A Big Earth Data Platform for Three Poles

**WATER: Dataset of ground truth measurement synchronizing with the airborne WiDAS mission in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on Jul. 11, 2008**

1、Description

The dataset of ground truth measurement synchronizing with the airborne WiDAS mission was obtained in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on Jul. 11, 2008. WiDAS, composed of four CCD cameras, one mid-infrared thermal imager (AGEMA 550), and one infrared thermal imager (S60), can acquire CCD, MIR and TIR band data. The simultaneous ground data included:  
 (1) Atmospheric parameters in Huazhaizi desert No. 2 plot from 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 details. 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) Radiative temperature of maize, wheat and the bare land (in Yingke oasis maize field), vegetation and the bare land (Huazhaizi desert No. 2 plot) by the thermal cameras at a height of 1.2m above the ground. Optical photos of the scene were also taken. Raw data (read by ThermaCAM Researcher 2001) was archived in IMG format and radiative files are stored in Excel format. .  
 (3) Photosynthesis by LI6400 in Yingke oasis maize field, 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.  
 (4) Ground object reflectance spectra in Yingke oasis maize field, Huazhaizi maize field, Huazhaizi desert No. 1 and 2 plots, by ASD FieldSpec (350～2500 nm) from Institute of Remote Sensing Applications (IRSA), CAS. Raw data were binary files direct from ASD (by ViewSpecPro), which were recorded daily in detail, and pre-processed data on reflectance were in .txt format.  
 (5) The radiative temperature in Huazhaizi desert No. 2 plot by the handheld infrared thermometer (BNU and IRSA). Raw data, blackbody calibrated data and processed data (in Excel format) were all archived.  
 (6) FPAR (Fraction of Photosynthetically Active Radiation) 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 Excel format.  
 (7) The radiative temperature of the maize canopy by the automatic thermometer (FOV: 10°; emissivity: 0.95) mearsued at nadir with an time intervals of 1s in Huazhaizi desert maize field. Raw data, blackbody calibrated data and processed data were all archived as Excel files.  
 (8) Maize albedo from two shortwave radiometer in Yingke oasis maize field. R =10H (R for FOV radius; H for the probe height). Data were archived in Excel format.

2、Keywords

Theme：Canopy spectrum,Vegetation,Aerosol,Aerosol optical depth/Thickness,Canopy reflected radiation,Terrestrial Surface Remote Sensing,Spectral components,Ground verification information  
Discipline：Atmosphere,Terrestrial Surface  
Places：Heihe River Basin, Arid Region Hydrology in the Middle Reaches,   
Time：

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：295.8MB

4.Data format：

4、Space scope

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

5、Time frame:2008-07-27 00:00:00+00:00--2008-07-27 00:00:00+00:00

6、Reference method

References to data:

YAN Guangkuo, ZHOU Mengwei, LI Hua, YANG Guijun, ZHOU Chunyan, XIA Chuanfu, REN Huazhong, CHENG Zhanhui, XIN Xiaozhou, LI Li, LI Xiaoyu, LIU Sihan, Liu Liangyun, WANG Tianxing. WATER: Dataset of ground truth measurement synchronizing with the airborne WiDAS mission in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on Jul. 11, 2008. A Big Earth Data Platform for Three Poles, doi:10.3972/water973.0133.db2015

References to articles:

刘强, 肖青, 刘志刚, 方莉, 彭菁菁, 李波. 黑河综合遥感联合试验中机载WIDAS数据的预处理方法. 遥感技术与应用, 2010, 25(6): 797-804.

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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