

# RANGES OF CONCENTRATION OF "QUALITY CONTROLLED" OCEANOGRAPHIC DATA (INORGANIC NUTRIENTS, DISSOLVED OXYGEN AND CHLOROPHYLL-A ) FROM THE NW MEDITERRANEAN

Mariona Segura-Noguera<sup>1</sup>\*, Antonio Cruzado<sup>2</sup> and Dolors Blasco<sup>1</sup>

<sup>1</sup> ICM-CSIC, Pg. Marítim Barceloneta 37-49, 08003 Barcelona, Catalonia, Spain - msegura@icm.csic.es

<sup>2</sup> CEAB-CSIC, Accés cala St Francesc 14, 17300 Blanes, Catalonia, Spain

## Abstract

Quality control procedures have been applied to oceanographic data collected at the Catalan Sea, NW Mediterranean Sea. The data source ranges from historical data from MEDATLAS and MATER databases, inhouse data from CSIC (IIP, ICM and CEAB) from 1982 to 1997, to recent cruises of ICM, from 1999 to 2003. The effects of sample manipulation and chemometrics on the data have been studied. On this basis the ranges for each variable have been defined. This "quality controlled" data would be used to study ecological and biogeochemical processes at the Catalan Sea (NW Mediterranean), such as seasonal dynamics of nutrients, dissolved oxygen and chlorophyll-a, as well as stoichiometry.

*Keywords* : Western Mediterranean, Phosphorus, Oxygen, Phytoplankton, Hydrography.

Although the Catalan Sea (NW Mediterranean Sea) has been largely studied over more than 30 years of oceanographic research (Table 1), the ranges of variation of some crucial data, such as inorganic nutrients, are not yet defined. At the MEDATLES and MATER databases ([1], [2]) there is a quality control of oceanographic data based on [3], which includes gradients and spikes of concentration, however specific ranges of the data in our study area (region DS2) are not given. In this study, procedures for quality control of the data has been adapted from [4] and [5], according to the quantity of data and other factors that control the distribution of the different variables at the Mediterranean and Catalan Sea. Experiments evaluating the effect of freezing nutrient samples from the area of interest have been performed, and the precision has been estimated for those cruises that do not report it. Table 1 shows the regional limits for inorganic nutrients, dissolved oxygen and chlorophyll-a for the Catalan Sea. The ranges have been specially studied for winter, when the highest intensity of vertical mixing processes takes place. The use of this quality controlled data allows us to distinguish structures related to the hydrography of the area, to study the seasonality of the variables and to verify the values of the ratios between variables such as stoichiometry. We thank Dra. M. Estrada, Mr. J. Salat, Dr. M. Alcaraz, Dra. A. Sabatés and Dr. A. Palanques for kindly providing the data and funds for this study.

Tab. 1. Ranges of concentration of oceanographic variables at the Catalan Sea, NW Mediterranean. n = quantity of data; year: range of years studied.

	Minimum	Maximum	n	year
Phosphate ( $\mu\text{M}$ )	0.0	0.52	9266	1957 – 2003
Nitrate + nitrite ( $\mu\text{M}$ )	0.0	9.75	10053	1979 – 2003
Nitrite ( $\mu\text{M}$ )	0.0	0.60	11374	1976 – 2003
Ammonia ( $\mu\text{M}$ )	0.0	2.80	2244	1982 – 2003
Silicate ( $\mu\text{M}$ )	0.0	10.75	12675	1970 – 2003
Dissolved oxygen (ml/l)	3.8	7.10	13360	1910 – 2000
Chlorophyll-a ( $\mu\text{g/l}$ )	0.0	2.75	6455	1976 – 2003

## References

- 1 - MEDAR Group, 2002 - MEDATLAS/2002 database. Mediterranean and Black Sea database of temperature salinity and bio-chemical parameters. Climatological Atlas. IFREMER Edition (4 CD).
- 2 - MATER Group, 2001. MTPII-MATER 1996-1999 (Mass transfer and ecosystem response) database Ifremer.
- 3 - Levitus, S. *et al.*, 1994. World Ocean Atlas, CD-ROM data Sets.
- 4 - Fichaut M., Balopoulos E., Baudet L., Dooley H., García-Fernández M.-J., Iona A., Jourdan D., Maillard C., 1997. A common protocol to assemble a coherent database from distributed heterogeneous data sets: the MEDATLAS database example. MAST Workshop on Project Data Management, 11-13 June 1997, Ispra, Italy.
- 5 - Conkright, M.E., H.E. Garcia, T.D. O'Brien, R.A. Locarnini, T.P. Boyer, C. Stephens, J.I. Antonov, 2002: World Ocean Atlas 2001, Volume 4: Nutrients. *In*: S. Levitus (ed.), NOAA Atlas NESDIS 52. US Government Printing Office, Wash., D.C., 392 pp.