Ocean Accounts

Global Ocean Data Inventory

Version 1.0 13 Dec 2019

UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

Global Ocean Accounts Partnership

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Global Ocean Data Inventory

Version 1.0 13 Dec 2019

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Overview

Status of ocean data

As basic information for ocean statistics, ocean data play an essential role in accounting. Not only physical, chemical, biological, and geological ocean data which reflect the natural characteristics of the oceans are components of the Ocean Accounting Framework (Figure 1), but also data regarding the impacts of human activities (e.g. fishing, marine tourism, shipping, and marine pollution, etc.) are indispensable.

Ocean data are collected by different agencies, organizations, research institutes, etc. for different themes. For example, National Oceanic and Atmospheric Administration (NOAA) and EU Copernicus-marine environment monitoring service are authoritative ocean research agencies providing global ocean data on sea surface temperature, salinity, sea level anomaly, chlorophyll, etc. Some international organizations like Food and Agriculture Organization (FAO) provides global fishery statistics, and International Maritime Organization (IMO) provides information on ships and marine security.

The existing ocean data inventories have their own purposes of use. For example, Ocean+ Library provided by World Conservation Monitoring Centre (WCMC) is a comprehensive collection of marine and coastal datasets for biodiversity while the Global Earth Observation System of Systems' Platform (GEOSS Platform) focuses on earth observation but has good data collection for the ocean.

Importance of OCEAN ACCOUNTS Global Ocean Data Inventory

There was no existing data inventory that fully matched the needs of ocean accounting so the OCEAN **ACCOUNTS Global Ocean Data Inventory** was developed. To match the structure of the accounts, this inventory refers to the classification in System of Environmental-Economic Accounting (SEEA) and SEEA Experimental Ecosystem Accounting (EEA), and comes with 7 components: **Spatial units, Ocean Extent, Use (designated), Ocean Condition, Ocean Asset, Ocean Service Supply, Ocean Service Use** (See Table 1 below). An extra component 'Non-specific classification' is designed for those data portals or inventories which are difficult to match the 7 components. Also, a database might include several datasets and has more than one component. 'single' and 'multiple' are used to make the distinction.

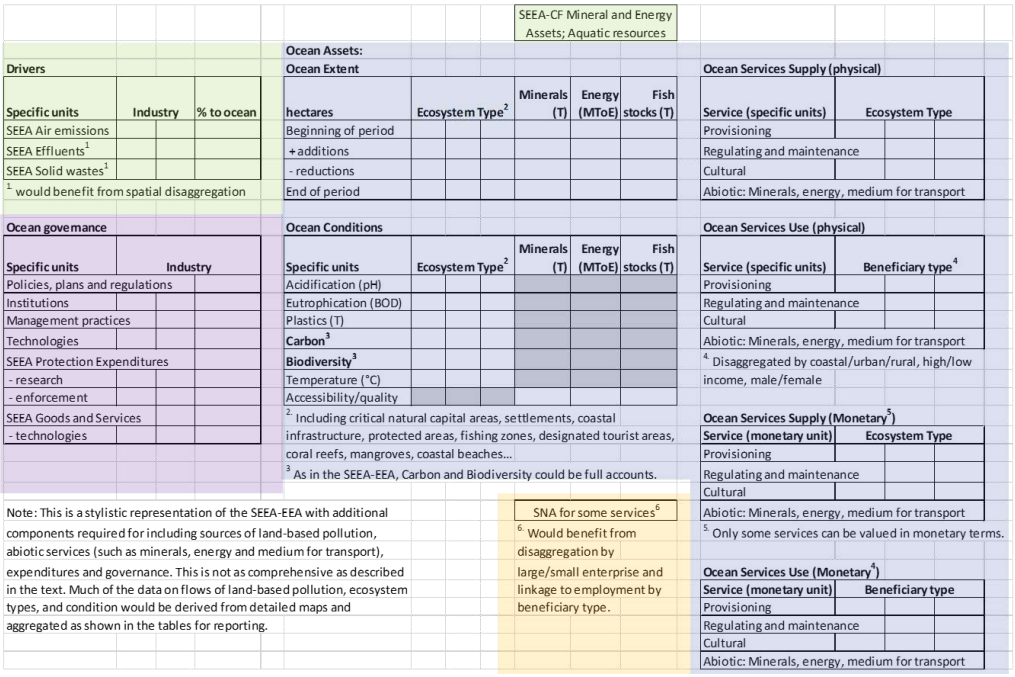

Figure 1 The table view of Ocean Accounts (http://communities.unescap.org/environment-statistics/tools/ocean-accounts)

Table 1 Classification(component) of OCEAN ACCOUNTS Global Ocean Data Inventory

	Component	Description
1	**Spatial units**	Existing databases/standards about the classification
2	**Ocean Extent**	Coastal community, topography, geoid, bathymetry, Exclusive Economic zone, geography, islands, distribution of coral, mangrove, seagrass, sponge and saltmarshes, etc.
3	**Use (designated)**	Protected areas, Fishing, Tourism, Shipping, etc.
4	**Ocean Condition**	Physical: temperature/ Sea surface temperature, ocean circulation, sea level, waves, tides, winds, sea ice/ glacier, salinity, heat content, mean sea surface, mean dynamic topography, turbidity (reflectance), mixed layer thickness, water pressure, water density, etc.; Chemical: phosphate, nitrate, silicate, alkalinity, pH, CO_2, Oxygen/hypoxia, tritium, etc.; Biological: plankton, Chlorophyll, ocean color, oil-spill trajectory, algal bloom, plastics, water quality, etc.
5	**Ocean Asset**	Fish stock, minerals, aquatic plants, oil/ petroleum/ gas, seafloor sediments and rocks, marine species, algae, seaweeds, plankton, whales, dolphins, sea turtles, etc.
6	**Ocean Service Supply**	Fish catch, tourism, mining, etc.
7	**Ocean Service Use**	Trade, transport(use), port, habitat, values at risk (coral bleaching, coral diseases), blue carbon, marine safety/security, shipping, etc.
8	**Non-specific classification**	Databases without a clear classification

By 11th Dec 2019, **138** databases were collected in **OCEAN ACCOUNTS Global Ocean Data Inventory,** among which **106** with a single component, **27** with multiple components and **5** with Non-specific classification. The number of databases on ocean conditions is significantly large (**86** among 138), while global mining and fishing, etc. data are not easy to access for confidential reasons. Almost all databases in this inventory are on a global scale, very few research centers mainly focus on collecting regional data but provide good global ocean data products as well. For each database, the inventory records

- Data format
- Status (whether it is ongoing or finished)
- Acquisition method (the ways of data collection, which could be in situ work, modelling, remote sensing, etc.)
- Data resolution (spatial and temporal resolution)
- Data available (the theme of the dataset, e.g. waves, salinity, bathymetry, etc.)
- Further information
- Website link
- Introduction document

Suggestions and prospection

Currently, this inventory still focuses on describing global ocean data. Descriptions of regional and national ocean data will be added in the future. A future revision will also include guidance on the selection of data.

Users are encouraged to use the most appropriate data for their study area. Local data may be of higher quality than in these global datasets. In the absence of local data, we sincerely hope this inventory could be a starting point. However, some important databases might still be missing. We are looking forward to your comments to make this inventory more comprehensive. Please contact (stat.unescap@un.org or lyutongcai@gmail.com)

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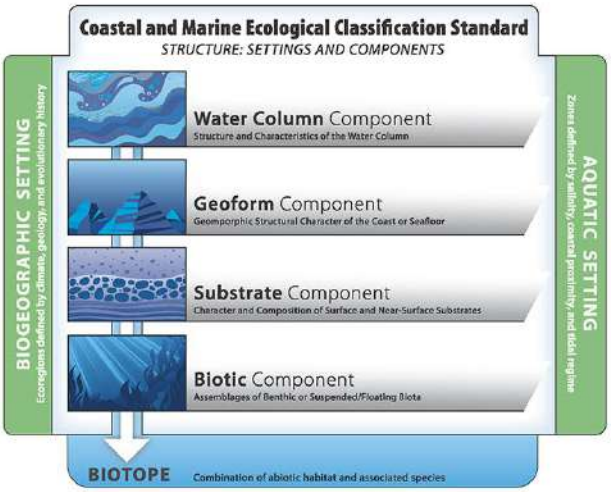
Section 1

Spatial Units

ID: SU-001

Name: **Coastal and Marine Ecological Classification Standard (CMECS)**



Component: Spatial units

Data format: N/A

Status: Ongoing

Acquisition method: This framework includes physical, biological, and chemical data that are collectively used to define coastal and marine ecosystems.

Data resolution: N/A

Data available: It is a comprehensive national framework for organizing information about coasts and oceans and their living systems.

Further information: CMECS is designed for use within all waters ranging from the head of tide to the limits of the exclusive economic zone, and from the spray zone to the deep ocean. It is compatible with many existing upland and wetland classification standards and can be used with most if not all data collection technologies.

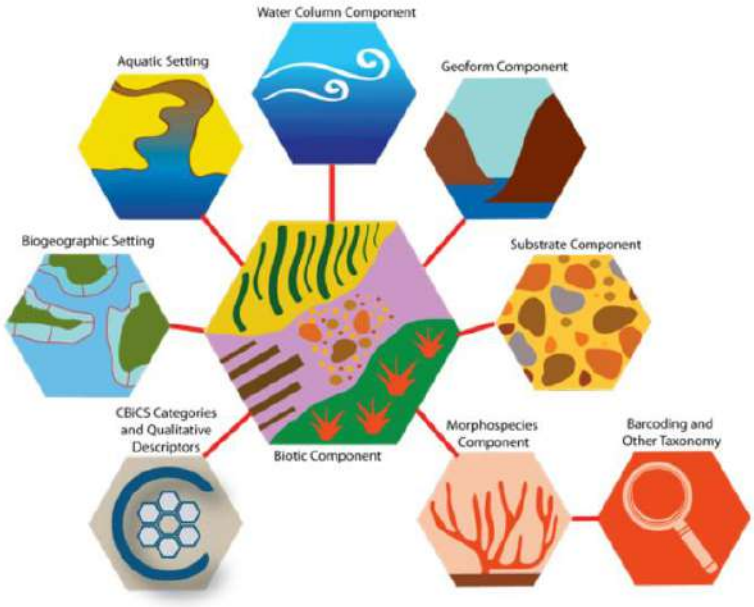
CMECS allows investigators to determine the types of data to be collected. Its structure accommodates data from multiple disciplines, and its use is not limited to specific gear types or to observations made at specific spatial or temporal resolutions.

Website: https://iocm.noaa.gov/cmecs/

Introduction document: https://iocm.noaa.gov/cmecs/documents/CMECS_One_Page_Description-20160518.pdf

ID: SU-002

Name: **Combined Biotope Classification Scheme(SBiCS)**



Component: Spatial units

Data format: Onlline viewer

Status: Ongoing

Acquisition method: N/A

Data resolution: N/A

Data available: It is a hierarchical classification of marine biotopes, including aquatic setting, biogeographic setting, water column component, substrate component, geoform component, biotic component, morphospecies component.

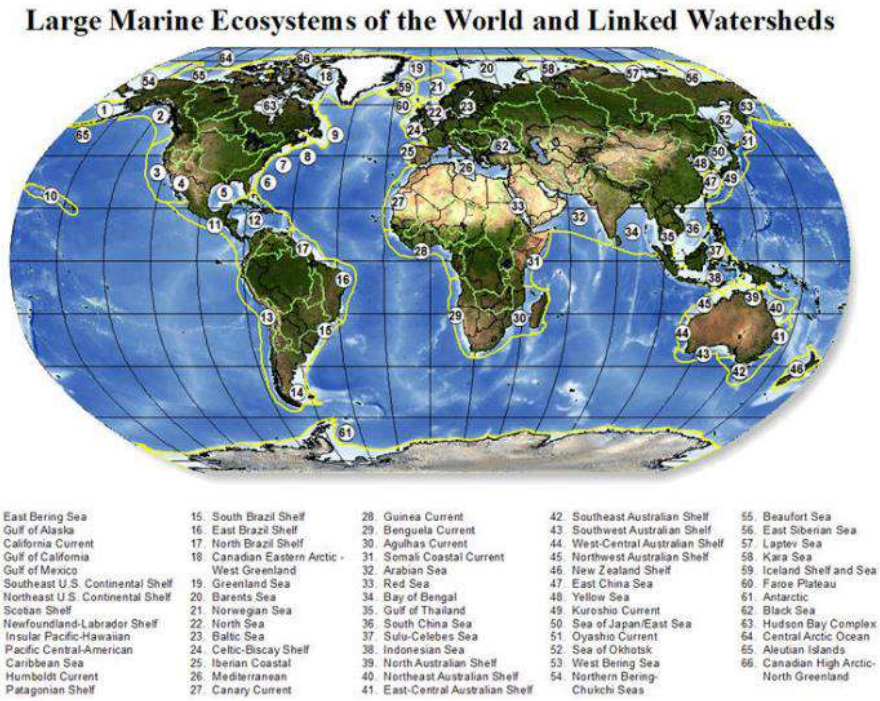
Further information: The Combined Biotope Classification Scheme (CBiCS) combines the core elements of the CMECS habitat classification scheme and the JNCC/EUNIS biotope classification scheme.

Website: http://www.cbics.org/about/

Introduction document: https://www.researchgate.net/publication/328891619_Combined_Biotope_Classification_Scheme_CBiCS_A_New_Marine_Ecological_Classification_Scheme_to_Meet_New_Challenges

ID: SU-003

Name: **Large Marine Ecosystems (LMEs)**



Component: Spatial units

Data format: SHP/ KML

Status: Ongoing

Acquisition method: Satallite data and modelled data

Data resolution: N/A

Data available: The LMEs produce about 80% of the annual world's marine fisheries catch. Globally they are centers of coastal ocean pollution and nutrient overenrichment, habitat degradation (e.g. seagrasses, corals, mangroves), overfishing, biodiversity loss, and climate change effects.

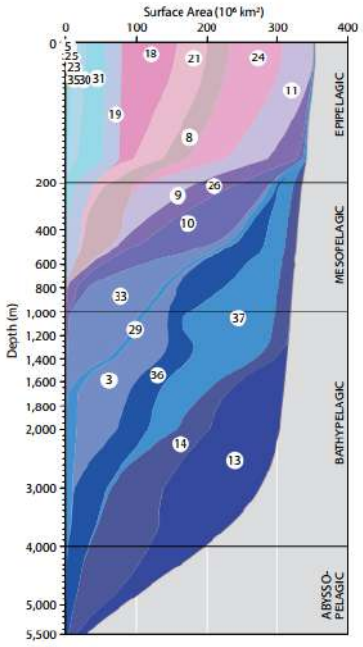
Further information: Large Marine Ecosystems (LMEs) are relatively large areas of ocean space of approximately 200,000 km² or greater, adjacent to the continents in coastal waters where primary productivity is generally higher than in open ocean areas.

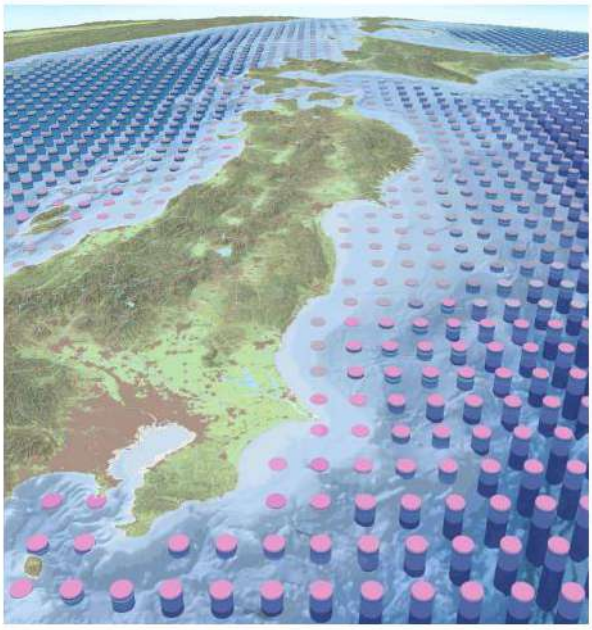
Website: http://lme.edc.uri.edu/

Introduction document:

ID: SU-004

Name: **ESRI - Ecological Marine Units**





Component: Spatial units

Data format: SHP

Status: Ongoing

Acquisition method: Historical data

Data resolution: Minmum spatial resolution: ¼° × ¼°

Data available: The EMUs are an initial objective partitioning of the ocean using longterm historical average data, and could be extended in the future by adding new classification variables and by introducing functionality to develop time-specific EMU distribution maps.

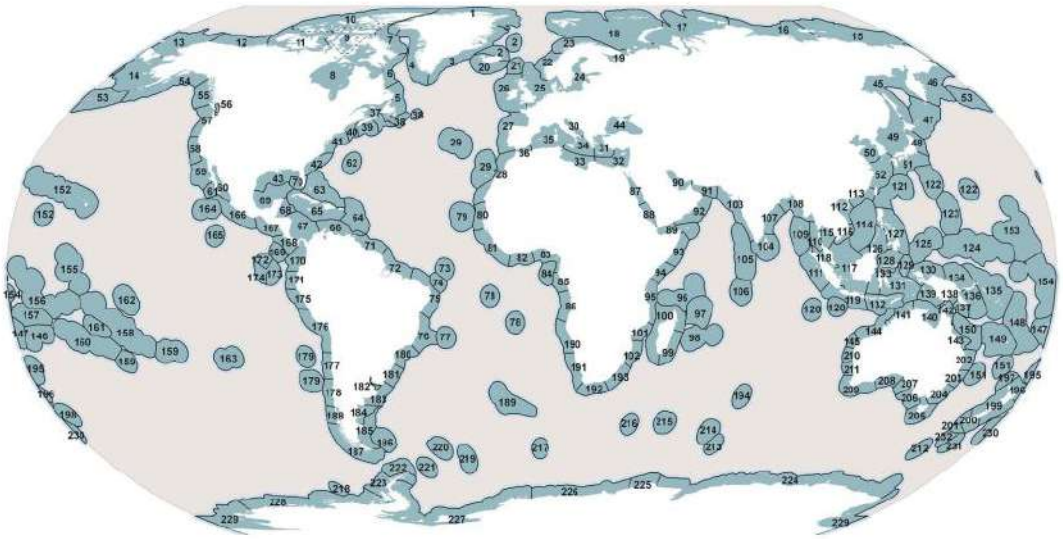
Further information: A new defined Ecosystem Classifiation

Website: https://www.esri.com/en-us/about/science/ecological-marine-units/overview

Introduction document: https://tos.org/oceanography/article/a-three-dimensional-mapping-of-the-ocean-based-on-environmental-data

ID: SU-005

Name: **WWF - Marine Ecoregions of the World (MEOW)**



Component: Spatial units

Data format: SHP

Status: Finished (2007)

Acquisition method: Underlying data for the identification and definition of biogeographic units from over 230 works in journals, NGO reports, government publications, and other sources.

