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► To cite this version:

Régis Hocdé, Valérie Derolez, Angelique Jadaud. MARBEC-Obs: towards a virtual observatory of marine and coastal ecosystems, mainly in Mediterranean and tropical areas. IMDIS 2018: International Conference on Marine Data and Information Systems, Nov 2018, Barcelona, Spain. pp.211-212. hal-01954486

HAL Id: hal-01954486

<https://hal.science/hal-01954486>

Submitted on 14 May 2019

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MARBEC-Obs: Towards a virtual observatory of marine and coastal ecosystems, mainly in Mediterranean and tropical areas

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The observatories department of MARBEC

MARine Biodiversity, Exploitation and Conservation (MARBEC), is the largest French research unit in marine biodiversity. MARBEC is a joint research unit between IRD, IFREMER, CNRS and University of Montpellier, and it has many international partnerships. Its objectives are the study of marine biodiversity in lagoon, coastal and offshore ecosystems, at different integration levels, mainly in Mediterranean and tropical areas: Indian Ocean, South, West and South-West Pacific, in Asia, Africa and South America. 45 people from MARBEC are involved in the 20 observatories or observation networks led by or involving MARBEC.

www.umr-marbec.fr/en/zones/observatoires,606.html?lang=en.

Fisheries and biological observation services

In ecology, the observation-research interaction stands first in a chronological framework in which the observation precedes any research process, since data production phases coming from the observation of the environment and the measures of conditions 'change, is a prerequisite for processing and analysis.

MARBEC-Obs is in charge of various durable observation missions, contributing to research and expertise on the state of coastal and marine ecosystems, marine biodiversity and the impact of human activities exploiting this biodiversity.

We provide ocean and coastal variables from acquisition by the observation networks, i.e. :

- MEDITS (MEDiterranean Trawl Survey), DCMAP-EU: Halieutic, Hydrology, Bony fish, elasmobranchs, cephalopods, crustaceans, contributes also to Marine Strategy Framework Directive, www.sibm.it/SITO%20MEDITS/principaleprogramme.htm
- Observatory of Exploited Tropical Pelagic Ecosystems Obs7: Biological Information Collection, Fisheries Informations, Tuna Fisheries, www.ob7.ird.fr
- ReefTemps (network of temperature, pressure and salinity sensors in the coastal area of the South, West and South-West Pacific): Temperature, Conductivity, Salinity, Pressure, Waves, pH, Acidity, Fluorescence, www.observatoire-gops.org/fr/reeftemps1
- DCE-LAG (EU Water Framework Directive - French Mediterranean Lagoons): monitoring of Mediterranean lagoons, ecological and chemical status (phytoplankton, nutrients, macrophytes, chemical contaminants), www.ifremer.fr/surval2/consultation.jsp?produit=resultats_par_parametre&carte=Resultats_par_parametre&progCds=RSLHYD#

Observation data management and access

MARBEC-Obs provide access to data and products. Several web data portals - currently for every observation network or part of an ocean - provide a combined array of services and functionalities (metadata exchange, visualisation of data, data acces, transformation of data...). Different types of

interoperable services are offered, each tailored to a specific scientific user community (including the use of SOS (Sensor Observation Service), NetCDF services and others). It manages a national fisheries information system (Obs7).

An additional quality control is made. All the steps, with the corrected values, are stored in the information systems. Several observation networks started a national or european labeling process, guaranteeing the quality of the measurements and the traceability of observations and analyzes.

The observation data also feeds the regional and international data centers and web data portals: SeaDataNet, Seanoce/ ODATIS data portal, IMOS, GBIF, EMODnet in a soon future for macrolitters in Mediterranean (MEDITS).

Towards a virtual observatory of marine and coastal ecosystems

The services and functionalities offered by the information systems combine modeling, statistical analysis, data management and data visualisation. We also target to share and to interconnect some datasets, to optimize the exploitation of already acquired data by facilitating access, to allow comparisons between data of different origin and nature (observation data *versus* model results).

The results, including indicators and innovative products, are designed for Institutional stakeholders, Government Services, EU Water and Marine Strategy Framework Directives and scientific communities. MARBEC-Obs also has developed a Tuna Fisheries Expertise and a wider expertise on marine and coastal ecosystems mainly in Mediterranean and tropical areas.

Future plans. MARBEC-Obs has now different components: from sensors, to data dissemination and interoperability, to data processing combining modeling. We can evolve towards a virtual observatory of marine and coastal ecosystems, mainly in Mediterranean and tropical areas.