

# COUNTRY PROFILE FRANCE

## Mapping of the construction of environmental information



Environmental observation systems and technology (in situ measurement devices, modelling, satellite observations) are developing at an increasingly rapid rate and offer new tools and methods for improving understanding and the management of ecosystems and monitoring their evolution. The resulting data, growing in quantity, are produced by many different players. The challenge remains to organise access to and the sharing of these data which are often multidisciplinary, between producers, managers and users.

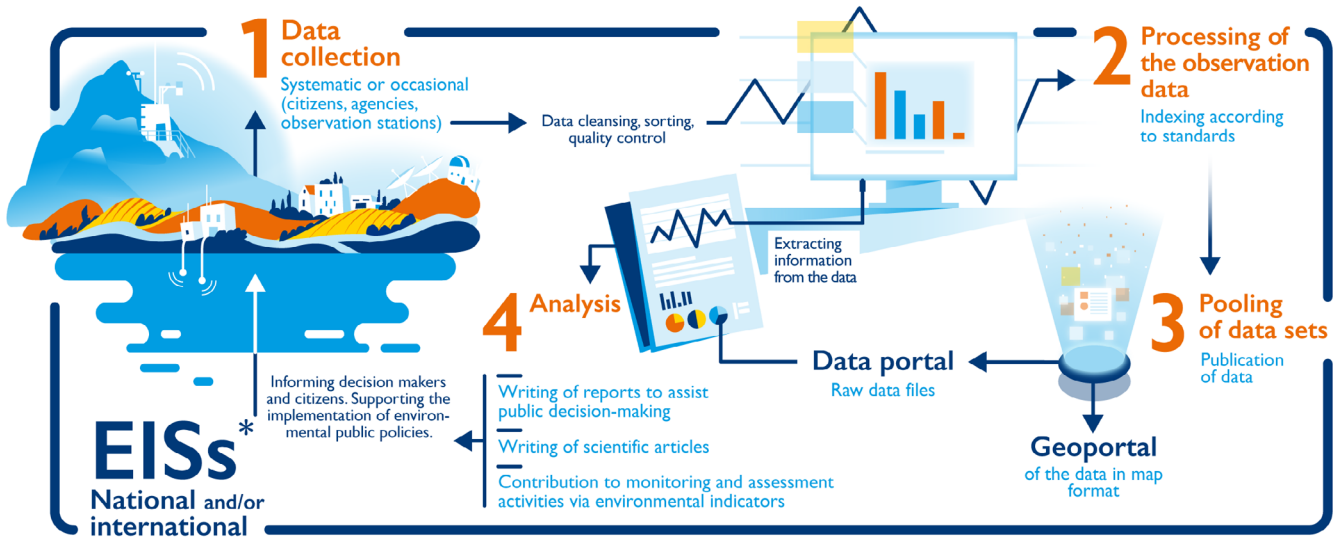
Better collaboration between institutions and their networking are therefore key elements in the organisation of data sharing and to be able to transform the data into high quality information which can be used by decision-makers over the long term.

Moreover, the value of the data is increasing as they go beyond observation for purely scientific purposes by providing services for maritime security and monitoring, for the research and economy sectors, in particular in coastal areas, where numerous economic activities are centred. This document presents the way in which environmental information is produced, how the institutions are structured and how the sharing of environmental information is organised.

According to the 2020 state of the environment in the Mediterranean report, pollution and climate change in the Mediterranean are "endangering populations' health and livelihoods". In such a context, the challenges related to the sharing of environmental information in the Mediterranean are considerable. They concern ensuring as many people as possible are able to access the information, as well as improving quality of life and the state of the environment. Observation therefore fulfils a range of missions, from contributing to research, to assisting public decision-making [diagram 1]. It is carried out in stages [diagram 2], by a diverse network of players: observation stations, observatories, research laboratories, government services and citizens. However, the links between these different players are not always seamless, and

