

EGU2020-21822

<https://doi.org/10.5194/egusphere-egu2020-21822>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



## Downscaling of L-Band microwave using Sentinel-3 land surface temperature

Ahmad Al Bitar<sup>1</sup>, Nitu Ojha<sup>1</sup>, Chiara Corbari<sup>2</sup>, Olivier Merlin<sup>1</sup>, Yann Kerr<sup>1</sup>, and Marco Mancini<sup>2</sup>

<sup>1</sup>CESBIO, (UMR 5126: CNRS, CNES, IRD, UPS), Toulouse, France

<sup>2</sup>Politecnico di Milano, Milano, Italy

### Downscaling of L-Band microwave using Sentinel-3 land surface temperature

A large number of agricultural and water management applications require sub-kilometric frequent revisit surface Soil Moisture (SM) observations. L-band passive radiometer acquisitions are especially suited for soil moisture retrieval since they are less susceptible to attenuation by vegetation than active methods and are less sensitive to surface roughness than C or X – bands. However, while providing a 3 days global coverage for ascending and descending orbits with the currently available missions (SMOS/SMAP) the spatial resolution of the space-borne L-band radiometers is of ~40 km. Downscaling technics have been extensively used to increase the resolution of the SM products by combining data from optical (Merlin et al. 2012) and SAR sensors (Tomer et al. 2015). Here, we use land surface temperature data from the Sentinel-3 sensors to disaggregate the SMOS SM product into the DISPATCH algorithm. DISPATCH is based on the link between the evaporative efficiency and the SM (Merlin et al. 2010). The exercises is applied over Italy and compared to in-situ SM observations and model outputs over two sites in Northern and southern Italy (Chiese and Capitanata). The algorithm is run using MODIS and the Sentinel-3 data for a comparative results. The potential of the combined use of Sentinel-3/MODIS and SMOS/SMAP is also investigate. The current study extends the application of an existing algorithm to new operational data from the Copernicus programe while accessing the advantages and ceavates.