Description of the primary production distribution in the Sardinian Sea (Western Mediterranean), between 2001 and 2004.

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The primary production dynamics of the Sardinian Sea are poorly described. This area is characterized by mesoscale dynamics, mainly anticyclonic eddies, influenced by the Algerian current. The dynamic phenomena affect phytoplankton biomass distribution and consequently the primary production.

The main aims of this work are the investigation of temporal and spatial primary production distribution and the analysis of the interaction between mesoscale dynamics and biological processes.

A big effort, therefore, has been produced to understand how dynamic features modulate primary production processes by means of representation of in situ data measured during five CNR (Consiglio Nazionale Ricerche) cruises (MedGOOS3, MedGOOS4, MedGOOS5, MedGOOS6 and MedGOOS7) carried out on board R/V Urania between 2001 and 2004. During these surveys more than 150 sampling stations has been investigated and hydrological data has been acquired by a SBE911 plus CTD probe equipped with 24 Niskin bottle rosette for water column sample collection. Moreover biological variables has been detected in the same CTD stations through the double impulse fluorometers Primprod 1.08 and Primprod 1.11 that measure chlorophyll-a fluorescence, photosynthetic efficiency and PAR. More than 300 water samples has been collected to estimate chlorophyll-a concentration by spectrophotometric method.

The primary production is calculated by the empirical model Phyto VFP (Variable Fluorescence Phytoplankton Production) (Marcelli et al.1997). This model computes punctual PP of phytoplankton through in situ measures of phytoplankton biomass, photosynthetic efficiency and light. Integrating the punctual PP in depth and time the model allows to estimate the distribution of daily primary production.