EUROPEAN COMMISSION
European Research Area

MARINE & COASTAL RESEARCH

SESAME

AT A GLANCE

Title: Southern European Seas: Assessing and Modelling Ecosystem changes

Instrument: Integrated Project FP6

Total Cost: 14.790.499 €
EC Contribution: 9.999.121 €

Duration: 48 months
Start Date: 1/11/2006

Consortium: 47 partners from 23 countries

Project Coordinator: Hellenic Centre for Marine Research (Greece)

Project Web Site: http://www.sesame-ip.eu

Key Words: Ecosystem modelling (climate change), marine ecosystems and processes, marine biodiversity, socio-economic research, Mediterranean and Black Sea

THE CHALLENGE

What were the mechanisms involved in the observed changes of the marine ecosystems of the Southern European Seas (SES)? Which ecosystem components are most likely to be affected by any major change or regime shifts during the coming decades? Which changes occurred to the functions pertinent to the ecosystems' ability to provide goods (tourism and fisheries) and services (the ecosystem stability through conservation of biodiversity and mitigation of climate change through carbon sequestration in water and sediments) during the past decades and which are likely to occur in the next fifty years? What are the economic values of these functions and how can we compare and assess the scenarios on the basis of the benefits and costs of protecting them? These are the key questions addressed by SESAME.

PROJECT OBJECTIVES

The project's objectives are to assess changes in the South European Seas ecosystems over the last 50 years, and to assess the current status of the SES ecosystems through analysis of existing and newly collected data at basin scale and through model simulations. SESAME aims to predict changes in the SES ecosystems, using existing and new observations at a regional and basin scale, in order to construct scenarios of the ecosystem responses to likely changes in climate and anthropogenic forcings during the next five decades. SESAME also aims to assess and predict changes in the ability of the SES ecosystems to provide goods and services. SESAME will identify the ecosystem functions (observed and predictable from model simulations) pertinent to these goods and services as well as their changes during the last decades.

METHODOLOGY

Historical and current datasets (gathered through multidisciplinary, multiship oceanographic cruises

across the SES) will be collected in order to assess the signals of environmental changes in the past as well as to validate the model used for hindcasting simulations. Long-term basin scale simulations and short-term regional scale simulations with coupled circulation-ecosystem models will be used to forecast the responses of ecosystems during the next five decades, based on consensus scenarios of changes in the forcings. A limited number of scenarios integrating qualitative stakeholder analysis and quantitative socioeconomic model outputs will be used to force the circulation-ecosystem model(s) to predict ecosystem changes resulting from each scenario. Conceptual and mathematical tools to represent higher trophic levels (e.g. fish) will be developed to produce new management tools. Finally, quantitative socioeconomic models will be used to investigate the economic welfare implications of alternative development scenarios in the SES ecosystems by transferring and/or adapting state-of-the-art analytical and policy tools.

Expected Results

SESAME will perform innovative research in both the observational and the numerical modelling fields and will establish an integrated approach between environmental and economical disciplines in order to assess and predict the past, present and future state of the marine ecosystem in relation to changes in natural and anthropogenic forcings. Furthermore it will assess the ability of the SES ecosystems to provide goods and services. Research will contribute to strengthen the European scientific and technological capacity needed to understand and predict ecosystem changes and assess their consequences at societal level. SESAME will have a significant impact on the prospects of sustainable development in the region by enhancing the 'resource consciousness' for the SES marine assets, improving governance at all levels by producing effectively 'usable' scientific and socioeconomic information, and providing solid bases to ensure the sustainable management of natural resources.

Project Partners	
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Istituto Centrale per la Ricerca Scientifica e Tecnologica Applicata al Mare, IT	Marine Hydrophysical Institute Ukrainian National Academy of Science, (Ukraine) UA
Institute of Marine Sciences, Middle East Technical University, (Turkey) TR	National Institute for Marine Research and Development "Grigore Antipa"Institutul National de Cercetare – Dezvoltare Marina, RO
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