

## *Editorial*

# **Earth and Space Science Informatics: informatics in oceanography**

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It is sometimes said that we know more about the surface of the moon than about the bottom of ocean. This perception is not unfounded. The recent Deepwater Horizon catastrophe in the Gulf of Mexico is a sad illustration of how difficult it is to operate in an environment that we do not know well. Yet, because we have used a large fraction of the easily reachable resources on land, it is likely that the search for new off-shore resources will continue. Before the Deepwater Horizon well failure, the International Energy Agency had projected that by 2020 deepwater would be providing 40 percent of all oil being extracted. If this projection materializes, then in the coming years we will really need to improve our knowledge base on the marine environment.

The first thing to do is to make the best use of the limited information already available.

For that purpose, Europe needs to pull resources with other regions of the world. Initiatives like the Group on Earth Observations (GEO), which is coordinating efforts to build a Global Earth Observation System of Systems, or GEOSS, are very timely. GEO was launched in response to calls for action by the 2002 World Summit on Sustainable Development and by the G8 (Group of Eight) leading industrialized countries. These high-level meetings recognized that international collaboration is essential for exploiting the growing potential of Earth observations to support decision making in an increasingly complex and environmentally stressed world. As of June 2010, GEO's Members include 81 Governments and the European Commission. In addition, 58 intergovernmental, international, and regional organizations with a mandate in Earth observation or related issues have been recognized as Participating Organizations. GEO is constructing GEOSS on the basis of a 10-Year Implementation Plan for the period 2005 to 2015 which defines a vision statement for GEOSS, its purpose and scope, expected benefits, and nine "Societal Benefit Areas". Several areas, in particular disasters, energy, climate, water, weather, ecosystems, and

biodiversity are relying on marine research to establish the knowledge base globally.

Another field to which the oceanographic research community actively contributes is the development of innovative informatics systems to improve the availability of data. The high quality papers presented in this special issue of AD-GEO illustrate several innovations in informatics that are contributing to this improvement. On the subject of innovation it is interesting to note that, although the EU, both individually as Member States and collectively through the European Union, spends approximately the same proportion of Gross Domestic Product on public funding on research as the United States, the amount of private funding is about half. The European Commission believes that this figure needs to be increased to promote innovation in the job-creating private sector. The European Commission also believes that, as far as the marine and maritime sector is concerned, this shortfall is partly because the data and information generated through monitoring programs and one-off research programs are largely inaccessible to the private sector. It is hard for the private sector to find what data are available and hard to assemble data from different disciplines and different countries into coherent seamless data layers. Opportunities to develop innovative services and products are lost. The recent Communication of the European Commission on "marine knowledge 2020" proposes a vision for improving matters.

Because it is the private sector that is driving the search for new natural resources in the ocean, improving access to environmental data will also help it to better care for the environment. An improved information flow will ensure that industrial activities are carried out with a proper assessment of the environmental impact. Moreover, it will no longer be possible to hide behind the lack of information on the marine environment to argue that not enough is known to regulate activities there. There is thus room for prudent optimism. Global informatics systems in oceanography will contribute to the knowledge base necessary for a sound management of off-shore activities. Accidents like the Deepwater Horizon oil spill should not be let to happen again.



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