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STSM title: Use of microwave remote sensing for drought monitoring in dry areas

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Five Keywords: Soil moisture, Synthetic Aperture Radar (SAR), Artificial Neural Networks (ANN), Electromagnetic models, Microwave

Topic summary: The purpose of this study was to develop an approach to estimate soil moisture from Synthetic Aperture Radar (SAR) data by using an inversion technique based on Artificial Neural Networks (ANN) which represents a good compromise between retrieval accuracy and computational cost.

Methods summary: First, Sentinel-1 image was calibrated, geocoded, and classified. Subsequently, an operative algorithm, based on an artificial neural network (ANN) approach, was developed for estimating SMC using simulated data obtained from electromagnetic model and experimental data. The dataset was divided into 3 sub-datasets for the training, validation and testing phases. At the end a soil moisture content map will be generated as a last step.

Results and implications for restoration: Relationships between the soil moisture content was measured on the ground and estimated by the ANN algorithm for the training phase. Generated the soil moisture map for all the period.