A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of LAINet observations in the middle reaches of the Heihe River Basin**

1、Description

This is the LAINet dataset measured in the corn field at the Xiaoman irrigation district (from 25 June, to 24 August, 2012). The time used in this dataset is in UTC+8 Time.
Instrument: LAINet- A wireless sensor network for leaf area index measurement, Beijing Normal University
Measurement Mode: LAINet observation system is formed by 3 kinds of sensor nodes, they are respectively (1) node below the canopy, sensors up-looking are used for measure the transmitted radiation through the canopy, which are deployed horizontally; (2) node above canopy: sensors up-looking are used for measure the total sun incident radiation, which are deployed horizontally; (3) sink or router node, which is designed for receiving and transmitting data measured by the above node and below node.
Data Processing: the original data obtained from sensors is received by sink nodes, and forms the original dataset in days after pre-processed. The observation for transmittance of the canopy is acquired by calculating the ratio of the radiation through the canopy and the total incident radiation above the canopy at different sun elevation angles during a day. The retrieval of LAI is based on the multi-angle transmittance data.
LAINet dataset is composed of original LAI data, LAI data after calculating the mean value in 5 days interval and the longitude and latitude of the measurement nodes. All the data are stored in the format of Excel. As for the data after calculating the mean value in 5 days, we take the number of aggregation nodes as the name of the sheet. Data saved in a sheet is from an sink node which receives the measurement data from the child nodes. The original data records the LAI of every node in the observation day. In the sheet of two kinds of data above, the meaning of the column is as follows: DOY, node one, node two, …, and node N.

2、Keywords

Theme：Leaf area index,Vegetation
Discipline：Terrestrial Surface
Places：Heihe River Basin, the artificial oasis experimental area in the middle reaches, Daman irrigation district
Time：2012, 2012-06-25 to 2012-08-24

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：1.0MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.88 | - |
| west：100.289 | - | east：100.46 |
| - | south：38.734 | - |

5、Time frame:2012-07-13 07:36:00+00:00--2012-09-11 07:36:00+00:00

6、Reference method

References to data:

MA Mingguo. HiWATER: Dataset of LAINet observations in the middle reaches of the Heihe River Basin. A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.057.2013.db2018

References to articles:

Qu, Y.H., Zhu, Y.Q., Han, W.C., Wang, J.D., & Ma, M.G. (2014). Crop leaf area index observations with a wireless sensor network and its potential for validating remote sensing products. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 7(2), 431-444.

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

Heihe Watershed Allied Telemetry Experimental Research (HiWATER)

8、Data resource provider

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