends of Ta, and the Tavg increase was more than 0.0 °C/a, which is consistent with the general global warming trend.  
 In conclusion, this dataset had a high spatial resolution and reliable accuracy, which makes up for the previous missing temperature value (Tmax, Tmin, and Tavg) at high spatial resolution. This dataset also provides key parameters for the study of climate change, especially high-temperature drought and low-temperature chilling damage。

2、Keywords

Theme：Temperature,Surface air temperature  
Discipline：Atmosphere  
Places：China  
Time：1979-2018

3、Data details

1.Scale：None

2.Projection：

3.Filesize：143000.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：58.64 | - |
| west：71.29 | - | east：136.69 |
| - | south：15.75 | - |

5、Time frame:1977-12-31 16:00:00+00:00--2018-12-30 16:00:00+00:00

6、Reference method

References to data:

FANG Shu, MAO Kebiao. A dataset of daily near-surface air temperature in China from 1979 to 2018. A Big Earth Data Platform for Three Poles, doi:10.5281/zenodo.55022752022

References to articles:

Fang, S., Kebiao Mao#\*, Xia, X., Wang, P., Shi, J., Bateni, S. M., Xu, T., Cao, M., and Heggy, E. Qin. Z., (2022). Dataset of daily near-surface air temperature in China from 1979 to 2018. Earth Syst. Sci. Data, 14, 1-20, 2022. https://essd.copernicus.org/articles/14/1413/2022/

7、Supporting project information

8、Data resource provider

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