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How does surface salinity and rain affect the North Atlantic ocean circulation?

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Salinity variations in recent decades have been linked to the Atlantic Meridional Overturning Circulation (MOC) strength, and the tropics/subtropics are considered important regions in relation to the reversal of northern N. Atlantic freshening and MOC recovery. This study focuses on the controlling mechanisms, particularly the influence of freshwater fluxes (Evaporation minus Precipitation, E-P), on sea surface (SSS) and upper ocean salinity (UOS) variability in the Atlantic region 30°N-S, which includes two dynamically different regimes, the P-dominated tropics and the E-dominated subtropics. Analysing various datasets for each variable (NCEP, WOA09, etc) on different time-scales, in addition to new SSS maps from the European Space Agency Soil Moisture and Ocean Salinity (SMOS) satellite, help us to consider the role of E-P on the formation, magnitude and maintenance of the subtropical Atlantic SSS maximum, the small seasonal cycle in SSS compared to that of E-P, and propagation pathways at these latitudes. This examination will contribute to a regional validation of SSS from the SMOS and Aquarius satellites in E- and P-dominated regions, and an improved definition of the variability of SSS in this region.