Data resolution: N/A

Data available: A biogeographic classification of the world's coasts and shelves

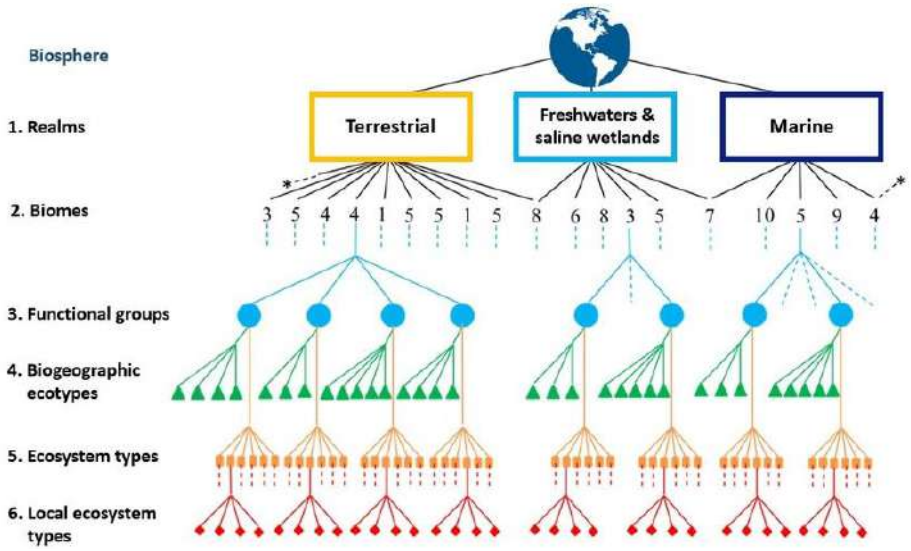
Further information: It is the first ever comprehensive marine classification system with clearly defined boundaries and definitions and was developed to closely link to existing regional systems.

Website: https://www.worldwildlife.org/publications/marine-ecoregions-of-the-world-a-bioregionalization-of-coastal-and-shelf-areas

Introduction document: It can be found on the website above.

ID: SU-006

Name: **IUCN - Global Ecosystem Typology**



Component: Spatial units

Data format: Map (ongoing updated)

Status: Ongoing

Acquisition method: Historical data, satellite data, modelled data

Data resolution: N/A

Data available: It is a new functional typology for ecosystems by providing a global framework for reporting on Aichi targets, Sustainable Development Goals, and natural capital accounting, as well as for structuring global risk assessments for the IUCN Red List of Ecosystems.

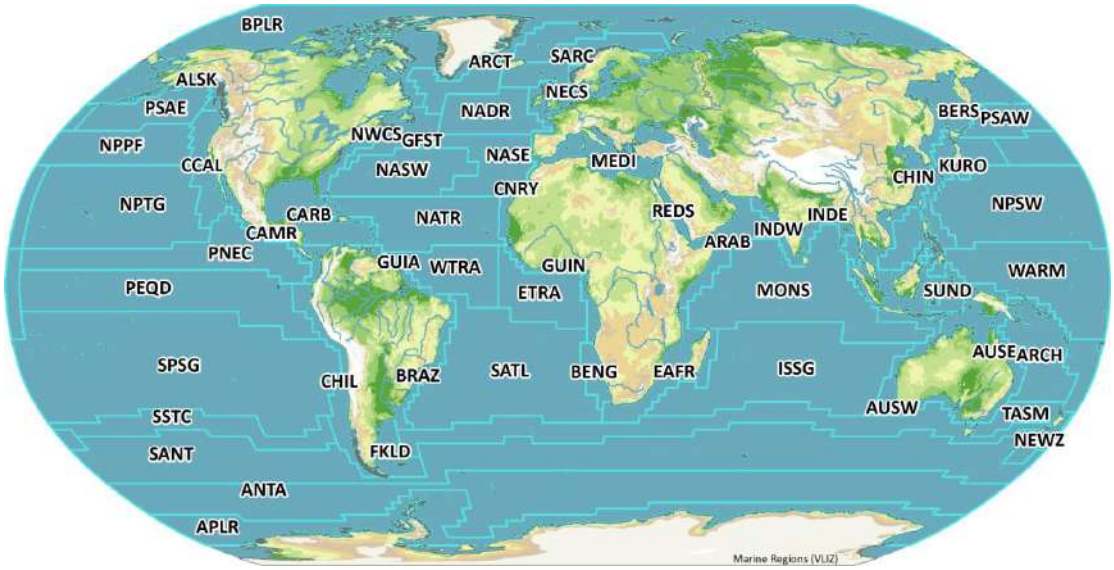
Further information: The theoretical framework is critical to ensuring classification robustness with a changing knowledge base plus the flexibility to accommodate new information. The hierarchical framework integrates both top-down approaches, essential for global consistency, and bottom-up approaches, to incorporate established ecological classifications, already in use and incorporated into policy infrastructure in regional, national and sub-national levels (e.g. EUNIS habitat classification). This is crucial, as important conservation action occurs at local levels, where most expertise resides.

Website: https://iucnrle.org/about-rle/ongoing-initiatives/global-ecosystem-typology/

Introduction document: https://iucnrle.org/static/media/uploads/references/key-documents/scientific-foundations/keith-etal-2013-scientific-foundations-red-list-ecosystems-en.pdf

ID: SU-007

Name: **Longhurst Provinces**



Component: Spatial units

Data format: SHP

Status: Finished (2010)

Acquisition method: N/A

Data resolution: Spatial resolution: 1x1°

Data available: The dataset represents the division of the world oceans into provinces as defined by Longhurst. The division has been based on the prevailing role of physical forcing as a regulator of phytoplankton distribution.

Further information: Note that the boundaries of these provinces are not fixed in time and space, but are dynamic and move under seasonal and interannual changes in physical forcing. At the first level of reduction, Longhurst recognized four principal biomes: the Polar biome, the Westerlies biome, the Trade winds biome, and the Coastal biome. These four biomes are recognized in every major ocean basin. At the next level of reduction, the ocean basins are divided into provinces, roughly ten for each basin. These regions provide a template for data analysis or for making parameter assignments on a global scale.

Website: https://www.arcgis.com/home/item.html?id=16ac3f05b7c24c34b458a28e8b6f5b30

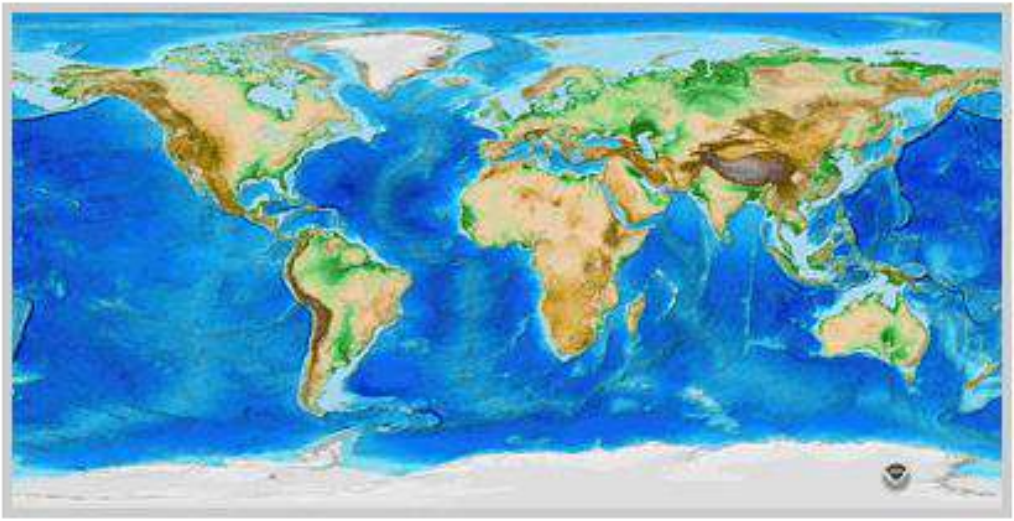
Introduction document: http://www.marineregions.org/gazetteer.php?p=details&id=22538

Section 2

Ocean extent

ID: OE-001

Name: **NOAA - ETOPO1 Global Relief Model**



Component: Spatial units

Data format: NetCDF/ GRD98/ BINARY/ XYZ/ Georeferenced TIFF/ PDF/ PNG/ JPEG/ KMZV

Status: Finished (in 2008)
Data from 1940 to 2008

Acquisition method: Modelled data

Data resolution: Spacial resolution: 1 arc-minute

Data available: Ocean bathymetry is available in "Ice Surface" (top of Antarctic and Greenland ice sheets) and "Bedrock" (base of the ice sheets).

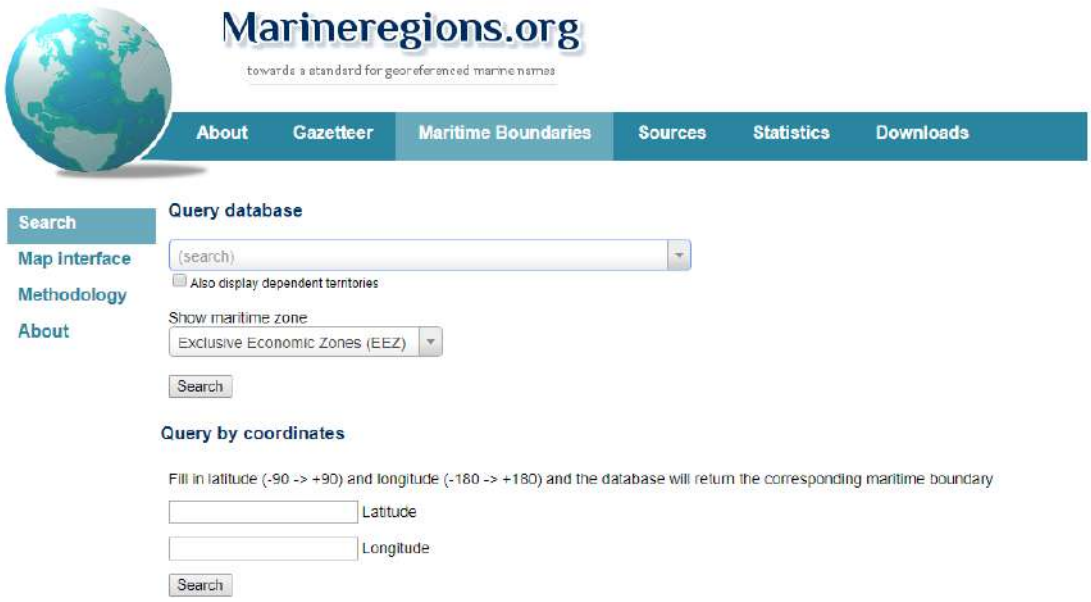
Further information: Horizontal datum: WGS 84 geographic
Vertical datum: sea level.

Website: https://www.ngdc.noaa.gov/mgg/global/global.html

Introduction document: https://data.nodc.noaa.gov/cgi-bin/iso?id=gov.noaa.ngdc.mgg.dem:316

ID: OE-002

Name: **Marine Regions**



Component: Spatial units

Data format: SHP/ GML

Status: Ongoing

Acquisition method: N/A

Data resolution: N/A

Data available: Maritime Boundaries, including EEZ, global sea area map
The purpose of Marine Regions is therefore to create a standard, relational list of geographic names, coupled with information and maps of the geographic location of these features. This will improve access and clarity of the different geographic, marine names such as seas, sandbanks, ridges and bays and display univocally the boundaries of marine biogeographic or managerial marine areas.

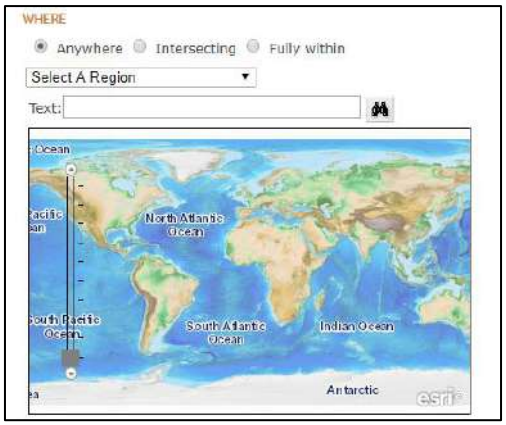
Further information: Marine Regions is a standard list of marine georeferenced place names and areas. It integrates and serves geographic information from the VLIMAR Gazetteer and the MARBOUND database and proposes a standard of marine georeferenced locations, boundaries and regions

Website: http://www.marineregions.org/sources.php

Introduction document: http://www.marineregions.org/

ID: OE-003

Name: **NOAA - Coral Reef Information System (CoRIS)**



Component: Ocean extent

Data format: Portal (See each dataset)

Status: Ongoing

Acquisition method: In situ data, satellite data, and publications

Data resolution: N/A

Data available:

- Benthic habitat maps, Environmental Sensitivity Index maps, bathymetry, shoreline, and backscatter data;
- Coastal Change and Analysis data, LiDAR and IfSAR data, satellite data and products, remotely sensed imagery and aerial photography;
- Coastal and marine observational data including Real time tides and currents data, and biological survey data including fish, coral, algae, and invertebrates.
- Journal articles and documents that relay CRCP program and policy information, descriptions of the state of corals, and strategies for preserving coral ecosystems

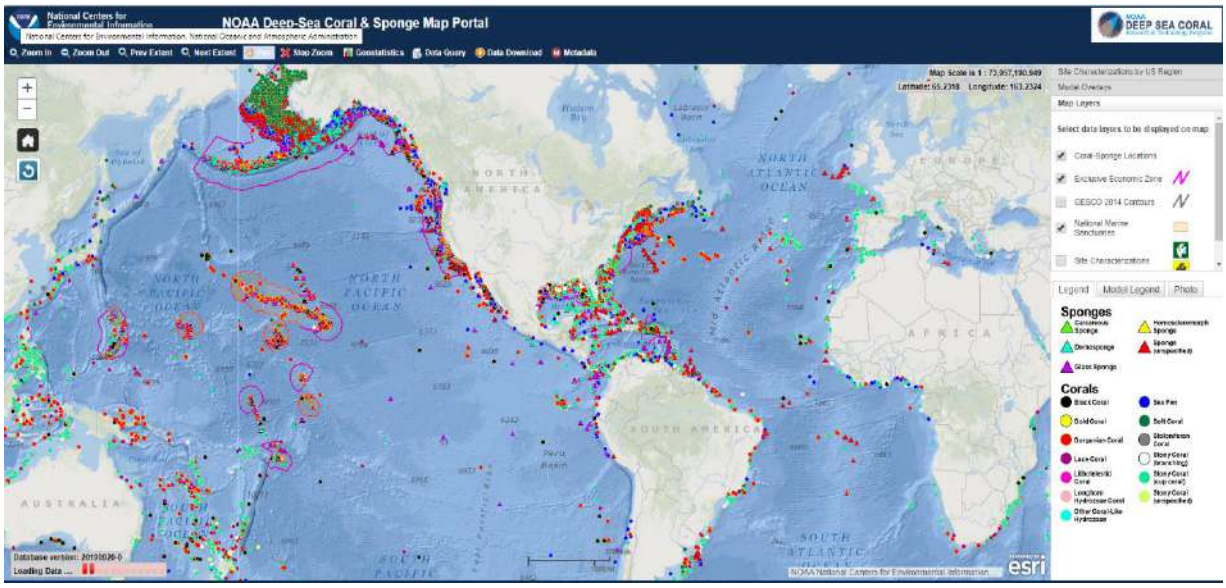
Further information: NOAA Coral Reef activities include coral reef mapping, monitoring and assessment; natural and socioeconomic research and modeling; outreach and education; and management and stewardship.

Website: https://www.coris.noaa.gov/
https://www.coris.noaa.gov/search/catalog/main/home.page

Introduction document:

ID: OE-004

Name: **NOAA - Deep Sea Coral Data Portal (DSCRTP)**



Component: Ocean extent

Data format: Portal (HTML/ CSV / JSON/ KML)

Status: Ongoing

Acquisition method: Historical records from samples and observations collected during deep-water in situ surveys

Data resolution: N/A

Data available: Deep-sea coral and sponge data, images, and technical reports

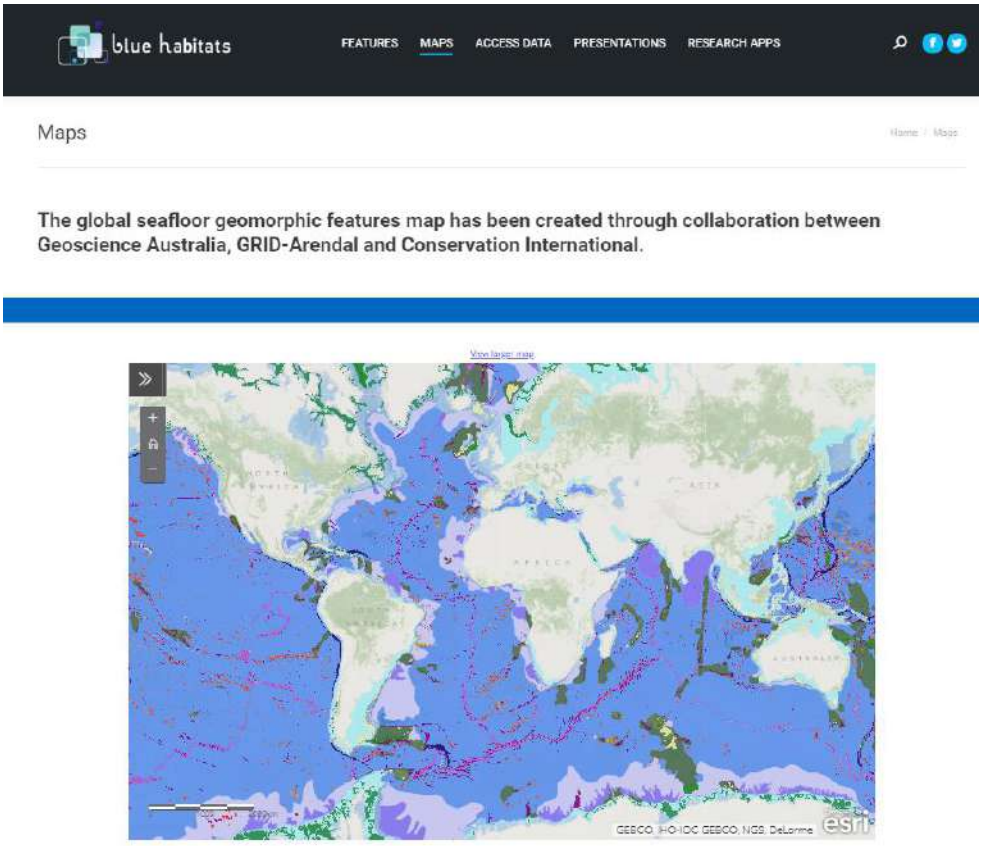
Further information: The database schema accommodates both linear (trawls, transects) and points data (samples, observations). The schema captures information in 95 fields across eight main categories related to surveys (e.g. cruises or expeditions), events (e.g. dives or transects), observations (e.g. specimens or images), as well as taxonomic identification, environment, occurrence details, metadata and record-keeping information.

