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Mediterranean Sea

The Mediterranean Sea presents some particularities within European seas: this small basin is driven by the same physical, chemical and biological processes as the oceans but on smaller scale. It is characterized by a complex food web with a great variety of organisms (in terms of size and trophic relationships). It is an area of low productivity at all trophic levels (e.g. fisheries) and therefore the sustainable use of its limited resources requires a very good knowledge of the pelagic system dynamics.

The semi-enclosed nature of this sea, in combination with the increasing trend of population growth and human activities in coastal regions make this basin very sensitive; it is sensitive to climate variability, both from the North Atlantic Oscillation and from the Indian Monsoon variability; it is sensitive also to human effects due to river and atmospheric inputs from many European, north-African and Asiatic countries. In addition, the ecosystem of the neighbouring Black sea has already revealed considerable catastrophic changes in the food web and collapse of fisheries, mainly due to anthropogenic activities.

Our major goal is to understand the vulnerability of all components of the Mediterranean and Black Sea pelagic ecosystems (from small unicellular organisms to large fish) to the global change and to produce models predicting the impact of these changes. National projects carried out in the recent past or currently running by Mediterranean and Black Sea countries will provide a considerable amount of conceptual ideas as well as data to be networked for the achievement of this goal.

A key element in this strategy is the observational sites driven by these national programs. On a national basis it would be difficult to understand the reaction and the feedback of the Mediterranean ecosystem to the process of global change. However, taken together the set of sites networked within EUR-OCEANS, these sites are treated as indicative 'sensors' since they are positioned in a) areas of variable productivity (from the Levantine Sea, an area of very low production, to the productive waters of the Alboran Sea), b) areas where climatic changes can affect water mass formation and thus productivity, c) strategic locations such as the Gibraltar strait, Sicily strait, Dardanelles strait etc. In a few of these sites time-series of meteorological and oceanographic data are provided e.g. the DYFAMED site in the Ligurian Sea, the POSEIDON buoys system in the Aegean and Ionian Seas.

The 'basin perspective' of the Mediterranean Team of EUR-OCEANS is precisely working to diagnose gaps in our knowledge of this complex ecosystem and motivate research aimed at the understanding of the Mediterranean and Black Seas ecosystems.