Seasonal and inter-annual variability of SMOS-derived soil moisture and ocean salinity

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Even with barely five years of SMOS data available, it is already possible to provide insight about the temporal changes in surface soil moisture (SSM) and sea surface salinity (SSS), as well as their links with the Earth's water cycle and climate system [1]. This work focuses on the estimation of trends, cycles and anomalies in SSM and SSS time series. Their spatial coherence and relationships through precipitation are also analysed in this study. The analysis includes the determination of the variability at seasonal and inter-annual scales, focusing on four target regions representative of arid, semi-arid, sub-humid and humid climates across global land biomes. The correlation between temporal series of SSM and SSS anomalies with the North Atlantic Oscillation (NAO) and the El Niño/Southern Oscillation (ENSO) climate indices has been explored. Results show that, despite being yet a short data set, SMOS data provides coherent and reliable variability patterns at both seasonal and inter-annual scales.

[1] M. Piles, E. Martínez, J. Ballabrera, M. Vall-llossera, E. Olmedo, J. Martínez and J. Font, "*Estimation of global soil moisture seasonal and inter-annual variability using SMOS satellite observations*", Proc. RAQRS'IV, 2014.