



EOF analysis of Sea Surface Temperature in the Canary Island - Madeira region

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We analyzed Sea Surface Temperature (SST) images in a region covering the Canary Islands and Madeira archipelagos, with the following objectives

1. The reconstruction of incomplete SST satellite images during the year 2009.
2. The determination of the main spatial and temporal patterns in the region.

SST images for 2009 are downloaded from the Medspiration project (<http://www.medspiration.org>). The images consist of combined measurements from several satellite systems. The images with less than 5% of valid pixels (e.g. clouds) were removed, so that out of the 365 initial images, 347 were kept. The method used in this work for the reconstruction of missing data is Data INterpolating Empirical Orthogonal Functions (DINEOF, Alvera-Azcárate et al., 2005).

The results show that the first mode is largely dominant, with 87% of the variance explained, and represents the regional seasonal cycle. The second mode accounts for 9% of the variance and depicts a separation between coastal waters and open-ocean waters. The signal of the Cape Ghir upwelling filament is also present in the second mode. The reconstruction allows one to reproduce the characteristic mesoscale features of the region: the coastal upwelling, the island wakes (Gran Canaria, Madeira, ...), the filament and the eddies in the lee of the main islands.

A near-operational version of the reconstruction has been implemented and is available at
http://gher-diva.phys.ulg.ac.be/DINEOF/dineof_allCAN.html