IMDIS 2018 - Barcelona, 5-7 November
International Conference on Marine Data and Information Systems

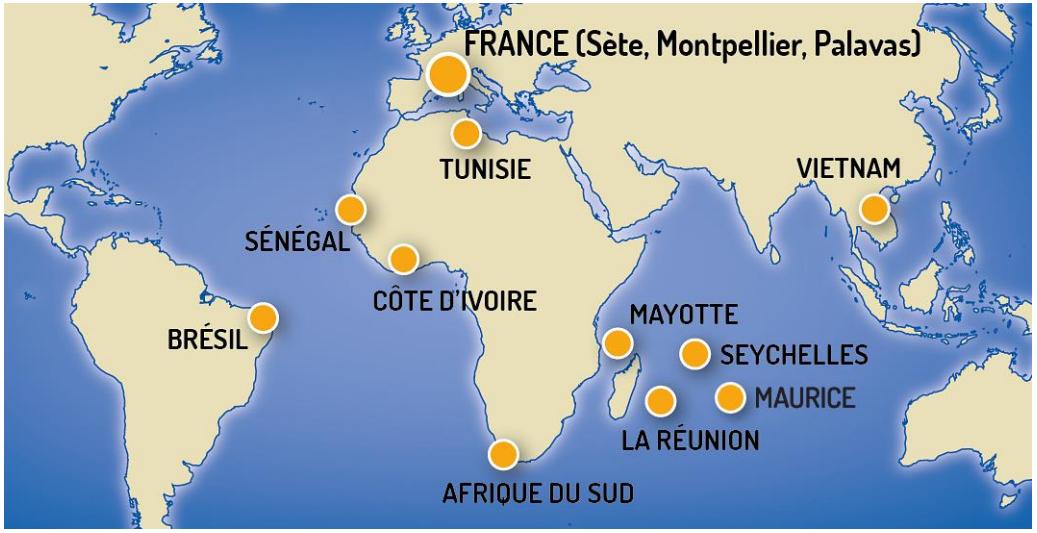
MARBEC-Obs : Towards a virtual observatory of marine and coastal ecosystems, mainly in Mediterranean and tropical areas

Régis Hocdé – Valérie Derolez – Angélique Jadaud

the largest French research unit in **marine biodiversity** (IRD IFREMER CNRS and University of Montpellier)

with many **international partnerships**

~ 240 people



3 main objectives :

1. To describe marine biodiversity, understand its dynamics and the functioning of marine ecosystems
2. To analyze the impact of anthropogenic pressure on these ecosystems and develop responses scenarii to global change
3. To reconcile exploitation (especially fisheries and aquaculture), and conservation and respond to societal expectations (expertise, innovation, remediation)

8 scientific topics :

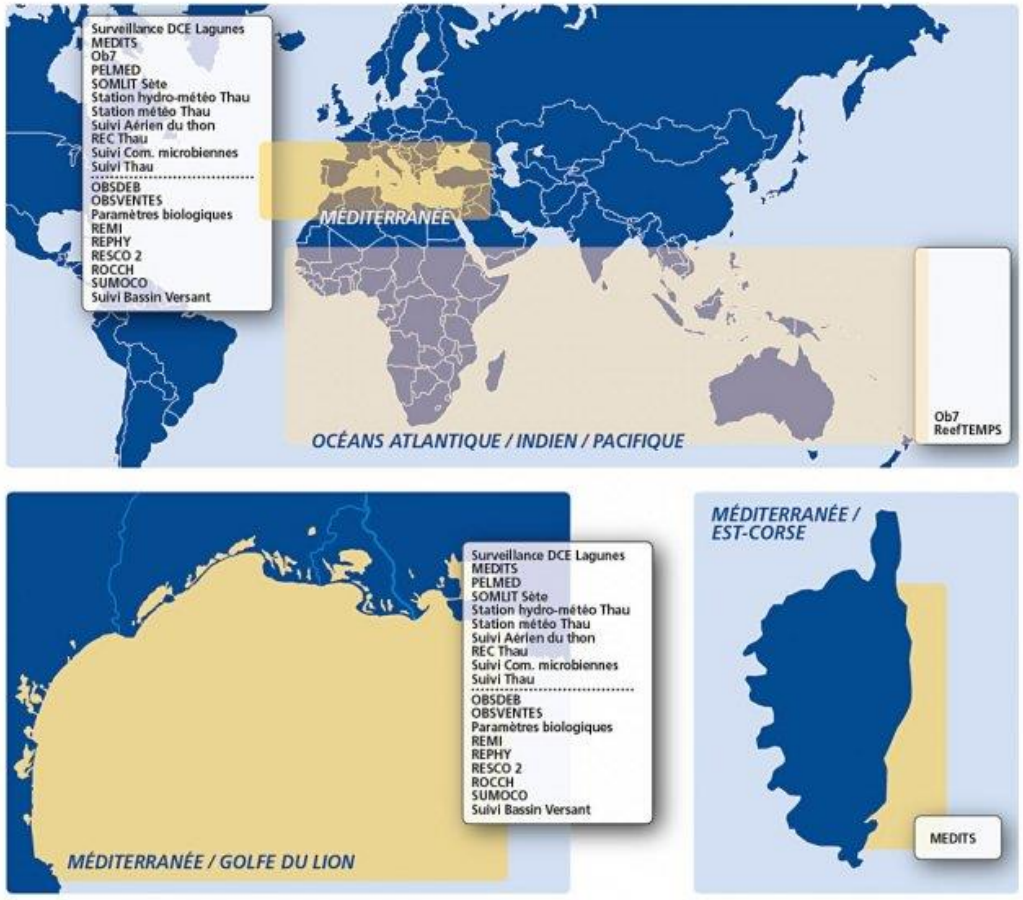
1. Evolutionary ecology and adaptation
2. Individuals, populations and habitats
3. Communities' dynamics and functioning
4. Micro-organisms and interactions with macro-organisms
5. Contaminants, future and answers
6. Sustainable aquacultures
7. Coastal systems of multiple uses
8. Ecosystem approach to fisheries

