A Big Earth Data Platform for Three Poles

**The global soil dataset for earth system modeling (2014)**

1、Description

The source data for this dataset is derived from world soil maps and multiple regional and national soil databases, including soil attributes and soil maps. We have adopted a unified data structure and data processing process to fuse diverse data. We then used the soil type connection method and the soil variable line connection method to obtain the spatial distribution of soil properties. To aggregate these data, we currently use the area weighting method. The raw data has a resolution of 30 seconds, and aggregated data with a 5-minute resolution (about 10km) is provided here. There are eight vertical layers with a maximum depth of 2.3 meters (ie 0- 0.045, 0.045- 0.091, 0.091- 0.166, 0.166- 0.289, 0.289- 0.493, 0.493- 0.829, 0.829- 1.383 and 1.383- 2.296 m).  
1. Data characteristics:  
Projection: WGS\_1984  
Coverage: Global  
Resolution: 0.083333 degrees (about 10 kilometers)  
Data format: netCDF  
  
2. The data set contains 11 items of general soil information and 34 properties of soil.  
(1) The general information of the soil is as follows, the file general.zip:  
No. Description Units  
1 additional property  
2 available water capacity  
3 drainage class  
4 impermeable layer  
5 nonsoil class  
6 phase1  
7 phase2  
8 reference soil depth cm  
9 obstacle to roots  
10 soil water regime  
11 topsoil texture  
(2) The 34 soil properties are as follows, files 1-9.zip, 10-18.zip, 19-26.zip, 27-34.zip  
Soil organic carbon density: SOCD5min.zip:  
No. Attrubute units Scale factor  
1 total carbon% of weight 0.01  
2 organic carbon% of weight 0.01  
3 total N% of weight 0.01  
4 total S% of weight 0.01  
5 CaCO3% of weight 0.01  
6 gypsum% of weight 0.01  
7 pH (H2O) 0.1  
8 pH (KCl) 0.1  
9 pH (CaCl2) 0.1  
10 Electrical conductivity ds / m 0.01  
11 Exchangeable calcium cmol / kg 0.01  
12 Exchangeable magnesium cmol / kg 0.01  
13 Exchangeable sodium cmol / kg 0.01  
14 Exchangeable potassium cmol / kg 0.01  
15 Exchangeable aluminum cmol / kg 0.01  
16 Exchangeable acidity cmol / kg 0.01  
17 Cation exchange capacity cmol / kg 0.01  
18 Base saturation%  
19 Sand content% of weight  
20 Silt content% of weight  
21 Clay content% of weight  
22 Gravel content% of volume  
23 Bulk density g / cm3 0.01  
24 Volumetric water content at -10 kPa% of volume  
25 Volumetric water content at -33 kPa% of volume  
26 Volumetric water content at -1500 kPa% of volume  
27 The amount of phosphorous using the Bray1 method ppm of weight 0.01  
28 The amount of phosphorous by Olsen method ppm of weight 0.01  
29 Phosphorous retention by New Zealand method% of weight 0.01  
30 The amount of water soluble phosphorous ppm of weight 0.0001  
31 The amount of phosphorous by Mehlich method ppm of weight 0.01  
32 exchangeable sodium percentage% of weight 0.01  
33 Total phosphorus% of weight 0.0001  
34 Total potassium% of weight 0.01

2、Keywords

Theme：Soil,Soil particle size,Soil texture  
Discipline：Terrestrial Surface  
Places：globe  
Time：2014

3、Data details

1.Scale：None

2.Projection：WGS84

3.Filesize：343.0MB

4.Data format：NetCDF

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：85.0 | - |
| west：-175.0 | - | east：175.0 |
| - | south：-85.0 | - |

5、Time frame:None--None

6、Reference method

References to data:

SHANGGUAN Wei, DAI Yongjiu. The global soil dataset for earth system modeling (2014). A Big Earth Data Platform for Three Poles, doi:10.11888/Soil.tpdc.2705782014

References to articles:

Shangguan, W., Dai, Y., Duan, Q., Liu, B., & Yuan, H. ( 2014), A global soil data set for earth system modeling, Journal of Advances in Modeling Earth Systems, 6(1), 249– 263, doi:10.1002/2013MS000293.

7、Supporting project information

8、Data resource provider

name: SHANGGUAN Wei  
unit:   
email: shanggv@hotmail.com  
  
name: DAI Yongjiu  
unit:   
email: yongjiudai@bnu.edu.cn