# APPLICATIONS

The importance of Coriolis is visible through the applications that are developed based on these data.

## Coriolis, MyOcean and the GMES Marine Core Service

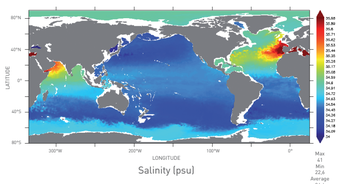
GMES (Global Monitoring for Environment and Security) is a major European initiative to monitor the state of earth environment, support policy decisions and provide a wide range of services to users.
MyOcean is the first project of the ocean component of GMES, the so-called GMES Marine Core Service. Coriolis coordinates the MyOcean in-situ Thematic Assembly Center and provides in-situ data needed to constrain and validate the MyOcean global and regional Modelling and Forecasting Centers.

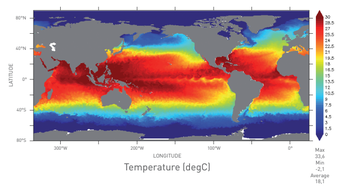
## Ocean variability inferred from in-situ data

The global ocean plays a major role in the Earth's climate. One way of observing and understanding the Earth's energy balance is to evaluate the average temperature change from the surface down to the deep ocean – the so called ocean heat content.
Monthly gridded global temperature fields based on in-situ measurements have been used to estimate global mean heat content variations.
A clear trend of the heat content during the past years has been highlighted using in-situ data.

## New autonomous platforms to observe marine ecosystems

Marine ecosystems are a key component of the Earth system. Their evolution can now be monitored and analyzed thanks to biogeochemical sensors. Specifically designed for autonomous platforms , these sensors are able to measure biogeochemical parameters such as chlorophyll concentration and its vertical distribution. They have been demonstrated on Gliders and new Argo floats called PROVBIO.




*Salinity at 1000m and sea surface temperature forecast in June 2010 from MyOcean/Mercator-Ocean global model*

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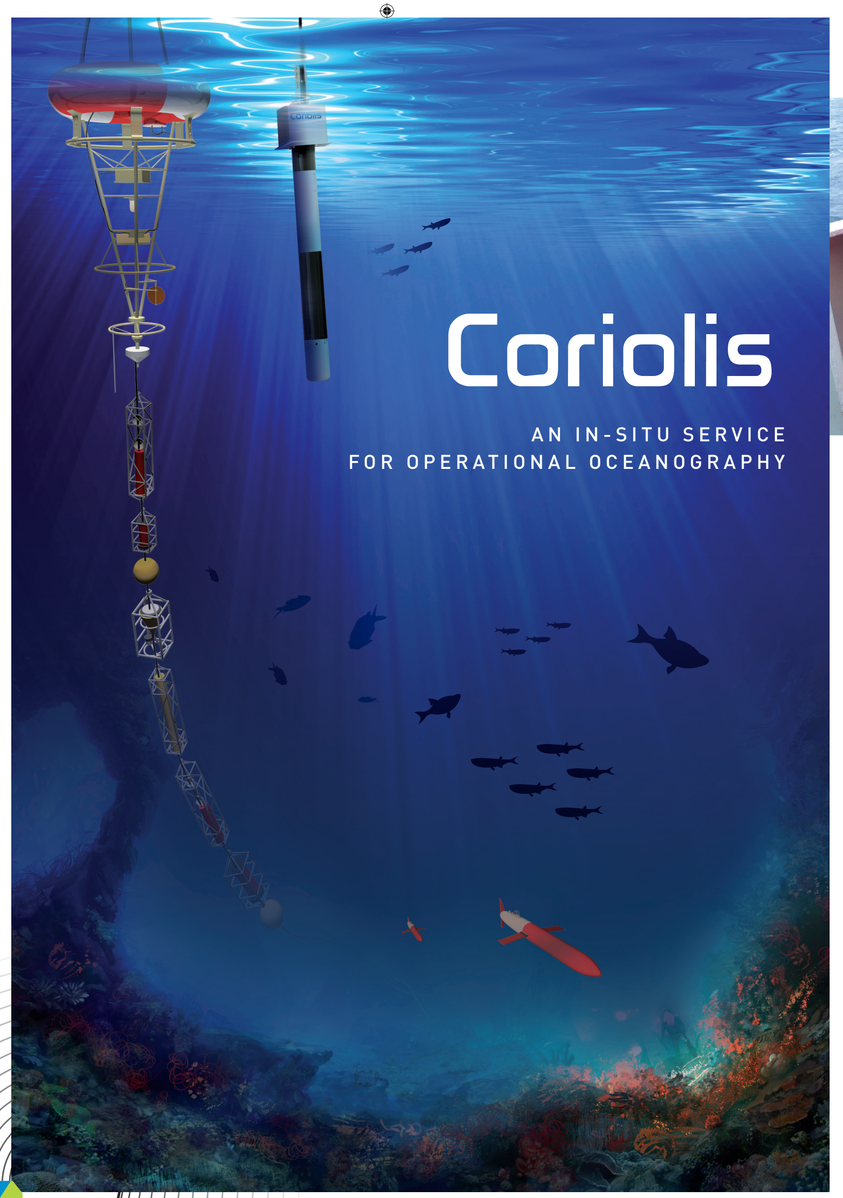