MARBEC-Obs in charge of **21 long-term observatories**

Aims: contributing to research and expertise
on the state of coastal and marine ecosystems, biodiversity and the impact of human activities
exploiting this biodiversity

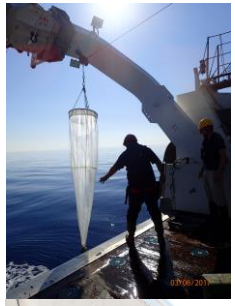
Geographical coverage
Western mediterranean sea, Indien, Atlantic and pacific Oceans

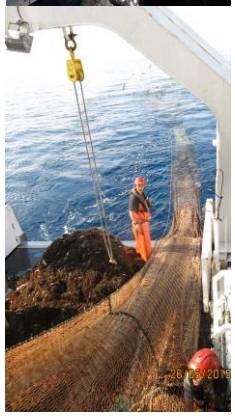
~ 45 people involved



MARBEC-Obs

www.umr-marbec.fr/fr/poles/observatoires,576.html





11 leaded by MARBEC & 10 with our participation

COORDINATION MARBEC

DCE-LAG (Directive Cadre sur l'Eau - Lagunes méditerranéennes françaises)
Diagnostic de leur état écologique et chimique
Mots clés : lagunes méditerranéennes, état écologique, état chimique, phytoplancton, nutriments, macrophytes, contaminants chimiques

MEDITS (MEDIterranean Trawl Survey)
Campagne de pêche scientifique sur les espèces démersales (Méditerranée et mer Noire)
Mots clés : Halieutique, DCSMM, Hydrologie, poissons osseux, elasmobranches, céphalopodes, crustacés

Observatoire des Ecosystèmes Pélagiques Tropicaux Exploités, Ob7
Observer les écosystèmes marins hauturiers et la pêche thonière tropicale
Mots clés : Collecte d'information biologique, Système d'information halieutique, Services aux administrations, Expertise en pêche thonière

PELMED (PELagiques MEDiterranée)
Campagne acoustique et de pêche
Mots clés : Halieutique, acoustique, DCSMM, hydrologie, phytoplancton, zooplancton, poissons pélagiques, prédateurs supérieurs

SOMLIT-Sète
Suivi de paramètres pertinents, d'un échantillonnage bimensuel et de la mise en place d'une charte qualité
Mots clés :

Station hydro-météo Thau
Acquisition Haute Fréquence de paramètres hydro-météo pour la modélisation ou la recherche
Mots clés : haute fréquence, météorologie, hydrologie

Station météo Thau
Acquisition de paramètres météo pour la modélisation ou la recherche
Mots clés :

Suivi aérien du thon rouge
Indice d'abondance pour les thons rouges juvéniles de Méditerranée
Mots clés : Survols, bancs, thon rouge, cétacés

Suivi-Thau
Suivre l'évolution sur le long terme des variables bio-physico-chimiques de la lagune de Thau
Mots clés :

Système d'Observation de Recherche en Environnement Côtier de Thau (REC-THAU)
Suivre l'évolution sur le long terme de la lagune de Thau
Mots clés :

Suivi des communautés microbiennes de Thau (bactériennes et planctoniques)
Suivi de la dynamique des populations et de la diversité
Mots clés :

