A Big Earth Data Platform for Three Poles

**WATER: Dataset of ground truth measurements synchronizing with ASTER in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on May 28, 2008**

1、Description

The dataset of ground truth measurements synchronizing with ASTER was obtained in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on May 28, 2008. Observation items included:  
 (1) 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.   
 (2) Photosynthesis by LI-6400. Raw data were archived in the user-defined format (by notepat.exe) and processed data were in Excel format.  
 (3) 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.  
 (4) Coverage fraction of maize and wheat by the self-made instrument and the camera (2.5m-3.5m above the ground) in Yingke oasis maize field. Based on the length of the measuring tape and the bamboo pole, the size of the photo can be decided. GPS date were also collected and the technology LAB was applied to retrieve the coverage of the green vegetation. Besides, such related information as the surrounding environment was also recorded. Data included the primarily measured image and final fraction of vegetation coverage.  
 (5) the radiative temperature of maize, wheat and the bare land in Yingke oasis maize field by ThermaCAM SC2000 using 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).  
 (6) the radiative temperature by the automatic thermometer (FOV: 10°; emissivity: 0.95), 3 for maize canopy, the bare land and wheat canopy in Yingke oasis maize field, one for maize canopy in Huazhaizi desert maize field, and 2 for vegetation and the desert bare land in Huazhaizi desert No. 2 plot,at nadir at a time interval of one second. Raw data, blackbody calibrated data and processed data were all archived in Excel format.  
 (7) 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.  
 (8) LAI in Yingke oasis maize field. The maximum leaf length and width of each maize and wheat were measured. Data were archived in Excel format.  
 (9) FPAR (Fraction of Photosynthetically Active Radiation) of maize and wheat by SUNSACN and the digital camera in Yingke oasis maize field. FPAR= (canopyPAR－surface transmissionPAR－canopy reflection PAR+surface reflectionPAR) /canopy PAR; APAR=FPAR\* canopy PAR. Data were archived in the table format of Word.  
 (10) The radiative temperature in Yingke oasis maize field (the transect observation), Yingke oasis wheat field (the transect observation), Huazhaizi desert maize field (the transect observation) and Huazhaizi desert No. 2 plot (the diagonal observation) by the handheld infrared thermometer (BNU and Institute of Remote Sensing Applications). Raw data (in Word format), blackbody calibrated data and processed data (in Excel format) were all archived.

2、Keywords

Theme：Radiation,Canopy spectrum,Leaf area index,Terrain spectrometer,Vegetation,Aerosol,Albedo,Aerosol optical depth/Thickness,Vegetation cover,Terrestrial Surface Remote Sensing,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：172.7MB

4.Data format：

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.88 | - |
| west：100.289 | - | east：100.46 |
| - | south：38.8734 | - |

5、Time frame:2008-06-12 00:00:00+00:00--2008-06-12 00:00:00+00:00

6、Reference method

References to data:

HUANG Bo, ZHOU Mengwei, YANG Tianfu, LI Shihua, ZHOU Chunyan, REN Huazhong, CHAI Yuan, WANG Haoxing, WANG Dacheng, ZHANG Yang, LI Li, CHEN Ling, LI Xiaoyu, LIU Sihan, LUO Zhen, KANG Guoting, SHU Lele, TAO Xin, CHENG Zhanhui, XIN Xiaozhou, QIAN Yonggang, WANG Jianhua. WATER: Dataset of ground truth measurements synchronizing with ASTER in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on May 28, 2008. A Big Earth Data Platform for Three Poles, doi:10.3972/water973.0123.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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