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ABSTRACT

A comparison study was undertaken to examine the sea surface temperatures as derived from the Along-Track Scanning Radiometer (ATSR) on board the European Remote Sensing Satellite (ERS-2) (ASST2) and the NOAA/NASA AVHRR Oceans Pathfinder data set, which uses the modified pathfinder sea surface temperature algorithm (MPFSST). Difference maps are created between the MPFSST and the ASST2 defined by MPFSST-ASST2. These differences maps are used to examine the significance of aerosols and/or cloud contamination on the MPFSST and the ASST2.

A simple statistical model, using cloud and aerosol data from the Total Ozone Mapping Spectrometer (TOMS), is applied to the MPFSST and the ASST2. A regressim, based on the ASST2, MPFSST versus the cloud and aerosol TOMS data, is used to remove the part of the MPFSST and the ASST2 that can be explained, in a linear fit, by the aerosol and cloud data. Results indicate that after application of the linear correction, global mean differences were reduced to approximately +0.1°C ± 0.4 for the daytime and –0.1°C ± 0.3 for the nighttime results. However these results varied regionally with the largest improvement in areas off the coast of Western Africa, where aerosols are known to be problematic. Additionally mean differences were reduced in areas of known cloud contamination, such as the North Atlantic. Considering that the MPFSST measures a SST tuned towards a bulk temperature and the ASST2 measures a skin temperature future studies should concentrate on whether remaining differences can be attributed to skin-bulk and/or diurnal differences.