Seasonal predictions of sea surface temperature anomalies in the North Atlantic using artificial neural networks

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We aim to investigate the potential of using artificial neural networks (ANN) for the prediction of sea surface temperature anomalies (SSTA) at seasonal time scales in the North Atlantic. At these time scales, SSTAs have been linked to the intensity and genesis of extreme weather events and fluctuations of marine resources, which have the potential for significant socio-economic consequences. Thus, providing reliable predictions of seasonal SSTAs can be very beneficial. Here, we aim to evaluate the performance of ANN over traditional methods, after training with both simulated and observed data. Traditionally, seasonal SST forecasts are based on persistence and common statistical methodologies, often showing low skill particularly in the subtropics. Among the parameters influencing SST variability, previous work has shown that in addition to heat content persistence, SSTAs are also influenced by convergence or divergence of northward transported heat. This has been shown to improve the SSTA hindcast skill in regions of the North Atlantic, in particular for summer seasonal means. Our first test will involve training the ANN to recover this correlation.