

# AquaMaps

## Marine Mammals and Invertebrates Distribution Maps GeAquaMaps

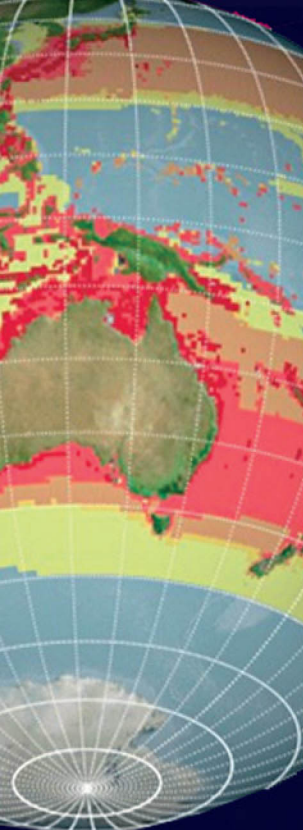
### The AquaMaps Service

AquaMaps ([www.aquamaps.org](http://www.aquamaps.org)) is a service offering distribution maps that show large-scale predictions of where a species or a set of species may occur. These maps are generated by relying on few known occurrences of the map target species and processing large data sets of Earth observations with respect to species environmental preferences including depth, salinity, temperature, primary production and its association to land or sea ice.

The complete potential of this service is presently hampered by the effort and difficulties encountered to perform computationally intensive calculations and to access data evolving and spread in a number of independently managed data sources. Moreover, scientists and decision makers dealing with species distribution maps are requesting maps that are more precise (e.g. distribution should be at lower scales), accurate (e.g. dynamic peer-review) and timely produced (e.g. relying on the latest version of the available environmental data).

1. Kaschner, K., J. S. Ready, E. Agbayani, J. Rius, K. Kesner-Reyes, P. D. Eastwood, A. B. South, S. O. Kullander, T. Rees, C. H. Close, R. Watson, D. Pauly, and R. Froese. 2008 AquaMaps: Predicted range maps for aquatic species. World wide web electronic publication, [www.aquamaps.org](http://www.aquamaps.org)





## The AquaMaps VRE

D4Science-II operates an AquaMaps Virtual Research Environment (VRE) dedicated to support the management of AquaMaps data and maps. This VRE relies on large-scale data management and processing facilities supported by the D4Science infrastructure to offer a service for generating the expected maps in an innovative and more effective way. It benefits from the interoperability solutions put in place by the D4Science infrastructure to seamlessly have access to multiple data sources including GENESI-DR/GENESI-DEC (Earth observation data), GBIF (bio-diversity data) and OBIS (taxonomically and geographically organised biodiversity data). Moreover, it exploits the capabilities offered by Grid and Cloud infrastructures to drastically reduce the time needed to produce the maps and enlarge the overall products offered both in size and quality.

The maps produced by this VRE are compound objects consisting of several Earth views, a GIS multilayered interactive map, and a rich set of metadata in multiple formats recording useful information on the artifact including authorship, versioning, coverage and provenance.

In the AquaMaps VRE the generated maps can be: (i) shared with co-workers before their publishing; (ii) discovered by relying on a rich array of search and browse facilities; (iii) annotated; (iv) integrated in innovative information packages like living reports; (v) compared with other maps.

Through the D4Science Ecosystem, collections of AquaMaps objects produced in the AquaMaps VRE can be exploited by external services and other VREs, e.g. FCPPS VRE. The FCPPS VRE is dedicated to support the production of a popular information product of the FAO Fishery and Aquaculture Department known as Fishery Country Profile. These reports are expected to be compiled by a group of experts and can largely benefit from the biodiversity scientists and their predictive species occurrence maps.

After an extensive testing of the existing VRE, the community operating the AquaMaps service have recognised the effectiveness of the proposed approach and planned to exploit this environment to support the official service.

