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 Jun. 29, 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 Jun. 29, 2008. WiDAS, composed of four CCD cameras, one mid-infrared thermal imager (AGEMA 550), and one infrared thermal imager (S60), can acquire VNIR, 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 detail. Processed 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) Emissivity of maize and wheat in the Yingke oasis by portable 102F (2.0~25.0um) from BNU. Warm blackbody, cold blackbody, the target and the au-plating board of known emissivity. Raw data of those four measurements were archived in \*.WBX, \*.CBX, \*.SAX and \*.CBX Besides, the spectral radiance and emissivity calculated by 102F were archived in \*.RAX and \*.EMX, respectively. Meanwhile, the final spectral emissivity of targets were also calculated by TES (ISSTES).  
 (3) LAI of mazie and wheat in Yingke oasis maize field. The maximum leaf length and width of leaves were measured. Data were archived as Excel files of Jul. 2.   
 (4) 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 MS Office Word format.  
 (5) the radiative temperature by the automatic thermometer (FOV: 10°; emissivity: 0.95), measured at nadir with time intervals of one second in Yingke oasis maize field (one from BNU and the other from Institute of Remote Sensing Applications), Huazhaizi desert maize field (only one from BNU for continuous radiative temperature of the maize canopy) and Huazhaizi desert No. 2 plot (two for reaumuria soongorica canopy and the background bare soil). Raw data, blackbody calibrated data and processed data were all archived as Excel files.  
 (6) the component temperature in Yingke oasis maize field (by the handheld radiometer and the thermal image from BNU), Yingke oasis wheat field and Huazhaizi desert maize field. For maize, the component temperature included the vertical canopy temperature, the bare land temperature and the plastic film temperature; for the wheat, it included the vertical canopy temperature, the half height temperature, the lower part temperature and the bare land temperature. The data included raw data (in MS Office Word format), recorded data and the blackbody calibrated data (in Excel format).  
 (7) Maize albedo by the shortwave radiometer in Yingke oasis maize field. R =10H (R for FOV radius; H for the observation height). Data were archived in MS Office Excel format.  
 (8) the radiative temperature by the handheld radiometer in Yingke oasis maize field and Huazhaizi desert maize field (the vertical canopy observation and the transect observation for both fields), and Huazhaizi desert No. 2 plot (the NE-SW diagonal observation). The data included raw data (in .doc format), recorded data and the blackbody calibrated data (in Excel format).  
 (9) ground object reflectance spectra in Yingke oasis maize field by ASD FieldSpec (350～2 500 nm) from BNU. The vertical canopy observation and the line-transect observation were used. The data included raw data (from ASD, read by ViewSpecPro), recorded data and processed data on reflectance (in Excel format).

2、Keywords

Theme：Photosynthetically active radiation,Canopy spectrum,Vegetation,Aerosol,Canopy temperature,Aerosol optical depth/Thickness,Aerosol backscatter,Terrestrial Surface Remote Sensing,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：360.9MB

4.Data format：

4、Space scope

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

5、Time frame:2008-07-14 00:00:00+00:00--2008-07-14 00:00:00+00:00

6、Reference method

References to data:

WANG Tianxing, YAN Guangkuo, FAN Wenjie, ZHOU Mengwei, LI Hua, YANG Guijun, ZHOU Chunyan, GUO Xinping, REN Huazhong, LI Li, GAO Shuai, CHEN Ling, YU Fan, SU Gaoli, LIU Sihan, Liu Liangyun, SHEN Xinyi, CHE Tao, GE Yingchun, XIAO Yueting, XIN Xiaozhou, WU Mingquan. WATER: Dataset of ground truth measurement synchronizing with the airborne WiDAS mission in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on Jun. 29, 2008. A Big Earth Data Platform for Three Poles, doi:10.3972/water973.0130.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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