REAL-TIME, LONG-TERM INTEGRATED OBSERVATIONS OF EUROPEAN SEAS FOR MONITORING AND RESEARCH

Peter M. Haugan

Director, Geophysical Institute, University of Bergen, Allegaten 70, N-5007 Bergen, Norway
E-mail: Peter.Haugan@gfi.uib.no

Marine observations are central to monitoring for societal needs as well as for research to further knowledge and understanding. Applications as diverse as environmental protection, business development, sports and recreation depend on reliable observations of known quality. The observations need to be real-time or near real-time in order to provide timely information to decision-makers.

The observations need to be long-term in order to put the short-term variability in context and detect irregularities. They also need to be long-term in order to detect trends and make assessments on e.g. human impact versus natural variability.

The use of the observations benefit from being integrated in several dimensions: integrated in space and time, integrated between observation platforms including satellites, ships, drifting and moored buoys, integrated between disciplines and primary users, and integrated between nations. For some purposes appropriate integration is best obtained by quite sophisticated model-based data assimilation tools such as those used in MyOcean.

In the marine domain in particular, where so much is yet unexplored and not well understood, there is benefit in connecting observations for research with observations for monitoring. Multidisciplinary co-located observations augment each other. Having additional sensors and parameters available helps explain the observed values of the relatively fewer key or baseline quantities that may be formally required for legal or jurisdictional purposes.

New ways to observe the oceans such as gliders and cable-based observatories provide new opportunities respectively for steering arrays of sensors rapidly into areas of particular interest and for providing continuous high band-width data streams including video from the deep sea
This situation creates formidable challenges and opportunities that Europe has begun to address. Procedures for quality control, data flow and storage benefit from close coordination across many acting institutions. Free access to basic data is crucial for scientific progress and for transparency in the science base for management, but can create problems in sharing of costs. Free and easy access to observations on the other hand creates new market opportunities and stimulates creativity as well as recruitment to marine science and applications. European-scale partnerships between government, industry and research institutions will be crucial to achieve sound and safe use of the oceans in the future.