Website: https://deepseacoraldata.noaa.gov/
https://www.ncei.noaa.gov/maps/deep-sea-corals/mapSites.htm

Introduction document: https://data.nodc.noaa.gov/coris/library/NOAA/CRCP/other/other_crcp_publications/DeepSeaCoralRT/Intro_Natl_DB_for_DSCS.pdf

ID: OE-005

Name: **Blue Habitats**



Component: Ocean extent

Data format: SHP/ Figures

Status: 2014

Acquisition method: N/A

Data resolution: Not mentioned

Data available: A map of the global distribution of seafloor geomorphic features

Further information: A portal for information on the global distribution of marine 'blue' habitats. Knowledge on the distribution of blue habitats is an important input into ocean management, marine spatial planning and biodiversity conservation.

Website: http://www.bluehabitats.org/?page_id=9

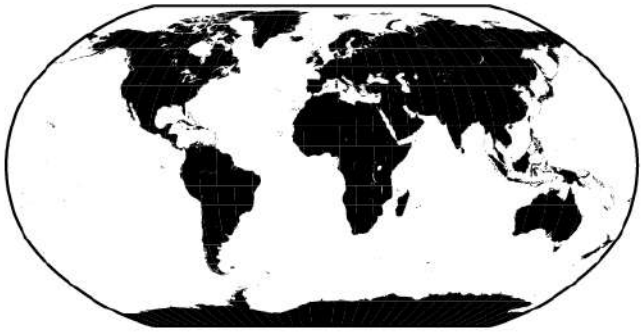
Introduction document:

ID: OE-006

Name: **A Global Self-consistent, Hierarchical, High-resolution Geography Database (GSHHG)**

GSHHG

A Global Self-consistent, Hierarchical, High-resolution Geography Database



Version 2.3.7 Released June 15, 2017

GSHHG is developed and maintained by

Paul Wessel, SOEST, University of Hawai'i, Honolulu, HI.
Walter H. F. Smith, NOAA Geosciences Lab, National Ocean Service, Silver Spring, MD.

Component: Ocean extent

Data format: NetCDF/ SHP/ Native binary files

Status: Ongoing (newest version: Version 2.3.7 Released June 15, 2017)

Acquisition method: Historical data

Data resolution:

- full resolution: Original (full) data resolution.
- high resolution: About 80 % reduction in size and quality.
- intermediate resolution: Another ~80 % reduction.
- low resolution: Another ~80 % reduction.
- crude resolution: Another ~80 % reduction.

Data available: A high-resolution geography data set.

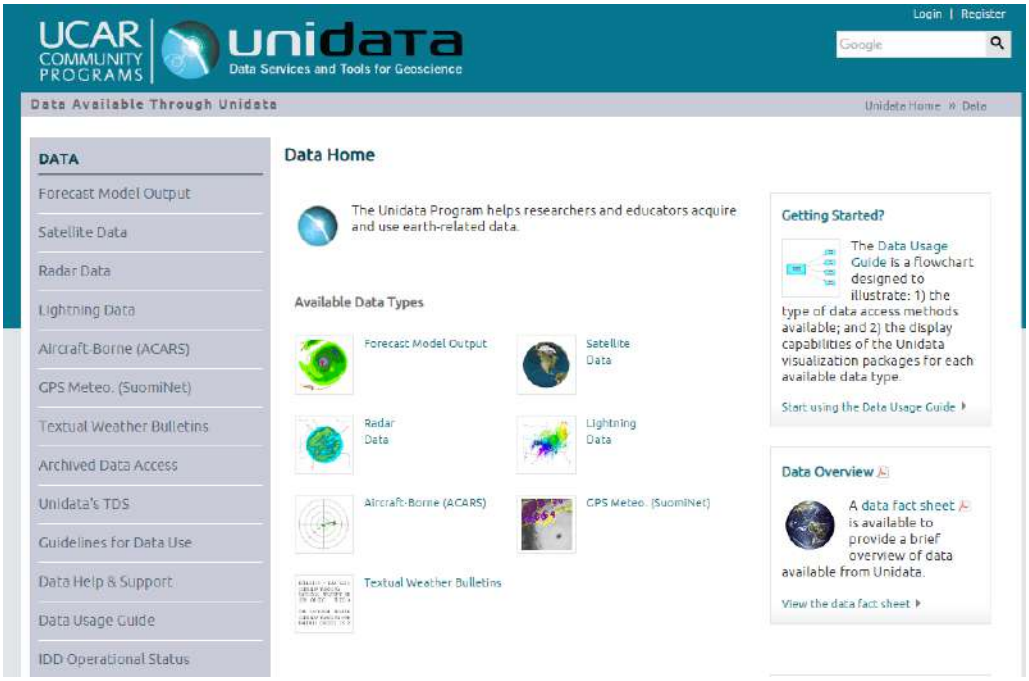
Further information: This dataset was amalgamated from three databases in the public domain:
World Vector Shorelines (WVS).
CIA World Data Bank II (WDBII).
Atlas of the Cryosphere (AC).

Website: https://www.soest.hawaii.edu/pwessel/gshhg/

Introduction document:

ID: OE-007

Name: **Unidata**



Component: Ocean extent

Data format: NetCDF

Status: Ongoing

Acquisition method: Historical data

Data resolution: See each dataset

Data available: Geographical boundaries

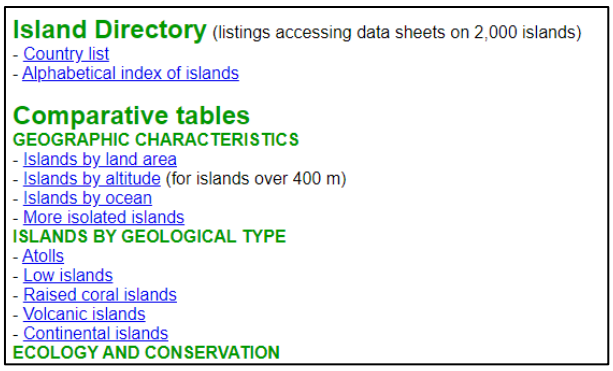
Further information:

Website: https://www.unidata.ucar.edu/data/

Introduction document: https://www.unidata.ucar.edu/publications/factsheets/current/factsheet_data.pdf

ID: OE-008

Name: **Island Directory**



Component: Ocean extent

Data format: Website

Status: Uncertain

Acquisition method: Information describtion

Data resolution: N/A

Data available: This Island Directory provides an annotated list of nearly 2,000 of the significant islands of the world. Several criteria were used to determine how much detail is provided for the selected islands.

The format has been designed to summarize many kinds of information to give an overview of the geographic, ecological and human interest of islands. Where the data available are sufficient, a variety of indicators are used to make listings and comparisons of islands easier. The size of each entry has been adjusted to the amount of data entered.

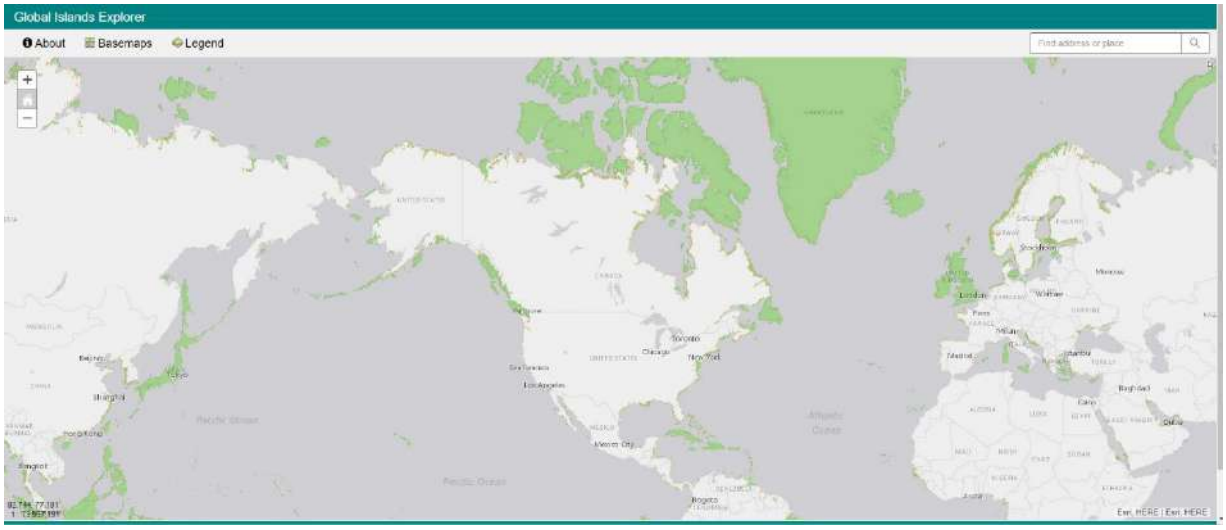
Further information:

Website: http://islands.unep.ch/isldir.htm

Introduction document:

ID: OE-009

Name: **Global Islands Explorer (GIE) Data: Global Shoreline Vector (GSV) and Global Ecological Coastal Units (ECUs)**



Component: Ocean extent

Data format: Online Viewer/ Map

Status: Ongoing

Acquisition method: Uncertain

Data resolution: N/A

Data available: This database includes 340,691 islands, which can be displayed over a number of backdrops including satellite imagery, topographic base maps, light and dark background canvas, etc. A query of any island returns its name (in English and when available - over 60,000 islands currently have name attributes), size, size class (continental mainland, large island, or small island), length of coastline, and the tectonic plate to which it is attached.

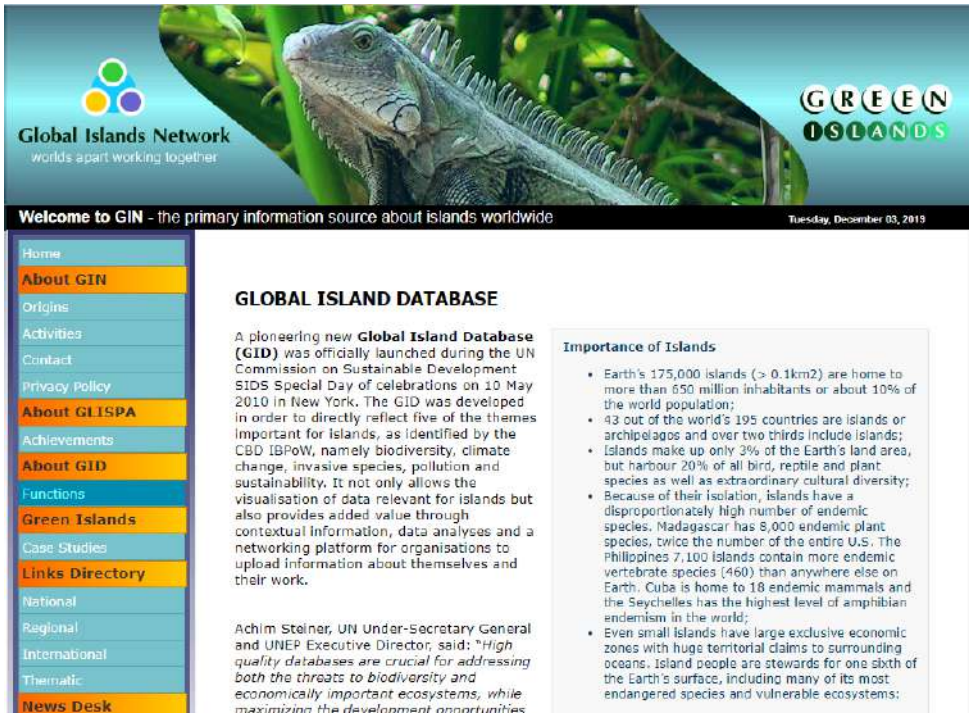
Further information:

Website: Introductio: https://rmgsc.cr.usgs.gov/gie/
Online Viewer: https://rmgsc.cr.usgs.gov/gie/gie.shtml
Data download: https://rmgsc.cr.usgs.gov/outgoing/ecosystems/Global/

Introduction document:

ID: OE-010

Name: **Global Island Database (GID)**



Component: Ocean extent

Data format: N/A

Status: Ongoing (since 2010)

Acquisition method: N/A

Data resolution: N/A

Data available: This database reflects five of the themes important for islands, as identified by the CBD IBPoW, namely biodiversity, climate change, invasive species, pollution and sustainability.

GID integrated information on 70,000 islands for use in conjunction with Google Maps.

UNEP-WCMC added 37 other spatial datasets including one on invasive species in the Pacific Islands.

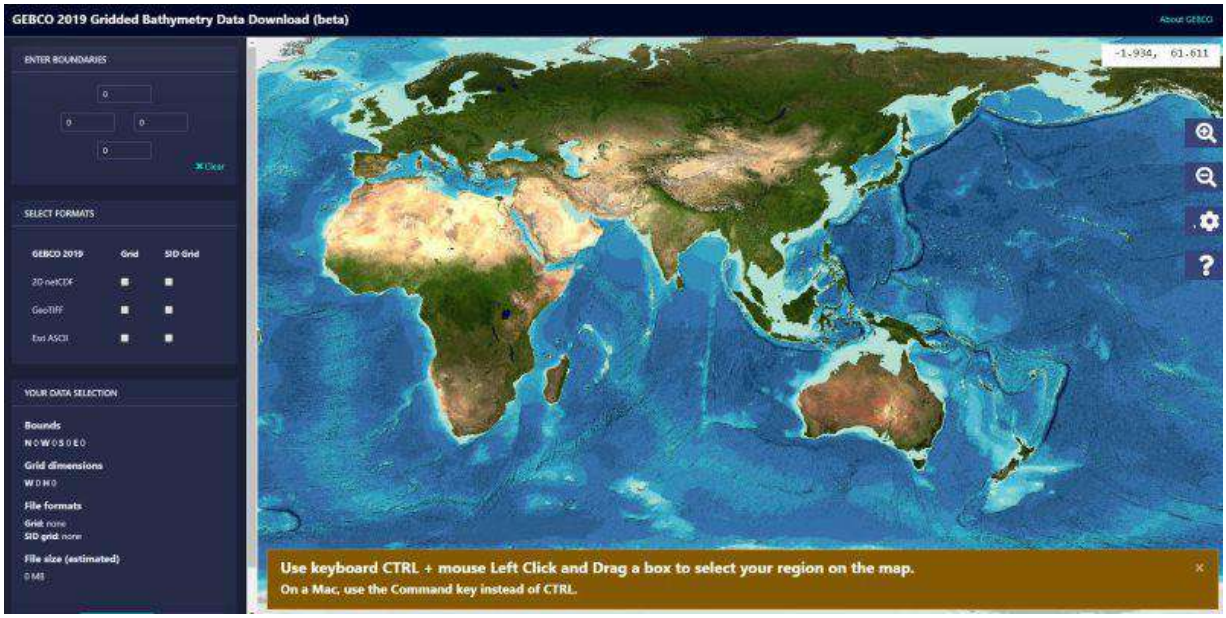
Further information:

Website: http://www.globalislands.net/about/gid_functions.php

Introduction document:

ID: OE-011

Name: **International Hydrographic Organization(IHO) & UNESCO/IPC - General Bathymetric Chart of the Oceans(GEBCO)**



Component: Ocean extent

Data format: SHP/ NetCDF /GeoTiff/ ASCII raster

Status: Ongoing (since 1903)

Acquisition method: Historical data, satellite data and modelled data

Data resolution: GEBCO One Minute Grid (2008）：one arc-minute
GEBCO_2014 (2015)：30 arc-seconds
GEBCO_2019: 15 arc-second grid

Data available: Bathymetry

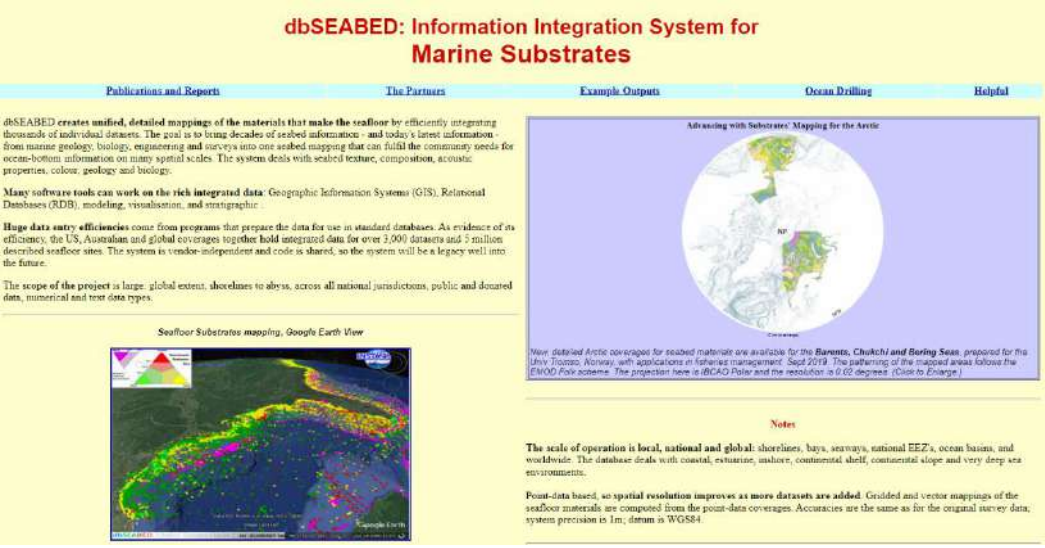
Further information: GEBCO aims to provide the most authoritative, publicly available bathymetry data sets for the world's oceans.

