

THE MEDITERRANEAN MARINE FORECASTING SYSTEM: STATUS OF IMPLEMENTATION

Nadia Pinaridi, Giovanni Coppini and MFSTEP partners

Istituto Nazionale di Geofisica e Vulcanologia, Via D. Creti, 12, Bologna I-40100, Italy
n.pinaridi@ambra.unibo.it, coppini@bo.ingv.it

Abstract

The Mediterranean ocean Forecasting System (MFS) has started operational activities in January 2000. Presently it produces daily analyses and weekly 10-days forecasts of currents and temperature and salinity fields for the entire Mediterranean at approximately 10 km resolution. The main elements of the MFS - simultaneously operating in near real time the observational data network, a general circulation model and the data assimilation scheme- were implemented as part of an EU funded project called Mediterranean Forecasting System Pilot Project (MFSP, IV Framework Program). The second phase will be undertaken by another EU funded project, called the Mediterranean ocean Forecasting System: Toward Environmental Predictions (MFSTEP, V Framework Program), which is seeking further consolidation and expansion of the MFS.

Keywords: Mediterranean Sea, Ocean forecasts, Operational oceanography.

Results and future developments

MFSP (1) lasted 3 years and ended in 2002 and achieved the following goals: 1) the first basin scale real time observing system was set up and operated with satellite, VOS-XBT (2) and moored buoys (3) observations; 2) the real time forecasting system (Fig. 1) assimilated all these observations and produced a 10 days forecast every week; 3) regional and shelf models were nested and calibrated within the MFS basin scale model; 4) biochemical flux models were calibrated and validated with data assimilation components for several open ocean and shelf areas in the Mediterranean.

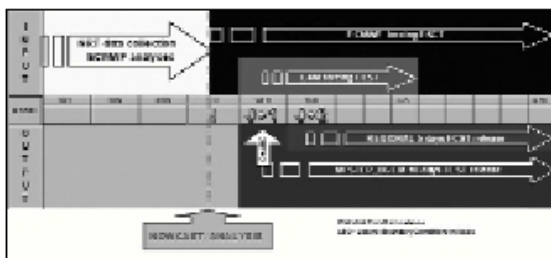


Fig. 1. The MFS weekly information flow for forecasting. The forecast starts every week at 12:00 on Tuesday from an analysis/nowcast produced from data collected in the previous week. The basin scale forecast is done with ECMWF forcing and on Wednesday the initial and lateral boundary conditions are given to limited areas models, nested within the MFS OGCM.

The main goal of MFSTEP, that it is funded to run from March 1, 2003 for three years, is to advance the present monitoring system, to demonstrate practical feasibility of regional and shelf predictions in several Mediterranean sub-regions (at 3 km resolution), to further develop the ecosystem modelling and to start the development of end-users interfaces for the exploitation of project results.

In particular MFSTEP has six major scientific/technological objectives:

OBJ1. Improve and expand the existing Near Real Time large scale monitoring system;

OBJ2. Add new observing system components in terms of biochemical measurements and new automated technology;

OBJ3. Improve the 10 days basin scale ocean forecast system (6.5 km resolution) and demonstrate the feasibility of Near Real Time three days forecasts in different regional areas (3 km resolution);

OBJ4. Develop the asynchronous ocean-atmosphere coupling with high resolution atmospheric forcing over regional areas;

OBJ5. Implement the three dimensional ecosystem models coupled to the forecasting system for future predictions of biochemical fluxes and state variables;

OBJ6. Consolidate the dissemination of forecast products to a wide user community and develop applications with end-users

The Mediterranean Forecasting System is presently operational and its products are available on MFSTEP central website: www.bo.ingv.it/mfstep (Fig. 2)



Fig. 2. MFSTEP central website.

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