A Big Earth Data Platform for Three Poles

**A dataset of global sand drift (V1.0) (1950-2021)**

1、Description

The sand drift potential (DP, in vector units (VU)) is calculated by  
DPi=∑U^2\*[U-Ut]\*fu  
where i represents 16 directions: N, NNE, NE, NEE, E, EES, ES, ESS, S, SSW, WS, WWS, W, WWN, NW and NNW; U is the sand-moving wind speed at the standard height of 10 m; Ut is the threshold wind velocity, which is the minimum wind velocity at the 10 m height to cause sediment particles in saltation; and fu is the fraction of time when the wind speed is higher than Ut. The 2 m s-1 bin is adopted in each sand-moving wind direction, corresponding to the mean wind speeds of 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33 and 34 m s-1, and the sum of these bins is the final DP in the wind direction. Note that these mean wind speeds have been expressed in knots by the approximate conversion (1 knot = 0.5144 m s-1) to ensure the valid classification of wind energy (low energy, <200 VU; intermediate energy, ≥200 VU and <400 VU; high energy, ≥400 VU) developed by Fryberger. The divisor used in calculating the frequency of effective sand-moving winds from different directions is the total hour number of Julian years (8760 hours for common years or 8784 hours for leap years). The wind speed and wind direction data from 1950 to 2021 were hourly estimates of 10 m u-component of wind and 10 m v-component wind with a horizontal resolution of 0.1°×0.1° generated with the ERA5-Land dataset.

2、Keywords

Theme：Remote Sensing Product,Winds,Remote Sensing Technology,Surface winds,Geomorphology,Aeolian landform  
Discipline：Atmosphere,Terrestrial Surface,Remote Sensing Technology  
Places：Global  
Time：1950-2020

3、Data details

1.Scale：None

2.Projection：

3.Filesize：48000.0MB

4.Data format：None

4、Space scope

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

5、Time frame:1949-12-31 16:00:00+00:00--2021-12-31 03:59:59+00:00

6、Reference method

References to data:

LI Xin, LI Guoshuai. A dataset of global sand drift (V1.0) (1950-2021). A Big Earth Data Platform for Three Poles, doi:10.11888/Terre.tpdc.2719392020

References to articles:

7、Supporting project information

the National Natural Science Foundation of China

8、Data resource provider

name: LI Guoshuai  
unit: Institute of Tibetan Plateau Research, CAS  
email: liguoshuai@itpcas.ac.cn  
  
name: LI Xin  
unit:   
email: xinli@itpcas.ac.cn