A Big Earth Data Platform for Three Poles

**Microwave radiometry experiment for snow in Altay China: in situ time series of data for electromagnetic and physical features of snow pack and environment**

1、Description

The dataset include ground-based passive microwave brightness temperature, multi-angle brightness temperature, ten-minute 4-component radiation and snow temperature, daily snow pit data and hourly meteorological data observed at Altay base station（lon：88.07、lat: 44.73）from November 27, 2015 to March 26, 2016. Daily snow pit parameters include: snow stratification, stratification thickness, density, particle size, temperature.  
These data are stored in five NetCDF files: TBdata. nc, TBdata-multiangle. nc, ten-minute 4 component radiation and snow temperature. nc, hourly meteorological and soil data. nc and daily snow pit data.nc.  
TBdata. nc is brightness temperature at 3 channels for both polarizations automatically collected by a six-channel dual polarized microwave radiometer RPG-6CH-DP. The contents include Year, month, day, hour, minute, second, Tb1h, Tb1v, Tb18h, Tb18v, Tb36h, Tb36v, incidence angle, azimuth angle.  
TBdata-multiangle.nc is 7 groups of multi-angle brightness temperatures at 3 channels for both polarizations. The contents include Year, month, day, hour, minute, second, Tb1h, Tb1v, Tb18h, Tb18v, Tb36h, Tb36v, incidence angle, azimuth angle.  
The ten-minute 4 component radiation and snow temperature.nc contains 4 component radiation and layered snow temperatures. The contents include Year, month, day, hour, minute, SR\_DOWN, SR\_UP, LR\_DOWN, LR\_UP, T\_Sensor, ST\_0cm, ST\_5cm, ST\_15cm, ST\_25cm, ST\_35cm, ST\_45cm, ST\_55cm.  
The hourly meteorological and soil data.nc contains hourly weather data and layered soil data. The contents include Year, month, day, hour, Tair, Wair, Pair, Win, SM\_10cm, SM\_20cm, Tsoil\_5cm, Tsoil\_10cm, Tsoil\_15 cm, Tsoil\_20cm.  
The daily snow pit data.nc. is manual snow pit data. The observation time was 8:00-10:100 am local time. The contents include Year, month, day, snow depth, thickness\_layer1, thickness\_layer2, thickness\_layer3, thickness\_layer4, thickness\_layer5, thickness\_layer6, Long\_layer1, Short\_layer1, Long\_layer2, Short\_layer2, Long\_layer3, Short\_layer3, Long\_layer 4, Short\_layer4, Long\_layer5, Short\_layer5, Long\_layer6, Short\_layer 6, Stube, Snow shovel\_0-10, Snow shovel \_10-20, Snow shovel \_20-30, Snow shovel \_30-40, Snow shovel \_40-50, Snow fork\_5, Snow fork \_10, Snow fork \_15, Snow fork\_20, Snow fork\_25, Snow fork\_30, Snow fork\_35, Snow fork\_40, Snow fork\_45, Snow fork\_50, shape1, shape2, shape3, shape4, shape5,

2、Keywords

Theme：Snow/ice temperature,Snow,Snow particle size,Synchronous observation,Snow water equivalent,Terrestrial Surface Remote Sensing  
Discipline：Terrestrial Surface,Cryosphere  
Places：Altay  
Time：2015/2016

3、Data details

1.Scale：None

2.Projection：

3.Filesize：103.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：44.73 | - |
| west：88.07 | - | east：88.07 |
| - | south：44.73 | - |

5、Time frame:2015-11-26 16:00:00+00:00--2016-03-25 16:00:00+00:00

6、Reference method

References to data:

DAI Liyun. Microwave radiometry experiment for snow in Altay China: in situ time series of data for electromagnetic and physical features of snow pack and environment. A Big Earth Data Platform for Three Poles, doi:10.11888/Snow.tpdc.2708862020

References to articles:

Dai, L.Y., Che, T., Xiao, L.et al. (2022) Improving the snow volume scattering algorithm in a microwave forward model by using ground-based remote sensing snow observation. IEEE Transactions on Geoscience and Remote Sensing, 60, 4300617

7、Supporting project information

8、Data resource provider

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