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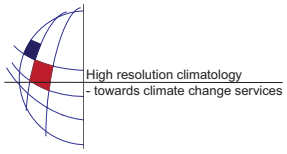

Coastal and Oceanic SST variability along the western Iberian Peninsula

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Trends in coastal and oceanic Sea Surface Temperature (SST) were analyzed along the western Iberian Peninsula for the period 1900-2008. SST data were obtained from the UK Meteorological Office, Hadley Centre (http://badc.nerc.ac.uk/data/hadisst). Nodes were distributed on a 1ºx1º grid with monthly periodicity. Twelve points were considered from 37ºN to 43ºN, six at coastal locations (9ºW) and six at oceanic locations (14ºW).

SST has undergone several periods of warming and cooling during the last century. In particularly, two warming periods (from 1900 to 1955 and from 1970 to 2008), and one cooling period (from 1955 to 1975). In addition, the increment of SST (ΔSST) has been calculated as the SST difference between coastal and ocean locations at the same latitude. This parameter has been used by some authors to characterize the upwelling (Nykjaer & VanCamp, 1994). In the inter-annual evolution of the average of ΔSST: two of increase (from 1920 to 1950 and from 1980 to 2008) and one of decrease (from 1950 to 1980). The same study was carried out seasonally. Three seasons were selected according to the periods of high, moderate or low ΔSST: November-February (NDJF); March-June (MAMJ) and July-October (JASO). The greatest differences between coast and ocean were observed during JASO and lowest ones during MAMJ. Negative values were detected during the whole year being more negative from July to September coinciding with the upwelling season (Alvarez et al., 2005). The seasonal ΔSST shows the same increase and decrease cycles as the annual ΔSST evolution.

SST patterns showed that warming and cooling trends were less intense near coast than in the ocean. The possible causes of this behavior were analyzed. If the mechanism described by Bakun (1990) and McGregor et al., (2007) is assumed, coastal upwelling is revealed as the main cause of this behavior. On the contrary, when upwelling index evolution is calculated from wind data, coastal upwelling is not revealed as the main cause because upwelling index decreases while ΔSST increases during the last period (1980 to 2008).

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