A Big Earth Data Platform for Three Poles

**WATER: Dataset of TIR spectrum observations in the arid region hydrology experiment area and A'rou foci experiment area from Jun to Jul, 2008**

1、Description

The dataset of TIR spectral emissivity was obtained in the arid region hydrology experiment area and A'rou foci experiment area. Observations were by:
 (1) Spectral emissivity obtained from 102F at 2-25um in cooperation with the handheld infrared thermometer (BNU) for the surface radiative temperature and one au-plating board for downward atmospheric radiation. The radiative transfer equation and TES methods were applied to retrieve emissivity.
 The grassland and the concrete floor were measured on May, 27, 2008, the wheat field and the maize field at ICBC resort on May, 29, 2008, the concrete floor (multiangle measurements) at ICBC resort on Jun. 3, 2008, the bare soil and the maize leaf in Yingke oasis maize field on Jun. 22, 2008, the maize and wheat canopy in Yingke oasis maize field on Jun. 23, 2008, the rape field in Biandukou experimental area on Jun. 24, 2008, the alfalfa, the saline land, the grassland and the barley land on Jun. 26, 2008, the wheat field and the maize field in Yingke oasis maize field on Jun. 29, 2008, the desert bare land and vegetation (Reaumuria soongorica) in No. 2 Huazhaiai desert plot on Jun. 30, 2008, the rape field and the grassland in Biandukou experimental area on Jul. 6, 2008, and the grassland and the bare land (multiangle) in A'rou experimental area on Jul. 14, 2008.
 The cold blackbody calibration (\*.CBX/\*.CBB), the warm blackbody calibration (\*.WBX/\*.WBB), the ground objects measurements (\*.SAX), au-plating board measurements, and the downward atmospheric radiation (\*.DWX) were all needed during observation. Moreover, the spectral radiance and emissivity were also archived.
 The response function of various bands could be acquired by 102F. And then emissivity of 2-25um could be retrieved. Two results of emissivity were developed: one was direct from 102F and the other was retrieved by ISSTES (Iterative spectrally smooth temperature-emissivity separation). Spectral resolution for raw data and proprecessed data was 4cm-1.
 (2) Spectral emissivity obtained from BOMAN at 2 -13μm in cooperation with the blackbody barrel and the blackbody from Institute of Remote Sensing Applications and the blackbody (BNU).
 The desert was measured on Jun. 30 and Jul. 1, 2008, A'rou foci experimental area on Jul. 14, 2008, indoor observations on the deep and shallow layer soil, vegetation, small stones, two maize plants from Yingke No.2 (YKYZYMD02) field and one maize plant and bare land from No. 3 (YKYZYMD03)field on on Jul. 16, 2008, Linze experimental area on Jul. 17, 2008, and gobi on Jul. 18, 2008. The sample site, coordinates, time and photos were all archived.
 During each observation, BOMAN was preheated and the blackbody was set at the predicted target temperature, which would be changed after the infrared radiation of the blackbody was measured by BOMAN. And then the target infrared radiation, the downward atmospheric radiation (reflected by the au-plating board) and the infrared radiation of the blackbody would be measured one by one. Raw data were archived in Igm, and after processed by FTSW500, the result was Rad (radiation). Finally, Rad would be changed into txt files by Matlab programs.

2、Keywords

Theme：Radiation,Infrared spectrometer,Remote Sensing Technology,Emissivity
Discipline：Atmosphere,Remote Sensing Technology
Places：Heihe River Basin, Arid Region Hydrology in the Middle Reaches, Zhangye City Foci Experimental Area, A'rou flight zone, closed observation area of Biandoukou,
Time：2008-07-14, 2008-06-30, 2008,

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：27.8MB

4.Data format：EXCEL

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：39.311 | - |
| west：100.11 | - | east：101.036 |
| - | south：38.015 | - |

5、Time frame:2008-06-08 08:00:00+00:00--2008-07-30 08:00:00+00:00

6、Reference method

References to data:

ZHOU Chunyan, YAN Guangkuo. WATER: Dataset of TIR spectrum observations in the arid region hydrology experiment area and A'rou foci experiment area from Jun to Jul, 2008. A Big Earth Data Platform for Three Poles, doi:10.3972/water973.0140.db2013

References to articles:

7、Supporting project information

The CAS (Chinese Academy of Sciences) Action Plan for West Development Project
National Program on Key Basic Research Project (973 Program

8、Data resource provider

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