



Decadal trends in coastal upwelling off Iberian Peninsula

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The upwelling off Western Iberian Peninsula is studied from 1961 until 2008 with numerical simulations realized with the ROMS (Regional Ocean Modeling System) model forced with eight atmospheric re-analysis variables (surface wind; relative humidity; surface atmospheric temperature; surface pressure; cloud cover; precipitation; freshwater flux and net shortwave radiation), retrieved from the ERA-40 and ERA-Interim databases. The differences obtained with the two forcing databases (ERA-40 and ERA-Interim) in the upwelling intensity and frequency are analyzed, for each season of the year, looking at the Ekman transport and sea surface temperatures differences between a point near the coast and another offshore. Both simulations indicate a clear increase in the number of days per year with upwelling in the southern part of the coast, and a slightly decrease in the northern part of the western Iberian coast. These opposing trends in the number of upwelling days are in agreement with the trend in meridional wind intensity measured with the QUICKSCAT sensor, increasing in the southern sector of the coast, decreasing in the north. A lagrangean study is made with trajectories of several virtual floats, released near the coast. The sea surface temperature from the ROMS numerical simulations is validated with remote detection data from the AVHRR (Advanced Very High Resolution Radiometer) sensor and the AMSR (Advanced Microwave Scanning Radiometer) sensor.