



Saharan Dust and Bloom of Diazotrophic Cyanobacteria in the NW African Upwelling

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During the warmest summer (2004) since 1912 in the NW African upwelling, meteorological data sets and ocean satellite and in situ observations targeted an anomalous bloom of the N₂-fixing cyanobacter *Trichodesmium erythraeum* Ehrenberg never described before.

Meteorological data sets showed strong changes of the dynamics of meridional and zonal winds which raised the temperature of the air to the highest record never registered. Quasi-true color images of mineral dust from OrbView-2 SeaWIFS satellite and dust model deposition results revealed intense Saharan dust inputs into the NE Atlantic ocean. AVHRR/NOAA SST images showed the warmest sea temperature and air temperature of the record in the NW African shelf where the upwelling (clor a > 3 mg/m³) developed. A bio-optical model of reflectance of *Trichodesmium* from SeaWIFS was used during the bloom event showing “optical positives” over an advective jet moving westward and off-shore towards the S Canary Islands.

Samples taken from the advective jet drifting off showed a high concentration (97 %) of *T. erythraeum* (1240 filaments/ml). Samples also confirmed the presence (3 %)

of dinoflagellates and diatoms (Gymnodinium, Ostreopsis and Zygabikodinium) (10 cell/ml). The early stage of this anomalous event has likewise been confirmed to be associated to the exceptional weather warming and intensive dust inputs.