A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of ground truth measurements synchronizing with airborne PLMR mission in the Yingke oasis and Huazhaizi desert steppe on June 28-29, 2012**

1、Description

The first dataset of ground truth measurements synchronizing with airborne Polarimetric L-band Multibeam Radiometer (PLMR) mission was obtained in the Yingke oasis and Huazhaizi desert steppe on 28-29 June, 7, 10, 26 July, 2 August, 2012 (UTC+8).
The dataset of ground truth measurements synchronizing with airborne Polarimetric L-band Multibeam Radiometer (PLMR) mission was obtained in the Linze Inland River Basin Comprehensive Research Station on 3 July, 2012.
PLMR is a dual-polarization (H/V) airborne microwave radiometer with a frequency of 1.413 GHz, which can provide multi-angular observations with 6 beams at ±7º, ±21.5º and ±38.5º. The PLMR spatial resolution (beam spot size) is approximately 0.3 times the altitude, and the swath width is about twice the altitude.
The measurements were conducted in the southwest part of the Zhangye Oasis, which included two sampling plots. One was located in Gobi desert with an area of 1 km × 1 km. Due to its homogeneous landscape, around 10 points were sampled to acquire the situation of soil water content. The other sampling plot was designed in farmlands with a dominant plant type of maize. Ground measurements took place along 16 transects, which were arranged parallelly with an interval of 160 m between each other in the east-west direction. In each 2.4 km long transect, soil moisture was sampled at every 80 m in the north-south direction. Steven Hydro probes were used to collect soil moisture and other measurements. For each sampling point in farmland, two measurements were acquired within an area of 1 m2, with one for the soil covered by plastic film (point name was tagged as LXPXXA) and the other for exposed soil (point name was tagged as LXPXXB). The field campaign started from 11:00 AM, but stopped at 4:00 PM on 28 June because of rain. The rest of measurements were completed from 10:30 AM to 5:30 PM on 29 June. Concurrently with soil moisture sampling, vegetation properties were measured at around 10 locations within the farmland sampling plot.

Observation items included:
Soil parameters: volumetric soil moisture (inherently converted from measured soil dielectric constant), soil temperature, soil dielectric constant, soil electric conductivity.
Vegetation parameters: biomass, vegetation water content, canopy height.

Data and data format:
This dataset includes two parts of measurements, i.e. soil and vegetation parameters. The former is as shapefile, with measured items stored in its attribute table. The measured vegetation parameters are recorded in an Excel file.

2、Keywords

Theme：Soil,Soil temperature,Remote Sensing Technology,Microwave radiometer,Soil moisture/Water content
Discipline：Terrestrial Surface,Remote Sensing Technology
Places：Heihe River Basin, the artificial oasis experimental area in the middle reaches
Time：2012-06-28, 2012, 2012-06-29

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：4.8MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.79 | - |
| west：100.32 | - | east：100.37 |
| - | south：38.76 | - |

5、Time frame:2012-07-10 11:23:00+00:00--2012-07-11 11:23:00+00:00

6、Reference method

References to data:

LI Xin. HiWATER: Dataset of ground truth measurements synchronizing with airborne PLMR mission in the Yingke oasis and Huazhaizi desert steppe on June 28-29, 2012. A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.052.2013.db2017

References to articles:

Li, X., Liu, S.M., Xiao, Q., Ma, M.G., Jin, R., Che, T., Wang, W.Z., Hu, X.L., Xu, Z.W., Wen, J.G., Wang, L.X. (2017). A multiscale dataset for understanding complex eco-hydrological processes in a heterogeneous oasis system. Scientific Data, 4, 170083. doi:10.1038/sdata.2017.83.

7、Supporting project information

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8、Data resource provider

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