PARTICIPATION MARBEC

OBSDEB (SIH-Usages)
Caractérisation (effort, captures) de l'activité des petits métiers méditerranéens
Mots clés : Echantillonnage des débarquements de la petite pêche méditerranéenne

OBSVENTES (SIH-Ressources)
Suivi des démographies des débarquements dans les principaux points de ventes (Criées/ Ports) du Golfe du Lion
Mots clés : Echantillonnage en taille, ventes, criées, débarquement, Golfe du Lion, poissons osseux et cartilagineux, céphalopodes

Paramètres biologiques
Obtenir des informations sur les paramètres biologiques des principales espèces évaluées
Mots clés :

ReefTEMPS (Réseau de capteurs de TEMpérature, Pression, Salinité)
Observation des eaux côtières dans la région du Pacifique Sud, Ouest et Sud-Ouest
Mots clés : Pacifique, côtier, Température, Conductivité, Salinité, Pression, vagues, pH, acidité, Fluorescence

REMI (REseau de contrôle MIcrobiologique des zones de production conchylicoles)
Diagnostic sanitaire microbiologique
Mots clés :

REPHY (REseau d'Observation et de Surveillance du PHYtoplancton et des Phycotoxines)
Mots clés :

RESCO 2
Suivi de la croissance et des mortalités des cheptels conchylicoles d'huîtres creuses français
Mots clés :

ROCCH (Réseau d'Observation de la Contamination CHimique)
Diagnostic de la contamination chimique
Mots clés :

SUMOCO
Suivi des maladies et mortalités des coquillages (autres que moules et huîtres)
Mots clés :

Suivi-Bassin Versant
Suivre l'évolution sur le long terme des apports du bassin versant à la lagune de Thau
Mots clés :

Focus on ⇨

MEDITS (MEDIterranean Trawl Survey)

Campagne de pêche scientifique sur les espèces démersales (Méditerranée et mer Noire)

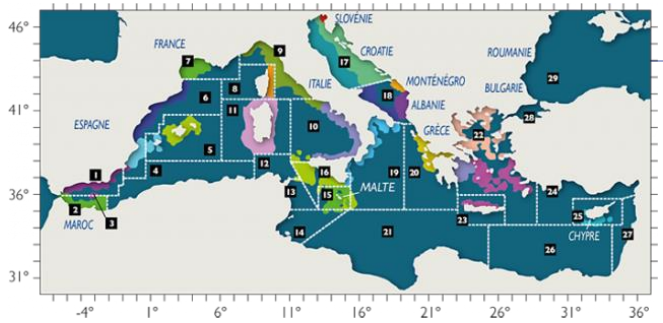
Example

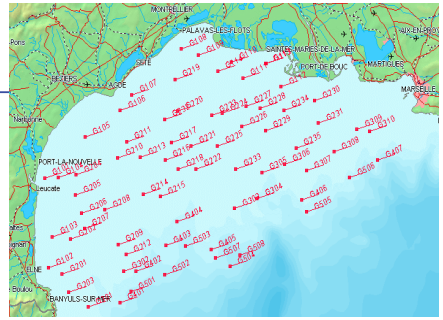
Mots clés : Halieutique, DCSMM, Hydrologie, Poissons osseux, Elasmobranches, céphalopodes, crustacés

Demersal resources (bottom) : MEDITS (MEDIterranean Trawl Survey) - DCMAP-EU

Lead: A. Jadaud, L. Metral

Halieutic, Hydrology, Bony fish, elasmobranchs, cephalopods, crustaceans, contributes also to Marine Strategy Framework Directive,





- May-June, since 1994, 12 counterparts European countries
- International protocol (MEDITS group)
- Biodiversity at the bottom (+ megabenthos)
- Bottom trawling
- DCSMM: physics (CTD), zooplankton (WP2), PFB, macrowastes, stomach contents, isotopes, contaminants…)

www.sibm.it/SITO%20MEDITS/principaleprogramme.htm

MARINE BIODIVERSITY EXPLOITATION & CONSERVATION

Observatoire des Ecosystèmes Pélagiques Tropicaux Exploités, Ob7

Observer les écosystèmes marins hauturiers et la pêche thonière tropicale

Mots clés : Gestion d'information biologique, Système d'information halieutique, Services aux administrations, Expertise en pêche thonière

