A Big Earth Data Platform for Three Poles

**WATER: Dataset of ground truth measurement synchronizing with the airborne imaging spectrometer (OMIS-II) mission in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on Jun. 16, 2008**

1、Description

The dataset of ground truth measurement synchronizing with the airborne imaging spectrometer (OMIS-II) mission was obtained in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on Jun. 16, 2008. Observation items included:
 (1) The radiative temperature by the handheld radiometer in Yingke oasis maize field (from BNU, the vertical canopy observation, the transect observation and the diagonal observation), Yingke oasis wheat field (only for the transect temperature), and Huazhaizi desert No. 2 plot (the NE-SW diagonal observation). Besides, the maize radiative temperature and the physical temperature were also measured both by the handheld radiometer and the probe thermometer in the maize plot of 30m near the resort. The data included raw data (in Word format), recorded data and the blackbody calibrated data (in Excel format).
 (2) 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.
 (3) The radiative temperature of maize, wheat and the bare land in Yingke oasis maize field and Huazhaizi desert 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).
 (4) The reflectance spectra by ASD through the vertical canopy observation and the transect observation in Yingke oasis maize field (350-2500nm , from BNU), and Huazhaizi desert maize field and Huazhaizi desert No. 1 plot (350-2500nm , from Cold and Arid Regions Environmental and Engineering Research Institute, CAS). The data included raw data (in .doc format), recorded data and the blackbody calibrated data (in Excel format).
 (5) The radiative temperature by the automatic thermometer (FOV: 10°; emissivity: 1.0), observing straight downwards at intervals of 1s 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 bare land). Raw data, blackbody calibrated data and processed data were all archived in Excel format.
 (6) Photosynthesis of maize and wheat 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.
 (7) Soil moisture in Yingke oasis maize field. The sample was fetched by the soil auger and weighed by the scales before and after drying. Data were archived in Excel format.
 (8) 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.
 (9) 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.

2、Keywords

Theme：Photosynthetically active radiation,Canopy spectrum,Thermal imager,Vegetation,Chlorophyll,Aerosol,Image spectrometer OMIS-II,Remote Sensing Technology,Aerosol optical depth/Thickness,Aerosol backscatter,Solar spectrophotometer,Atmospheric Water Vapor
Discipline：Atmosphere,Terrestrial Surface,Remote Sensing Technology
Places：Heihe River Basin, Arid Region Hydrology in the Middle Reaches,
Time：2008,

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：179.9MB

4.Data format：

4、Space scope

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

5、Time frame:2008-06-27 16:00:00+00:00--2008-06-27 16:00:00+00:00

6、Reference method

References to data:

XIN Xiaozhou, CAO Yongpan, ZHOU Hongmin, FAN Wenjie, ZHOU Mengwei, YANG Guijun, ZHOU Chunyan, WU Yueru, LIANG Wenguang, XIA Chuanfu, REN Huazhong, XU Zhen, WANG Dacheng, FENG Lei, LI Li, CHEN Ling, LI Xiaoyu, YU Fan, LIU Sihan, Liu Liangyun, SHU Lele, TAO Xin. WATER: Dataset of ground truth measurement synchronizing with the airborne imaging spectrometer (OMIS-II) mission in the Yingke oasis and Huazhaizi desert steppe foci experimental areas on Jun. 16, 2008. A Big Earth Data Platform for Three Poles, doi:10.3972/water973.0127.db2013

References to articles:

陶欣, 范闻捷, 王大成, 闫彬彦, 徐希孺. 植被FAPAR的遥感模型与反演研究. 地球科学进展, 2009, 24(7): 741-747.

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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