Website: https://www.gebco.net/

Introduction document:

ID: OE-012

Name: **dbSEABED**



Component: Ocean extent

Data format: ASCII/ LYR/ QML/ AVL

Status: Ongoing

Acquisition method: Historical data and modelled data (integrated data for over 3,000 datasets and 5 million described seafloor sites)

Data resolution: See each dataset (system precision is 1m)

Data available: The scale of operation is local, national and global: shorelines, bays, seaways, national EEZ's, ocean basins, and worldwide. The database deals with coastal, estuarine, inshore, continental shelf, continental slope and very deep sea environments.

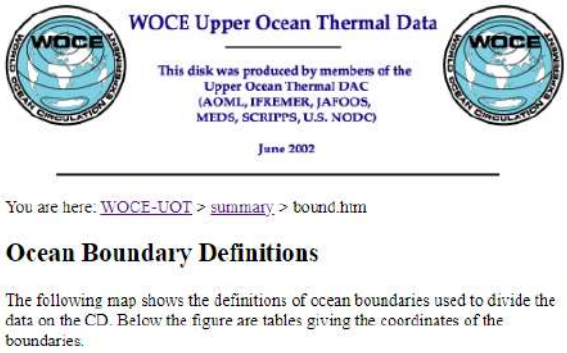
Further information: dbSEABED creates unified, detailed mappings of the materials that make the seafloor by efficiently integrating thousands of individual datasets. The goal is to bring decades of seabed information - and today's information - from marine geology, biology, engineering and surveys into one seabed mapping that can fulfill the community needs for ocean-bottom information on many spatial scales. The system deals with seabed texture, composition, acoustic properties, colour, geology and biology.

Website: https://instaar.colorado.edu/~jenkinsc/dbseabed/

Introduction document: http://instaar.colorado.edu/~jenkinsc/dbseabed/db9_outputs.pdf

ID: OE-013

Name: **Marine Regions**



WOCE Upper Ocean Thermal Data

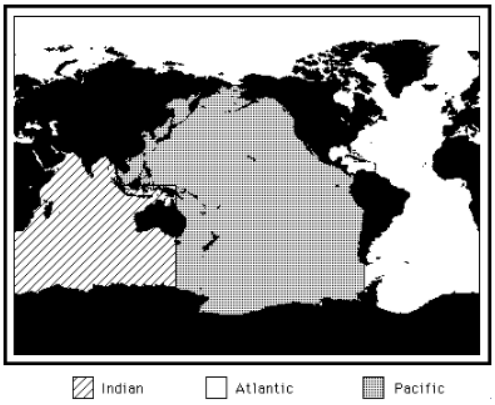
This disk was produced by members of the Upper Ocean Thermal DAC (AOML, IFREMER, JAFOOS, MEDS, SCRIPPS, U.S. NODC)

June 2002

You are here: WOCE-UOT > summary > bound.htm

Ocean Boundary Definitions

The following map shows the definitions of ocean boundaries used to divide the data on the CD. Below the figure are tables giving the coordinates of the boundaries.



Component: Ocean extent

Data format: Location/ Map

Status: Finished (2002)

Acquisition method: N/A

Data resolution: N/A

Data available: This dataset provides geographical definition for the boundaries of Pacific, Atlantic and Indian Ocean

Further information:

Website: https://www.nodc.noaa.gov/woce/woce_v3/wocedata_1/woce-uot/summary/bound.htm

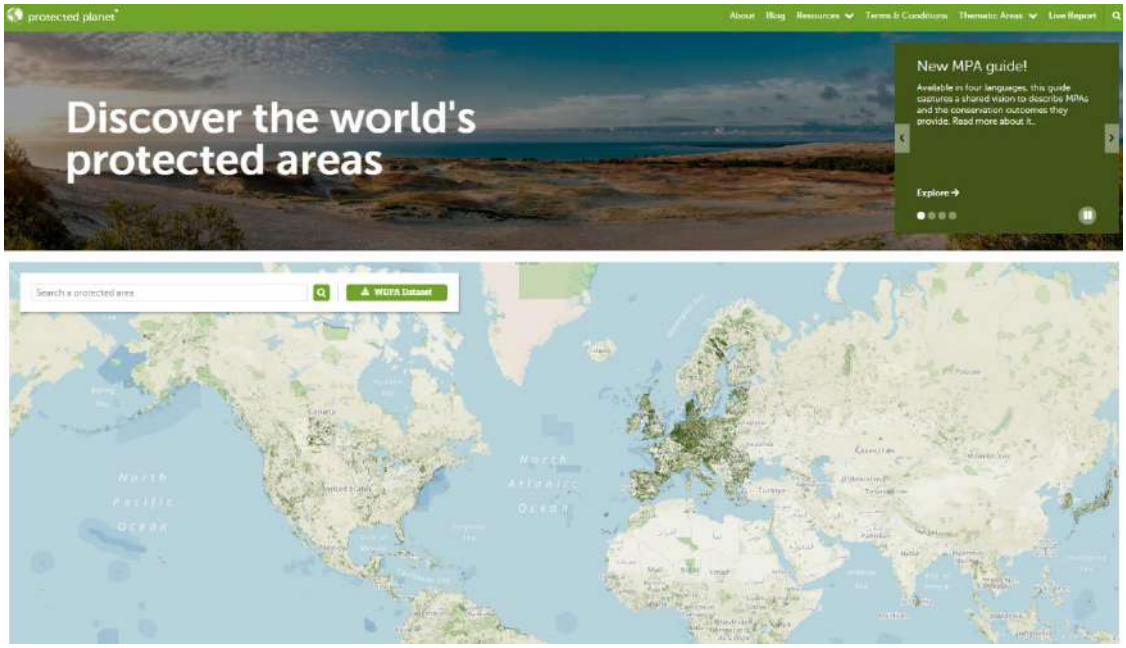
Introduction document:

Section 3

Use (designated)

ID: DU-001

Name: **UNEP-WCMC & IUCN - Marine Protected Planet & MPAtlas**



Component: Use (designated)

Data format: CSV/ SHP/ PDF

Status: Ongoing (since 2010)

Acquisition method: Updated monthly with submissions from governments, non-governmental organizations, landowners and communities

Data resolution: N/A

Data available: Marine protected area

Further information: The most up to date and complete source of information on protected areas.
Main projection: WGS84, Mollweide projection

Website: https://www.protectedplanet.net/marine
http://www.mpatlas.org/

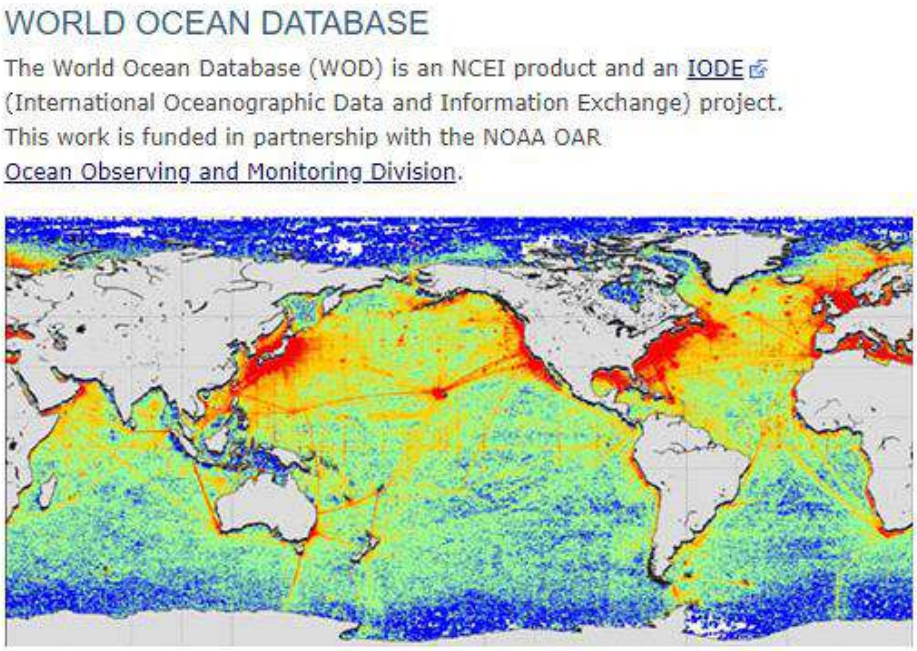
Introduction document: http://pp-import-production.s3.amazonaws.com/WDPA_Manual_1_5.pdf

Section 4

Ocean condition

ID: OC-001

Name: **NOAA - World Ocean Database (WOD)**



Component: Ocean condition

Data format: NetCDF

Status: Ongoing (since 1773)
Newest version: World Ocean Database 2018

Acquisition method: In situ data

Data resolution: See each dataset

Data available: The World Ocean Database (WOD) is a collection of scientifically quality-controlled ocean profile and plankton data that includes measurements of temperature, salinity, oxygen, phosphate, nitrate, silicate, chlorophyll, alkalinity, pH, pCO2, TCO2, Tritium, Δ13Carbon, Δ14Carbon, Δ18Oxygen, Freon, Helium, Δ3Helium, Neon, and plankton.

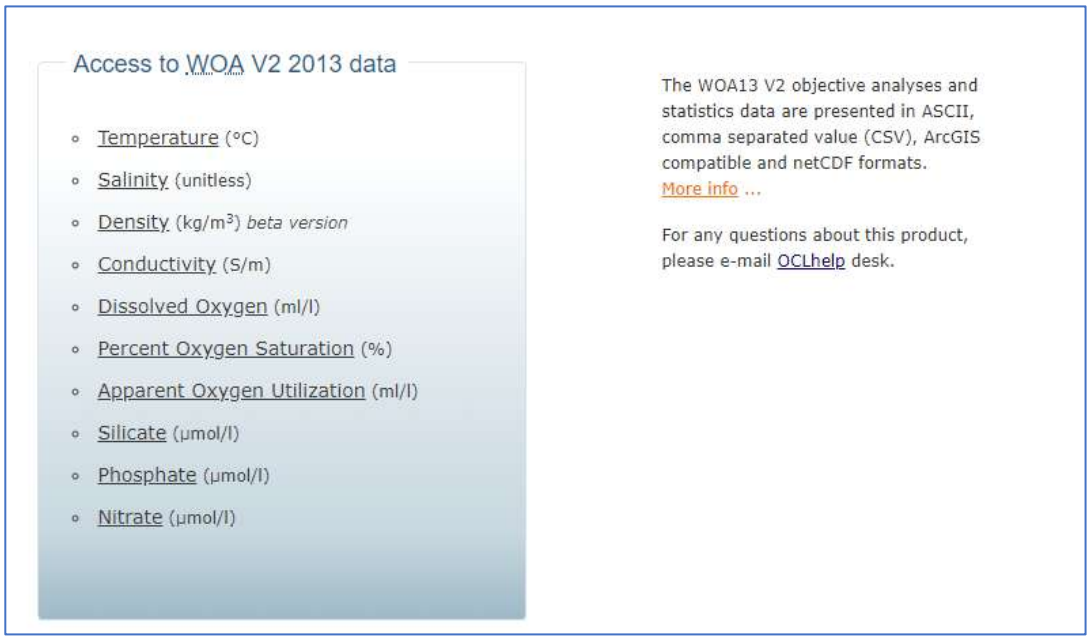
Further information: It is the most comprehensive and common ocean database, including over 11 datasets.

Website: https://www.nodc.noaa.gov/OC5/WOD/pr_wod.html

Introduction document: https://data.nodc.noaa.gov/woa/WOD/DOC/wod_intro.pdf

ID: OC-002

Name: **NOAA - World Ocean Atlas 2013 Version 2**



Component: Ocean condition

Data format: ASCII/ CSV/ SHP/ NetCDF

Status: Ongoing (since 1995)

Acquisition method: In situ data

Data resolution: 1/4°, 1° (objectively analyzed), and 5° (quality control)

Data available: This dataset includes in situ temperature, salinity, dissolved oxygen, Apparent Oxygen Utilization (AOU), percent oxygen saturation, phosphate, silicate, and nitrate at standard depth levels for annual, seasonal, and monthly compositing periods for the World Ocean.

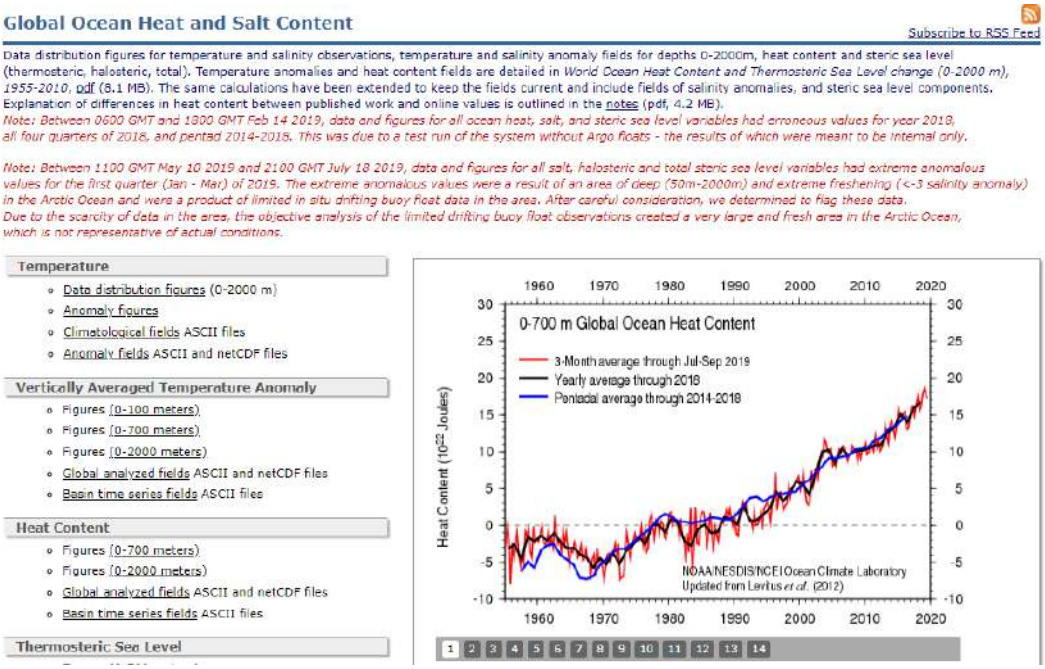
Further information: The most comprehensive and common ocean atlas dataset

Website: https://www.nodc.noaa.gov/OC5/woa13/

Introduction document: https://www.nodc.noaa.gov/OC5/woa13/readwoa13.html

ID: OC-003

Name: **NOAA - Global Ocean Heat and Salt Content**



Component: Ocean condition

Data format: Figures/ ASCII/ NetCDF

Status: Ongoing (since 1955)

Acquisition method: Historical data, modelled data, in situ corrected bathythermograph data, and Argo data

Data resolution: N/A

Data available: Data distribution figures for temperature and salinity observations, temperature and salinity anomaly fields for depths 0-2000m, heat content and steric sea level (thermosteric, halosteric, total).

Further information: These estimates are based on historical data not previously available, additional modern data, and bathythermograph data corrected for instrumental biases. They have also used Argo data corrected by the Argo DAC if available and used uncorrected Argo data if no corrections were available at the time we downloaded the Argo data.

Website: https://www.nodc.noaa.gov/OC5/3M_HEAT_CONTENT/

Introduction document:

ID: OC-004

Name: **NOAA - NCEI Ocean Surface Topography Mission (OSTM) /Jason-2 and Jason-3 Satellite Products Archive**

Component: Ocean condition

Data format: NetCDF

Status: Ongoing (since 1985)

Acquisition method: Satellite data (near Real time data)

Data resolution: Mean Sea Surface: Spatial resolution Regular grid with a 1/30° (2 minutes) spacing;

Mean Dynamic Topography: Spatial resolution Regular grid with a 1/4° (15 minutes) spacing;

Bathymetry: 2 minutes

Data available: A series of ocean altimeter missions designed to observe ocean circulation, sea level rise, and wave heights, mean sea surface, mean dynamic topography, geoid, bathymetry, ocean tides, wind speed

Further information:

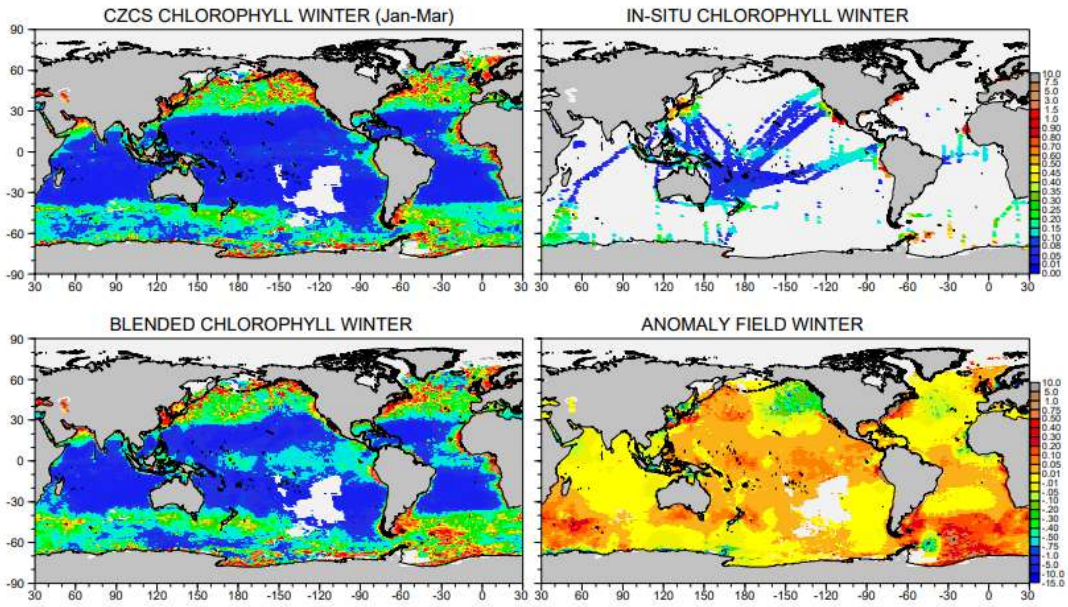
Website: https://www.nodc.noaa.gov/SatelliteData/jason/

Introduction document: https://www.nodc.noaa.gov/media/pdf/jason2/j3_user_handbook.pdf

https://www.nodc.noaa.gov/media/pdf/jason2/j2_user_handbook.pdf

ID: OC-005

Name: **NOAA - Blended In Situ-CZCS Chlorophyll Data Set**



Component: Ocean condition

Data format: ASCII

Status: Finished (data from 1978 to 1986)

Acquisition method: In situ data and satellite data

Data resolution: Spatial resolution: 1° x 1°

Data available: Chlorophyll

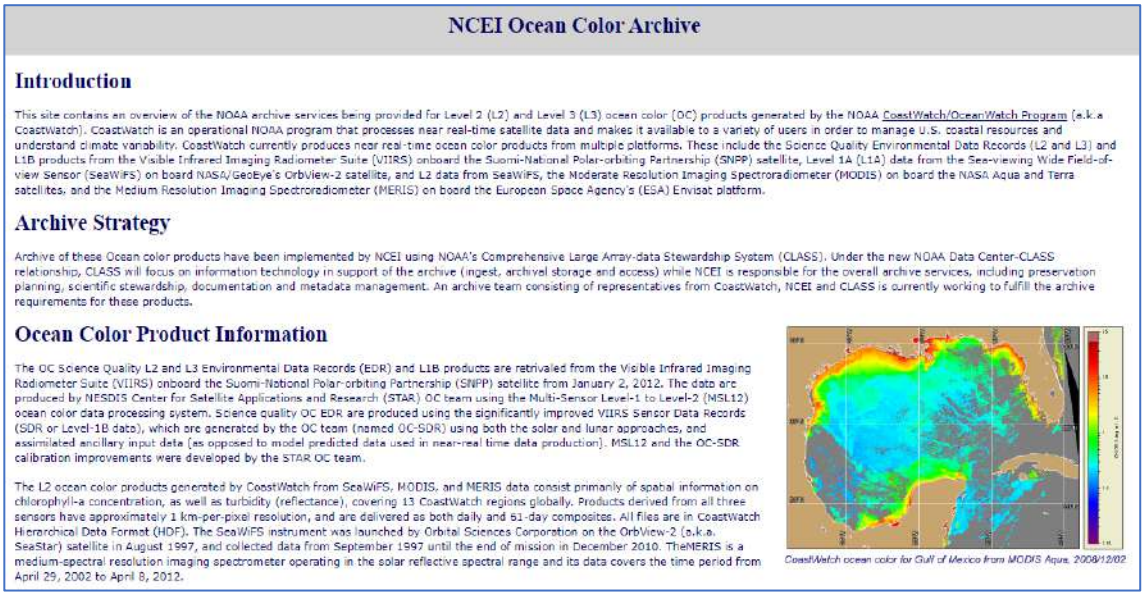
Further information: The historical archives of in situ (National Oceanographic Data Center) and satellite (Coastal Zone Color Scanner) chlorophyll data were combined using the blended analysis method of Reynolds [1988] in an attempt to construct an improved climatological seasonal representation of global chlorophyll distributions.

