A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of emissivity in the middle reaches of the Heihe River Basin in 2012**

1、Description

This dataset includes the emissivity spectrum of typical ground objects in middle researches of the Heihe river basin. This dataset was acquired in oasis, desert, Gobi and wetland of experiment area. Time range starts from 2012-05-25 to 2012-07-18 (UTC+8).  
Instrument: MODEL 102F PORTABLE FTIR (Fourier Transform Infrared Spectrometer), Handheld infrared thermometer.  
Measurement methods: at the first step, measure the thermal radiance of cold blackbody, warm blackbody, sample and gold plate (Downwelling Radiance). The radiance of cold blackbody and warm blackbody was used to calibrate the instrument, and eliminate the “noise” caused by the device itself. The retrieval of emissivity and temperature was then performed using iterative spectrally smooth temperature-emissivity separation (ISSTES) algorithm. The retrieved emissivity spectrum range from 8 to 14 μm, with spectral resolution of 4cm-1.   
Dataset contains the original recorded spectra (in ASCII format) and the log files (in doc format). The processed data are emissivity curves (ASCII) that ranged from 8 to 14 μm, and the temperatures of samples. Thermal photos of the sample, digital photo of the scene and the object are recorded in some cases.

2、Keywords

Theme：Emissivity,Radiation,Temperature,Skin temperature,Infrared spectrometer,Remote Sensing Technology  
Discipline：Atmosphere,Remote Sensing Technology  
Places：Heihe River Basin, the artificial oasis experimental area in the middle reaches, desert, desert, wetland, crop land  
Time：2012-06-17, 2012-07-10, 2012-07-11, 2012, 2012-05-30, 2012-06-26, 2012-05-26, 2012-06-01, 2012-07-18, 2012-06-24, 2012-06-02, 2012-06-19, 2012-07-04, 2012-05-25, 2012-07-03, 2012-05-29, 2012-07-09, 2012-06-03

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：208.0MB

4.Data format：文本, \*.cbx, \*.wbx, \*.sax, \*.dwx, \*.jpg, \*.img, \*.emiss, \*.xlsx后缀

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.855 | - |
| west：100.373 | - | east：100.373 |
| - | south：38.855 | - |

5、Time frame:2012-06-06 10:27:00+00:00--2012-07-30 10:27:00+00:00

6、Reference method

References to data:

MA Mingguo. HiWATER: Dataset of emissivity in the middle reaches of the Heihe River Basin in 2012. A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.042.2013.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

Heihe Watershed Allied Telemetry Experimental Research (HiWATER)

8、Data resource provider

name: MA Mingguo  
unit: Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences  
email: mmg@lzb.ac.cn