

LTER, LONG TERM ECOLOGICAL RESEARCH ALONG THE ITALIAN COASTS

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Abstract

Long-term ecological research (LTER) plays a crucial role in tracing and predicting ecosystem trends in response to environmental changes. Within the LTER-Italy network, which is part of the International LTER network, a great scientific effort is concentrated on the marine environment. To this end several different Italian institutions, working in four coastal sites, are networked with the aim of sharing methodologies, experimental approaches, and ecological data. This intellectual and experimental partnership among disciplines and researchers represents an essential requirement also for knowledge driven environmental policy.

Keywords: Time Series, Plankton, Biodiversity, Coastal Systems

Long-term ecological research (LTER) is fundamental to assess the main trends of marine ecosystems and relate them to variations in climate and anthropogenic impact at the interannual and decadal scales. LTER is also essential for testing ecological theories, enhancing our capacity for short- and medium-term forecasting and the managing of the environmental resources. The LTER-Italy network, which is part of the European (www.lter-europe.net) and international LTER (www.lternet.edu) ones, presently includes 20 sites, 4 of which are marine (Fig. 1): the Northern Adriatic Sea, the Gulf of Naples, the Sardinian coastal waters and the Portofino Marine Protected Area.

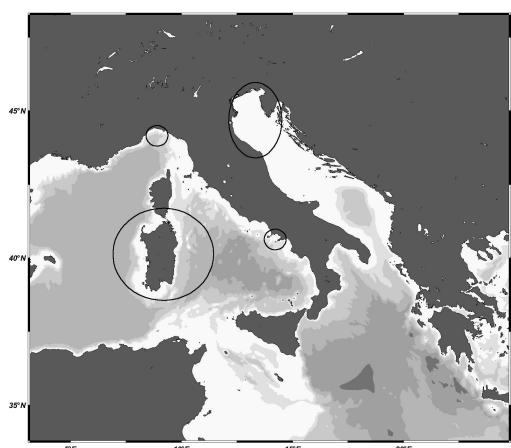


Fig. 1. Marine sites in the LTER-Italy network

Intensive monitoring programmes and interdisciplinary experimentation at these sites are carried on at six Italian scientific institutions. The main common ecological investigations concern: i) patterns and trends in plankton and benthos communities, ii) carbon pathways and budgets in the pelagic food web, iii) trophic state and biodiversity variations, in relation to local and global changes. Relevant examples of results of these activities concern mainly the detection of interannual changes in plankton patterns and scales of variability as well as significant shifts [1, 2, 3] (Fig 2). In some key areas advanced automatic acquiring systems are operating, as early warning systems for dystrophic events and a validating centre for numerical models. An intense effort has been done to disseminate this kind of information among different stakeholders. For a couple of examples see: www.ve.ismar.cnr.it/piattaforma/, s1.bo.ismar.cnr.it and portofino.macisteweb.com/.

While the research carried so far has been based on efforts of individual institutions, it is predictable that the LTER network will help generating and sharing ideas, protocols, data sets and research facilities, in order to address and answer research questions on important environmental topics in a coordinated way, giving also a scientifically sound support to environmental management.

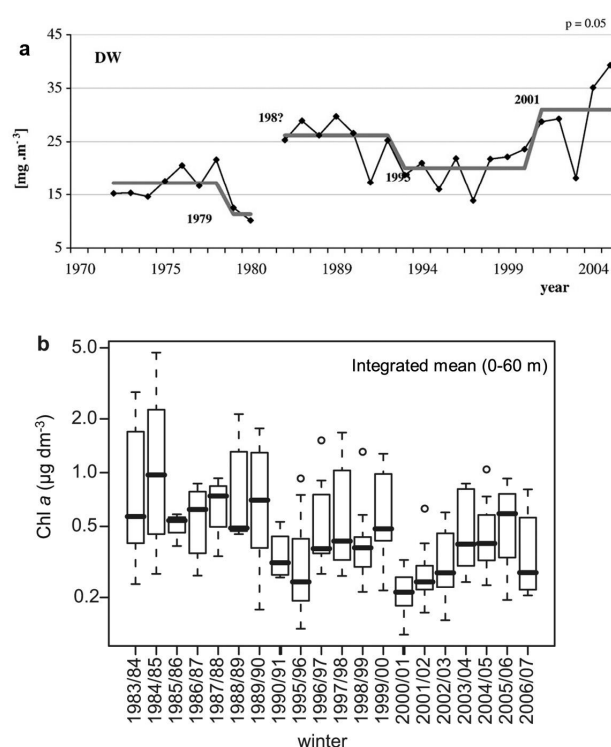


Fig. 2. a) Northern Adriatic: shifts in zooplankton biomass related to temperature variations (modified from [1]) b) Gulf of Naples: Chlorophyll a decrease during last two decades winters (modified from [3])

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