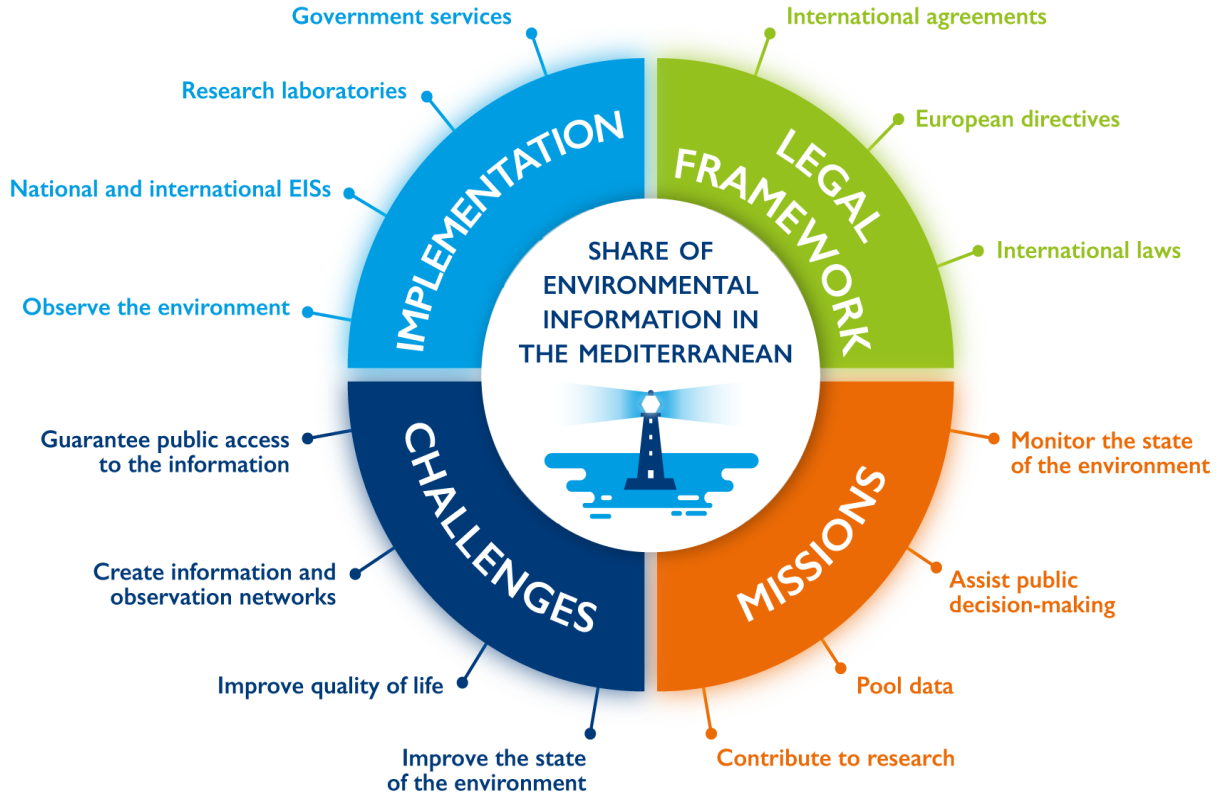
the data formats are not standardised. Moreover, the normative frameworks between the Contracting Parties to the Barcelona Convention are very heterogeneous in this regard. Therefore, although the networking of the information on a European and international scale has progressed over recent years, it is clear that the insertion of different regions into subregional information systems relating to marine and coastal environments remains unequal. The country profiles thereby present both the organisation of the construction of information relating to Mediterranean coastal and marine environments, and national observation capacities. They highlight existing cooperation between observation players, in order to favour the future sharing of marine environmental information in the Mediterranean.

## Mapping of the construction of environmental information



www.planbleu.org  
Design: J. Berthod and A.G. Beurier - Creation: J. Rey

**Diagram 1:** Construction of environmental information  
\*EIS: Environmental Information System



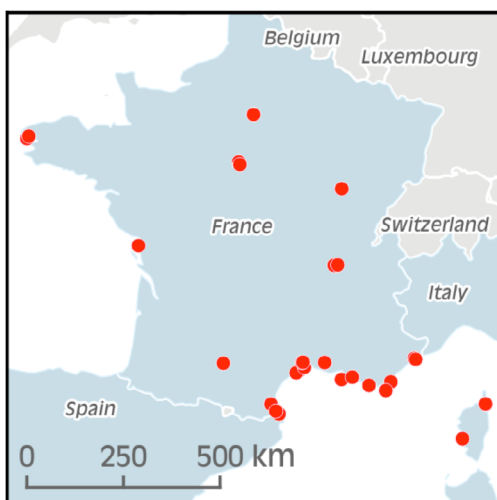
www.planbleu.org  
Design: J. Berthod and A.G. Beurier - Creation: J. Rey

