Sea surface temperature: Satellite microwave SSTs for climate

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Satellite microwave sea surface temperature (SST) measurements have been made since 1998, globally since 2002, from the TRMM TMI, Aqua AMSR-E, and Coriolis WindSat radiometers. SST is calculated using a multi-stage linear regression algorithm derived through comprehensive radiative transfer model simulations. Retrieval is prevented only in regions with sun-glitter, rain, and close to land where there is side-lobe contamination. Since only a small number of retrievals are unsuccessful, almost complete global coverage is available daily. In Polar Regions where cloud cover regularly prevents infrared observations of SSTs, the MW observations of SST provide a significant improvement. Validation of the datasets through comparison to the global drifting buoy networks yields mean biases of -0.02 and 0.01 C and standard deviations of 0.50 and 0.48 C for AMSR-E and WindSAT respectively. SST data are produced with errors assigned for each retrieval based on validation results.