Sea Surface Temperature Climate Data Record for the North Sea and Baltic Sea - DTU Orbit (09/11/2017)

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A 30-yr climate data record (CDR) of sea surface temperature (SST) has been produced with daily gap-free analysis fields for the North Sea and the Baltic Sea region from 1982 to 2012 by combining the Pathfinder AVHRR satellite data record with the Along-Track Scanning Radiometer (ATSR) Reprocessing for Climate (ARC) dataset and with in situ observations. A dynamical bias correction scheme adjusts the Pathfinder observations toward the ARC and in situ observations. Largest Pathfinder-ARC differences are found in the summer months, when the Pathfinder observations are up to 0.4 °C colder than the ARC observations on average. Validation against independent in situ observations shows a very stable performance of the data record, with a mean difference of -0.06 °C compared to moored buoys and a 0.46 °C standard deviation of the differences. The mean annual biases of the SST CDR are small for all years, with a negligible temporal trend when compared against drifting and moored buoys. Analysis of the SST CDR reveals that the monthly anomalies for the North Sea, the Danish straits, and the central Baltic Sea regions show a high degree of correlation for interannual and decadal time scales, whereas the monthly variability differs from one region to another. The linear trends of the 1982-2012 SST anomaly time series range from 0.037 °C yr^{-1} for the North Sea to 0.041 degrees C yr^{-1} for the Baltic Sea.

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