Exemple

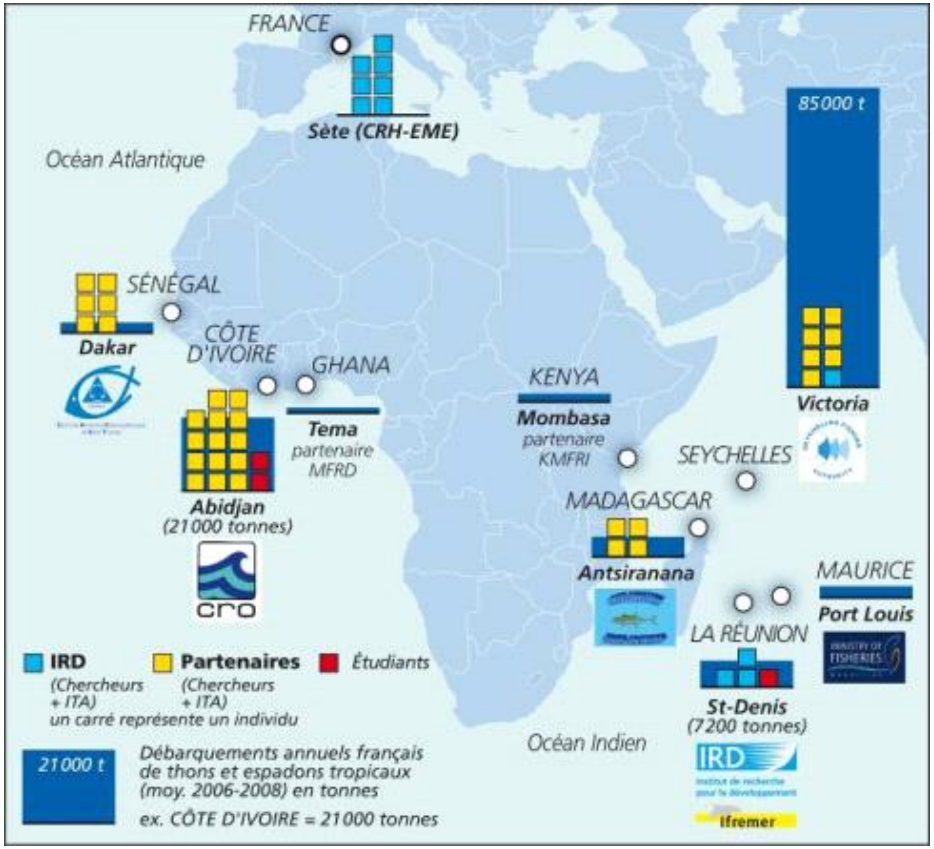
Observatory of Exploited Tropical Pelagic Ecosystems (Obs7)

Lead: P. Bach

Biological Information
Collection, Fisheries Informations, Tuna Fisheries,

Institut de Recherche pour le Développement FRANCE

www.ob7.ird.fr



marbec MARINE BIODIVERSITY EXPLOITATION & CONSERVATION

ReefTEMPS (Réseau de capteurs de TEMpérature, Pression, Salinité)

Observation des eaux côtières dans la région du Pacifique Sud, Ouest et Sud-Ouest

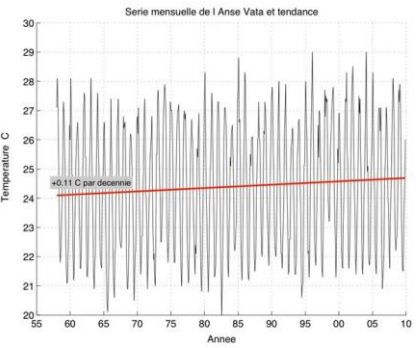
Mots clés : Pacifique, côtier, Température, Conductivité, Salinité, Pression, vagues, pH, acidité, fluorescence