Website: https://www.nodc.noaa.gov/OC5/WOA98/pr_chlr.html

Introduction document: https://data.nodc.noaa.gov/woa/PUBLICATIONS/blend.pdf

ID: OC-006

Name: **NOAA - NCEI Ocean Color Archive**



NCEI Ocean Color Archive

Introduction

This site contains an overview of the NOAA archive services being provided for Level 2 (L2) and Level 3 (L3) ocean color (OC) products generated by the NOAA CoastWatch/OceanWatch Program (a.k.a CoastWatch). CoastWatch is an operational NOAA program that processes near real-time satellite data and makes it available to a variety of users in order to manage U.S. coastal resources and understand climate variability. CoastWatch currently produces near real-time ocean color products from multiple platforms. These include the Science Quality Environmental Data Records (L2 and L3) and L1B products from the Visible Infrared Imaging Radiometer Suite (VIIRS) onboard the Suomi-National Polar-orbiting Partnership (SNPP) satellite, Level 1A (L1A) data from the Sea-viewing Wide Field-of-view Sensor (SeaWiFS) on board NASA/GeoEye's OrbView-2 satellite, and L2 data from SeaWiFS, the Moderate Resolution Imaging Spectroradiometer (MODIS) on board the NASA Aqua and Terra satellites, and the Medium Resolution Imaging Spectroradiometer (MERIS) on board the European Space Agency's (ESA) Envisat platform.

Archive Strategy

Archive of these Ocean color products have been implemented by NCEI using NOAA's Comprehensive Large Array-data Stewardship System (CLASS). Under the new NOAA Data Center-CLASS relationship, CLASS will focus on information technology in support of the archive (ingest, archival storage and access) while NCEI is responsible for the overall archive services, including preservation planning, scientific stewardship, documentation and metadata management. An archive team consisting of representatives from CoastWatch, NCEI and CLASS is currently working to fulfill the archive requirements for these products.

Ocean Color Product Information

The OC Science Quality L2 and L3 Environmental Data Records (EDR) and L1B products are retrivaled from the Visible Infrared Imaging Radiometer Suite (VIIRS) onboard the Suomi-National Polar-orbiting Partnership (SNPP) satellite from January 2, 2012. The data are produced by NESDIS Center for Satellite Applications and Research (STAR) OC team using the Multi-Sensor Level-1 to Level-2 (MSL12) ocean color data processing system. Science quality OC EDR are produced using the significantly improved VIIRS Sensor Data Records (SDR or Level-1B data), which are generated by the OC team (named OC-SDR) using both the solar and lunar approaches, and assimilated ancillary input data (as opposed to model predicted data used in near-real time data production). MSL12 and the OC-SDR calibration improvements were developed by the STAR OC team.

The L2 ocean color products generated by CoastWatch from SeaWiFS, MODIS, and MERIS data consist primarily of spatial information on chlorophyll-a concentration, as well as turbidity (reflectance), covering 13 CoastWatch regions globally. Products derived from all three sensors have approximately 1 km-per-pixel resolution, and are delivered as both daily and 61-day composites. All files are in CoastWatch Hierarchical Data Format (HDF). The SeaWiFS instrument was launched by Orbital Sciences Corporation on the OrbView-2 (a.k.a. SeaStar) satellite in August 1997, and collected data from September 1997 until the end of mission in December 2010. TheMERIS is a medium-spectral resolution imaging spectrometer operating in the solar reflective spectral range and its data covers the time period from April 29, 2002 to April 8, 2012.

CoastWatch ocean color for Gulf of Mexico from MODIS Aqua, 2008/12/02

Component: Ocean condition

Data format: Hierarchical Data Format (HDF)

Status: Ongoing(since 1997)

Acquisition method: Near-Real time data and satellite data

Data resolution: Spatial resolution: 1 km-per-pixel resolution

Data available: Chlorophyll-a concentration, turbidity (reflectance)

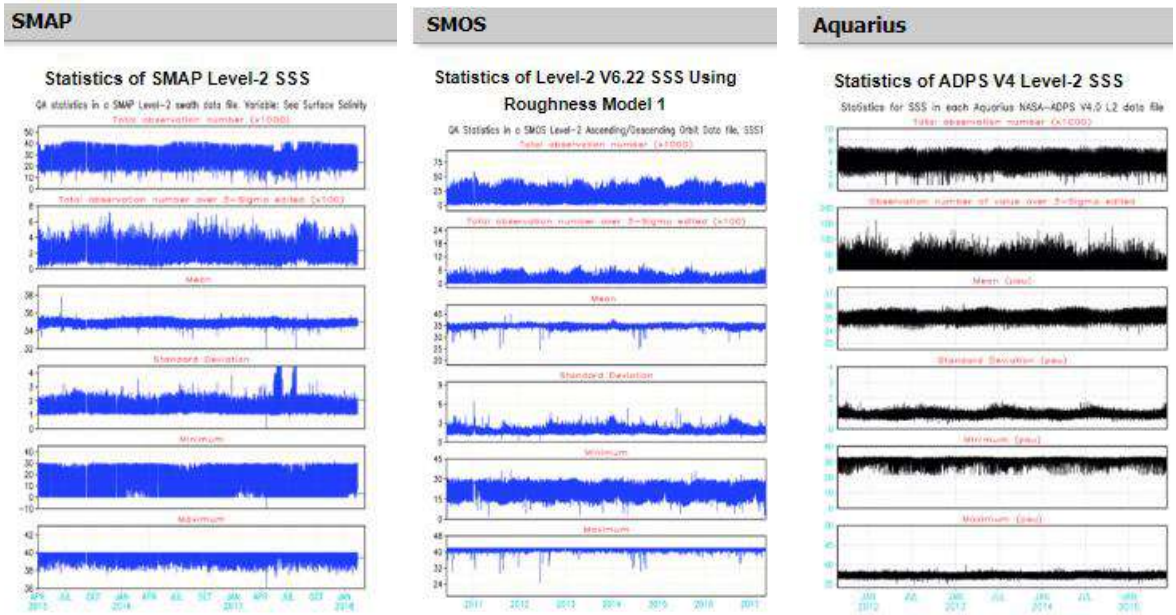
Further information: This study included the Science Quality Environmental Data Records (L2 and L3) and L1B products from the Visible Infrared Imaging Radiometer Suite (VIIRS) onboard the Suomi-National Polar-orbiting Partnership (SNPP) satellite, Level 1A (L1A) data from the Sea-viewing Wide Field-of-view Sensor (SeaWiFS) on board NASA/GeoEye's OrbView-2 satellite, and L2 data from SeaWiFS, the Moderate Resolution Imaging Spectroradiometer (MODIS) on board the NASA Aqua and Terra satellites, and the Medium Resolution Imaging Spectroradiometer (MERIS) on board the European Space Agency's (ESA) Envisat platform.

Website: https://www.nodc.noaa.gov/SatelliteData/OceanColor/

Introduction document:

ID: OC-007

Name: **NOAA - Quality Monitoring on Level-2 Sea Surface Salinity (SSS) Products from SMAP, SMOS and Aquarius Missions**



Component: Ocean condition

Data format: NetCDF

Status: Ongoing

Acquisition method: Satellite data

Data resolution: Spatial resolution: 1°
Temporal resolution:
SMOS data: monthly and 3-day
Aquarius data: monthly and 7-day

Data available: Sea surface salinity (SST)

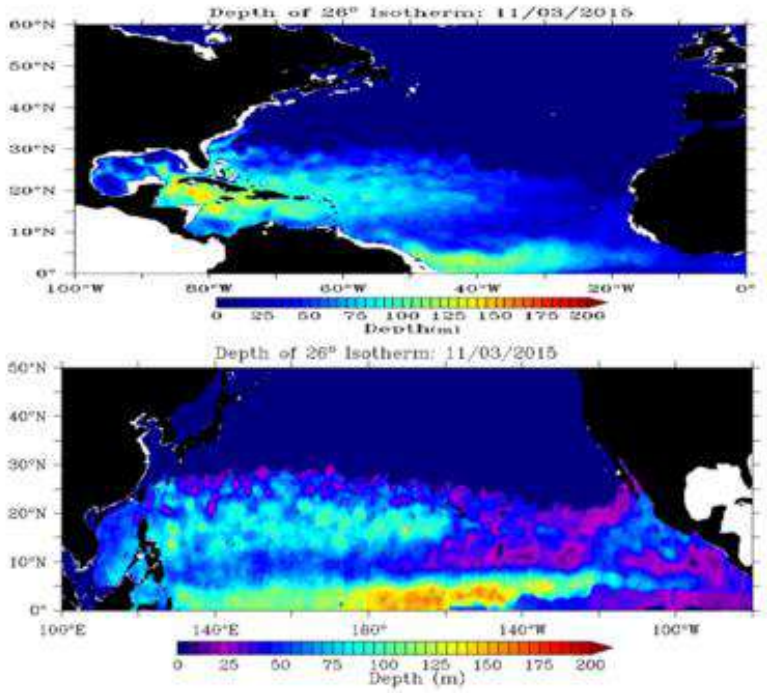
Further information: The data quality monitoring systems (DQMS) for NASA's Soil Moisture Active Passive (SMAP), ESA's Soil Moisture Ocean Salinity (SMOS) and NASA's Aquarius satellites Level-2 products have been developed by the National Centers for Environmental Information (NCEI) Satellite Oceanography team.

Website: https://www.nodc.noaa.gov/SatelliteData/sss/

Introduction document:

ID: OC-008

Name: **NOAA - Satellite Ocean Heat Content Suite (SOHCS)**



Component: Ocean condition

Data format: NetCDF/ ASCII/ GIF

Status: Ongoing (since 2012)

Acquisition method: Satellite data, real-time data

Data resolution: Spatial resolution: 0.25°

Data available: Ocean heat

Further information: The SOHCS product measures the integrated vertical temperature from the sea surface to the depth of the 26°C isotherm.

Website: https://data.nodc.noaa.gov/cgi-bin/iso?id=gov.noaa.nodc:NESDIS-OHC

Introduction document: https://journals.ametsoc.org/doi/full/10.1175/2007WAF2006111.1

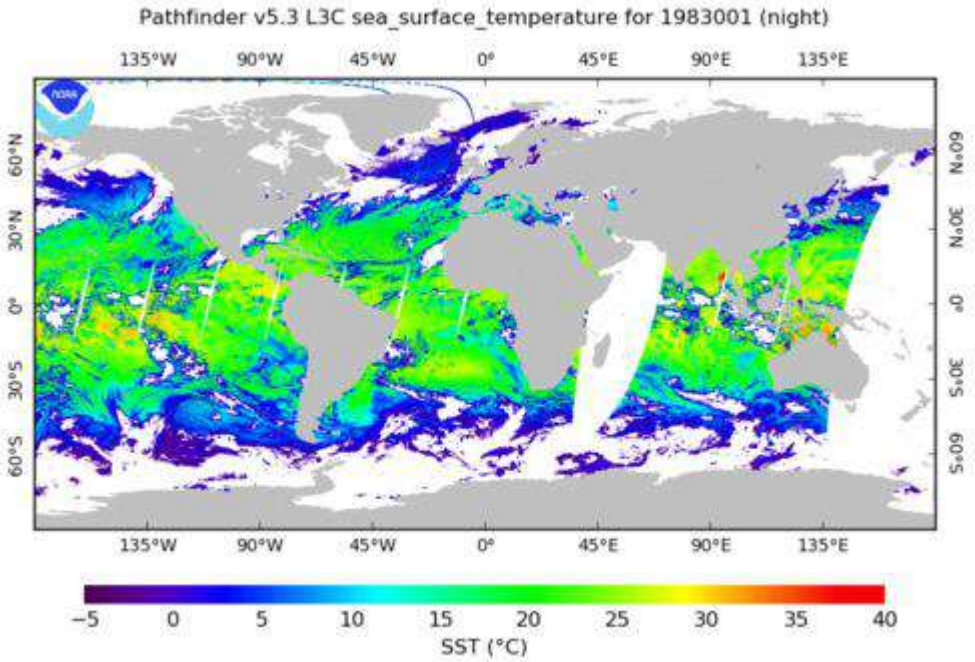
https://journals.ametsoc.org/doi/full/10.1175/2010MWR3189.1

http://www.rsmas.miami.edu/groups/upper-ocean-dynamics/research/ocean-heat-content/

https://www.ospo.noaa.gov/Products/ocean/ocean_heat.html

ID: OC-009

Name: **NOAA - AVHRR Pathfinder version 5.0 and 5.1 4km global sea surface temperature (SST) monthly harmonic climatologies for 1982-2008**



Component: Ocean condition

Data format: Figures(PNG)/ NetCDF

Status: Ongoing (1981)

Acquisition method: Satellite data

Data resolution: Spatial resolution: 1km - 28km

Data available: This dataset provides Sea surface temperature(SST) data from satellite (4km spatial resolution). In addition to climatological sea surface temperature, each file contains standard deviation, sea ice concentration, sea ice concentration error, and land mask information.

This accession also includes a 'classic,' or mean, monthly sea surface temperature climatology derived from the same Pathfinder time series data.

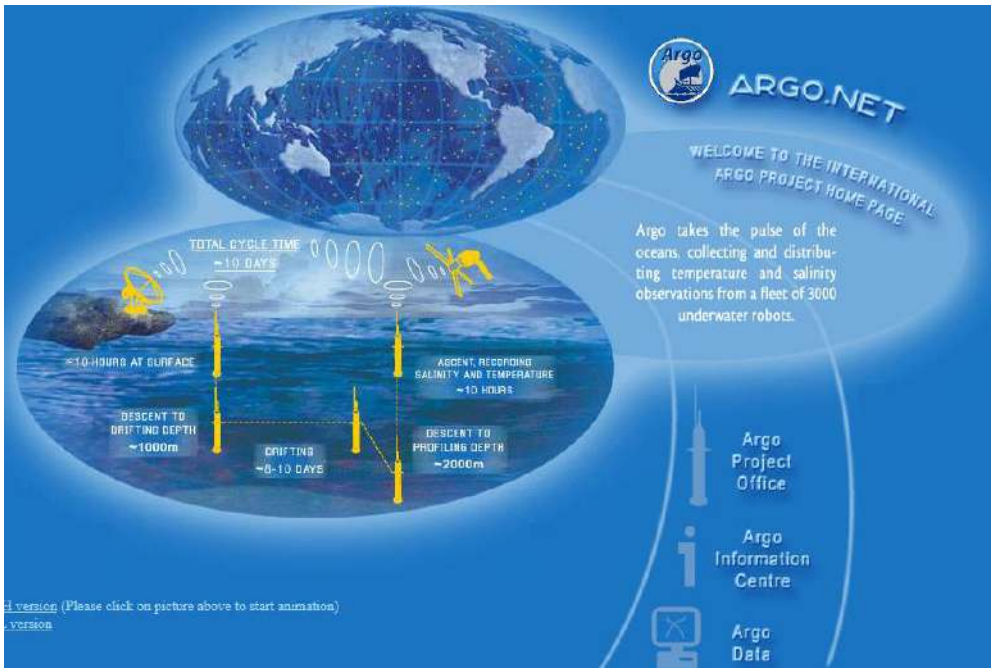
Further information: Data from AVHRR Pathfinder satellite.

