A Big Earth Data Platform for Three Poles

**A merged continental planetary boundary layer height dataset based on high-resolution radiosonde measurements, ERA5 reanalysis, and GLDAS (2017-2021)**

1、Description

A global continental blended high-resolution planetary boundary layer height (PBLH) dataset is generated with machine learning algorithms, covering a time period from 2017 to 2021 with a 3-hour and 0.25º resolution in space and time. The radiosonde dataset contains around 180 million profiles over 370 stations across the world. The machine learning model was established by taking the parameters derived from ERA5 reanalysis and GLDAS as input while PBLH determined from radiosonde measurements was used as the learning target. Once a start-of-the-art model has been eventually trained, the model was then used to predict PBLHs at other grids across the globe with parameters acuqired or derived from ERA5 and GLDAS, including PBLH, lower tropospheric stability, near-surface wind speed and standard deviation of orography extracted from ERA5 reanalysis, sensible heat flux, latent heat flux, transpiration, evapotranspiration, downward long wave radiation, downward short wave radiation, total precipitation rate and near-surface pressure from GLDAS.
 Overall, this harmonized high-resolution PBLH dataset is outstanding in terms of both spatiotemporal coverage and good accuracy, as compared to the PBLHs retrieved from radiosonde.

2、Keywords

Theme：The Planetary Boundary Layer Height,Atmosphere Remote Sensing
Discipline：Atmosphere
Places：Continental, The global
Time：2017-2021, 3 hours resolution

3、Data details

1.Scale：None

2.Projection：

3.Filesize：12500.0MB

4.Data format：None

4、Space scope

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

5、Time frame:2016-12-31 16:00:00+00:00--2021-12-30 16:00:00+00:00

6、Reference method

References to data:

GUO Jianping , ZHANG Jian , SHAO Jia . A merged continental planetary boundary layer height dataset based on high-resolution radiosonde measurements, ERA5 reanalysis, and GLDAS (2017-2021). A Big Earth Data Platform for Three Poles, doi:10.11888/Atmos.tpdc.2726732022

References to articles:

7、Supporting project information

8、Data resource provider

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