



*remote sensing*



*Special Issue Reprint*

## Microwave Remote Sensing of Soil Moisture

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This reprint focuses on the most advanced theories, models, algorithms, and products related to microwave remote sensing of soil moisture. Over the past few decades, significant efforts have been made to develop models, retrieval algorithms, downscaling methods, and validation strategies related to microwave remote sensing of soil moisture. Following the turn of the century, a series of microwave-based satellites/sensors have been successfully launched, and satellite soil moisture products have become increasingly abundant, greatly promoting the various applications of satellite soil moisture datasets. Despite numerous studies and achievements in this field, great challenges remain, such as the spatial resolution, retrieval accuracy, and validation strategies related to satellite soil moisture datasets. This reprint covers research progress on the following topics: (1) downscaling passive microwave-based soil moisture products, (2) estimating soil moisture from active microwave observations, (3) presenting some new algorithms (freeze–thaw state detection algorithm) and models (soil dielectric models) related to microwave remote sensing of soil moisture, (4) evaluating microwave-based soil moisture products, and (5) reviewing the state-of-the-art techniques and algorithms used to estimate and improve the quality of soil moisture estimations.



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