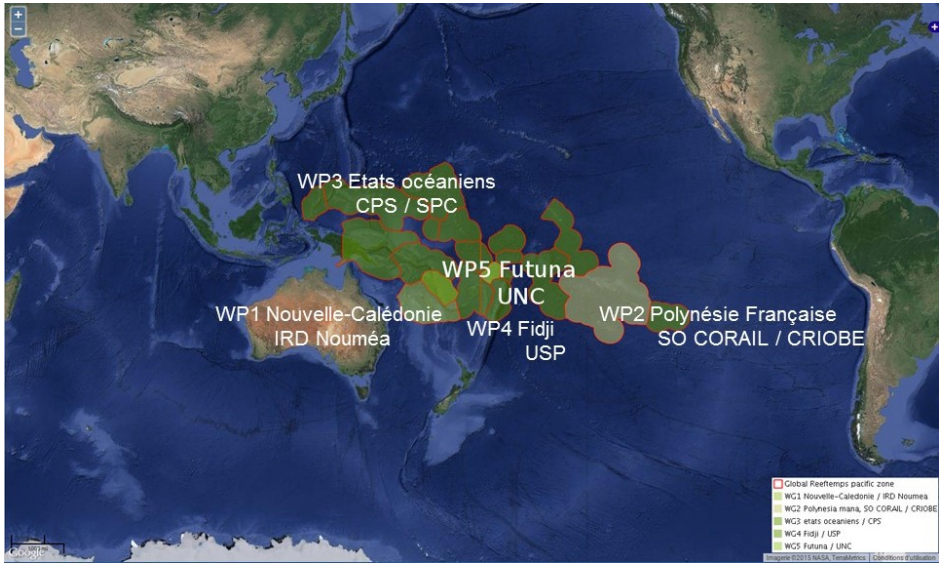
Example

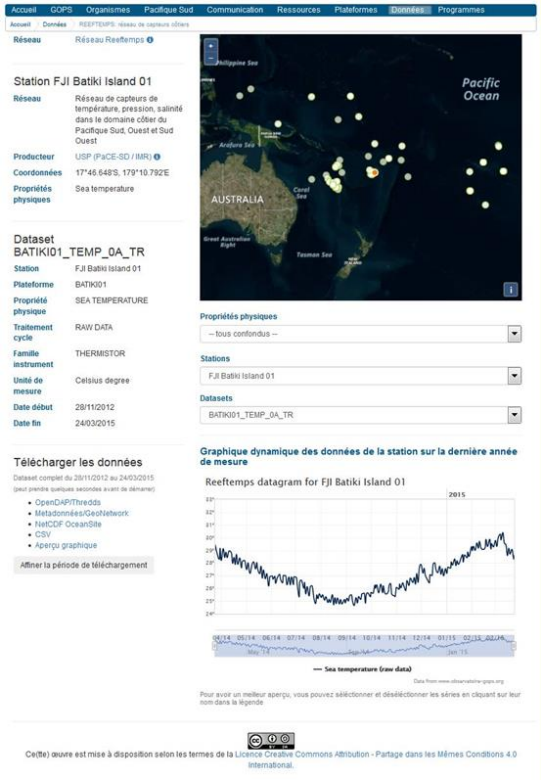
ReefTEMPS : Network of temperature, pressure and salinity sensors in the coastal area of the South, West and South-West Pacific

Lead: Jérôme Aucan - Régis Hocdé

Temperature, Conductivity, Salinity, Pressure, Waves, pH, Acidity, Fluorescence







http://reeftemps.observatoire-gops.org

MARINE BIODIVERSITY EXPLOITATION & CONSERVATION

DCE-LAG (Directive Cadre sur l'Eau - Lagunes méditerranéennes françaises)

Diagnostic de leur état écologique et chimique

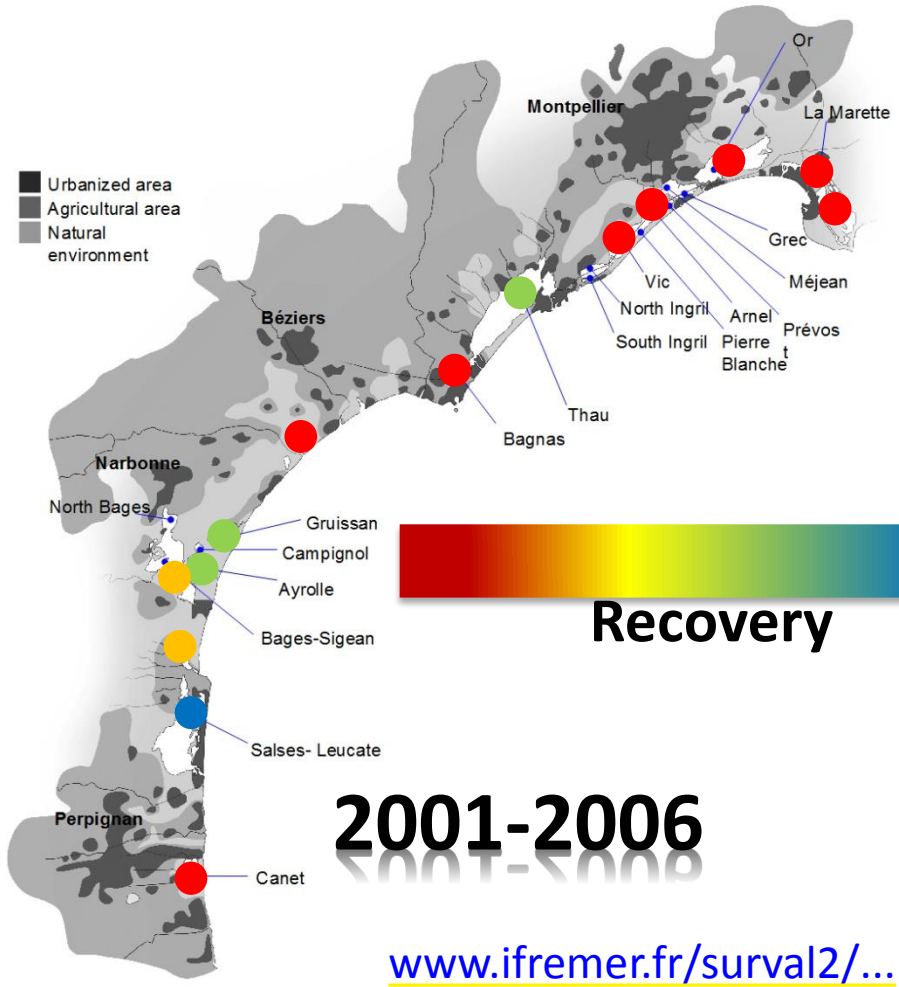
Mots clés : lagunes méditerranéennes, état écologique, état chimique, phytoplancton, nutriments, macrophytes, contaminants chimiques