**Diagram 2:** The issues relating to environmental information sharing

### National challenges

#### A WEAKENED COASTLINE WITH INCREASED URBANISATION

"Getting to know the sea better, developing a marine and maritime knowledge society" and "defining relevant maritime policy monitoring indicators" are two of the 26 priority actions established by the French National Strategy for the Sea and Coast<sup>1</sup>. A report on the state of the environment is published every four years by the SDES (data and statistical studies office). The latest, published in 2019, describes a French coastline highly sought-after and endangered, notably due to growing urbanisation and the threats facing natural habitats, primarily pollution. The acidification of the Mediterranean Sea is accelerating, and the environmental status of transitional waters, in particular lagoons, is deteriorating<sup>2</sup>. A Sustainable Development and Environmental Information System (SIDE) is supplied with data from ministerial departments, regional and national environment, planning and housing directorates (DREAL/DEAL) and other agencies. The Ministry for the Ecological Transition is mainly responsible for the implementation of European Commission directives and international conventions relating to the protection and monitoring of coastal and marine environments. Its monitoring activities are supported by several agencies, as well as by science-based public institutions which have been developing and structuring coastal monitoring since the 1980s (such as the IFREMER (French Research Institute for Exploitation of the Sea), the MNHN (National Natural History Museum), the SHOM (Naval Hydrographic and Oceanographic Service) and several universities) [diagram 3].



Design and creation: Florent Taureau, LETG UMR 6554 CNRS, 2021

**Diagram 3:** Mapping of the players in the construction of environmental information in France

<sup>1</sup><https://www.legifrance.gouv.fr>

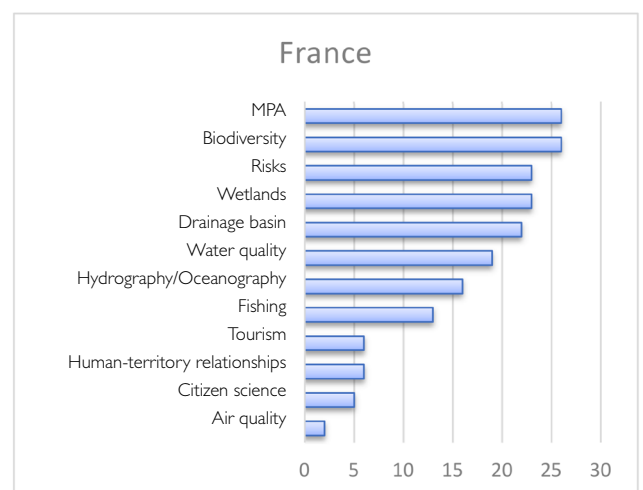
<sup>2</sup><https://ree.developpement-durable.gouv.fr>

### National observation capacities

#### PROTECTED MARINE AREAS: A CENTRAL ROLE IN THE OBSERVATION OF THE MARINE ENVIRONMENT

The themes [diagram 4] covered by the agencies, observation stations, networks and observatories, reveal **the central role played by marine protected areas (MPAs) in the implementation of marine environmental observation**, whether they be marine natural parks, national parks, regional natural parks or biosphere reserves. **Biodiversity, risks and water quality**, are the most commonly covered themes, mainly **in wetlands and drainage basins**. Data on the relationships between societies and territories and on tourism, both of which are based on socio-economic data, are not as well represented. They are published in the form of statistics within the SDES report on the state of the environment, or gathered as part of research projects led by the OHM Littoral Méditerranéen (Mediterranean Coast Man-Environment Observatory). More than the geophysical data, their distribution and sharing via interoperable databases poses additional challenges.

