Upper Yangtze River Scientific Data Center

**36KM Soil Moisture Data Set in Southwest China Based on AMSR-E and AMSR2 Data (2002-2022)**

1、Description

Stable and continuous long time series surface soil moisture data set is very important for monitoring global environment and climate change. The L-band radiometer carried by SMAP and other satellites can provide the best precision global surface soil moisture observation at present, but the short time of its data recording limits its application in long-term research; AMSR-E and AMSR2 series sensors can provide long time sequence and multi band radiometer observation (C, X and K bands). This data set is a 20 year (2002/07/27~2022/08/31) continuous and consistent global surface soil moisture data set, with a resolution of 36 km on a daily scale. The EASE-Grid2 projection coordinate system is adopted, and the data unit is m3/m3. The data set adopts the soil moisture neural network inversion algorithm developed by Yao et al. The data set can reproduce the spatial and temporal distribution of SMAP soil moisture, and the precision is equivalent to that of SMAP soil moisture products; At the same time, the precision of this data set is better than the official soil moisture products of AMSR-E and AMSR2. The ground observation verification of 14 global intensive observation stations shows that the precision of soil moisture is about 5%. The global long time series data set currently covers 20 years. With the continuous on orbit observation of AMSR2 and the upcoming follow-up AMSR3 mission, the data set can be extended to support the long time series research of climate extreme events, trend analysis and interdecadal changes.

2、Keywords

Theme：Soil,Surface Freeze-thaw Cycle/state Remote Sensing,Soil moisture,microwave remote sensing,Hydrology,Terrestrial Surface Remote Sensing
Discipline：Terrestrial Surface,Cryosphere
Places：World, Southwest China
Time：202-2022

3、Data details

1.Scale：None

2.Projection：

3.Filesize：21514.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：35.0 | - |
| west：97.0 | - | east：113.0 |
| - | south：20.5 | - |

5、Time frame:None--None

6、Reference method

References to data:

YAO Panpan, LU Hui. 36KM Soil Moisture Data Set in Southwest China Based on AMSR-E and AMSR2 Data (2002-2022). Upper Yangtze River Scientific Data Center, 2022

References to articles:

Yao, P.P., Shi, J.C., Zhao, T.J., Lu, H. & Al-Yaari, A. (2017). Rebuilding Long Time Series Global Soil Moisture Products Using the Neural Network Adopting the Microwave Vegetation Index. Remote Sensing 9(1), 35

Yao, P.P., Lu, H., Shi, J.C., Zhao, T.J., Yang K., Cosh, M.H., Gianotti, D.J.S., & Entekhabi, D. (2021). A long term global daily soil moisture dataset derived from AMSR-E and AMSR2 (2002-2019). Scientific Data, 8, 143 (2021). https://doi.org/10.1038/s41597-021-00925-8

7、Supporting project information

8、Data resource provider

name: YAO Panpan
unit: Tsinghua University
email: yaopp@radi.ac.cn

name: LU Hui
unit: Tsinghua University
email: luhui@tsinghua.edu.cn