Website: https://data.nodc.noaa.gov/cgi-bin/iso?id=gov.noaa.nodc:AVHRR_Pathfinder-NCEI-L3C-v5.3

Introduction document:

ID: OC-010

Name: **Argo**



Component: Ocean condition

Data format: NetCDF/ TESAC/ BUFR/ ASIIC

Status: Ongoing(since 2000)

Acquisition method: In situ data and real-time data

Data resolution: Salinity/ temperature profiles: average 3° x 3° spacing

Data available: Temperature, salinity, oxygen, chlorophyll, conductivity, nitrate, PH, surface and subsurface currents in the upper 2000 m of the ocean

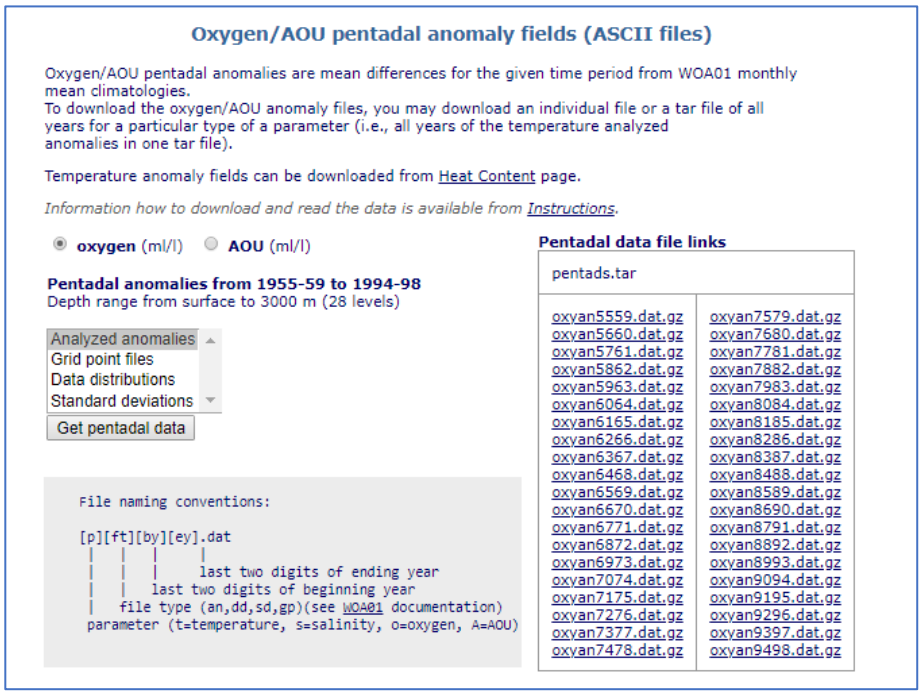
Further information: A global array of 3,800 free-drifting profiling floats
Two Argo Global Data Assembly Centers (GDACs), the U.S. GODAE (Global Ocean Data Assimilation Experiment) Argo server and the French IFREMER (Institute for Research and Exploitation of the Sea) Argo server

Website: http://www.argo.net/
http://www.argo.ucsd.edu/
http://www.jcommops.org/board?t=argo
https://www.nodc.noaa.gov/argo/

Introduction document:

ID: OC-011

Name: **NOAA - Oxygen / Apparent Oxygen Utilization (AOU) Content**



Component: Ocean condition

Data format: ASCII

Status: 1955-1998

Acquisition method: Observational data

Data resolution: Spatial resolution: 1° grid box

Data available: O2, AOU, and heat content in the top 100 m of the world ocean (70° S–70° N) between 1955 and 1998 are included in this dataset.

Further information: Data from WOA

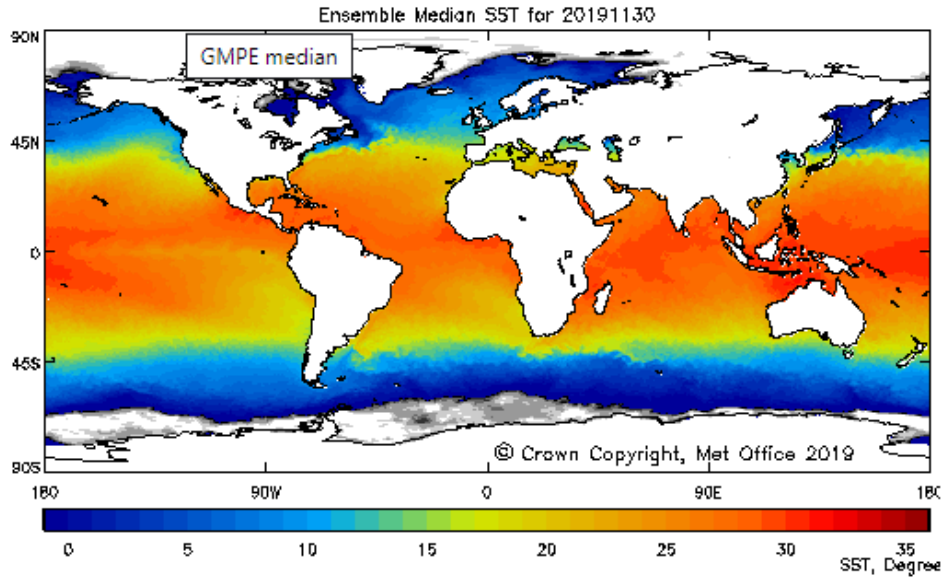
Website: https://www.nodc.noaa.gov/cgi-bin/OC5/PENTAS/anomalydata.pl?parameter=oxy

Introduction document: https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2004GL022286

ID: OC-012

Name: **Group For High Resolution Sea Surface Temperature (GHRSST)**

Latest Multi-Product Ensemble (GMPE) median:



Component: Ocean condition

Data format: Figures/ NetCDF

Status: Ongoing (since 2008)

Acquisition method: Real-time data (30 days or less) and historical SST (older than 30 days)

Data resolution: High resolution

Data available: This dataset provides Sea Surface Temperature (SST) data in satellite swath coordinates (L2P), gridded data (L3), and gap-free gridded products (L4).

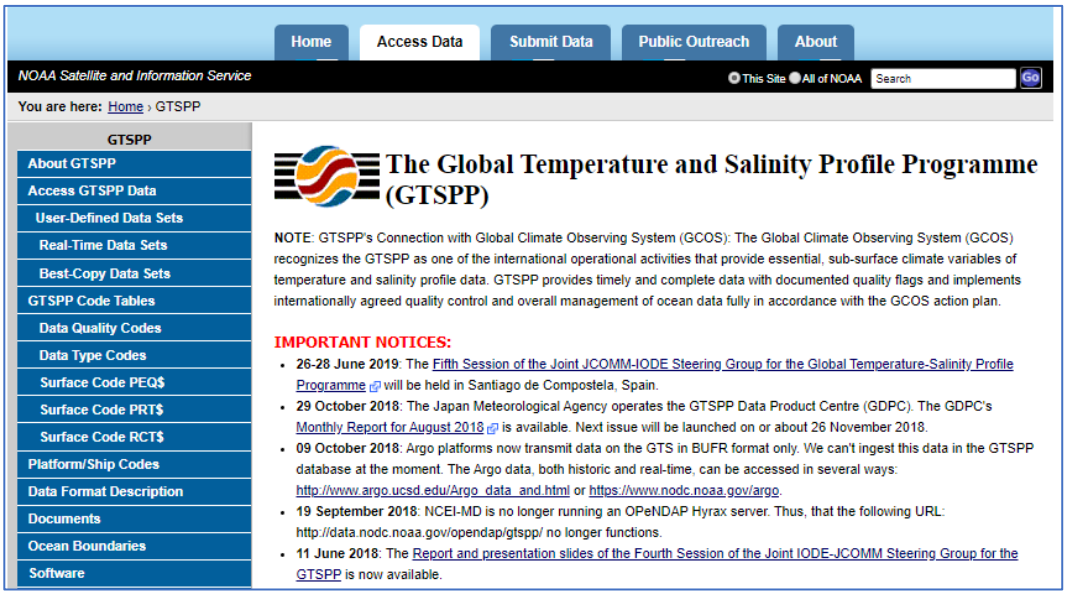
Further information: Gives a detailed definition and classification for SST.

Website: https://www.ghrsst.org/

Introduction document: https://www.ghrsst.org/ghrsst-data-services/services/

ID: OC-013

Name: **Global Temperature and Salinity Profile Programme (GTSPP)**



Component: Ocean condition

Data format: ASCII/ NetCDF

Status: Ongoing (since 1989)

Acquisition method: Near Real-time data (observations within 30 days); non real-time data (observations older than 30 days or data never circulated on the global telecommunication system); quality control and analysis procedures; continuously managed database; shipboard observers (XBTs or CTDs) or automated instruments

Data resolution: Full resolution/ low resolution

Data available: Temperature and salinity

Further information: GTSPP is One of the international operational activities that provide essential, sub-surface climate variables of temperature and salinity profile data. It provides timely and complete data with documented quality flags and implements internationally agreed quality control and overall management of ocean data fully in accordance with the GCOS action plan.
3 types of datasets are accessible:

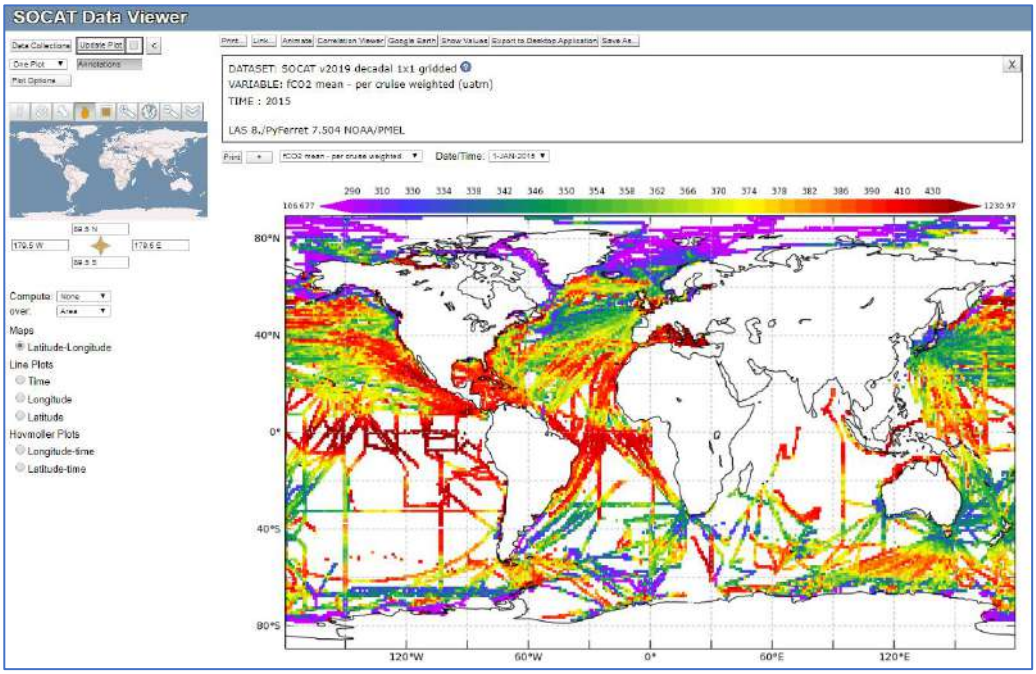
- User-Defined Data Sets (GTSPP Web Interface (GWI))
- Real-Time Data Sets
- Best Copy Data Sets

Website: https://www.nodc.noaa.gov/GTSPP/

Introduction document: https://www.nodc.noaa.gov/GTSPP/document/index.html

ID: OC-014

Name: **GOOS - Surface Ocean CO2 Atlas (SOCAT)**



Component: Ocean condition

Data format: NetCDF/ ASCII/ CSV/ ArcGrid

Status: Ongoing (since 2007)

Acquisition method: Data from observations (V2019 includes 25.7 million observations)

Data resolution: SOCAT v2019: decadal 1x1 gridded

Data available: Surface ocean fCO_2 (fugacity of carbon dioxide), SST, Salinity
SOCAT v2019 (1957 to 2019)

Further information: All publicly available fCO_2 data in a common format for the surface oceans SOCAT enables quantification of the ocean carbon sink and ocean acidification and evaluation of ocean biogeochemical models.

Website: https://www.socat.info/index.php/data-access/

Introduction document:

ID: OC-015

Name: **Copernicus Marine Environment Monitoring Service**

Component: Ocean condition

Data format: See each dataset (NetCDF included)

Status: Ongoing

Acquisition method: Historical and forecast data, satellites, in situ (direct ocean sampling), and numerical models that cover the global ocean

Data resolution: See Copernicus Marine Service Catalogue April 2019

Data available: Temperature, salinity, sea surface height, current velocity, mixed-layer thickness, sea ice, wind, wave, plankton, oxygen, nutrients, primary production, reflectance, turbidity, reflectance, turbidity, transparency, phytoplankton, Ocean Monitoring Indicators (OMIs)

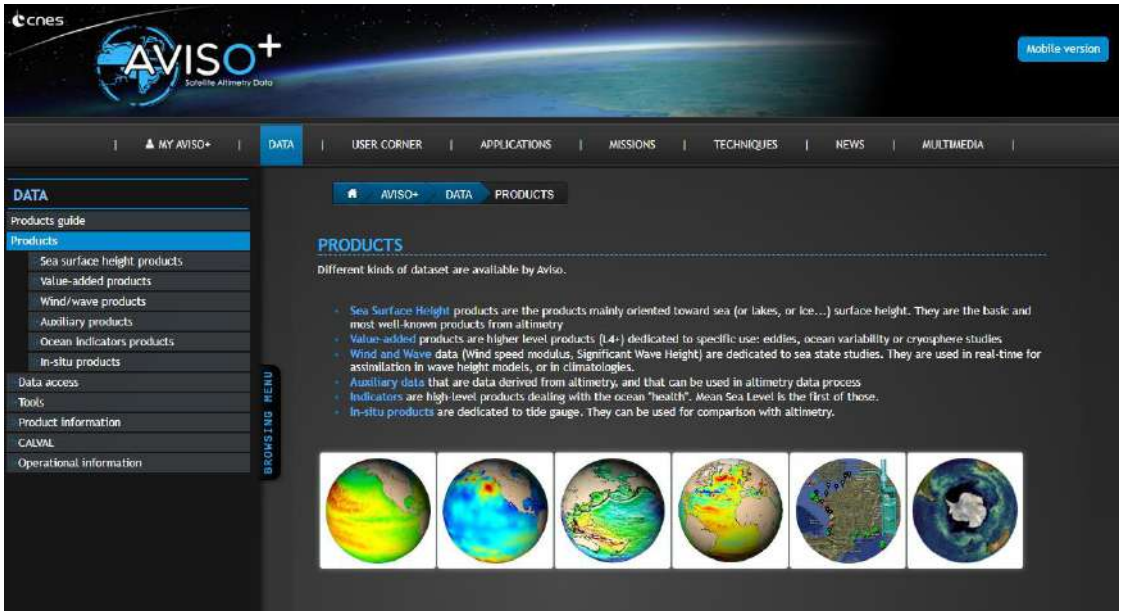
Further information: This database includes many datasets from several satellites.

Website: http://marine.copernicus.eu/

Introduction document: Copernicus Marine Service Catalogue April 2019: http://marine.copernicus.eu/ wp-content/uploads/catalogue-cmems.pdf

ID: OC-016

Name: **CNES - AVISO+ Satellite Altimetry Data**



Component: Ocean condition

Data format: See each dataset (at least includes NetCDF)

Status: Ongoing (since 1992)

Acquisition method: Satellite data

Data resolution: See each dataset

Data available: Altimetry-based data products including sea surface height, sea ice thickness, wave height and wind velocity, tide elevations

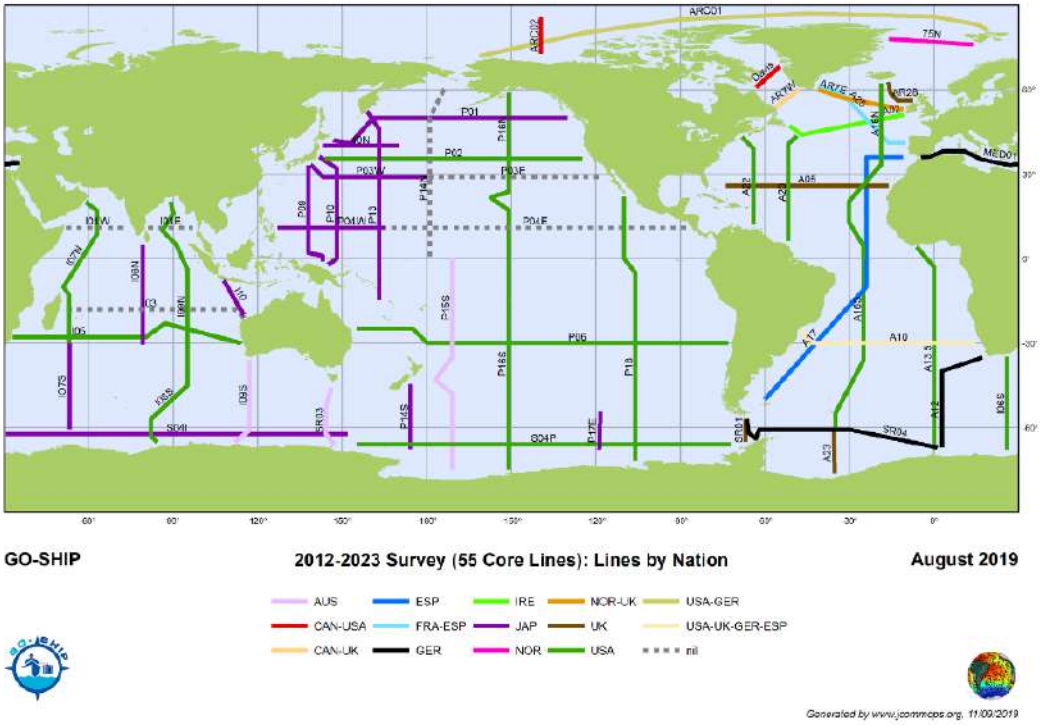
Further information: Aviso: Archiving, Validation and Interpretation of Satellite Oceanographic data.
Aviso distributes satellite altimetry data from Topex/Poseidon, Jason-1, ERS-1 and ERS-2, and EnviSat, and Doris precise orbit determination and positioning products.

Website: https://www.aviso.altimetry.fr/en/data.html

Introduction document: https://www.aviso.altimetry.fr/fileadmin/documents/data/tools/Aviso_EGU_201904.pdf

ID: OC-017

Name: **Global Ocean Ship-based Hydrographic Investigations Program (GO-SHIP)**



Component: Ocean condition

Data format: WHP-Exchange /WOCE/ and NetCDF/ TGM-3M

Status: Ongoing (since 2007)

Acquisition method: Observational data (from cruises)

Data resolution: High-quality, high spatial and vertical resolution
Approximately decadal resolution

Data available: GO-SHIP provides approximately decadal resolution of the changes in inventories of heat, freshwater, carbon, oxygen, nutrients and transient tracers, covering the ocean basins from coast to coast and full depth (top to bottom), with global measurements of the highest required accuracy to detect these changes.