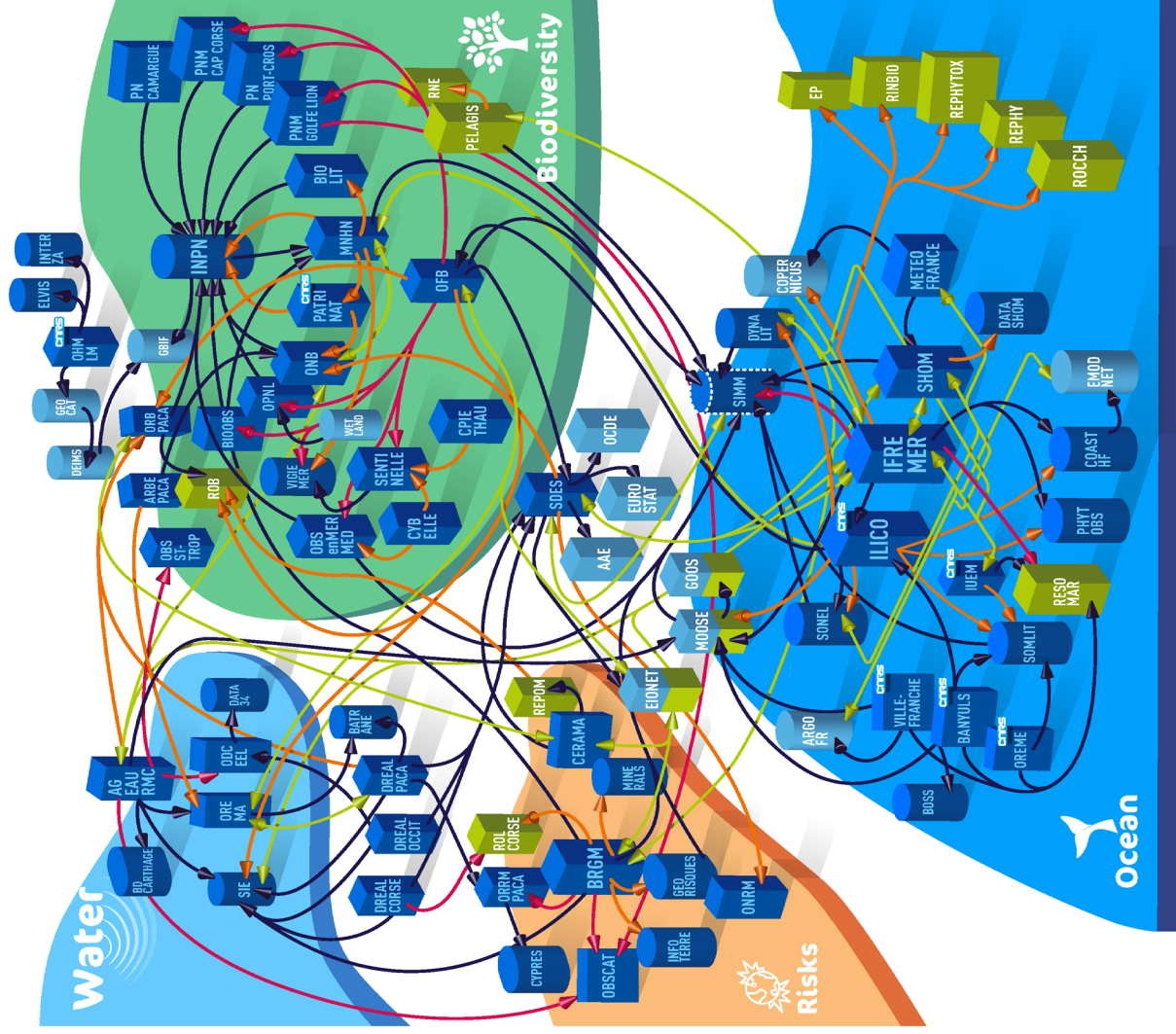
#### AN INSTITUTIONAL RESEARCH POOL STRUCTURES THE OBSERVATION OF THE MARINE ENVIRONMENT