The ocean plays a major role in the earth'climate. It stores, transports and exchanges large amounts of heat, water and gases, and acts as a memory of the climate system. Global ocean observations are critical to understand and forecast the earth' climate and weather as well as for a wide range of ocean services. CORIOLIS contributes to the French operational oceanography program for the in-situ observations.

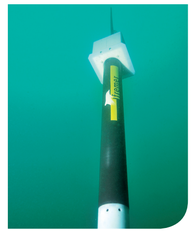
# MONITORING THE OCEAN WITH CORIOLIS

## Coordinate

CORIOLIS has set up an infrastructure for the coordination of in-situ data acquisition, validation and distribution, in real time and delayed mode over the world ocean. Conducted by seven French agencies, CORIOLIS integrates national activities related to in-situ measurements for operational oceanography and climate research.

## Measure

Coriolis contributes to the observation of the global ocean with the instruments it deploys. It coordinates the French contribution to international programs:
Argo, the global array of profiling floats, Pirata, the tropical mooring array in the Atlantic, the global surface drifter program and the acquisition of underway data from research and ship of opportunity vessels.



## Manage and Distribute

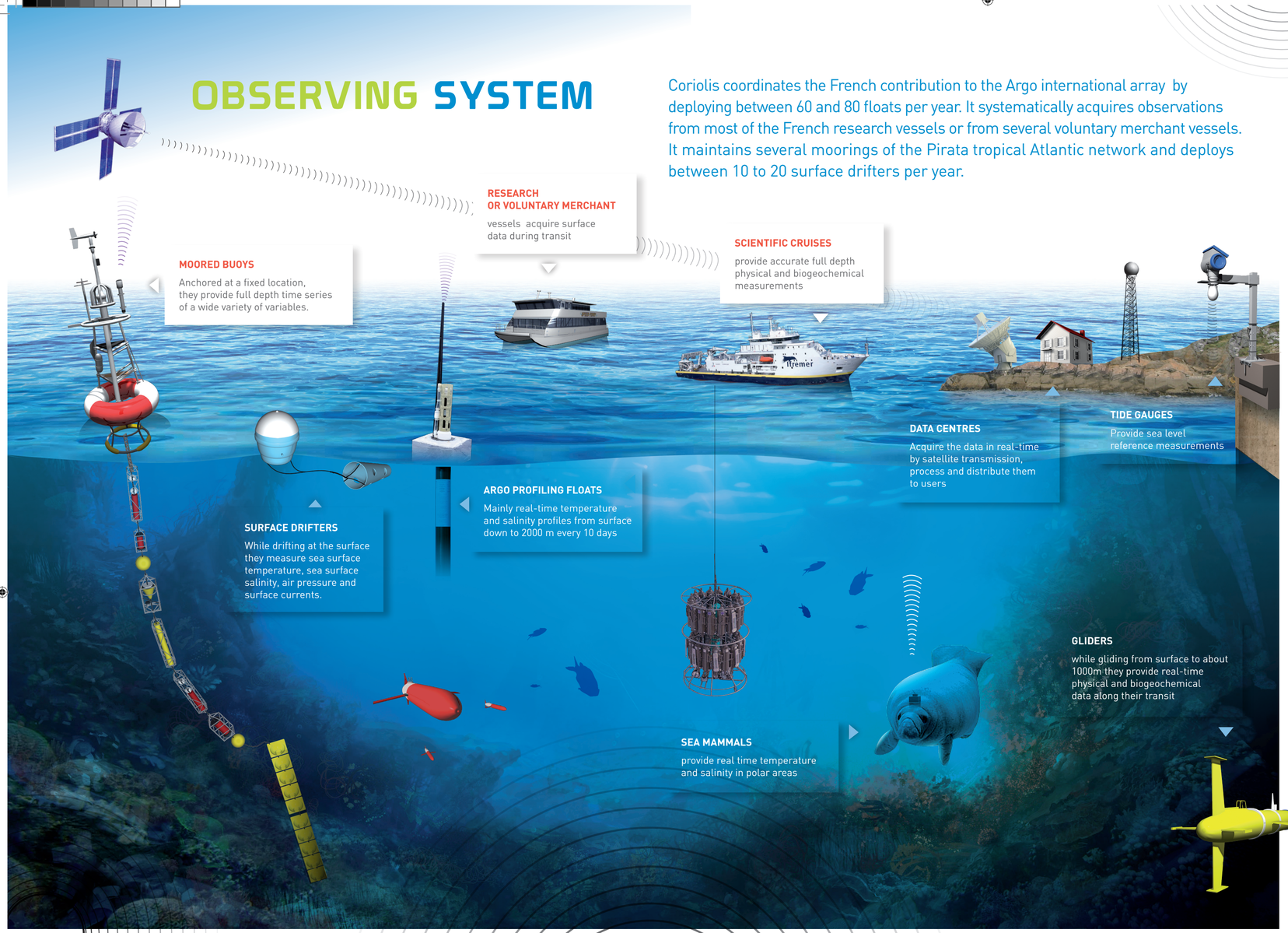
The centre collects data from the main global ocean observing networks as well as from agencies operating observing systems in Europe. Data are obtained from a variety of platforms:
floats, buoys, research vessels, ships of opportunity, drifters, gliders, sea mammals...
The quality of these data is controlled within 24 hours using internationally agreed procedures and distributed to the main ocean forecasting centres in France (Mercator-Ocean, Soap/Shom) and Europe (GMES Marine Core Service), and to the international community. Yearly high quality products are provided to the research community.

