

MEDAR/MEDATLAS – A database for the Mediterranean and Black Sea projects

Basic oceanographic data like temperature, salinity and nutrients are at the core of any scientific and technical studies. The needs are also for data of good quality, which requires to have enough available data to compute statistics and to compare the isolated data with these statistics. This is more or less the case for key parameters such as temperature, salinity, oxygen, nitrate, nitrite, ammonia, total nitrogen, phosphate, total phosphorus, silicate, H₂S, pH, alkalinity, and chlorophyll-a profiles, which have been collected for several decades by about 150 laboratories of 33 countries, most of them bordering the Mediterranean and Black Seas but also a few institutes outside.

To facilitate the access to these dispersed data, an EU concerted action MEDAR/MEDATLAS (MAS3-CT98-0174 & ERBIC20-CT98-0103) was initiated to develop a joint comprehensive through a wide co-operation of Mediterranean and Black Sea countries. Most of the partners (Fig.1) were National Oceanographic Data Centre or Designated National Agencies for International Oceanographic Data and Information Exchange (IODE) of UNESCO Intergovernmental Oceanographic Commission (IOC), and had the duty to compile and safeguard copies of the data sets collected at sea by the scientific laboratories of their country. These data have been reformatted at the common MEDATLAS format, and checked for quality according to the common protocol (MEDAR Group 2001) based on the international IOC, ICES and EC/MAST recommendations, with automatic (objective) and visual (subjective) checks. Seasonal gridded fields have been computed by using a variational model for objective analysis (Rixen et al. 2001). Meta-data (cruise inventory), observed data, gridded data, maps, documentation and software are published on a set of four Cdroms (MEDAR Group 2002).

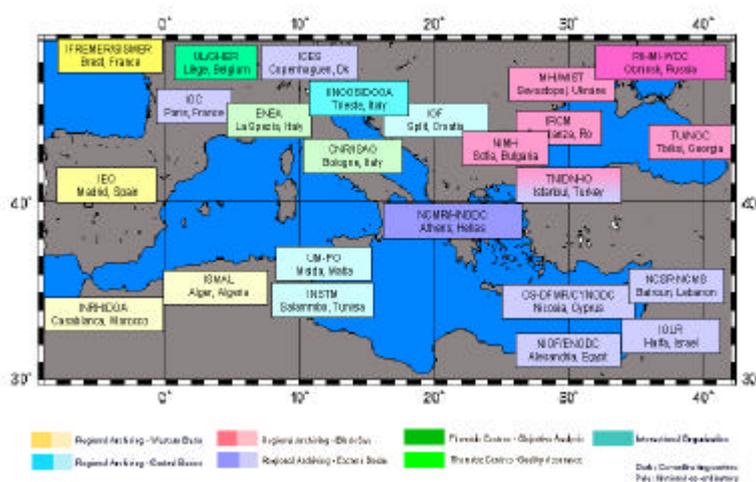


Fig. 1 MEDAR Network

This international cooperation work was successful in doubling the volume of available data which represents now 286426 stations (vertical profiles from bottle casts, CTD, Xbt, Mbt), which presently represents the best database for the Mediterranean and Black studies. Among these stations, the number spatial coverage of each parameter is not homogeneous. The coverage of the nutrients decreases dramatically from phosphate, which is considered by the biologists as a control parameter of the biota (20808 profiles, Fig. 2) to total nitrogen (153 available profiles only). H₂S is measured only in the Black Sea, in relation with the lack of oxygen in the subsurface layers. The middle of the deep basins and on the Lybian shelf are poorly covered, even for temperature.

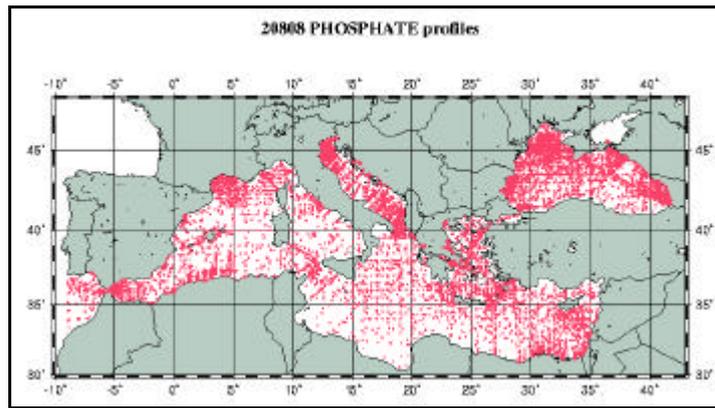


Fig. 2 : Distribution of Phosphate profiles in MEDAR Database

Data selected with acceptable quality flags have been interpolated at 25 horizontal levels and objectively analysed to produce the gridded climatological fields, vertical sections (Fig. 3) and horizontal maps.

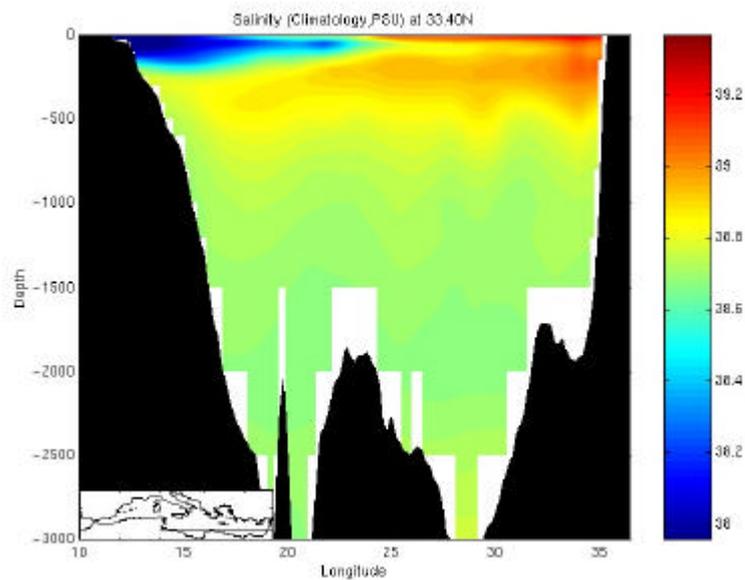


Fig. 3: Annual Mean Vertical Salinity distribution in the Levantine Basin

There are plans to maintain and develop this database by integrating new data produced by recent projects and from the operational oceanography. Further work will involve also to deal with improvement of the quality control protocol with issues which has not been possible to implement during MEDAR. The QC of the nutrients in areas with poor data coverage remains problematic. New methods using theoretical relationships between nutrients such as the Redfield ratio will be incorporated in routine checks. However there is still a need for a better coverage in nutrients, both for observations and for improving the quality checks, which are based on the pre-existing knowledge of the distributions. This is critical in the middle of the deep basins and along the Southern Mediterranean coasts. It is therefore hoped that more observational programmes will be undertaken in these regions, with intensified monitoring over these empty areas.

Acknowledgements

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MEDAR/MEDATLAS co-ordinating web site : www.ifremer.fr/medar/