

Seasonality in sea surface salinity and relating sea surface variables

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With accumulation of salinity observational data by Argo floats, it becomes possible to investigate salinity variability on seasonal to interannual time scales. While we know that there is strong seasonality in sea surface temperature (SST), seasonality in sea surface salinity (SSS) is not known well. Based on gridded Argo and other observational data and atmospheric reanalysis data, we examine global distribution of SSS seasonality using 12-month lagged auto-correlation map. In contrast to SST, which shows clear seasonality except for the tropical oceans especially in the Pacific, seasonality of SSS is not clear in large part of the global ocean except for tropics in the eastern Atlantic, the eastern Pacific, and the western Indian Oceans. Meanwhile the distribution depends on data products to some extent. Consistent with the limited seasonality, forcing field for SSS, i.e., precipitation-evaporation, Ekman transport, and geostrophic current fields also show limited seasonality except for the tropical oceans.

Keywords: Sea surface salinity, seasonality, Argo observation