A Big Earth Data Platform for Three Poles

**HiWATER: The multi-scale observation experiment on evapotranspiration over heterogeneous land surfaces (MUSOEXE-12)-dataset of flux observation matrix (thermal dissipation sap flow velocity Probe) from Jun to Sep, 2012**

1、Description

This dataset includes observational data of sap flow from 14 June to 21 September, 2012. The study area was located in the irrigation area within the middle reaches of the Heihe River Basin, China. Sample trees were selected for installing TDP (thermal dissipation sap flow velocity probe) instruments according to their height and diameter at breast height (DBH); only Popolusgansuensis trees were selected in this study. The TDP instrument is made in China; the model type was TDP30. There were 3 TDP observation sites, i.e., TDP-1, TDP-2 and TDP-3, which were located near the LAS4\_S, EC6 and EC8 sites, respectively. The order of tree heights was TDP-2 > TDP-1 > TDP-3, and the order of DBH was TDP-2 > TDP-3 > TDP-1. At each site, 3 representative trees were selected to measure the sap flow. Three TDPs were mounted on the stem of each tree, one each for the southeast, southwest and north directions; the mounting height is 1.3 meters.  
Each TDP had two probes. The raw TDP data included the temperature difference between the two probes at a frequency of 30 s. The released data include the 10 minute-averaged sap flow rate (cm/h), sap flow flux (cm^3/h), and daily transpiration (mm/d). The sap flow rate and the sap flow flux were calculated according to the temperature difference between the two probes; the shelter-forest transpiration per unit area (Q) was calculated based on the area of shelterbelts and density of Popolusgansuensis trees at each site. The data preprocessing steps included the following. (1) Unphysical data were excluded. (2) Missing data were filled with -6999. (3) Suspicious data, which were most likely caused by probe failure, were marked in red; confirmed bad data were excluded.  
For more information, please refer to Liu et al. (2016) (for multi-scale observation experiment or sites information), Qiao et al. (2015) (for data processing) in the Citation section.

2、Keywords

Theme：Vegetation,Canopy interception,Evapotranspiration  
Discipline：Terrestrial Surface  
Places：Heihe River Basin, the artificial oasis experimental area in the middle reaches, flux observation matrix  
Time：2012-06-14 to 2012-09-21

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：5.28MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.8468 | - |
| west：100.3685 | - | east：100.3685 |
| - | south：38.8468 | - |

5、Time frame:2012-06-28 15:54:00+00:00--2012-10-05 15:54:00+00:00

6、Reference method

References to data:

LI Xin, LIU Shaomin. HiWATER: The multi-scale observation experiment on evapotranspiration over heterogeneous land surfaces (MUSOEXE-12)-dataset of flux observation matrix (thermal dissipation sap flow velocity Probe) from Jun to Sep, 2012. A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.106.2013.db2016

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.  
  
Qiao, C., Sun, R., Xu, Z.W., Zhang, L., Liu, L.Y., Hao, L.Y., Jiang, G.Q. (2015). A study of shelterbelt transpiration and cropland evapotranspiration in an irrigated area in the middle reaches of the Heihe River in northwestern China. IEEE Geoscience and Remote Sensing Letters, 12(2), 369-373. doi:10.1109/LGRS.2014.2342219.

7、Supporting project information

National Natural Science Foundation of China

8、Data resource provider

name: LI Xin  
unit:   
email: xinli@itpcas.ac.cn  
  
name: LIU Shaomin  
unit: Beijing Normal University  
email: smliu@bnu.edu.cn