

Station Name:
Station DYFAMED

Type of Station (moored / ship-based) and Location (geographic region / latitude and longitude coordinates):
Moored. Ligurian Sea (Mediterranean Sea): 43°25N; 7°52E

Carbon and biogeochemistry measurements at the station (indicate the frequency of observations, the year measurements began, and if they are surface / full water column, etc.):
CT, AT, pCO ₂ , O ₂ , Nutrients, Chla, POC, PON, Primary production, Bacteria, phyto- and zooplankton. Frequency of observations: in average, each month The year measurements began: 1991 Full water column or surface depending on the parameter

Principle Investigators / Contact Points:
Dr. Laurent Coppola Laboratoire d'Océanographie de Villefranche BP 8 – 06238 Villefranche sur Mer, France e-mail : coppola@obs-vlfr.fr

Affiliation of this station with national, regional, or global research programs and process studies:
INSU, JGOFS France

Web-site or links to other information:
www.obs-vlfr.fr/sodyf/

Site Overview
<p>DYFAMED / MOOSE (north western Mediterranean Sea)</p> <p>During the second half of the 20th century, the Mediterranean coastal regions experienced a strong growth of its urban population, from 94 million in 1950 to 274 million in 2000. The anthropogenic pressure on the Mediterranean marine ecosystems thus increased considerably during this period. At the same time several studies revealed important changes in the circulation or physical properties of the Mediterranean Sea (decrease of the sea level; appearance of a new deep water formation site in the southern Aegean Sea; increases of salinity and temperature in intermediate and deep waters of the western Mediterranean), but also in its chemical composition (increase of phosphates and nitrates in the deep layers of the western basin). The causes of these major changes and the consequences on the functioning of the Mediterranean Sea ecosystems are continuously in debat in the literature. It is difficult to assess if these changes are directly or indirectly linked to a global or a regional increase of the anthropogenic pressure. Are some of these</p>

Mediterranean perturbations able to affect significantly the general circulation and the composition of seawaters in the north Atlantic through the exchange of waters between the Atlantic Ocean and the Mediterranean Sea at the Gibraltar Strait?

The main objective of the DYFAMED (DYnamique des Flux Atmosphériques en MEDiterranée) time series station was to study the vertical transfer of materials from the atmosphere to the deep waters in a location where horizontal advection was believed to be reduced. Monthly sampling of physical, chemical, and biological parameters started in 1993 and lasted for more than 14 years. The DYFAMED time series station allowed scientists involved in this work to identify very interesting trends from seasonal to decadal time scales as a result of increasing anthropogenic pressure whose effects are reinforced by the short residence time of water masses (16 years in the western Mediterranean). For instance, decadal variations in nutrient elemental ratios, in temperature and salinity, or in the accumulation of anthropogenic CO₂ have been revealed thanks to the measurements realized at the DYFAMED site.

During the year 2007, the French institution INSU and the Inter-Organization Environment Committee (CIO-E) decided to support the MOOSE (Mediterranean Ocean Observing System on Environment) project which is based on a multisite system approach of continental-shelf and deep-sea fixed stations as well as a Lagrangian platform network to observe the spatio-temporal variability of processes interacting between the coastal-open ocean and the ocean-atmosphere components. The implementation of MOOSE should start in 2010 and it should last for at least several decades. The main objectives of the MOOSE are 1) to observe the long-term evolution of the north western Mediterranean Sea in the context of the climate change and anthropogenic pressure; 2) to detect and identify long-term environmental anomalies; 3) to build efficient indicators of the health of the north western Mediterranean; 4) to provide data to facilitate the validation of operational oceanographic models (e.g. MERCATOR); 5) to provide all data to a common public database; and 6) to harmonize the multi-sites observation strategies in the NW Mediterranean.