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Long-term changes in the Northwestern Atlantic and Mediterranean SST from 1982 to 2016: A contribution of the Operational Oceanography to the determination of the present day Climate

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Estimating long-term SST changes is crucial to evaluate global warming impact at regional scales. Here, we analyze the Mediterranean (MED) and the Northwestern Atlantic Box (NWA) SST changes over the last 34 years (1982 - 2016) by combining reprocessed (REP) and near-real-time (NRT) data. Actually, the Italian National Research Council (CNR) has recently produced daily (nighttime), 4 km resolution REP MED level 4 datasets (REP L4), also covering the adjacent Atlantic region, based on the latest Pathfinder v5.2 AVHRR dataset (1982-2012). These data represent the longest satellite MED SST L4 time series and are freely distributed through the European Copernicus Marine Environment Monitoring Service (CMEMS). However, as Pathfinder has not yet released an update of its product, the REP data end in 2012. To fill in the gap between 2013 and 2016, we investigated the possibility to extend the time series by using the Mediterranean near real time (NRT), multi-sensor L4 SST data at Ultra-High spatial Resolution (UHR) produced by CNR, which are distributed through CMEMS and now mirrored at GHRSST. Since this product is available since 2008, the consistency with the REP has been assessed. Combining the REP L4 data (1982-2012) and a bias-corrected version of the NRT L4 data (2013-2016), we built the SST time series and provided updated estimates of the MED and NWA SST trends. The analysis shows that The Atlantic Box and The Mediterranean Sea have similar trend behavior until 2008. Afterward the Mediterranean Sea SST continued to increase while the Atlantic Box persisted in its warming pause.