

Biogeochemical tracers and fluxes in the Western Mediterranean Sea, spring 2005

Schroeder K., Gasparini G.P., Borghini M., Cerrati G., Delfanti R.

Abstract

Only few studies about biogeochemical properties' distributions in wide areas of the Mediterranean Sea are available. We present a new biogeochemical dataset for the western Mediterranean, collected in spring 2005. The paper presents a general description of the vertical and horizontal variability of dissolved inorganic nutrients and of the anomalous stoichiometric ratios. Nutrients are subsequently used as water mass tracers, comparing non-conservative with conservative tracers. The biogeochemical footprint of waters of different origin and ages has been revealed by the conservative parameters NO and PO, which combine oxygen and nutrients to cancel the alteration of both due to respiration. Using mass transports estimated with an inverse box model, the biogeochemical fluxes between different regions are computed. Our results confirm previous findings, i.e. that the eastern basin is a nutrient source for the western one. In addition we provide quantitative estimates of cross-basin biogeochemical fluxes. In the vertical, generally the surface layers act as a nutrient sink, to which corresponds a deep source. Finally, the biogeochemical fluxes were used to estimate the export production. A comparison with an independent measurement, confirms that this method is a valuable tool to obtain information about the CO₂ removal and the functioning of pelagic ecosystems.

Keywords: Western Mediterranean; Nutrients; Biogeochemical Fluxes; Biogeochemical Tracers; New Production

Citation: Schroeder K., Gasparini G.P., Borghini M., Cerrati G., Delfanti R., 2010. Biogeochemical tracers and fluxes in the Western Mediterranean Sea, spring 2005. *J. Mar. Sys.* 80: 8-24, doi: 10.1016/j.jmarsys.2009.08.002.

For a full-text copy, please contact me at katrin.schroeder@sp.ismar.cnr.it