A Big Earth Data Platform for Three Poles

**WATER: Dataset of ground truth measurements synchronizing with Landsat TM in the Biandukou foci experimental area (Mar. 17, 2008)**

1、Description

The dataset of ground truth measurements synchronizing with Landsat TM was obtained in the Biandukou foci experimental area from 11:10-13:30 on Mar. 17, 2008. Those provide reliable ground data for objects modelling and background modelling, remote sensing image simulation and scaling.  
 Simultaneous with the satellite overpass, numerous ground data were collected, spectrum (ASD Fieldspec FRTM (Boulder, Co, USA), 350nm-2500nm, 3nm for the visible near-infrared band and 10nm for the shortwave infrared band), the surface temperature, atmospheric parameters, the soil profile gravimetric moisture (0-1cm, 1-3cm and 3-5cm), the shallow layer frost depth and the soil roughness in C1, G1, W1, W2, B1 and B2, mostly the grassland, the wheat stubble land, the deep plowed land and the rape stubble land. The quadrates of 90m×90m and 450m×450m were compartmentalized into 81 subgrids of 10m×10m and 50m×50m. Based on the resolution of 30m×30m and 150m×150m, the influence of adjacent eight pixels on the center pixel was studied. Section lines of each subgrid were adopted to acquire the pixel spectrum, which were measured more than once for the mean value.  
 The spectrum data were archived in the ASCII format, with the first five rows as the file header and the following two columns as wavelength (nm) and reflectance (percentage) respectively. The .txt file was not reflectance but intermediate file for further calculation. Raw data were binary files direct from ASD (by ViewSpecPro).  
 The surface radiative temperature and the physical temperature were measured by the handheld infrared thermometer. Besides, the cover type was also recorded. The data can be opened by Microsoft Office.  
 Atmospheric parameters were measured by CE318 to retrieve the total optical depth, aerosol optical depth, Rayleigh scattering coefficient, column water vapor in 936 nm, and various parameters at 550nm to obtain horizontal visibility with the help of MODTRAN or 6S. Those provide reliable data for atmosphere correction of the same period in this area.  
 The gravimetric soil moisture (samples from 0-1cm, 1-3cm and 3-5cm) was measured by the microwave drying method.   
 The frost depth by the chopstick and the ruler. The soil was considered frozen when it was hard and with ice crystal. The data can be opened by Microsoft Office.  
 Nine data files were included, TM data, CE318 data, B1, B2, C1, G1, W1 and W2.

2、Keywords

Theme：Soil,Depth of soil freezing,Surface radiation temperature,Terrain spectrometer,Earth SurFace Processes,Aerosol,Aerosol optical depth/Thickness,Aerosol backscatter,Soil moisture/Water content,Terrestrial Surface Remote Sensing  
Discipline：Atmosphere,Terrestrial Surface  
Places：Heihe River Basin, the cold region hydrology experimental area in the upper reaches, closed observation area of Biandoukou  
Time：2008,

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：100.5MB

4.Data format：

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.312 | - |
| west：100.881 | - | east：101.036 |
| - | south：38.192 | - |

5、Time frame:2008-04-05 00:00:00+00:00--2008-04-05 00:00:00+00:00

6、Reference method

References to data:

PAN Jinmei, CHANG Sheng, YIN Xiaojun, ZHANG Zhiyu, LIU Zhigang, REN Huazhong, LIANG Xingtao, ZHENG Yue, CHANG Yan, ZHAO Shaojie, Zhou Ji, QU Ying, PENG Danqing, Zhao Tianjie, ZHANG Yongpan, LIU Chenzhou, Fang Qian. WATER: Dataset of ground truth measurements synchronizing with Landsat TM in the Biandukou foci experimental area (Mar. 17, 2008). A Big Earth Data Platform for Three Poles, doi:10.3972/water973.0028.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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