A Big Earth Data Platform for Three Poles

**Multi-frequency and multi-angular ground-based microwave radiometer and radar cooperative experimental data for grassland in 2018**

1、Description

This data set was collected in 2018 during the ground-based microwave radiometry and radar cooperative experiment, which is part of the Soil Moisture Experiment in the Luan River (SMELR). The experiment site is located in Zhenglan Banner, Inner Mongolia (115.93° E, 42.04° N, at 1362 m in altitude). The data set contains four parts, namely brightness temperature data, radar backscatter coefficient, soil data and vegetation data. The microwave brightness temperature data was observed by a vehicle-mounted dual-polarized multi-frequency radiometer (RPG-6CH-DP), including the horizontal (H) and vertical (V) polarization brightness temperatures at L-, C- and X-bands. The brightness temperature data was acquired every 30 minutes from 30° to 65° with an interval of 2.5°. The active microwave data is obtained by ground-based synthetic aperture radar (GBSAR), including the L- and C-band backscattering coefficients under four polarization modes (VV, VH, HH, HV), and the incidence varies from 30° to 65° (2.5° interval). The soil data contains the surface roughness, soil moisture and temperature at six depths of layer (1 cm, 3 cm, 5 cm, 10 cm, 20 cm, 50 cm). The vegetation data is mainly the vegetation water content of the grassland.
The experimental period lasted from August 18 to September 25, 2018, and it provided important data for the land surface microwave radiation modeling and validation, as well as the development of soil moisture retrieval algorithms.

2、Keywords

Theme：Ground-based SAR,Surface Water,Remote Sensing Technology,Soil moisture,Ground-based microwave radiometer
Discipline：Terrestrial Surface,Remote Sensing Technology
Places：Zhenglan Banner, Luan River Watershed, Shandian River Watershed
Time：2018

3、Data details

1.Scale：None

2.Projection：

3.Filesize：7.7MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：42.04 | - |
| west：115.93 | - | east：115.93 |
| - | south：42.04 | - |

5、Time frame:2018-08-17 16:00:00+00:00--2018-09-25 03:59:59+00:00

6、Reference method

References to data:

GENG Deyuan, HU Lu, SHI Jiancheng, ZHAO Tianjie. Multi-frequency and multi-angular ground-based microwave radiometer and radar cooperative experimental data for grassland in 2018. A Big Earth Data Platform for Three Poles, doi:10.11888/Soil.tpdc.2716562021

References to articles:

Zhao, T.J., Shi, J.C., Lv, L.Q., Xu, H.X., Chen, D.Q., Cui, Q., Jackson, T.J., Yan, G.J., Jia, L., Chen, L.F., Zhao, K., Zheng, X.M., Zhao, L.M., Zheng, C.L., Ji, D.B., Xiong, C., Wang, T.X., Li, R., Pan, J.M., Wen, J.G., Yu, C., Zheng, Y.M., Jiang, L.M., Chai, L.N., Lu, H., Yao, P.P., Ma, J.W., Lv, H.S., Wu, J.J., Zhao, W., Yang, N., Guo, P., Li, Y.X., Hu, L., Geng, D.Y., & Zhang, Z.Q. (2020). Soil moisture experiment in the Luan River supporting new satellite mission opportunities. Remote Sensing of Environment, 240.

Zhao, T.J., Shi, J.C., Entekhabi, D., Jackson, T.J., Hu, L., Peng, Z.Q., Yao, P.P., Li, S.N., & Kang, C.S. (2021). Retrievals of soil moisture and vegetation optical depth using a multi-channel collaborative algorithm. Remote Sensing of Environment, 257, 112321.

赵天杰, 施建成, 徐红新, 孙彦龙, 陈德清, 崔倩, 贾立, 黄硕, 牛升达, 李秀伟, 阎广建, 陈良富, 柳钦火, 赵凯, 郑兴明, 赵利民, 郑超磊, 姬大彬, 熊川, 王天星, 李睿, 潘金梅, 闻建光, 穆西晗, 余超, 郑姚闽, 蒋玲梅, 柴琳娜, 卢麾, 姚盼盼, 马建威, 吕海深, 武建军, 赵伟, 杨娜, 郭鹏, 李玉霞, 胡路, 耿德源, 张子谦,胡建峰, 杜爱萍. (2021). 闪电河流域水循环和能量平衡遥感综合试验. 遥感学报, 25(4), 871-887.

耿德源, 赵天杰, 施建成, 胡路, 徐红新, 胡建峰. (2021). 地基雷达的微波面散射模型对比与土壤水分反演. 遥感学报, 25(4), 929-940.

李尚楠, 赵天杰, 施建成, 肖青, 胡路, 王平凯, 赵瑞, 陈德清, 崔倩, 薛淑琴, 胡建峰. (2018). 基于车载微波辐射计的地面观测试验方法. 上海航天, 35(02), 81-90.

阎广建, 赵天杰, 穆西晗, 闻建光, 庞勇, 贾立, 张永光, 陈德清, 姚崇斌, 曹志宇, 雷永荟, 姬大彬, 陈良富,柳钦火, 吕利清, 陈镜明, 施建成. (2021). 滦河流域碳、水循环和能量平衡遥感综合试验总体设计. 遥感学报, 25(4), 856-870.

7、Supporting project information

Satellite observation and simulation studies of the land surface water and energy exchange processes and its effects on global changes

8、Data resource provider

name: SHI Jiancheng
unit:
email: shijiancheng@nssc.ac.cn

name: ZHAO Tianjie
unit:
email: zhaotj@aircas.ac.cn

name: HU Lu
unit:
email: hulu@smail.nju.edu.cn

name: GENG Deyuan
unit:
email: gengdeyuan@thupdi.com