Data are divided into Level 1, 2, and 3.

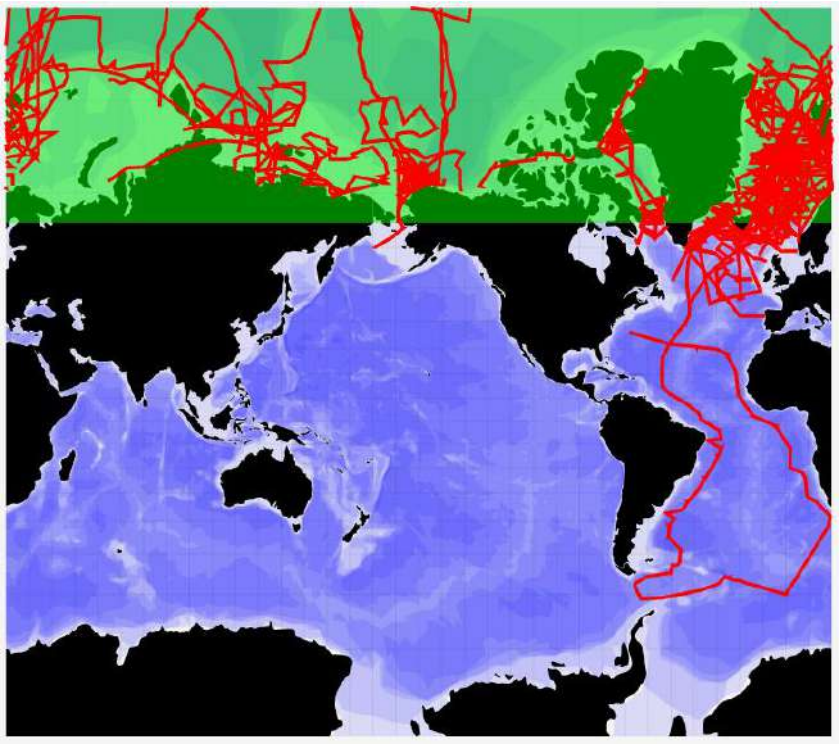
Further information: Data are from ship measurement and seawater sample.

Website: http://www.go-ship.org/DataDirect.html

Introduction document: http://www.go-ship.org/CMCST-3.pdf

ID: OC-018

Name: **CLIVAR and Carbon Hydrographic Data Office (CCHDO)**



Component: Ocean condition

Data format: WHP-Exchange /WOCE/ NetCDF

Status: Ongoing

Acquisition method: Observational data

Data resolution: See each dataset

Data available: The highest possible quality global CTD and hydrographic data.

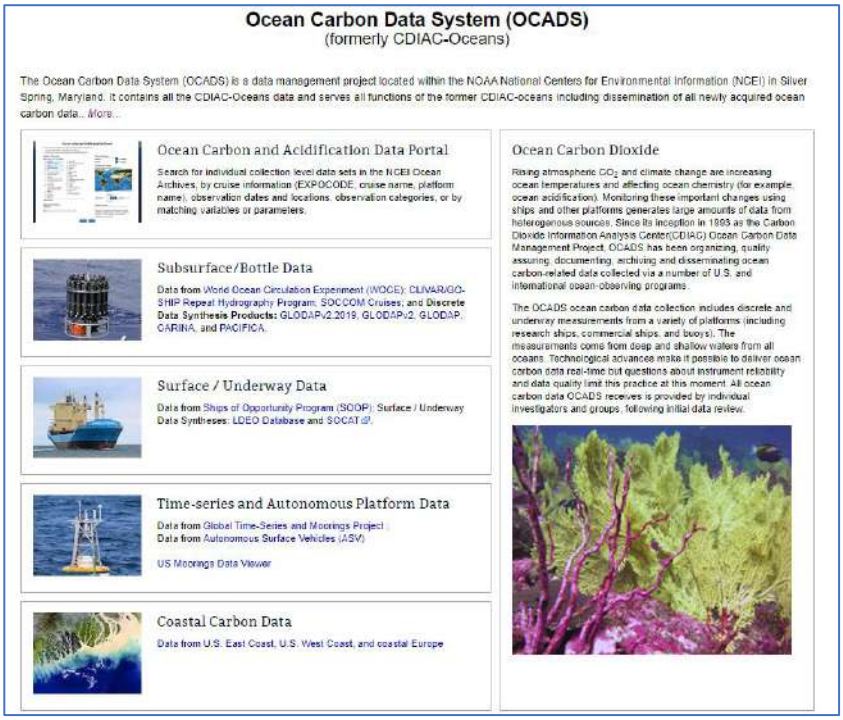
Further information: These data are a product of decades of observations related to the physical characteristics of ocean waters carried out during WOCE, CLIVAR and numerous other oceanographic research programs. It is a comprehensive database of ship-based hydrography investigation.

Website: https://cchdo.ucsd.edu/

Introduction document:

ID: OC-019

Name: **NOAA - Ocean Carbon Data System (OCADS) (formerly CDIAC-Oceans)**



Component: Ocean condition

Data format: OME/ NetCDF

Status: Ongoing

Acquisition method: CDIAC-Oceans data sets, including bottle, underway, coastal, time series and moorings.

Data resolution: See each dataset

Data available:

- Ocean Carbon and Acidification Data Portal
- Subsurface/Bottle Data (Historical WOCE Data, CLIVAR / GO-SHIP Cruises Data,GLODAPv2 Database,GLODAP Database, CARINA Database, PACIFICA Database)
- Surface / Underway (VOS Program Data, Global Surface pCO2 (LDEO) Database V2015, SOCATv5 Database)
- GlobaL CO2 Time-Series and Moorings Project
- Coastal Carbon Data

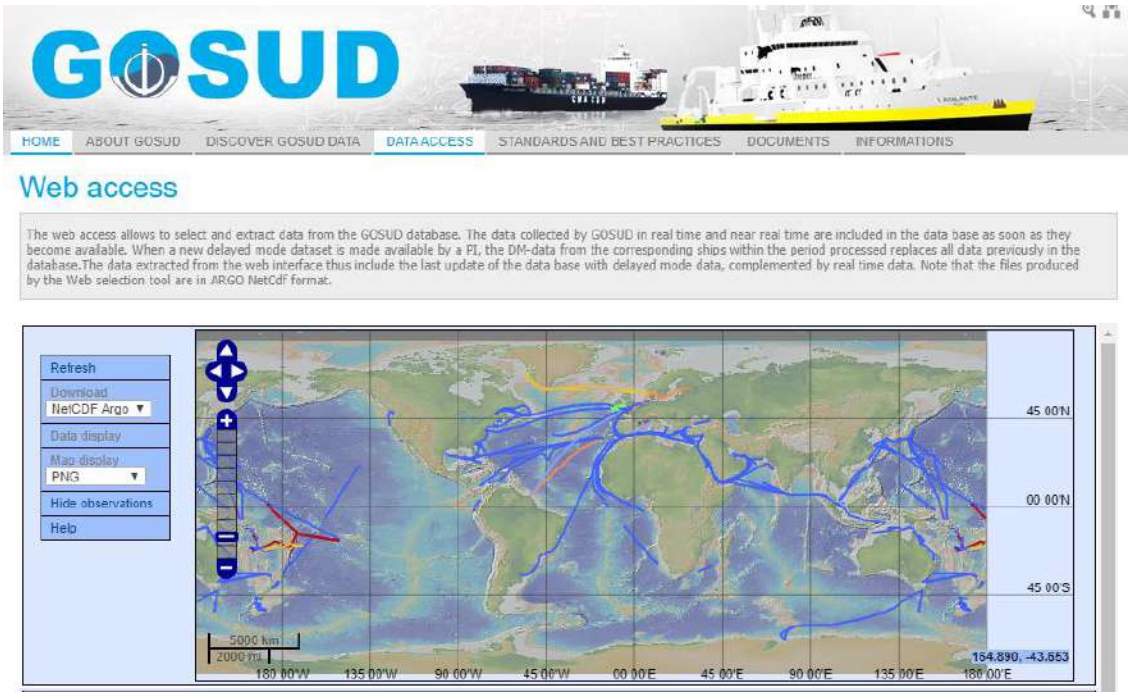
Further information: OCADS is responsible for hosting and providing access for ocean carbon data collected from around the world, as previously performed by the Oceans component of the Carbon Dioxide Information Analysis Center (CDIAC-Oceans) at the Oak Ridge National Laboratory (ORNL).

Website: https://www.nodc.noaa.gov/ocads/

Introduction document:

ID: OC-020

Name: **UNESCO/IOC - Global Ocean Surface Underway Data (GOSUD)**



Component: Ocean condition

Data format: NetCDF/ CVS/ Map

Status: Ongoing (since 2001)

Acquisition method: In-situ observations (vessels), real-time (monthly) and near real-time (annual), and delayed mode data

Data resolution: N/A

Data available: Temperature and salinity (underway from the ocean surface down to the mixed layer)

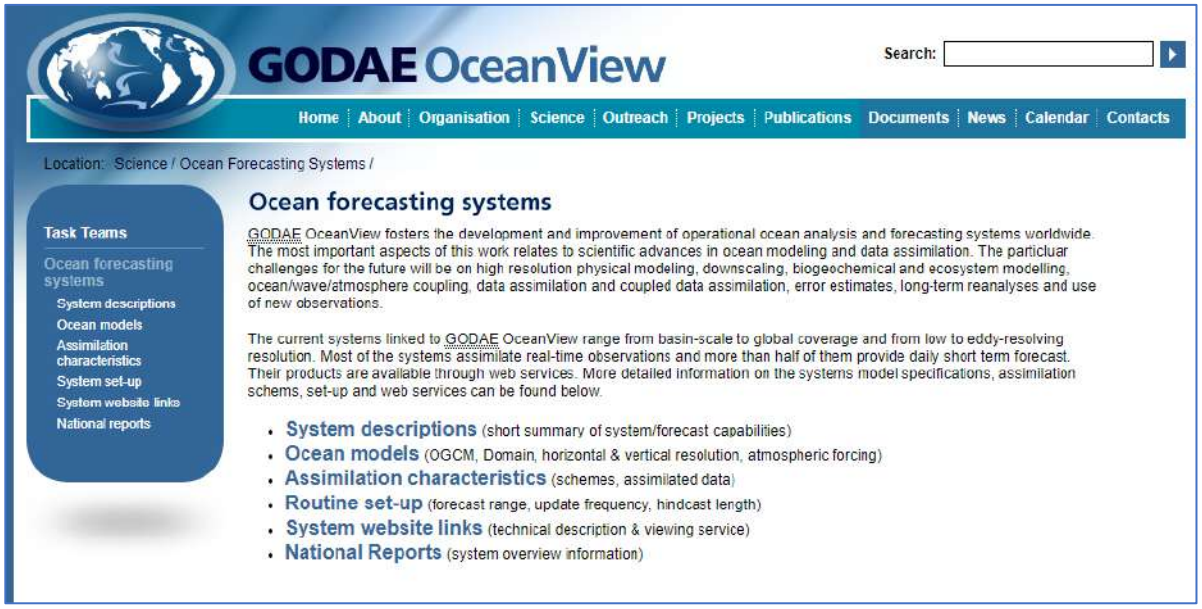
Further information: The observations are collected from different categories of platforms such as research vessels, merchant ships but also sailing ships or cruise vessels. Whenever possible, data or data subsets are transmitted in real-time.

Website: http://www.gosud.org/

Introduction document: http://www.gosud.org/Documents

ID: OC-021

Name: **Global Ocean Data Assimilation Experiment (GODAE)**



Component: Ocean condition

Data format: See each dataset

Status: Ongoing (since 1997)

Acquisition method: Near-real-time, global ocean data assimilation, and historical oceanographic observations

Data resolution: See each dataset

Data available: GODAE provides global & regional ocean analysis and forecasting systems on an international level. Temperature, salinity and velocity structures etc. are included.

Further information: GODAE is the predecessor of GODAE OceanView and was proposed by Smith & Lefebvre in 1997 to support the development of national ocean prediction systems. GODAE was conceived as a 10-year demonstration of both the feasibility and the utility of high-resolution global-scale ocean predictions and led by an International GODAE Science Team (IGST) incorporating the key players in the teams developing the ocean prediction systems at the national level.

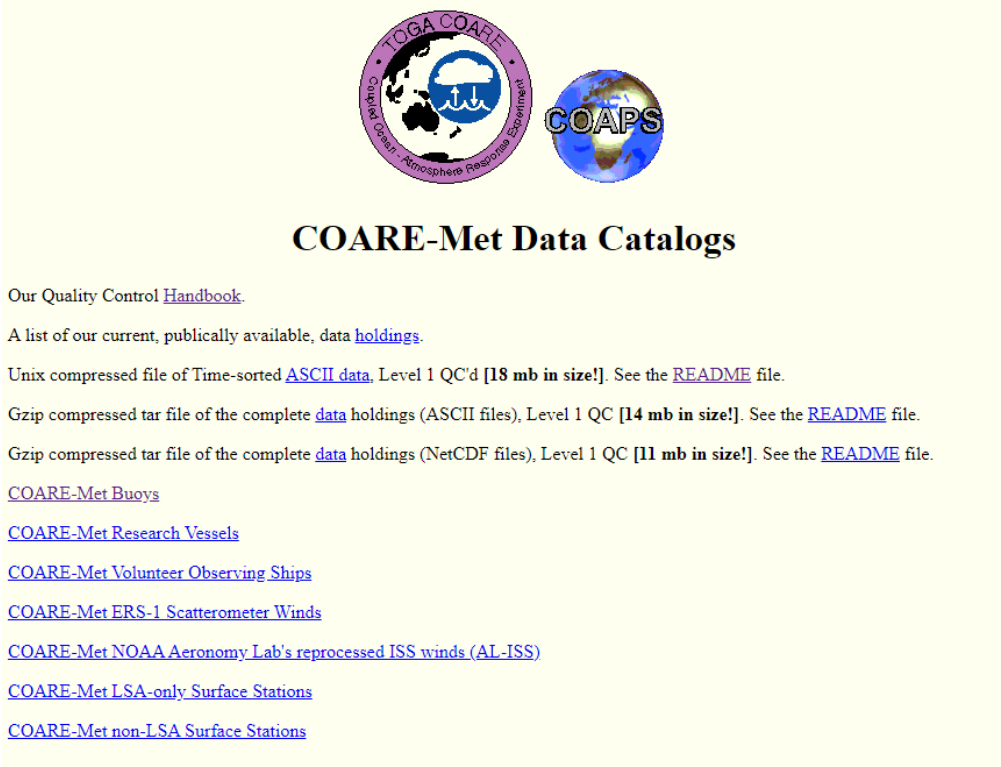
Website: https://www.usgodae.org/index.html

https://www.godae-oceanview.org/science/ocean-forecasting-systems/

Introduction document: See each dataset

ID: OC-022

Name: **Tropical Ocean Global Atmosphere (TOGA) Coupled Ocean Atmosphere Response Experiment (COARE) TOGA/COARE**



COARE-Met Data Catalogs

Our Quality Control Handbook.

A list of our current, publically available, data holdings.

Unix compressed file of Time-sorted ASCII data, Level 1 QC'd **[18 mb in size!]**. See the README file.

Gzip compressed tar file of the complete data holdings (ASCII files), Level 1 QC **[14 mb in size!]**. See the README file.

Gzip compressed tar file of the complete data holdings (NetCDF files), Level 1 QC **[11 mb in size!]**. See the README file.

COARE-Met Buoys

COARE-Met Research Vessels

COARE-Met Volunteer Observing Ships

COARE-Met ERS-1 Scatterometer Winds

COARE-Met NOAA Aeronomy Lab's reprocessed ISS winds (AL-ISS)

COARE-Met LSA-only Surface Stations

COARE-Met non-LSA Surface Stations

Component: Ocean condition

Data format: NetCDF/ ASCII

Status: Ongoing

Acquisition method: Observational data (including standard ship bridge observations, advanced automated buoy, shipboard, and land systems)

Data resolution: Spatial resolution: 1-minute (some)

Data available: Wind direction and speed, sea temperature

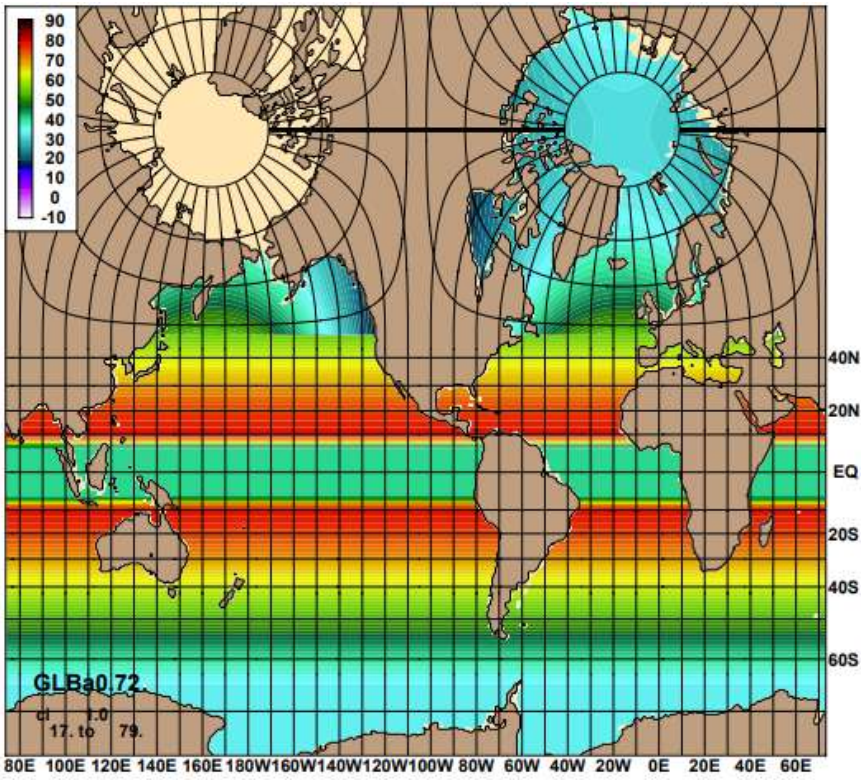
Further information:

Website: https://www.coaps.fsu.edu/COARE/coaremet.html

Introduction document: https://www.coaps.fsu.edu/COARE/qc-handbook/#intro

ID: OC-023

Name: **NOAA - Naval Oceanographic Office Global Hybrid Coordinate Ocean Model (HYCOM)**



Component: Ocean condition

Data format: NetCDF

Status: Ongoing

Acquisition method: Near Real time (prediction)

