

Annual characterisation of four Mediterranean coastal lagoons subjected to intense human activity



In the present study the annual variability of the physico-chemical parameters of four coastal lagoons subjected to intense human activity was characterised. The trophic state indices (TSI) of Carlson (1977) and the water quality index TRIX of Vollenweider et al. (1998) were tested and compared with the water quality categories proposed by the European Environmental Agency (2009). All the parameters were sampled monthly from May 2004 to July 2005. There were important differences in the annual variability of the physico-chemical parameters between the lagoons, reflecting the importance of human-induced pressures and the heterogeneity of these environments. The lagoons were in a eutrophic/hypereutrophic state most of the year. Trophic state indices classified the lagoons in a bad or poor trophic state most of the year, and they were not able to discriminate the effect of secondary variables such as freshwater releases, ground waters fluxes or water renewal. Nitrogen was the limiting factor in the lagoon with a higher exchange rate with the sea, while phosphorous was the limiting factor in the other lagoons, due to the high nitrogen external loads and the poor water renewal. The need for developing indices specifically designed for coastal lagoons in order to assess their trophic state is discussed.

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