

Near-Surface Salinity Stratification from Satellite SSS Observations and Numerical Models

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Using a recently developed ESSL (extended surface-salinity layer) model [Song et al., JGR, 2013], we have examined the near-surface salinity stratifications with emphasis on understanding of the dynamical processes that differ from one region to another. It is shown that the seasonal SSS variability at skin layer differs/agrees regionally in their amplitude from/with Argo-measured salinity at 5 m depth and model salinity at the top layer, indicating various characteristics of near-surface salinity stratifications. Our model-data comparisons show that for regions with river runoff and/or surface freshwater, significant differences due to near-surface stratification can be found between the Aquarius, Argo and model. Differently for well-mixed regions, like the southern Arabian Sea due to seasonally reversing currents driven by monsoons, the surface water can be mixed down quickly to the depth of 5 m, resulting in an agreement among the datasets. The modeling study suggests that dynamical differences can lead to different vertical salinity stratifications locally.

Keywords: Satellite observation , Sea surface salinity, River runoff

