A Big Earth Data Platform for Three Poles

**WATER: Dataset of ground truth measurement synchronizing with Landsat TM in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on May 20, 2008**

1、Description

The dataset of ground truth measurement synchronizing with Landsat TM was obtained in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on May 20, 2008. Observation items included:
 (1) LAI in Yingke oasis maize field. The maximum leaf length and width of each alfalfa and barley were measured. Data were archived in Excel format.
 (2) Reflectance spectra in Yingke oasis maize field by ASD FieldSpec (350-2500nm, the vertical canopy observation and the transect observation) from Institute of Remote Sensing Applications (CAS), and in Huazhaizi desert No. 2 plot by ASD FieldSpec (350-1603nm, the vertical observation and the transect observation for reaumuria soongorica and the bare land) from Beijing Academy of Agriculture and Forestry Sciences. The grey board and the black and white cloth were also used for calibration spectrum. Raw data were binary files direct from ASD (by ViewSpecPro), and pre-processed data on reflectance were in Excel format.
 (3) the radiative temperature by 3 handheld radiometers in Yingke oasis maize field (Institute of Remote Sensing Applications, BNU and Institute of Geographic Sciences and Natural Resources respectively, the vertical canopy observation and the transect observation), and by 3 handheld infrared thermometers in Huazhaizi desert No. 2 plot (the vertical vegetation and bare land observation). The data included raw data (in Word format), recorded data and the blackbody calibrated data (in Excel format).
 (4) the radiative temperature of maize, wheat and the bare land of Yingke oasis maize field by ThermaCAM SC2000 (1.2m above the ground, FOV = 24°×18°). The data included raw data (read by ThermaCAM Researcher 2001), recorded data and the blackbody calibrated data (archived in Excel format).
 (5) Photosynthesis of maize, wheat and the bare land of Yingke oasis maize field by LI6400, carried out according to WATER specifications. Raw data were archived in the user-defined format (by notepat.exe) and processed data were in Excel format.
 (6) Maize albedo by the shortwave radiometer in Yingke oasis maize field. R =10H (R for FOV radius; H for the probe height). Data were archived in Excel format.
 (7) Atmospheric parameters in Huazhaizi desert No. 2 plot by CE318 (produced by CIMEL in France). The total optical depth, aerosol optical depth, Rayleigh scattering coefficient, column water vapor in 936 nm, particle size spectrum and phase function were then retrieved from these observations. The optical depth in 1020nm, 936nm, 870nm, 670nm and 440nm were all acquired by CE318. Those data include the raw data in k7 format and can be opened by ASTPWin. ReadMe.txt is attached for detail. Processed data (after retrieval of the raw data) in Excel format are on optical depth, rayleigh scattering, aerosol optical depth, the horizontal visibility, the near surface air temperature, the solar azimuth, zenith, solar distance correlation factors, and air column mass number.
 (8) Coverage fraction of Reaumuria soongorica by the self-made coverage instrument and the camera (2.5m-3.5m above the ground) in Huazhaizi desert No. 2 plot. Based on the length of the measuring tape and the bamboo pole, the size of the photo can be decided. GPS data was used for the location and the technology LAB was used to retieve the coverage fractionof the green vegetation. Besides, such related information as the surrounding environment was also recorded. Data included the vegetation iamge and coverage (by .exe).
 (9) The radiative temperature of Reaumuria soongorica canopy and the bare land by 2 fixed automatic thermometers (FOV: 10°; emissivity: 0.95) in Huazhaizi desert No. 2 plot, observing straight downwards at intervals of 1s. Raw data, blackbody calibrated data and processed data were all archived in Excel format.

2、Keywords

Theme：Canopy spectrum,Leaf area index,Vegetation,Aerosol,Aerosol optical depth/Thickness,Aerosol backscatter,Vegetation cover,Terrestrial Surface Remote Sensing,Ground verification information,Atmospheric Water Vapor
Discipline：Atmosphere,Terrestrial Surface
Places：Heihe River Basin, Arid Region Hydrology in the Middle Reaches,
Time：2008,

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：203.3MB

4.Data format：

4、Space scope

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

5、Time frame:2008-06-04 08:00:00+00:00--2008-06-04 08:00:00+00:00

6、Reference method

References to data:

YAN Guangkuo, ZHOU Chunyan, REN Huazhong, CHAI Yuan, YAN Binyan, XIAO Zhiqiang, WANG Haoxing, LI Li, CHEN Ling, LI Xiaoyu, LIU Sihan, LI Jing, KANG Guoting, Liu Qiang, WANG Jindi, GUANG Jie, YAO Yanjuan, SHU Lele, TAO Xin, ZHANG Hao, TIAN Jing, XIN Xiaozhou, QIAN Yonggang. WATER: Dataset of ground truth measurement synchronizing with Landsat TM in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on May 20, 2008. A Big Earth Data Platform for Three Poles, doi:10.3972/water973.0120.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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