A Big Earth Data Platform for Three Poles

**WATER: Dataset of ground-based RPG-8CH-DP microwave radiometer and ground truth observations for soil freeze/thaw cycle in the A'rou foci experimental area**

1、Description

The dataset of ground-based RPG-8CH-DP microwave radiometer and ground truth observations for soil freeze/thaw cycle was obtained in the A'rou foci experimental area from Mar. 10 to 11, 2008.  
 The radiometer was set 4.5m height above a smooth land, which was covered with snow less than 10cm deep. The field of view was roughly determined and not as ideal. Frozen soil was observed clockwise 240° and snow clockwise 270° with the truck head as the 0 degree azimuth; the elevation angle was set at -40° for the former, and from -20° to -70° for the latter.   
 Observation items included surface soil moisture (microwave drying to get the gravimetric moisture), the soil temperature by the thermal resistor and vegetation. The shallow layer of the site was covered with withered grass with exuberant roots underground due to rich organic. The soil temperature changes were reflected by the thermal resistor and recorded by the DataTaker.  
 The brightness temperature was archived as .BRT and .txt files (the ASCII format). Data in two formats were the same. Each row in .txt format was listed by year, month, date, hour, minute, second, 6.925GHz (h), 6.925GHz (v), 10.65GHz (h), 10.65GHz (v) , 18.7GHz (h), 18.7GHz (v), 36.5GHz (h), 36.5GHz (v), the elevation angle, and the azimuth angle. Values for 6.925GHz and 10.65GHz were zero due to disfunction.

2、Keywords

Theme：Soil,Depth of soil freezing,Soil temperature,Remote Sensing Technology,Soil moisture/Water content,Ground-based microwave radiometer  
Discipline：Terrestrial Surface,Remote Sensing Technology  
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：3.09MB

4.Data format：

4、Space scope

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

5、Time frame:2008-03-23 00:00:00+00:00--2008-03-24 00:00:00+00:00

6、Reference method

References to data:

WATER: Dataset of ground-based RPG-8CH-DP microwave radiometer and ground truth observations for soil freeze/thaw cycle in the A'rou foci experimental area. A Big Earth Data Platform for Three Poles, doi:10.3972/water973.0017.db2013

References to articles:

张立新, 赵少杰, 蒋玲梅. 冻融交替季节黑河上游代表性地物类型的微波辐射时序特征. 冰川冻土, 2009, 31(2): 198-206.  
  
赵天杰, 张立新, 蒋玲梅, 赵少杰. 复杂地表条件下冻融土的微波辐射特性模拟及判别分析. 冰川冻土, 2009, 31(2): 220-226.  
  
Zhao TJ, Zhang LX, Jiang LM, Zhao SJ, Chai LN, Jin R. A new soil freeze thaw discriminant algorithm using AMSR-E passive microwave imagery. Hydrological Processes, 2011, 25(11): 1704-1716. DOI: 10.1002/hyp.7930.

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