

The inclusion of a diurnally varying sea surface temperature in surface energy budget calculations

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With nearly three-quarters of the globe covered by oceans, in order to accurately depict our climate, we must accurately calculate the ocean surface energy budget. Air-sea turbulent fluxes and upwelling longwave (ULW) radiation contain large amounts of variability among the components in the global energy budget calculations. Therefore, in order to better understand our climate, we must better properly calculate or model the variability in the turbulent fluxes and ULW, including the addition of a diurnally varying sea surface temperature (SST). Techniques to calculate the diurnal SST, or difference in maximum and minimum daily SST, rely on a physical understanding of ocean warming (e.g. Clayson and Weitlich 2005). The current version of the SeaFlux turbulent flux data set includes a diurnally varying SST. The fluxes were rerun using a daily average SST and a pre-dawn SST. Initial comparisons indicate that the the lack of inclusion of a diurnally varying SST can produce instantaneous local differences in the fluxes of 50%, as well as measurable biases on weekly, monthly and seasonal timescales. In this presentation we will show these results as well as some implications for the global climate budgets.