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## The Carbon Dioxide System South of the Canary Islands

M. González-Dávila, J. M. Santana-Casiano, and M. Suárez-Tangil University of Las Palmas G.C., Spain (<u>mgonzalez@dqui.ulpgc.es</u> / Fax: +34 928-452922 / Phone: +34 928-452914)

Measurements of surface partial pressure of  $CO_2$  and water column alkalinity,  $pH_T$ , nutrients, oxygen, fluorescence and hydrography were carried out south of the Canary Islands during September 1998. Cyclonic and anticyclonic eddies were alternatively observed from the northwestern area to the central area of the Canary Islands. Nutrient pumping and vertical uplifting of the deep chlorophyll maximum by cyclonic eddies were also accomplished by upward displacement of dissolved inorganic carbon. A model has been applied to determine the net inorganic carbon balance in the cyclonic eddy. The fluxes are determined considering both the diffusive and convective contributions from the upward pumping and the corresponding horizontal transport of water outside the area. An increase in the total inorganic carbon concentration in the upper layers inside the eddy field of 133 mmol C m<sup>-2</sup> d<sup>-1</sup> is determined. The upward flux of inorganic carbon decreased the effect of the increased primary production on the carbon dioxide chemistry. The reduced  $fCO_2$  inside the cyclonic eddy, 15  $\mu$ atm lower than that observed in non affected surface water, was explained by considering thermodynamic aspects, biological activity, eddy upward pumping and diffusion and air-sea water exchange effects.