Design and creation: J. Berthod and A.G. Beurier

**Diagram 4:** Number of observation players by theme

## Mapping of the construction of environmental information



*Design: J. Berthod and A.G. Beurrier - Creation: P. Jeannoutot - Studio Zen*

**Diagram 5: Organisation and mapping of players in environmental construction in France**

- |                | Nature institution        | Nature ISZ category                                                                                                     | Provides data to                        |
|----------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
|                | International institution | International ISZ Category                                                                                              | Coordinates                             |
|                | Observation network       | International Planned                                                                                                   | Frances<br>Partnership                  |
|                |                           |                                                                                                                         | National Centre for Scientific Research |
| AEE            |                           | Agence Européenne de l'Environnement                                                                                    |                                         |
| AEU EPMC       |                           | Agence du Littoral Méditerranéen Côte d'Azur                                                                            |                                         |
| AGB            |                           | Agencia Regional de la Conservación del Medio Ambiente de las Islas Baleares                                            |                                         |
| AGRIFFA        |                           | Observatoire régional de l'environnement de Corse                                                                       |                                         |
| BANYULS        |                           | Observatoire écoséculaire de Banyuls-sur-Mer                                                                            |                                         |
| BATIMARE       |                           | Base Territoriale Régionale Aménagement Environnement Provence-Alpes-Côte d'Azur                                        |                                         |
| BLOIUT         |                           | Observatoire du littoral                                                                                                |                                         |
| BOOBS          |                           | Base pour l'inventaire des Observations Subaquatiques                                                                   |                                         |
| BOSS           |                           | Banyuls Observation Sea Service                                                                                         |                                         |
| CBRA           |                           | Centre de Recherches Biologiques et Minières                                                                            |                                         |
| CORSE          |                           | Bureau d'études et d'expertise sur les Risques, l'Environnement, la Mobilité et l'Aménagement                           |                                         |
| COSPIE         |                           | Corsica Coastal ocean observing system - High frequency                                                                 |                                         |
| COPUSICS       |                           | Corsica Coastal ocean observing system - Low frequency                                                                  |                                         |
| CPE THAU       |                           | Centre Permanent d'Informations Scientifiques du Thau                                                                   |                                         |
| CPRES          |                           | Centre d'information pour la prévention des risques majeurs                                                             |                                         |
| DAMA 34        |                           | Data Hérault - Open Data du département de Hérault                                                                      |                                         |
| DEIMS          |                           | Dynamic Ecological Information Management System                                                                        |                                         |
| DREA CORSE     |                           | Direction Régionale de l'Environnement, de l'Aménagement et du Logement - Corse                                         |                                         |
| DREA OCCIT     |                           | Direction Régionale de l'Environnement, de l'Aménagement et du Logement - Occitanie                                     |                                         |
| DREA PACA      |                           | Direction Régionale de l'Environnement, de l'Aménagement et du Logement - Provence Alpes Côte d'Azur                    |                                         |
| DYNALIT        |                           | Service National d'Observations Dynamiques du Littoral                                                                  |                                         |
| EJONET         |                           | Ecosystem Observation Network                                                                                           |                                         |
| ENJOE          |                           | Ecosystem Observation Network                                                                                           |                                         |
| ENJOE NET      |                           | Ecosystem Marine Observation and Data Network                                                                           |                                         |
| EP             |                           | Centre de surveillance par échallonnements passifs                                                                      |                                         |
| EURSTAT        |                           | Direction générale de la commission européenne chargée de l'information statistique                                     |                                         |
| GEACAT         |                           | Gespacat Conservation Assessment tool                                                                                   |                                         |
| GEORISONS      |                           | Portail d'information public qui permet d'évaluer son exposition aux risques majeurs sur le territoire français du BRGM |                                         |
| GOUS           |                           | Global Ocean Observation System                                                                                         |                                         |
| IEMER          |                           | Institut Français de Recherche pour l'Exploitation de la Mer                                                            |                                         |
| ILCO           |                           | Infrastructures de Recherche Littorale et Océane                                                                        |                                         |
| INFORMERE      |                           | Portail géomatique des données géospatiales au BRGM                                                                     |                                         |
| INTER 34       |                           | Chambre Interdépartementale de l'Estuaire Naturel                                                                       |                                         |
