



MERSEA

Marine Environment and Security for the European Area

OCEAN MONITORING AND FORECASTING

The objective of MERSEA was to develop an integrated European operational system for the global monitoring and forecasting of the ocean and a coordinated network of regional systems for European waters. This system delivers now a set of basic and generic information products based on physical and bio-geochemical state variables. It provides an integrated service to intermediate users and policy makers in support of safe and efficient off-shore activities, environmental management, security and sustainable use of marine resources.

Although the services are developed primarily to fulfil the reporting, monitoring and forecasting requirements of European agencies and stakeholders, they do have a global scope. The provision of services is based on access to ocean products and information, such as long-running data sets to define the mean, fluctuations, and past trends in the state of the marine environment; to record its evolution; and, through predictions of future change, to establish baselines for effective environmental management.

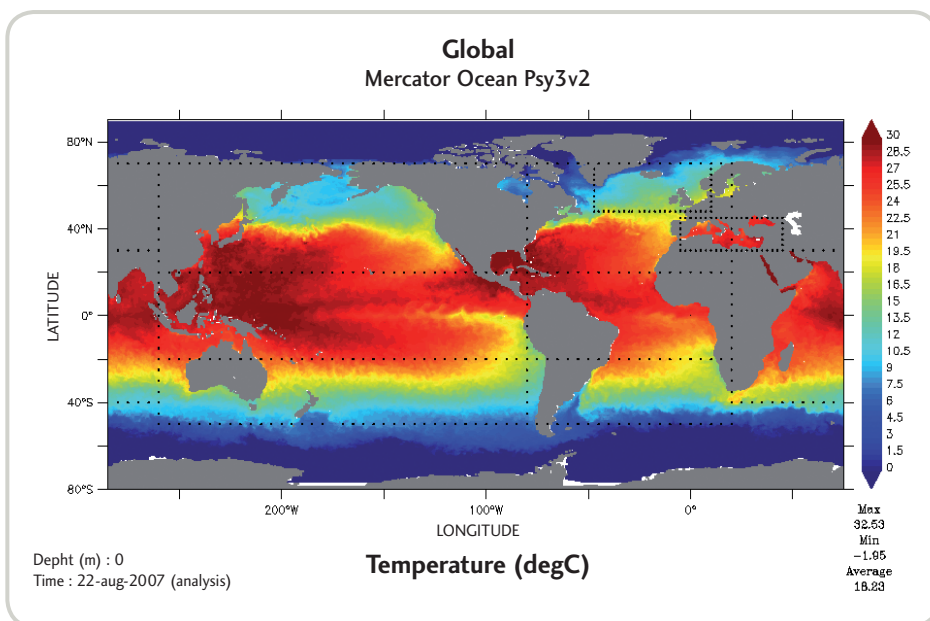
The system is a contribution to GMES, which will lead to the establishment of a Marine Core Service.

In the project, research and development were undertaken in multidisciplinary fields relevant to the system: delivery of fully validated multi-sensor data sets (satellite and in situ), information management, system design and implementation, advances in ocean circulation and marine ecosystem modelling, data assimilation, development of user products. Particular attention is paid to the full validation of the systems from the points of view of scientific quality and skill of the forecasts, operational requirements, and fitness for the purposes of users.

MODELLING OCEAN PHYSICS

The basic method is to merge and assimilate diverse data from space-borne sensors and in situ measurement networks into high-resolution ocean models in order to monitor the ocean physics, bio-geo-chemistry and ecosystems and to provide forecasts on prediction time scales ranging from days to months. The pre-operational system integrated in the course of the project comprises global and regional (Arctic, North-Atlantic and European shelves, Baltic, and Mediterranean) centres; Data Assembly Centres for satellite altimetry, ocean colour, sea-ice, sea-surface temperature, and forcing fields; and in situ data. Atmospheric analyses and forecasts are provided by ECMWF (European Centre for Medium Range Weather Forecasting) and National Weather Services.

The system produces regular and systematic reference information on the state of the ocean, of known quality and accuracy for the global and regional European seas. The information delivered presently covers physical ocean state variables. The number of environmental variables produced will increase over the period 2008-2013. The products include observational and model data, real time mapping and forecasting. Ocean bulletins, indicators, synthesis, and statistics are elaborated.



Sea Surface Temperature provided by a Global Ocean model which assimilates satellite (altimetry and SST) and in-situ (Argo) observations.
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LIST OF PARTNERS

- Institut Français de Recherche pour l'Exploitation de la MER (IFREMER), France
- Fisheries and Oceans, Canada
- Oceanography Centre, University of Cyprus, Cyprus
- Danish Meteorological Institute, Denmark
- Hamburg Institut fuer Meereskunde, Germany
- Joint Research Centre, Italy
- BOOST Technologies, France
- Collecte Localisation Satellites, France
- Centre National de la Recherche Scientifique, France
- Instituto Canario de Ciencias Marinas, Spain
- GIP MERCATOR OCEAN, France
- Alfred-Wegener-Institut für Polar- und Meeresforschung in der universität, Germany
- Leibniz-Institut fuer Meereswissenschaften an der Universität Kiel, Germany
- Hellenic Centre for Marine Research, Greece
- Agency for New Technology, Energy and the Environment, Italy
- Istituto Nazionale di Geofisica e Vulcanologia, Italy
- Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, Italy
- Marine Information Service MARIS B.V, The Netherlands
- Utrecht University, The Netherlands
- Norwegian Meteorological Institute, Norway
- Nansen Environmental and Remote Sensing Centre, Norway
- Consejo Superior de Investigaciones Científicas, Spain
- Instituto Espanol de Oceanografía, Spain
- METU Institute of Marine Sciences, Middle East Technical University, Turkey
- European Center for Medium range Weather Forecasting International, International Organisation
- Ocean Numerics Ltd, UK
- Plymouth Marine Laboratory, UK
- Southampton Oceanography Centre, UK
- United Kingdom Met Office, UK
- Istituto di Scienze dell'Atmosfera e del Clima, Italy
- Consiglio Nazionale Delle Ricerche - Istituto di Studi Sui Sistemi Intelligenti per l'Automazione, Italy
- Météo France, France
- Proudman Oceanographic Laboratory, UK
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PROJECT INFORMATION

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