

Development of an algorithm for estimation of specific humidity using TMI data

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We developed an algorithm to determine the surface air specific humidity over the ocean from the TMI brightness temperature data. In situ data included in ICOADS for the year 2005 are used as true values in this study. We validated the products obtained by the developed regression formulae by using moored buoy data. We also carried out same validation for other three products for comparison, which are J-OFURO2 (Kubota and Tomita, 2007) and the products derived from AMSR-E (Kubota and Hihara, 2008) and TMI (Schlüssel and Albert, 2001). We found the bias of our products is considerably small, i.e. 0.06 g/kg, compared with other products. Also the RMS errors are small compared with other products except for AMSR-E product. Moreover, we investigated the impact of multi satellite. Using the specific humidity derived from AMSR-E and TMI data in addition to J-OFURO2, we can remarkably reduce not only the RMS error but also the bias. The reduction is remarkable in mid-latitudes, while it is not the case in the tropical regions where the accuracy of J-OFURO2 is not so accurate and diurnal variability of surface specific humidity is small.