Geophysical Research Abstracts,
Vol. 10, EGU2008-A-02613, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-02613
EGU General Assembly 2008

DYFAMED Time Series: A synthesis of 20 years observation in the Ligurian Sea

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From 1987 to 2007, the DYFAMED (Dynamics of atmospheric fluxes in the Mediterranean Sea) time series aimed to study the response of the northwestern Mediterranean Sea to climate change and anthropogenic forcings. During 20 years, the DYFAMED offshore site and the Cap Ferrat atmospheric station have been visited monthly to establish one of the longest time series measurements of marine and atmospheric parameters. The marine site located in the Ligurian site is of particular interest: 1) the central part of the basin is sheltered from coastal inputs by the presence of the North Mediterranean Current, 2) atmospheric inputs are predominant (anthropogenic background mixed with episodic Saharan events), 3) physical and biogeochemical processes exhibit a strong seasonal variability. Such investigations contribute to our understanding of the physical and biogeochemical processes of the ocean since the Mediterranean Sea can be viewed as a model for many open ocean processes. More recently, the complete 20 years time series revealed that a modification of the Mediterranean ecosystem started to appear through decadal and/or abrupt changes: phytoplankton population shift, anthropogenic aeolian modification, deep sea temperature and salinity increase, anthropogenic carbon decrease. The results of this long term time series contribute to emerge some responses of the Mediterranean Sea to climate variability and human

activities and should revise our knowledge of the functioning of the ocean.