A Big Earth Data Platform for Three Poles

**WATER: Dataset of ground truth measurements synchronizing with Envisat ASAR in the A'rou foci experimental areas on Mar. 12, 2008**

1、Description

The dataset of ground truth measurements synchronizing with Envisat ASAR was obtained in No.1 (freeze/thaw status), No. 2 (snow parameters) and No. 3 (freeze/thaw status) quadrates of the A'rou foci experimental areas on Mar. 12, 2008.
 The Envisat ASAR data were in AP mode and VV/VH polarization combinations, and the overpass time was approximately at 11:29 BJT. The quadrates were divided into 4×4 subsites, with each one spanning a 30×30 m2 plot. Center and corner points of each subsite were chosen for all observations except for the cutting ring measurements which only observed the center points.
 In No. 1 quadrate, numerous ground data were collected, the soil temperature, soil volumetric moisture, the loss tangent, soil conductivity, and the real part and the imaginary part of soil complex permittivity by the POGO soil sensor, soil volumetric moisture by ML2X, the soil volumetric moisture profile (10cm, 20cm, 30cm, 40cm, 60cm and 100cm) by PR2, the mean soil temperature from 0-5cm by the probe thermometer, soil gravimetric moisture, volumetric moisture, and soil bulk density after drying by the cutting ring (100cm^3).
 In No. 2 quadrate, simultaneous with ASAR, snow parameters were measured, the snow surface temperature by the thermal infrared probe, the snow layer temperature by the probe thermometer, the snow grain size by the handheld microscope, snow density by the aluminum case, the snow surface temperature and the snow-soil interface temperature by the thermal infrared probe, snow spectrum by ASD, and snow albedo by the total radiometer.
 In No. 3 quadrate soil volumetric moisture, soil conductivity, the soil temperature, and the real part of soil complex permittivity were measured by WET, the mean soil temperature from 0-5cm by the probe thermometer (5# and 7#), the surface radiative temperature by the hand-held infrared thermometer (5#), and soil gravimetric moisture, volumetric moisture, and soil bulk density after drying by the cutting ring (100cm^3).
 Surface roughness was detailed in the "WATER: Surface roughness dataset in the A'rou foci experimental area". Besides, GPR (Ground Penetration Radar) observations were also carried out in No. 1 quadrate of A'rou. Those provide reliable ground data for retrieval and verification of soil moisture and freeze/thaw status from active remote sensing approaches.

2、Keywords

Theme：Soil,Depth of soil freezing,Microwave remote sensing,Surface radiation temperature,Albedo,Snow/ice temperature,Snow,Snow particle size,Earth SurFace Processes,Surface Freeze-thaw Cycle/state Remote Sensing,Soil moisture/Water content
Discipline：Terrestrial Surface,Cryosphere
Places：Heihe River Basin, the cold region hydrology experimental area in the upper reaches, A'rou flight zone
Time：2008,

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：1137.4MB

4.Data format：EXCEL

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.078 | - |
| west：100.411 | - | east：100.55 |
| - | south：38.015 | - |

5、Time frame:2008-03-28 16:00:00+00:00--2008-03-28 16:00:00+00:00

6、Reference method

References to data:

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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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