A Big Earth Data Platform for Three Poles

**Surface PM2.5 concentrations in Tibetan Plateau (2021)**

1、Description

The surface PM2.5 concentration data of Tibet Plateau is named by date (YYYYMMDD). Each NC file contains one day's data, which is composed of PM2.5 concentration, longitude, latitude, and time information of the area (the corresponding variables in the data are named with PM2.5, lon, lat, time). The data inversion relies on the reanalysis data MERRA-2 released by NASA and the AOD product of Multi-angle Imaging SpectroRadiometer (MISR). MERRA-2 is mainly based on NASA GMAO Earth system model version 5 (GEOS 5). The algorithm is able to assimilate all the in-situ and re- motely-sensed atmospheric data. This dataset mainly focuses on the aerosol field of MERRA-2. This is the first multi-decadal reanalysis within which meteorological and aerosol observations are jointly assimilated into a global assimilation system. MISR views Earth with cameras pointed in 9 different directions， which can help us know the amount of sunlight that is scattered in different directions under natural conditions. The main data products used in this data algorithm are MERRA-2 aerosol analysis product (M2T1NXAER) and MISR Level 3 version 4 global aerosol products (MIL3DAEN\_4). Firstly, the ratio of PM2.5 to AOD in each grid was calculated by using the aerosol information provided by MERRA-2. Second, the PM2.5 concentration of the grid was calculated by multiplying the AOD of MISR by the ratio. The mean prediction error of PM2.5 concentration obtained by this method is within 20 μg/m3. The corresponding PM2.5 products can be used for the assessment of particulate pollution in the Tibet Plateau.

2、Keywords

Theme：Atmospheric remote sensing products,Aerosol mass concentration,Aerosol,Atmosphere Remote Sensing  
Discipline：Atmosphere  
Places：Tibetan Plateau  
Time：2021

3、Data details

1.Scale：None

2.Projection：

3.Filesize：9.29MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：45.0 | - |
| west：70.0 | - | east：105.0 |
| - | south：25.0 | - |

5、Time frame:2020-09-06 16:00:00+00:00--2021-09-29 16:00:00+00:00

6、Reference method

References to data:

FU Disong. Surface PM2.5 concentrations in Tibetan Plateau (2021). A Big Earth Data Platform for Three Poles, doi:10.11888/Atmos.tpdc.2728302022

References to articles:

Fu, D., Song, Z., Zhang, X., Xia, X., Wang, J., Che, H., Wu, H., Tang, X., Zhang, J., & Duan, M. (2020). Mitigating MODIS AOD non-random sampling error on surface PM2.5 estimates by a combined use of Bayesian Maximum Entropy method and linear mixed-effects model. Atmos. Pollut. Res. 11, 482–490.

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program  
Second Tibetan Plateau Scientific Expedition Program

8、Data resource provider

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