

MEDATLAS 2002: DATABASE AND DATA MANAGEMENT SYSTEM FOR THE LONG TERM MONITORING OF MEDITERRANEAN AND BLACK SEAS

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Abstract

The EU concerted action MEDAR/MEDATLAS-II, was launched in 1998 with the overall objective to make available a comprehensive data product of multi-disciplinary in-situ data and information in the Mediterranean and Black Sea, through a wide co-operation of the bordering countries. The resulting integrated multidisciplinary database MEDATLAS 2002 includes observed data collected over more than one century and gridded climatological fields and maps. This database has been published on CDrom to facilitate its use. New actions are in preparation to improve the data services by offering an integrated and continuously updated data access on internet.

Key words: Mediterranean, Black Sea, Oceanography, Chemicals, Database

Introduction

Long time series of marine observations are required for many studies, especially to follow up changes in the seawaters, to manage living and non-living marine resources and to make predictions. Many scientific laboratories collect such data, but in most cases they remain dispersed in heterogeneous formats and systems. Their access is difficult, and due the lack of appropriate archiving, they are frequently in danger to be lost. The IOC "Global Ocean Data Archaeology and Rescue (GODAR)" programme has been launched to rescue and disseminate the dispersed data. Two pilot projects MODB and MEDATLAS (1994-1997) initiated the Mediterranean and Black Sea regional module of GODAR. These projects were followed by a wider EU concerted action MEDAR/MEDATLAS-II, launched in 1998 with the overall objective to make available a comprehensive data product of multi-disciplinary in-situ data and information in the Mediterranean and Black Sea, through a wide co-operation of the bordering countries. The data management was focused on basic parameters that influence the biodiversity and the primary production and for which sufficient preliminary knowledge of the distributions were available to allow quality checks to be performed. These selected parameters were: Temperature, Salinity, Oxygen, Phosphate, Silicate, PH, Nitrate, Nitrite, Ammonium, Chlorophyll, Alkalinity, Total Phosphorus, H₂S, Total Nitrogen. This paper present a brief overview of the resulting data and products and new actions in preparation to improve the Mediterranean data servicing.

Data processing

The 17 oceanographic data centres of the MEDAR consortium have compiled historical and recent data from 150 source laboratories of 33 countries. The integrated database has been prepared by using a common protocol (1) for formatting the data and checking them for quality in agreement with the international standards of ICES, IOC and EC/MAST. Accordingly automatic (objective) and visual (subjective) checks have been performed, which result in a quality flag added to each numerical value: location, date and data points, respectively. These checks have been performed at four Regional Data Centres, while the Global Assembling Centre finalized quality and duplicates checks. Several up and down transfers of subsets of data between the data centres have been necessary before getting a fully qualified integrated data set. The resulting volume of data has doubled compared to 1997 database. It includes now 161 877 vertical profiles of temperature form bathythermographs and thermistor chains and 124 002 multi-parameters profiles from CTD and bottle casts. However the number of profiles is very variable from a parameter to another, and besides temperature and salinity (118 009 profiles, Fig. 1), the highest numbers of available profiles are for oxygen and phosphate (44 928 and 20 761 respectively).

The qualified data were used to produce higher-level products providing a more complete and synthetic view of the bio-chemical systems. Climatological and gridded fields were computed by using the Variational Inverse Model (2), on finite elements and then re-interpolated on a regular grid (0.2 degrees in Latitude and Longitude), with smaller scales for local computations. The computations were made on a climatic, seasonal or monthly scale when the space and time data coverage were sufficient. The gridded fields have been

mapped horizontally and vertically. On these maps the main features of the region, such as the Atlantic inflow and the Levantine meso-scale eddies appear very clearly at the resolution of the computation.

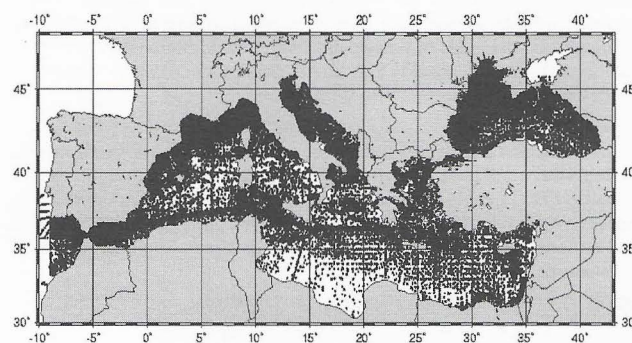


Fig. 1. Distribution of the 118 009 salinity profiles

Present and future data services

MEDATLAS 2002 (3) disseminated by the MEDAR network, is the resulting database published in the form of a set of four CDROMs in order to facilitate the access to data. It includes meta-data, observed and gridded data, maps, vertical sections, user friendly software to extract, visualise, plot, check for quality and process data. It is presently the best available integrated database for the Mediterranean and Black Seas, and a real scientific and educational tool.

Still there are needs for getting similar possibilities on line, for getting new data sets and products such as mean, decadal, seasonal, monthly statistics at basin, regional and shelf scales and for developing the quality assurance protocols for bio-chemicals and gridded products. Therefore new projects are in preparation (MEDBLACK-ODN and SEA-DATANET), intending to provide the needed integrated services through the networking of national data centers, enhanced capacity building activities and better public awareness on the data heritage.

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