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Ocean and coastal warming in the north Atlantic by means of SST data from 1985 to 2005.

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Oceanic and coastal warming were analyzed by means of satellite derived SST in the north Atlantic region limited by 37ºN, 20ºW and 48ºN, 1ºW from 1985 to 2005. Weekly mean SST data is obtained from night-time measurements carried out by the Advanced Very-High Resolution Radiometer (AVHRR) onboard of NOAA with a spatial resolution of 4km. Inter-annual variability of monthly SST shows an inhomogeneous oceanic and coastal warming trend. Warming ranges from 4.5ºC century^{-1} at latitudes close to 48ºN to 3ºC century^{-1} at latitudes close to 37ºN in the ocean and from 3ºC century^{-1} at latitudes close to 48ºN to 1ºC century^{-1} at latitudes close to 37ºN near coast. Ocean warming trend is higher than the coastal one and the maximum difference was detected along the west Iberian Peninsula (WIP) area where oceanic warming rate has risen at about double the coastal rate. The meridional ocean warming was 4.0ºC century^{-1} in front of the Atlantic French coast, 2.2ºC century^{-1} for the Cantabrian area and 2.8 ºC century^{-1} in front of the WIP. The meridional coastal warming was 2.8ºC century^{-1} along the Atlantic French coast, 2.1ºC century^{-1} along the Cantabrian coast and 1.2ºC century^{-1} along the WIP coast. Inter-annual variability of seasonal SST shows that ocean warming occurs during all seasons in front of the Atlantic French coast and during winter, spring and summer in the rest of the area under study. In contrast, inter-annual coastal warming occurs basically during spring and summer. The highest warming observed in the ocean in front of the Atlantic French coast during all seasons and the slowest rate of warming observed in the WIP coast could be explained by the strong increase of heat flow from the Gulf Stream into the north Atlantic and coastal upwelling events which take place in the WIP from April to October.