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The intraseasonal SST variability from a global drifter program, two reanalysis products and one climatology

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The global array of surface drifters supplies a constantly growing data base of position- and near-surface temperature (a proxy for the Sea Surface Temperature, SST) observations. The drifter-borne measurements integrate information about spatiotemporal variability of the underlying circulation and the air-sea exchange along their trajectories, and are unique for their extensive coverage and high temporal and horizontal resolution. The drifter data is used in operational services, and is assimilated to reanalysis products and ocean temperature climatologies. The questions remain whether the temperature variability from drifters and the gridded products are consistent, what is the contribution of the drifter observations to the products that utilize them, and whether their usage could be further optimized.

We address these questions in the context of intraseasonal temperature variability diagnosed from drifter trajectories, two Reanalysis products of different resolutions (ERA-Interim and NCEP Reanalysis) and a mixed-layer monthly climatology (MIMOC) temperatures using a suite of Eulerian and Lagrangian diagnostics. The scope of the study is global and we interpret the regional differences in the context of the mixed layer depth, seasonality, ocean dynamics and drifter data coverage. With additional variables available through reanalysis products, we also address intraseasonal variability of the air-sea exchange.