## Assess the product quality

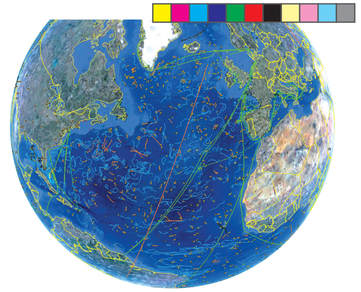
One of the aims of the R&D Coriolis activities is to scientifically assess and improve the quality of the products. A scientific team is working closely with the Coriolis data center and the user community to improve validation methods and derive value added products such as climatologies or gridded fields.

# OBSERVING SYSTEM

Coriolis coordinates the French contribution to the Argo international array by deploying between 60 and 80 floats per year. It systematically acquires observations from most of the French research vessels or from several voluntary merchant vessels. It maintains several moorings of the Pirata tropical Atlantic network and deploys between 10 to 20 surface drifters per year.




# CORIOLIS PRODUCTS



Coriolis has set up an operational data centre that provides an integrated service for operational oceanography and research activities.
The Coriolis data centre handles temperature, salinity and current parameters, and is extending its service to biogeochemical parameters such as chlorophyll and oxygen. Four categories of products are provided :

## Real time observations

Coriolis provides an integrated access to observations collected by the data centre for the past 30 days through WWW, OPeNDAP or FTP means. The quality of these observations is checked, using automatic quality control procedures, as well as statistical methods that analyze the consistency of the data in a given area.

## Global Portal to main international observing networks

Users benefit from a single entry point to the best copy of the datasets collected by three international networks: Argo, GOSUD and OceanSITES. The Coriolis data centre has set up Global Data Centres integrating data processed at national level following commonly agreed procedures.

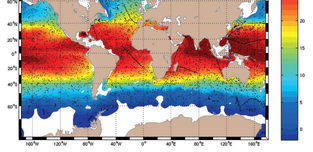
*Argo float positions in september 2010*

## Scientifically qualified observations

Coriolis contributes to the quality of ocean data analyses by producing every year an updated qualified temperature and salinity data set, and performing a scientific assessment of this data set extracted from the Coriolis data base.

## Gridded products and Atlases

Users can access gridded fields and Atlases elaborated with the scientific community from the Coriolis database. Updated periodically, these products can be real-time or delayed mode weekly temperature and salinity fields from 1992 until now, temperature & salinity and mixed layer depth climatology, subsurface velocity atlas from Argo, etc...




*Temperature gridded map from one month of Coriolis data*