Example

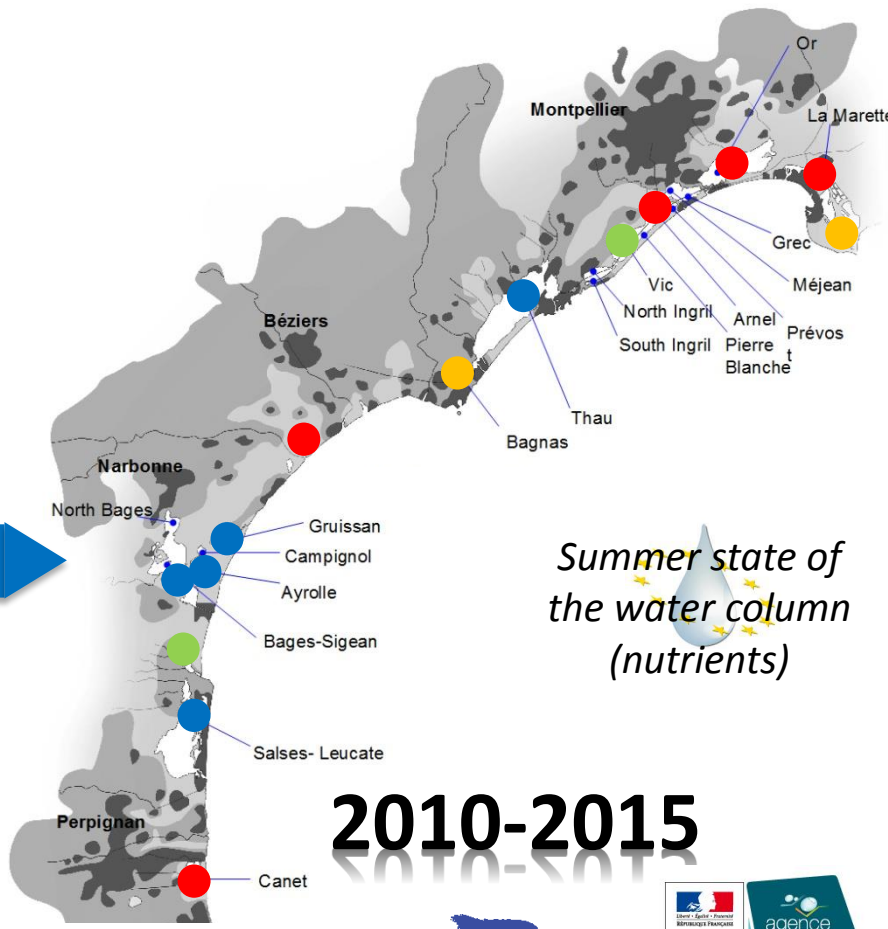
DCE-LAG: EU Water Framework Directive - French Mediterranean Lagoons

Lead: Valérie Dérolez

Monitoring of Mediterranean lagoons, ecological and chemical status (phytoplankton, nutrients, macrophytes, chemical contaminants),



Recovery



Summer state of the water column (nutrients)

www.ifremer.fr/surval2/...

Ifremer

agence de l'eau rhône méditerranée & corse

Observation data management and access

We promote –to our team- the adoption and use of the **best practices**

Within **FAIR** guiding principles for scientific data management (Findable, Accessible, Interoperable and Re-usable)

MARBEC-Obs

Observation data management and access

- Provide access to data and products
  Provide a combined array of services and Functionalities :
  metadata exchange, visualisation of data, data acces, transformation of data…

- Interoperable services (each tailored to a specific scientific user community):
  SOS / Sensor ML (Sensor Observation Service), NetCDF services and others…

- Management of the national fisheries information system (Obs7)

- Additional quality control. Storage in the information systems of all values (raw, validated) along the qualification process. Guaranteeing the quality of the measurements and the traceability of observations and analyzes.

