

AN ESTIMATE OF PELAGIC AND BENTHIC OXYGEN CONSUMPTION AND NUTRIENT REGENERATION RATES FROM ELNA DATA IN THE ADRIATIC SEA

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Oxygen and nutrient fluxes as determined from sediment core incubations reflect respiration and nutrient regeneration rates in the seabed. Rates inferred from a temporal series of hydrographic profiles of oxygen and nutrients instead represent the result of both pelagic and benthic processes. Both types of data are available from two ELNA cruises (June-July 1993) in the Adriatic sea, thus providing an opportunity to compare rates of water column versus benthic respiration/regeneration. Bottom sediments, collected by a boxcorer, were subsampled in triplicate and the subcores were incubated onboard. All boxcore stations were deeper than 25 m and included the Po area, the Italian coast from Ravenna to Ancona, and the Jabika Pit. Oxygen and nutrient (SiO_2 , NH_4 , NO_3 , NO_2) concentrations from the incubation cores were monitored over a 1-2 day period. In each case, the rate of change was determined by a linear fit. The rates obtained tended to be comparable or lower than published values (GORDIANI *et al.*, 1992), but most of these previous *in situ* measurements were made at shallower depths. The $\Delta\text{Si}:\Delta\text{O}$ and $\Delta\text{Si}:\Delta\text{N}$ ratios showed no consistent trend suggesting that the recycling of silicate is decoupled from the other nutrients, as noted earlier by DEGOBBIS and GILMARTIN (1990). In many cases, the $\Delta\text{O}:\Delta\text{N}$ ratio deviated from the Redfield ratio, especially in the Po area. For the water column data, we selected a number of hydrographic stations in the vicinity of the boxcore stations (within a ~ 10 km radius). Volume integrations for the lower layer were made, and rates were determined by difference. Stoichiometric ratios for the changes are compared with those from the incubations. The importance of pelagic vs. benthic processes in recycling of organic matter in the Northern Adriatic is discussed.

REFERENCES

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