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SOIL moisture data intercomparison

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The Soil Moisture and Ocean Salinity satellite (SMOS) was launched in November 2009 and started delivering data in January 2010. Subsequently, the satellite has been in operation for over 6 years while the retrieval algorithms from Level 1 to Level 2 underwent significant evolutions as knowledge improved. Other approaches for retrieval at Level 2 over land were also investigated while Level 3 and 4 were initiated. In this présentation these improvements are assessed by inter-comparisons of the current Level 2 (V620) against the previous version (V551) and new products either using neural networks or Level 3. In addition a global evaluation of different SMOS soil moisture (SM) products is performed comparing products with those of model simulations and other satellites (AMSR E/ AMSR2 and ASCAT). Finally, all products were evaluated against in situ measurements of soil moisture (SM).
The study demonstrated that the V620 shows a significant improvement (including those at level1 improving level2)) with respect to the earlier version V551. Results also show that neural network based approaches can yield excellent results over areas where other products are poor. Finally, global comparison indicates that SMOS behaves very well when compared to other sensors/approaches and gives consistent results over all surfaces from very dry (African Sahel, Arizona), to wet (tropical rain forests). RFI (Radio Frequency Interference) is still an issue even though detection has been greatly improved while RFI sources in several areas of the world are significantly reduced. When compared to other satellite products, the analysis shows that SMOS achieves its expected goals and is globally consistent over different eco climate regions from low to high latitudes and throughout the seasons.