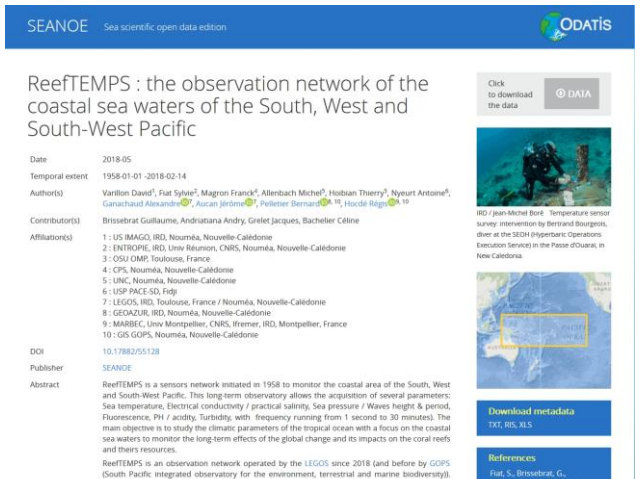
MARBEC-Obs

Observation data management and access

- Starting a national or european labeling process (for several observation networks)

- Feeding the regional and international data centers and web data portals:
  SeaDataNet/EDIOS, Seanoe/ ODATIS data portal, IMOS, GBIF, EMODnet in a soon future for macrolitters in Mediterranean (MEDITS)

- Identifying of the dataset archives (DOI)
  ReefTemps: doi.org/10.17882/55128 Medits: dx.doi.org/10.18142/7 Pelmed: dx.doi.org/10.18142/19


SEANOE Sea scientific open data edition

ReefTEMPS : the observation network of the coastal sea waters of the South, West and South-West Pacific

Date 2018-05

Temporal extent 1958-01-01 -2018-02-14

Author(s) Varillon David[1], Fiat Sylvie[2], Magron Franck[3], Allenbach Michel[5], Hoibian Thierry[5], Nyeurt Antoine[6], Ganachaud Alexandre[7], Aucan Jérôme[8], Pelletier Bernard[9, 10], Hocdé Régis[9, 10]

Contributor(s) Brissebrat Guillaume, Andriatiana Andry, Grelet Jacques, Bachelier Céline

Affiliation(s) 1 : US IMAGO, IRD, Nouméa, Nouvelle-Calédonie
2 : ENTROPIE, IRD, Univ Réunion, CNRS, Nouméa, Nouvelle-Calédonie
3 : OSU OMP, Toulouse, France
4 : CPS, Nouméa, Nouvelle-Calédonie
5 : UNC, Nouméa, Nouvelle-Calédonie
6 : USP PACE-SD, Fidji
7 : LEGOS, IRD, Toulouse, France / Nouméa, Nouvelle-Calédonie
8 : GEOAZUR, IRD, Nouméa, Nouvelle-Calédonie
9 : MARBEC, Univ Montpellier, CNRS, Ifremer, IRD, Montpellier, France
10 : GIS GOPS, Nouméa, Nouvelle-Calédonie

DOI 10.17882/55128

Publisher SEANOE

Abstract ReefTEMPS is a sensors network initiated in 1958 to monitor the coastal area of the South, West and South-West Pacific. This long-term observatory allows the acquisition of several parameters: Sea temperature, Electrical conductivity / practical salinity, Sea pressure / Waves height & period, Fluorescence, PH / acidity, Turbidity, with frequency running from 1 second to 30 minutes). The main objective is to study the climatic parameters of the tropical ocean with a focus on the coastal sea waters to monitor the long-term effects of the global change and its impacts on the coral reefs and theirs resources.
ReefTEMPS is an observation network operated by the LEGOS since 2018 (and before by GOPS (South Pacific integrated observatory for the environment, terrestrial and marine biodiversity)).

Click to download the data DATA

IRD / Jean-Michel Boré - Temperature sensor survey: intervention by Bertrand Bourgeois, diver at the SEDH (Hyperbaric Operations Execution Service) in the Passe d'Ouaraï, in New Caledonia.

Download metadata
TXT, RIS, XLS

References
Fiat, S., Brissebrat, G.,

imdis

SeaDataNet

ODATIS

ILICO INFRASTRUCTURE DE RECHERCHE LITTORALE & CÔTIÈRE

EMODnet

GBIF

IMOS Integrated Marine Observing System

AODN Australian Ocean Data Network

marbec MARINE BIODIVERSITY EXPLOITATION & CONSERVATION

MARBEC-Obs

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 developped a Tuna Fisheries Expertise and a wider expertise on marine and coastal ecosystems mainly in Mediterranean and tropical areas.