| ILEM           |                           | Classement des zones littorales                                                                                         |                                         |
| MEDAM          |                           | Institut Interacadémique Européen de la Mer                                                                             |                                         |
| MINERAL        |                           | Cities méditerranéennes françaises. Inventaires et impact des aménagements aggrus sur le domaine marin                  |                                         |
| MNHN           |                           | Portail français des ressources minières non énergétiques du BRGM                                                       |                                         |
| MOOSE          |                           | Museum National d'Histoire Naturelle                                                                                    |                                         |
| OBSCAN         |                           | Mediterranean Ocean Observation System for the Environment                                                              |                                         |
| OBS STYRROP    |                           | Observatoire de la côte sabbieuse catalane                                                                              |                                         |
| OSCEMER MED    |                           | Observatoire de Saint-Jepez                                                                                             |                                         |
| ODCEEL         |                           | Observatoire de Développement Économique Littoral                                                                       |                                         |
| OMHLM          |                           | Observatoire Écologique Climatologie Eau Environnement Littoral                                                         |                                         |
| ONB            |                           | Observatoire Hommes-Milieux Littoral Méditerranée                                                                       |                                         |
| OPNL           |                           | Observatoire National de la Biodiversité                                                                                |                                         |
| OREPA          |                           | Observatoire National des Risques Naturels                                                                              |                                         |
| ORENE          |                           | Observatoire du Patrimoine Naturel Littoral                                                                             |                                         |
| PACAPACA       |                           | Observatoire Régional de la Biodiversité                                                                                |                                         |
| PAYOT          |                           | Observatoire Régional de L'eau et des Milieux Aquatiques                                                                |                                         |
| PELLAIS        |                           | Observatoire Régional de L'air et de l'Atmosphère                                                                       |                                         |
| PHYTIDS        |                           | Observatoire de Recherche Méditerranéenne de l'Environnement Littoral                                                   |                                         |
| PN CAMARGUE    |                           | Unité de service Parc National d'Ensemble Régionaux                                                                     |                                         |
| PNK CAP CORSE  |                           | Observatoire des Rives de l'Environnement Naturel, centre de données et d'expertise sur la Nature                       |                                         |
| PNK GOU FE LUN |                           | Laboratoire d'océanographie et climatologie du phytoplancton                                                            |                                         |
| REMY           |                           | Parc National Régional de Camargue                                                                                      |                                         |
| REPHTOX        |                           | Parc National de Port-Cros et de Port-Croix                                                                             |                                         |
| RESSAR         |                           | Parc National du Port-Cros et de l'Argenteuil                                                                           |                                         |
| RIB            |                           | Parc National Marin du Golfe de Lion                                                                                    |                                         |
| RINHO          |                           | Parc National Marin du Golfe de Lion                                                                                    |                                         |
| RNE            |                           | Région d'observation et de surveillance des hydrologues et de l'hydrologie dans les eaux littorales                     |                                         |
| ROCH           |                           | Région d'observation des phytocromes sans les organismes marins                                                         |                                         |
| ROL CORSE      |                           | Région d'observation de la biodiversité marine                                                                          |                                         |
| SDBS           |                           | Région d'observation de la biodiversité marine                                                                          |                                         |
| SENTINELLE     |                           | Région d'observation de la biodiversité marine                                                                          |                                         |
| SIE            |                           | Région d'observation de la biodiversité marine                                                                          |                                         |
| SHAW           |                           | Système d'information sur l'Eau                                                                                         |                                         |
| SOALIT         |                           | Système d'information sur le littoral marin                                                                             |                                         |
| VILLFRANCHE    |                           | Service d'observation en milieu littoral                                                                                |                                         |
| WETLAND        |                           | Service d'observation en milieu littoral                                                                                |                                         |
|                |                           | Observatoire écoséculaire de Villfranche-sur-Mer                                                                        |                                         |
|                |                           | Wetlands International France                                                                                           |                                         |

