



Using Sentinel-1 microwave remote sensing images to estimate soil moisture

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Soil moisture is a key parameter in various study fields such as hydrology and agriculture, even climate change. In agriculture, soil moisture is a significant parameter to decide the water status, which can determine the irrigation water requirements. So far the measurement of soil moisture is using ground instrument such as TDR. Although it can directly measure the value of soil moisture, the instrument needs to maintain and consume manpower to operation. If we need a wide range region information, ground measurement may be not suitable. In order to solve this problem, satellite remote sensing is used for a wide range information estimation.

Sentinel-1 microwave satellite, which is of the Earth observation satellites in the European Space Agency, is used to estimate the soil moisture over the year of 2017 in Taiwan region in this study. The estimations are then compared with the observations at the soil moisture stations from Taiwan Soil and Water Conservation Bureau. Results show that the satellite remote sensing data can be helped in soil moisture estimation. Further analysis are needed to obtain the optimal parameters for soil moisture estimation in Taiwan.