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Development of a Physically-based Soil Moisture Retriev Spaceborne Passive Microwave Radiometers and its Appl E

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Abstract

Many microwave radiometer algorithms for the retrieval of soil mois overestimate moisture in very dry cases, partly due to volume scatte reports the development of a physically-based soil moisture retrieva

microwave remote sensing. The algorithm is based on physically-ba
which simulates the radiative transfer processes in soil by a 4-strean
method and the Henyey-Greenstein phase function. The multiple sca
particles are calculated using the Dense Media Radiative Transfer T
roughness effects are simulated by the Advance Integral Equation m
implementation of this algorithm consists of three steps : 1) forward
optimization ; 2) lookup table generation ; and 3) lookup table rever
estimation.
The algorithm was tested by retrieving soil moisture and temperatur
Brightness Temperature data at a Coordinate Enhanced Observing
the Mongolian Gobi. The retrieved soil moisture data was compared
observations. The comparison shows that the performance of the ne
satisfactory, with acceptable values of Standard Error of the Estima
correlation coefficient. Moreover, the algorithm estimates soil physi
accurately.

Keywords: Passive Microwave Remote Sensin, AMSR-E, Soil M
Radiative Transfer Model, Lookup Table

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