# A Recently Revived Production of Global Air-sea Surface Turbulent Fluxes - the Newly Produced GSSTF2b Dataset

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## ABSTRACT

Accurate sea surface flux measurements are crucial to understanding the global water and energy cycles. The oceanic evaporation, which is a major component of the global oceanic fresh water flux, is particularly useful for predicting oceanic circulation and transport. Remote sensing is a valuable tool for global monitoring of these flux measurements. The Goddard Satellite-based Surface Turbulent Fluxes (GSSTF) algorithm was developed and applied to remote sensing research. The subsequently produced daily global (1°x1°) GSSTF2 (Version-2) dataset (July 1987-December 2000) has been widely used by the scientific community for global energy and water cycle research, as well as regional and short period data analyses since its official release in 2001. We were recently funded by the NASA/MEaSUREs Program to revive the GSSTF production aiming at continually producing an up-to-date uniform and reliable dataset of sea surface turbulent fluxes. The daily global (1°x1°) GSSTF2b (Version-2b) dataset (July 1987-December 2008) has lately been produced using upgraded and improved input datasets such as *the Special Sensor Microwave Imager (SSM/I) Version-6 (V6) product* (including brightness temperature [Tb], total precipitable water [W], and wind speed) and *the NCEP/DOE Reanalysis-2 (R2) product* (including sea skin temperature, 2-meter air temperature, and sea level pressure). The previous input datasets used for producing GSSTF2 were earlier products of *SSM/I Version-4 (V4)* and *NCEP Reanalysis-1 (R1)*. The newly produced GSSTF2b was found to generally agree better with available ship measurements obtained from several field experiments than its counterpart GSSTF2 in all three flux components – latent heat flux (LHF), sensible heat flux,

and wind stress. The globally averaged LHF of GSSTF2b was found with a smaller magnitude, as well as an improved (smaller) temporal trend than that of GSSTF2. The SSM/I Tb (i.e., Tb19v and Tb22v) that was used to retrieve the bottom-layer precipitable water (WB), and then the surface air humidity (Qa) has played a critical role in the trend of globally averaged LHF. More findings and detailed discussions will be presented in the workshop.