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5-4 A New Diurnally Adjusted High Resolution SST
Analysis

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We describe the rationale for our new diurnally adjusted SST analysis, the overall processing methodology, discuss the science, implementation and performance of the diurnal adjustment, and show examples of the output. The analysis methodology employed is a multi-scale OI scheme which emulates Kalman filter behavior. A non-stationary prior is mimicked by performing the analysis at three different length scales and interpolating the final result based on local data density. This has the benefit of allowing high resolution where data coverage permits without introducing excessive noise. Furthermore, it preserves mathematical rigor in terms of the anomaly correlation lengths.

The satellite observations themselves are individually adjusted to a foundation (a.k.a. bulk) temperature using a 1-d turbulence model forced with NWP fluxes of heat and momentum. Non-local mixing is parameterized using operational wave model data in a Stokes' Drift formulation. Residual bias corrections for each dataset (day and night separately for each platform) are estimated on a stochastic basis.

As indicated above, comparisons of resultant analyses with and without the diurnal correction are made, including validation against in situ observations (buoy and Argo). Contributions of various error sources will also be discussed.

Another aspect of the presentation will be a brief discussion regarding SST retrieval algorithm sensitivity to diurnal excursions. This important topic has recently become prominent within the satellite SST community, and a brief summary of discussions at the recent GHRSSST Science Team Meeting will be presented.