A Big Earth Data Platform for Three Poles

**Observational data of soil hydrological heterogeneity in the upper reaches of the Heihe River (2012-2014)**

1、Description

Soil bulk density, porosity, water content, water characteristic curve, saturated hydraulic conductivity, particle analysis, infiltration rate, and sampling point location information in the upper reaches of the Heihe River Basin.
1. The data is for 2014 supplementary sampling for 2012, using the ring knife to take the original soil;
2. The soil bulk density is the dry bulk density of the soil and is measured by the drying method. The original ring-shaped soil sample collected in the field was thermostated at 105 ° C for 24 hours in an oven, and the soil dry weight was divided by the soil volume (100 cubic centimeters) , unit: g/cm 3 .
3. Soil porosity is obtained according to the relationship between soil bulk density and soil porosity;
4. Soil infiltration analysis data set, the data is the field experimental measurement data from 2013 to 2014.
5. The infiltration data is measured by “MINI DISK PORTABLE TENSION INFILTROMETER”, and the approximate saturated hydraulic conductivity under a certain negative pressure is obtained.
6. Soil particle size data was measured at the Grain Granulation Laboratory of the Key Laboratory of the Ministry of Education of Lanzhou University. The measuring instrument is a Malvern laser particle size analyzer MS2000.
7. The saturated hydraulic conductivity is measured according to the enamel hair self-made instrument of Yi Yanli (2009). The Marioot bottle was used to maintain the head during the experiment; at the same time, the Ks measured at the time was converted to the Ks value at 10 °C for analysis and calculation.
8. Soil water content data is measured using ECH2O, including 5 layers of soil water content and soil temperature.
9. The water characteristic curve is measured by the centrifuge method: the undisturbed soil of the ring cutter collected in the field is placed in a centrifuge, and each of the speeds is measured at 0, 310, 980, 1700, 2190, 2770, 3100, 5370, 6930, 8200, 11600. The secondary rotor weight is obtained.

2、Keywords

Theme：Soil,Topography,Soil particles,Base data,Soil bulk density,Saturated hydraulic conductivity,Soil infiltration,Soil moisture/Water content,Soil porosity
Discipline：Terrestrial Surface
Places：Upper reaches of the Heihe River
Time：2012-2014

3、Data details

1.Scale：None

2.Projection：

3.Filesize：155.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：39.63 | - |
| west：97.72 | - | east：101.49 |
| - | south：37.84 | - |

5、Time frame:None--None

6、Reference method

References to data:

HE Chansheng. Observational data of soil hydrological heterogeneity in the upper reaches of the Heihe River (2012-2014). A Big Earth Data Platform for Three Poles, doi:10.11888/Soil.tpdc.2701112019

References to articles:

Jin, X., Zhang, L.h., Gu, J., Zhao, C., Tian, J., He, C.S. (2015). Modeling the impacts of spatial heterogeneity in soil hydraulic properties on hydrological process in the upper reach of the Heihe River in the Qilian Mountains, Northwest China. Hydrological Processes, 29(15), 3318-3327.

Li, J., Zhang, L., He, C., Zhao, C. (2018). A Comparison of Markov Chain Random Field and Ordinary Kriging Methods for Calculating Soil Texture in a Mountainous Watershed, Northwest China. Sustainability, 10(8), 2819.

Tian, J., Zhang, B., He, C., Han, Z., Bogena, H.R., Huisman, J.A. (2019). Dynamic response patterns of profile soil moisture wetting events under different land covers in the Mountainous area of the Heihe River Watershed, Northwest China. Agricultural and Forest Meteorology, 271(15), 225-239.

Tian, J., Zhang, B., He, C., & Yang, L. (2017). Variability in Soil Hydraulic Conductivity and Soil Hydrological Response Under Different Land Covers in the Mountainous Area of the Heihe River Watershed, Northwest China. Land Degradation & Development, 28(4), 1437-1449.

白晓, 张兰慧, 王一博, 田杰, 贺缠生, 刘国华. (2017). 祁连山区不同土地覆被类型下土壤水分变异特征. 水土保持研究, 24(2), 9.

赵琛, 张兰慧, 李金麟, 田杰, 吴维臻, 金鑫, 张喜风, 蒋忆文, 王晓磊, 贺缠生. 黑河上游土壤含水量的空间分布与环境因子的关系. 兰州大学学报 (自然科学版), 2014, 3010.

Zhang, L., He, C., Zhang, M., & Zhu, Y. (2019). Evaluation of the SMOS and SMAP soil moisture products under different vegetation types against two sparse in situ networks over arid mountainous watersheds, Northwest China. Science China Earth Sciences, 62(4), 703-718.

Zhang, L., He, C., & Zhang, M. (2017). Multi-Scale Evaluation of the SMAP Product Using Sparse In-Situ Network over a High Mountainous Watershed, Northwest China. Remote Sensing, 9(11), 1111.

7、Supporting project information

8、Data resource provider

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