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Validation of the ESA CCI+SSS products

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The European Space Agency (ESA) Climate Change Initiative (CCI+) for Sea Surface Salinity (CCI+SSS) project aims at generating long-term, improved, calibrated global SSS fields from space. The project started in mid-2018 and in its second year (version 2) has produced a 10-year dataset (2010-2019) from the three available L-band radiometer satellites (SMOS: Soil Moisture and Ocean Salinity; Aquarius; SMAP: Soil Moisture Active Passive) and validated it against in situ references (Argo and ISAS: In Situ Analysis System). The comparisons with in situ ground truth indicate much better performances than the ones obtained with a single satellite data product, with global precision against in situ references of 0.15 pss. CCI SSS version 2 products show similar performance than version 1 but is one year longer. There is a very good agreement between the CCI dataset and references, including long-term stability, with differences within ± 0.05 pss for global ocean within $[40^{\circ}\text{S}-20^{\circ}\text{N}]$. At higher latitude, we observe seasonal oscillation of the CCI SSS difference against references. The uncertainty provided in the CCI SSS product are in good agreement with observations (within $\pm 25\%$).