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Variability of Sea surface salinity as seen by the Argo Profilers in the Atlantic Ocean between 2000 and 2010 and as simulated by a high resolution OGCM.

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The sea surface salinity (SSS) from ESA's Soil Moisture and Ocean Salinity (SMOS) satellite mission is key to a better understanding of the role and impact of a changing global water cycle in the ocean circulation.

Salinity data received from the Argo profilers in the upper 10 m compare very well to salinity variability observed at time series stations. They are used to construct the seasonal cycle in the Atlantic Ocean.
The data processing was done without gridding or objective analysis to retain most of the SSS variability. Whereas the middle and eastern open ocean areas show SSS variability of less than 0.1, in western boundary regions and equatorial and eastern boundary regions the variability reach values higher than 1.6. In several boundary and equatorial regions the observed total SSS variability is explained to about 50 % by the annual cycle.
The above results compare very well to a high resolution model run at the IfM Hamburg and constrained to the Levitus climatology which allows to investigate in detail the causes for salinity variability in various dynamically different regimes of the Atlantic.