A Big Earth Data Platform for Three Poles

**The surface heterogeneity patterns and the flux Imbalance under free convection based on the WRF LES**

1、Description

The Tibetan plateau (TP), called as “the third pole of the earth” is the water tower of Asia not only feed tens of millions of people, but also maintain fragile ecosystems in arid region of northwestern China. Temporal-spatially complete representations of land surface temperature are required for many purposes in environmental science, especially in third pole where the traditional ground measurement is difficult and therefore the data is sparse.
The cloud-free datasets of daily mean land surface temperature (LST) and mean annual land surface temperature (MAST) during 2004 to 2016 were released and derived from the quartic daily MODIS (the Moderate Resolution Imaging Spectroradiometer) Terra/Aqua LST products with a resolution of 1 km using a pragmatic data processing algorithm (Ran et al., 2015; 2017a). The comparison between radiance-based LST measurement and the estimated LST shows good agreement in the daily and inter-annual variability, with a correlation of 0.95 and 0.99 and bias of -1.73℃ (±3.38℃) and -2.07℃ (±1.05℃) for daily-mean-LST and MAST, respectively (Ran et al., 2017c). The systematic error is mainly source from the defined of daily mean LST, which is represented by the arithmetic average of the daytime and nighttime LSTs. The random error is mainly source from the uncertainty of the original MODIS LST values, especially for the daytime LST products. Trend validation using air temperatures from 94 weather stations indicate that the warming trends derived from time series MAST data is comparable with that derived from CMA data. The dataset is potential useful for various studies, including climatology, hydrology, meteorology, ecology, agriculture, public health, and environmental monitoring in the third pole and around regions.

2、Keywords

Theme：Radiation,Energy balance closure
Discipline：Atmosphere
Places：ideal experiments, author defined
Time：3 hours

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：900.0MB

4.Data format：None

4、Space scope

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

5、Time frame:None--None

6、Reference method

References to data:

ZHOU Yanzhao. The surface heterogeneity patterns and the flux Imbalance under free convection based on the WRF LES. A Big Earth Data Platform for Three Poles, doi:10.11888/Meteoro.tpdc.2701032019

References to articles:

Diurnal variations of the flux imbalance over homogeneous and heterogeneous landscapes

Zhou, Y., Li, D., Liu, H. and Li, X., 2018. The Effects of Surface Heterogeneity Scale on the Flux Imbalance under Free Convection. Journal of Geophysical Research: Atmospheres. (Under Review)

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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