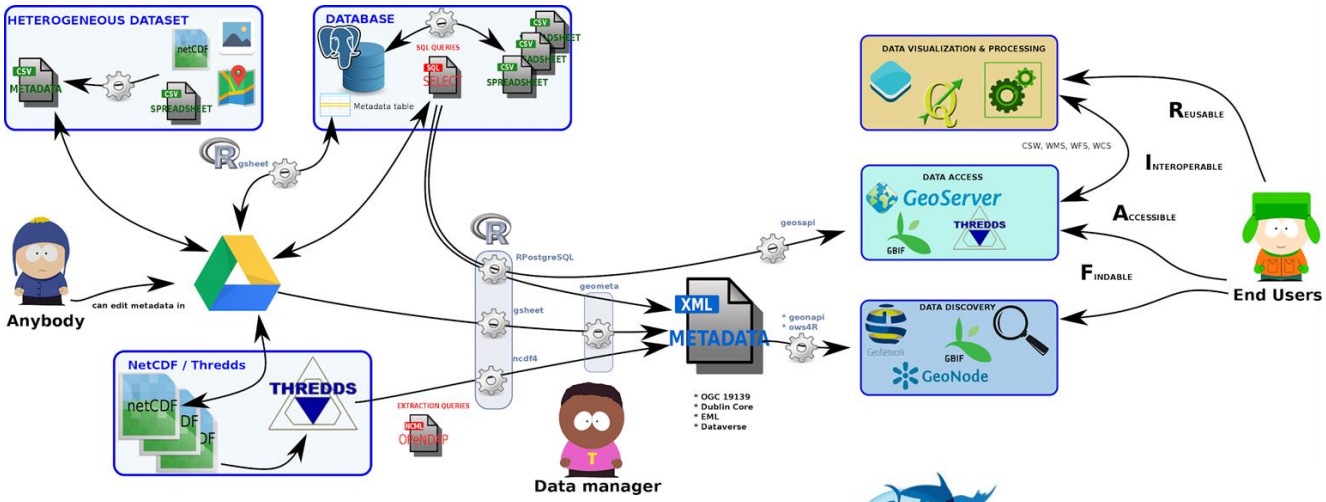
Automation of tasks with a simple & easy-to-use Workflow:

Users: CSVs to fill (via google doc => collaborative inputs): infrastructure metadata, dataset metadata

Developers: **R codes for easy handling** (on Github) (i.e. R packages created by a very good developer of the FAO (java, web)

Data sources: photos, semi-structured (CSV ..), SQL, NetCDF

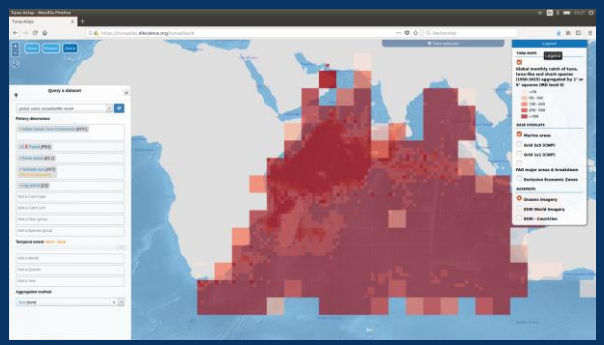
Reference standards for interoperability: metadata, data and access protocols (OGC/INSPIRE, EML/GBIF...)

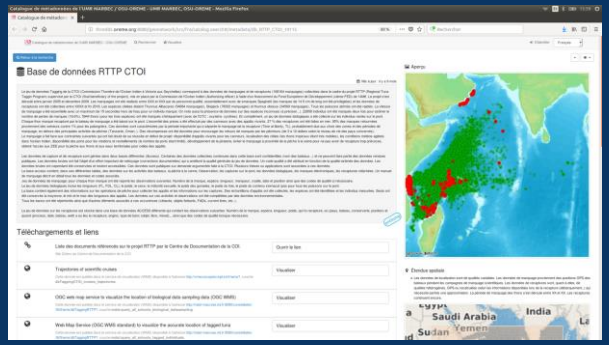


Future plans

MARBEC-Obs has now different components:
from sensors, to data dissemination and interoperability,
to data processing combining modeling.

**MARBEC-Obs can evolve towards a virtual observatory of marine and coastal ecosystems,
mainly in Mediterranean and tropical areas.**





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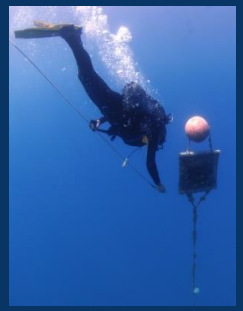
regis.hocde@ird.fr - valerie.derolez@ifremer.fr - angelique.jadaud@ifremer.fr