### A WIDE VARIETY OF MONITORING NETWORKS INCLUDING THE STRUCTURING OF A "NETWORK OF NETWORKS" IN PROGRESS

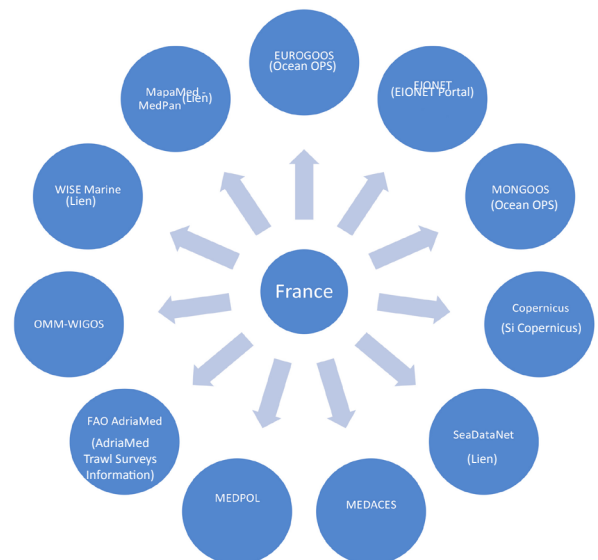
Some players stand out as having a structural role in the observation of the marine environment in France. The French Geological Survey, BRGM, is a key player in the area of risk, having a significant national data banking capacity. It also plays a role in financing certain observation activities and infrastructure providers - as is the case for the ROL Corse, the Corsican coast observation network. In the area of biodiversity, the MNHN plays a key inventory management role, via its inventory of natural heritage (INPN). The French Biodiversity Agency (OFB) is a central player in the financing of observation structures. As for water quality, the Rhone-Mediterranean-Corsica (RMC) water agency and the DREAL are essential for collecting and centralising information within the national environmental information system (EIS). Thanks to its sizeable ocean observation infrastructure, the IFREMER is a major player in oceanography. The institute is very active in the collection of data, writing of reports and storing of data. It manages a significant number of observation networks, and is closely connected to national players (SDES, RMC water agency SHOM, SIMM) and international players (MOOSE, Copernicus, EIONET, Argo, SeaDataNet). The SHOM also provides essential monitoring infrastructure. The French National Centre for Scientific Research (CNRS) has a structural role, via its institutes, particularly the INSU (National Institute of Sciences of the Universe), like the IUEM (European Institute for Marine Studies), the OREME (Observatory of Sciences of the Universe), the Banyuls-sur-Mer observatory and the Villefranche-sur-Mer Sea Institute. The UMS PatriNat (joint natural heritage service unit), the OHM Littoral Méditerranéen, also come under the umbrella of the CNRS. It cooperates with the IFREMER in unifying the French oceanographic fleet. The CNRS is also involved in the initiative to structure research into the natural dynamics of coastal systems, through the setting up with the Ministry of Higher Education, Research and Innovation of ILICO (Coastal Ocean and Nearshore Observation Research Infrastructure). Thirty-two of its sites are situated along the Mediterranean coast. It is becoming increasingly active in the coordination of observation networks. **The country boasts a wide variety of monitoring networks and observation services, not all of which are represented in the diagram [diagram 5].**

### National observation funding

#### FUNDING MAINLY FROM PUBLIC SOURCES CENTRED ON NATIONAL RESEARCH INSTITUTIONS

The IFREMER (240 million euros), the CEREMA (191), the MNHN (165) and the BRGM (140) have the biggest annual budgets. They manage to secure significant grants and operate with stable equity. The RMC water agency also has

**The structuring and harmonisation of the flourishing monitoring activities of coastal and marine environments and activities are still in progress.** In terms of centralised information systems, there are three main structuring initiatives, with the SIE (for water), the SIB (via the SINP, for biodiversity) and the SIMM (for the marine environment). The SIMM is in the process of being set up. The SDES appears to be the statistical observatory with the most prominent cross-disciplinary activity, due to its activity centralising environmental information and its reporting role within international institutions (EIONET; OECD; EEA; Eurostat). **The country is therefore well integrated into international maritime observation networks [diagram 6].** This reflects both France's activity regarding the sharing of environmental information, as well as the fact that it benefits from European services linked to the monitoring of the marine environment, such as the Clean Sea Net portal for satellite-based oil spill monitoring.



Design and creation: J. Berthod and A.G. Beurrier

**Diagram 6:** Insertion of France into the main international marine data networks and structures. When the structure has an information system, its name is given between brackets along with a hypertext link to the data portal.

a big budget, in that it receives both grants and considerable resources from water use charges. The SHOM (58), the IUEM (30), the Oceanological Observatory of Banyuls-sur-Mer (13) and ILICO (10) also have robust budgets. Protected areas operate with more modest budgets (3.5 for the Camargue Regional Natural Park, 1.1 for the Gulf of Lion marine natural park), of which the proportion allocated to observation is difficult to assess and depends first and foremost on the Ministry for the Ecological Transition. Research structures, such as the UMS Pelagis (800 000

