



On the summer coast parallel winds off the west coast of Iberia

Nádia Rijo (1,2), Daniela C. A. Lima (2), Alvaro Semedo (1,2), Pedro M. M. Soares (2), Rita M. Cardoso (2), and Pedro M. A. Miranda (2)

(1) Naval Academy - CINAV, Portugal (nadia.sofia.rijo@marinha.pt), (2) Instituto Dom Luiz, University of Lisbon, Lisbon, Portugal

During summer the west coast of the Iberian Peninsula is under the effect of persistent coast parallel northerly winds, called Nortada (northerly wind in Portuguese). The synoptic forcing behind the Nortada is caused by the semi-permanent Azores High and the thermal low pressure system in-land central Iberia. The associated pressure gradient gives rise to coastal parallel winds as the result of the geostrophically adjusted response to this synoptic pattern. In turn the persistence of the Nortada induces the development of upwelling systems from the Galicia to Algarve, off the west coast of Iberia, bringing deep cold nutrient-rich water to the shelf and to the surface. This cold water sharpens the temperature and pressure gradients at the coast, leading to a further increase of the wind speed at the coast. The summer regional climate of the coastal western Iberian area is modulated by the Nortada. The structure and climatology characterization of the summer Nortada is investigated through analyses of close to surface wind data produced by a regional 9km horizontal resolution atmospheric hindcast. This regional data was produced using the WRF model, forced by the ECMWF (European Centre for Medium-Range Weather Forecasts) ERA-Interim reanalysis, and covers the period 1989-2007. The link between the Nortada and the Iberian coastal low level jet is also studied.