



Electron transport system activity in an upwelling area of the NW Alboran Sea

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The NW Alboran Sea is a relatively high productive area in comparison with other areas within the Mediterranean. The enhanced productivity is caused by a geostrophic front that promotes the upwelling of saltier and nutrient-rich waters along the Spanish coast. This upwelling leads to high chlorophyll *a* concentrations during almost all the year. The high productivity produces a high consumption of oxygen and an intense nutrient regeneration in the subsurface layers. The measure of the electron transport system (ETS) activity in plankton provided an estimation of the potential respiratory metabolism of these organisms and it can be used to estimate respiratory CO₂ production in the ocean. The aim of this work was to study the seasonal variability of the ETS activity in the upwelling area of the NW Alboran Sea. In addition, the relationship among ETS activity and other biological and physicochemical variables was studied. ETS activity was measured in plankton samples (<200 μm) collected in July 2003, October 2003, February 2004 and April 2004. ETS activity showed significant seasonal variations. On average, the higher ETS activities were detected during summer coinciding with the higher chlorophyll *a* concentration and relatively high levels of particulate organic carbon. Averaged respiratory C production was estimated to range between 19.8 mg C m⁻³ d⁻¹ in summer and 12.9 C m⁻³ d⁻¹ in the other seasons. These estimates suggest that most of the primary production in the studied area is probably exported by means of both horizontal advection and vertical flux of particulate organic matter.