euros), the OREME (600 000), BioLit (500 000 euros) and the OHM Littoral Méditerranéen (between 50 000 and 80 000 euros) function on much smaller annual budgets. Moreover, their activities are highly dependent on funding through short term projects. Regional observatories, such as the ORB Occitanie (22 000 euros) operate with lower funding which depends on the region, or even municipal budgets. The observation carried out by associations, such as ObsEnMer (15 000) receives funding from the private sector as well as public financing (Ministry for the Ecological Transition). It should be stressed that funding for observation activities comes primarily from the public sector, via the Ministry of Defence (which finances the SHOM), the Ministry for Higher Education, Research and Innovation, and the Ministry for the Ecological Transition (via the OFB for example). It operates on different administrative levels, when the financing of advanced observation infrastructure (ships, satellites, etc.) requires stable, long-term financing, often national or even European. The CNRS finances a lot of observation activity, when it is related to research, and contributes to the budget of a diverse range of structures (the OOB, ILICO, the IUEM, etc.).

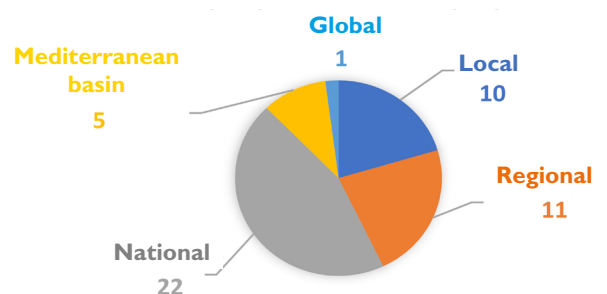
### Scales of observation

**A CENTRALISED OBSERVATION SYSTEM WHICH IS INCREASINGLY BASED ON REGIONAL SCALES**

The scales of observation of the 49 mapped structures, observatories and networks are diverse, and range from the local scale (e.g. the Thau Basin Observatory) to the global scale (e.g. ILICO). The national scale is the most represented in the mapping, through large-scale infrastructure such as the BRGM, the IFREMER, the MNHN, as well as information systems (e.g. EIS, SINP), and observation networks rolled out across national waters (e.g. REPOM). **This demonstrates the centralised character of observation activities in France [diagram 7].** The regional scale is strongly represented, through the significant action of the DREAL/DEALS, water agencies, regional biodiversity observatories - in terms of both the collection and pooling of data within information systems. The regions (PACA, Occitanie and Corsica) provide regular funding for observation activities, notably in order to monitor

certain risks likely to affect their inhabitants. It should be noted that certain structures operate on the scale of the French Mediterranean basin, such as agencies (RMC water agency), research laboratories (e.g. MEDAM), and citizen observatories (Cybelle Méditerranée, MIRACETI). The local scale is represented by observation stations (Banyuls-sur-Mer Observatory) and observatories linked to communities of communes (Saint Tropez Marine Observatory), to a department (ODCEEL of the Hérault department), or to protected marine areas (Gulf of Lion marine natural park, Côte Bleu marine park). There is considerable cooperation between these different levels, through the integration of local data within national information systems. It still needs to be reinforced as certain structures appear cut off from existing information exchange infrastructure (for example the Saint Tropez marine observatory).

### Scale of observation of the mapped structures



*Design and creation: J. Berthod and A.G. Beurier*

**Diagram 7: Scale of observation of the mapped structures**

networks, whereby observers of all levels of expertise monitor biodiversity via protocols set out online (websites, mobile applications) and often accompanied by scientific structures. The MNHN is a key player in the field, in that it oversees the Vigie Nature programme, including BioLit, and supports the Sentinelles de la Mer Occitanie programme. It also integrates into its INPN the data collected by the BioObs programme. These initiatives are also driven by associations with the marine species observation programme run by Cybelle Méditerranée, BioLit launched by the association Planète Mer, and the Sentinelles de la Mer Occitanie programme initiated by the Thau Bassin CPIE. The citizen science approach is two-pronged: it aims to improve knowledge of certain species while at the same time raising public awareness. First and foremost, these programmes allow invasive and endemic species visible from the coast or identified during underwater dives to be counted.

### Focus on citizen observation

**RAPID DEVELOPMENT OF PARTICIPATORY SCIENCE AND CITIZEN NETWORKS**

While the theme is generally poorly covered by observatories, France has a particularly high number of public participation nature observation programmes. These are marine fauna and flora citizen observation