

# Chapter 3

## Developing a Common Global Framework for Marine Data Management

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### ABSTRACT

*The paradigm shift in marine research moving from the traditional discipline based methodology to a multidisciplinary, ecosystem level approach is being driven by changes in both the policies for the management and exploitation of the ocean, and the scientific method itself. The availability of large volumes of good quality data is fundamental to this increasingly holistic approach to ocean research but there are significant barriers to its re-use. The Ocean Data Interoperability Platform (ODIP) project has been funded in parallel by the European Commission, National Science Foundation in the USA and the Australian Government to promote the development of a common framework for marine data management that leverages the existing marine e-infrastructures which have been created in response to the need for greater sharing of marine data at a regional level.*

### INTRODUCTION

In recent years there has been a paradigm shift in marine research, moving from the traditional discipline based methodology employed at the national level by one or more organisations, to a multidisciplinary, ecosystem level approach conducted on an international scale.

This increasingly holistic approach to marine research is in part being driven by policy and legislation. The European Commission's Marine Knowledge 2020 initiative was launched in response to the need for a more coordinated approach to the management of marine data on a regional scale to support sustainable exploitation of the marine environment whilst still achieving the good environmental status of the seas (European Commission 2010). This initiative was aligned with the Marine Strategy Framework Directive that requires the European Member States to have coordinated marine monitoring programmes for the ongoing assessment of the environmental status of their marine waters (European Commission,

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2008). It also emphasises the need for this marine monitoring data to be shared between organisations and across national boundaries in order to obtain wider assessments of the marine environment at a regional or sea basin level.

To address the requirements for increased availability of data for re-use that were highlighted in these EU policy documents the European Commission funded the European Marine Observation and Data Network (EMODNET). Its aim is to integrate the fragmented national and organisational marine data systems into a single coherent system that supports the discovery and access of data and data products for the European sea basins. The EMODNET initiative also forms a core element of the EU Blue Growth Strategy and, by further developing the existing framework, the European Commission aims to improve the availability of multidisciplinary basin level data and information to support policy driven marine research that forms part of this strategy.

The European Commission's Blue Growth strategy is promoting sustainable growth in the marine environment including the development of sea-basin strategies which foster cooperation between nations (European Commission, 2014). It recognises that national and regional data does not provide the information that is needed to fully understand the global ocean systems. The EU Blue Growth strategy therefore prioritises the need to address the gaps in knowledge and data about the state of the oceans, seabed resources, marine life and the potential risks to habitats and ecosystems.

The move towards basin level research in the north Atlantic has also been formalised through the Galway Statement on Atlantic Ocean Cooperation which launched the Transatlantic Ocean Research Alliance between Europe, the USA and Canada (European Commission, 2013). The goal of this agreement is to promote collaborative marine research in the Atlantic Ocean and the bordering sea areas. The Galway Statement identifies the Atlantic Ocean as a shared resource for the adjacent countries and recognises the importance of activities to coordinate data sharing and observing infrastructures to support a fundamental understanding of the Atlantic Ocean and adjacent bodies of water to support long-term sustainable management and use.

Similarly the Australian Government's position paper titled *Marine Nation 2025: Marine Science to Support Australia's Blue Economy* emphasised that "Australia's ongoing marine research success depends on improved management of national and global marine research data and information, and the engagement of the marine research community and marine research institutions in improving and supporting marine research data infrastructure" (Oceans Policy Science Advisory Group, 2013). This paper also highlighted the need for "a national marine science information management strategy to ensure that all data collected is stored and systematically described so that information is readily identifiable and accessible to stakeholders and users". The recommendations made in this discussion document gave rise to the *National Marine Science Plan 2015-2025* which emphasises the socio-economic benefit of the blue economy and the importance of sharing marine data to support multidisciplinary marine research (National Marine Science Committee, 2015). A key element for the delivery of this national strategy is recognised to be "greatly improved, openly available data as well as better understanding of the cumulative impacts of development, climate change and socio-economic factors on marine ecosystems".

As well as this policy driven shift to ecosystem level marine research there are also scientific and economic drivers for a basin level approach. Marine monitoring is essential for assessing the health of a particular ecosystem and for assessing the impacts of specific factors and activities on it. Data is fundamental to carrying out these marine ecosystem assessments and making forecasts of potential future changes to support sustainable use of the marine environment and the ecosystem services it delivers (UNEP-WCMC, 2011).

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