

Examining the Long Term Stability of Sea Surface Temperature Measurements made by Drifting Buoys

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Sea surface temperature (SST) retrievals from the Advanced Along Track Scanning Radiometer (AATSR) satellite instrument provide an estimate of SST independent from that from the *in situ* observing network. This independent SST data source can be compared with near co-incident SST measurements made by drifting buoys to monitor performance and relative biases associated with those measurements.

Our results suggest that up to 10% of drifting buoys within this sample of the population have average offsets or calibration drifts in their temperature measurements relative to the AATSR data that exceed $\pm 0.1^{\circ}\text{C}$ and $\pm 0.1^{\circ}\text{C yr}^{-1}$ respectively.

These relative biases suggest that error estimates assigned to retrievals of SST from satellite platforms, validated using drifting buoy measurements, may be overestimates and the suspect buoys should be removed from match up data bases used for this purpose. However, we detect no significant effect on the global or large regional average SST anomalies calculated from combined *in situ* measurements, which are used to monitor surface temperature changes.

Nonetheless, rigorous quality control of drifting buoys through their lifetime using an approach of this kind would be beneficial and feasible. However, limitations of this approach mean that we would also encourage more studies using buoys with dual temperature sensors to directly monitor sensor quality.