Data resolution: Fine resolution
Daily data is typically accessible within 48-hrs of the initial runtime

Data available: The NetCDF files contain ocean temperature, salinity, eastward and northward currents, sea surface elevation, and water velocity

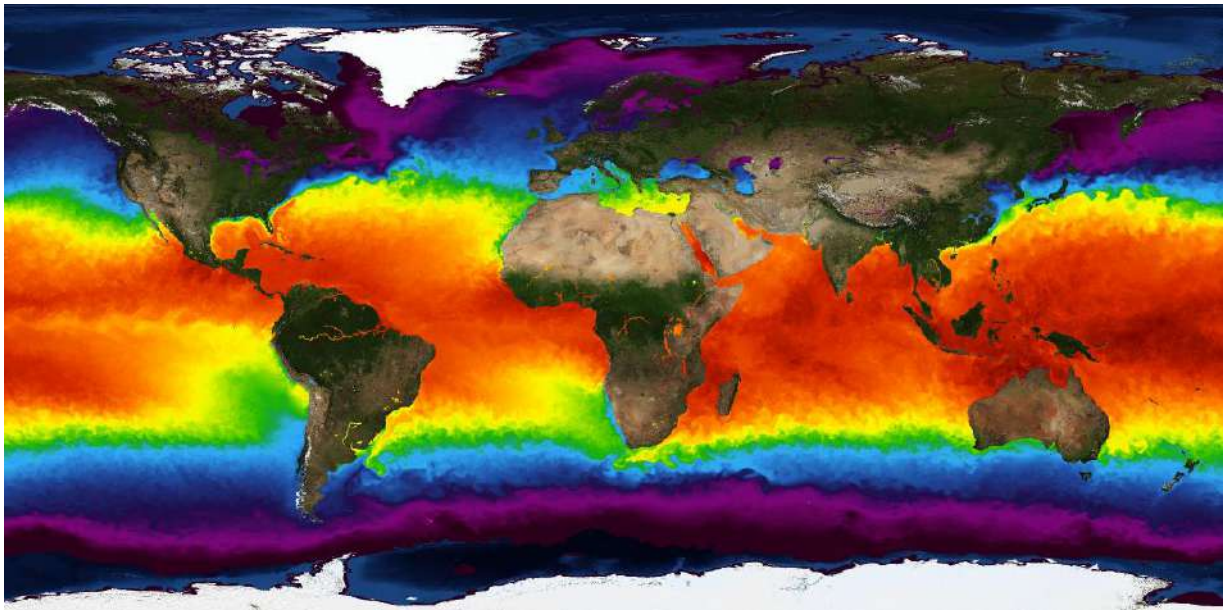
Further information: Navy Global HYCOM assimilates satellite altimeter observations, satellite and in situ sea surface temperature, as well as available in situ vertical temperature and salinity profiles from XBTs, ARGO floats, and moored buoys, using the NRL-developed Navy Coupled Ocean Data Assimilation (NCODA) system

Website: https://hycom.org/dataserver

Introduction document: https://www.hycom.org/hycom/documentation

ID: OC-024

Name: **NASA - State of the Ocean (SOTO) Version 4.2.1**



Component: Ocean condition

Data format: Online viewer

Status: Ongoing

Acquisition method: Satellite data

Data resolution: See each dataset

Data available: Ocean color, ocean surface current, ocean surface wind, sea ice, sea surface height, sea surface salinity, and sea surface temperature

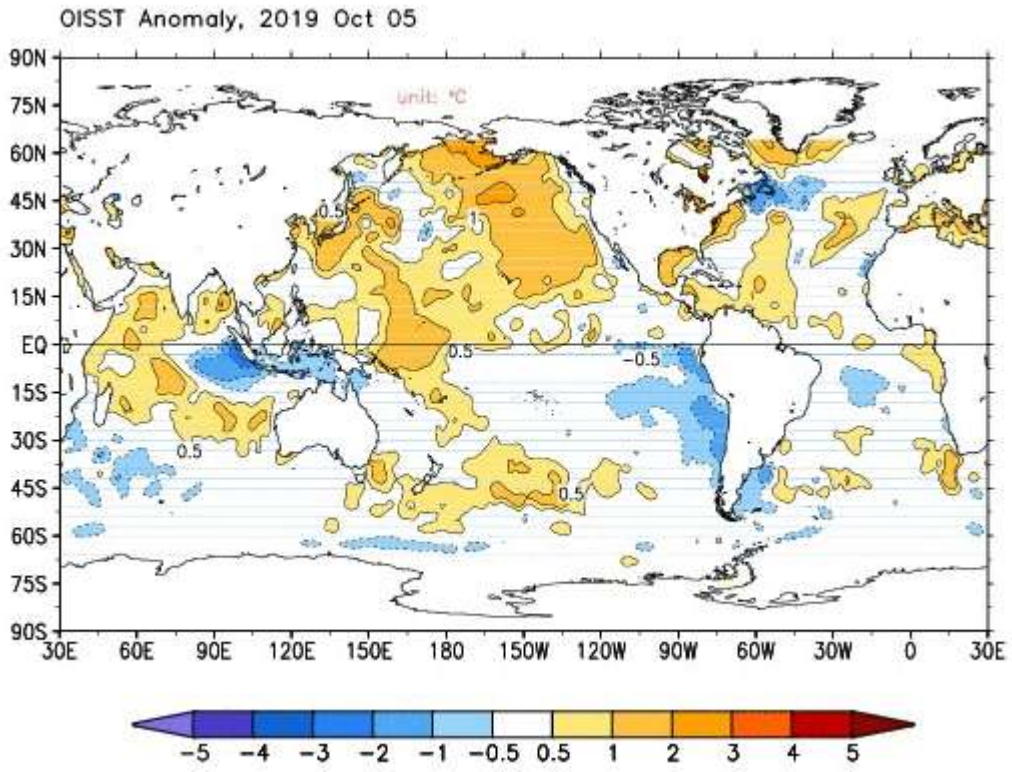
Further information: SOTO is a suite of tools presented through an interactive, web-based visualization front end. It provides access to a broad range of satellite-derived products and key parameters of interest to the oceanographic community.

Website: https://podaac-tools.jpl.nasa.gov/soto/

Introduction document:

ID: OC-025

Name: **NOAA - NCEP Global Ocean Data Assimilation System (GODAS)**



Component: Ocean condition

Data format: Online Maps/ NetCDF (monthly)

Status: Ongoing

Acquisition method: Real-time ocean reanalyzed and reanalyzed data

Data resolution: 75°S to 65°N: 1° by 1° enhanced to 1/3°, in the N-S direction: within 10° of the equator.
40 levels with a 10 meter resolution in the upper 200 meters.

Data available: Sea surface temperature anomaly, isotherm, sea level anomaly, heat content anomaly, tropical cyclone heat potential, surface wind stress, surface currents and ENSO data

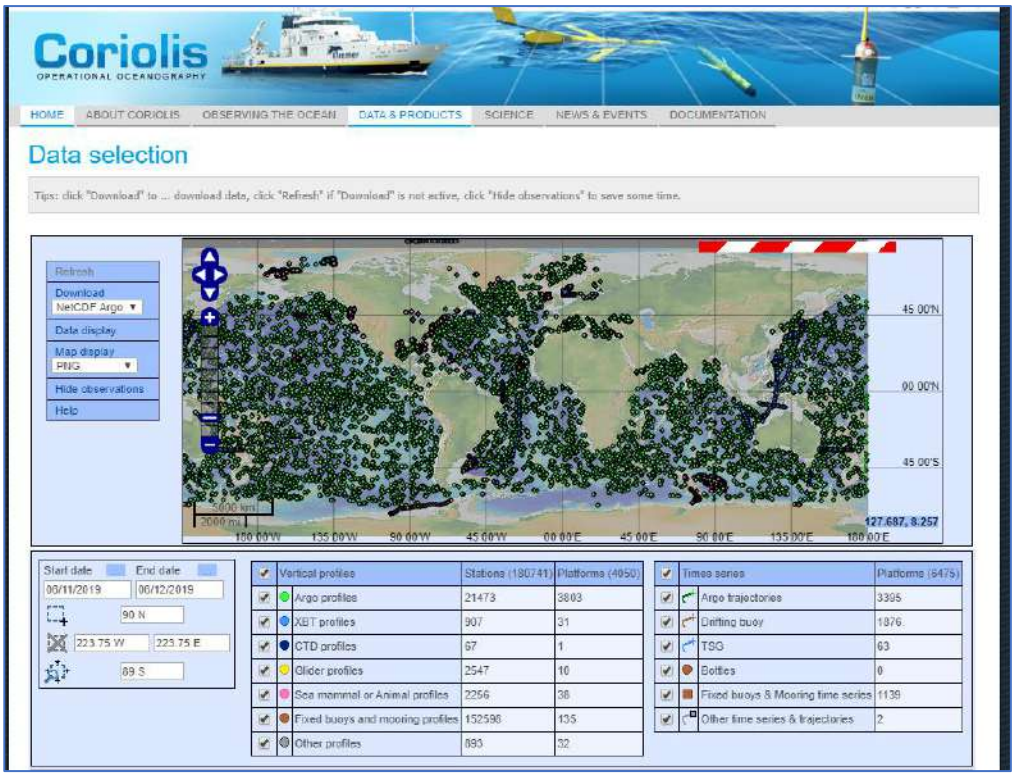
Further information: A global ocean climate monitoring activity

Website: http://www.cpc.ncep.noaa.gov/products/GODAS/

Introduction document: https://www.cpc.ncep.noaa.gov/products/GODAS/pl/introduction_godas_web.pdf

ID: OC-026

Name: **Coriolis - Operational Oceanography**



Component: Ocean condition

Data format: NetCDF/ CSV

Status: Ongoing (since 2001)

Acquisition method: Sea-surface observation (satellite sensors), in situ measurements (ships, moored or drifting autonomous systems), assimilation of in-situ and satellite data in an ocean circulation model.

Data resolution: See each dataset

Data available: Temperature, salinity, oxygen, chlorophyll, ocean heat content

Further information: Products:

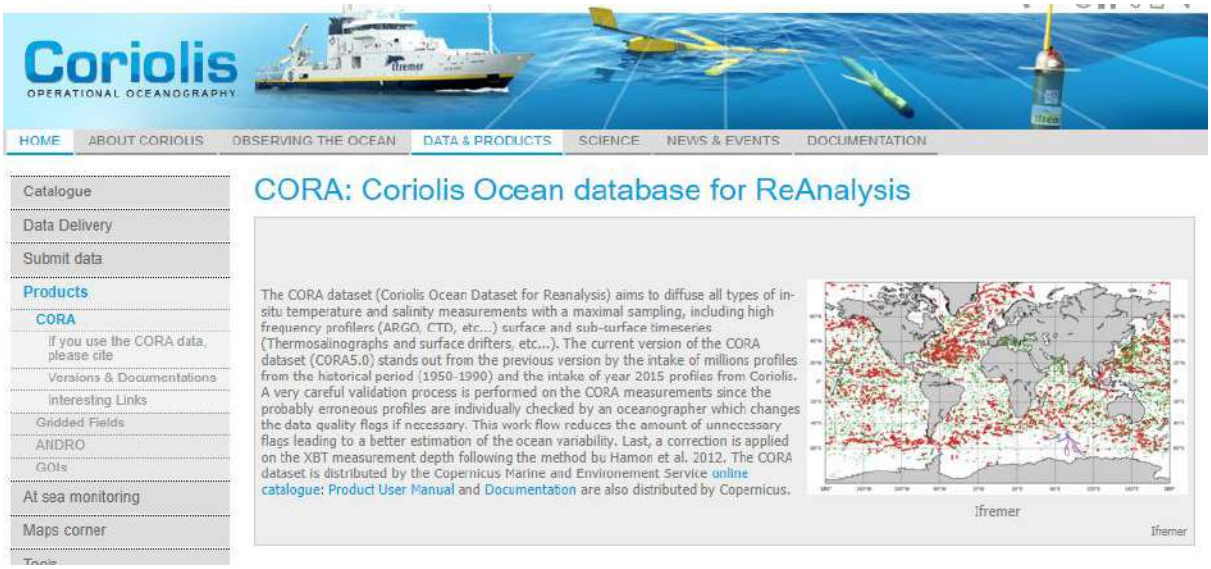
- CORA (see details in this inventory)
- Gridded Fields (Online maps)
- ANDRO (see details in this inventory)
- Global Ocean Indicators (not accessible now)

Website: http://www.coriolis.eu.org/Data-Products/Data-Delivery/Data-selection

Introduction document:

ID: OC-027

Name: **Coriolis - Coriolis Ocean Dataset for Reanalysis(CORA)**



Component: Ocean condition

Data format: NetCDF

Status: Ongoing

Acquisition method: in situ data (Argo DACS, research vessels, moored buoys, moored buoys)

Data resolution: Full/ high resolution

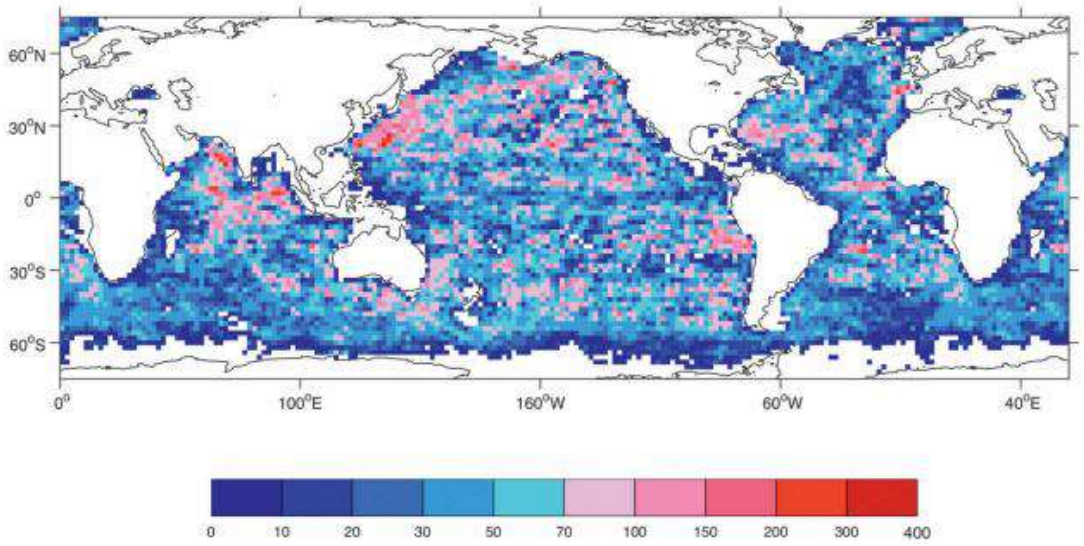
Data available: This dataset diffuses all types of in-situ temperature and salinity measurements with a maximal sampling, including high frequency profilers (ARGO, CTD, etc...) surface and sub-surface timeseries (surface drifters and thermosalinographs, etc...)

Further information:

Website: http://www.coriolis.eu.org/Data-Products/Products/CORA

Introduction document: http://cmems-resources.cls.fr/documents/QUID/CMEMS-INS-QUID-013-001b.pdf

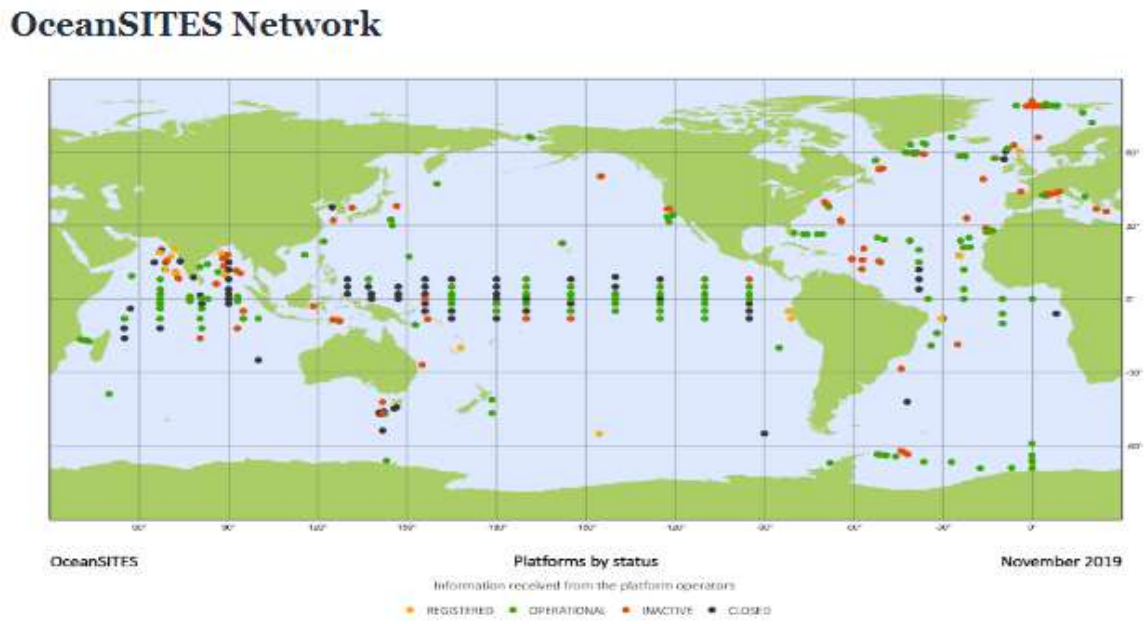
ID:	OC-028
Name:	**Coriolis - Argo New Displacements Rannou and Ollitrault (ANDRO) An Argo-based deep displacement atlas**



Component:	Ocean condition
Data format:	ASCII DEP file/ NetCDF
Status:	Uncertain (2012 - 2017)
Acquisition method:	Argo data, Real time data
Data resolution:	N/A
Data available:	Float parking pressure (RPP) and temperature, deep and surface displacements, and associated times, deep and surface associated velocities with their estimated errors
Further information:	A world deep displacement dataset, named ANDRO, after a traditional dance of Brittany meaning a swirl, comprising more than 600 000 deep displacements, has been produced from the Argo float data.
Website:	https://www.seanoe.org/data/00360/47077/
Introduction document:	https://archimer.ifremer.fr/doc/00360/47126/47066.pdf

ID: OC-029

Name: **OceanSITES**



Component: Ocean condition

Data format: NetCDF/ MAP (PNG/PDF)

Status: Ongoing (since 1999)

Acquisition method: Observational data

Data resolution: High time resolution, often in real-time

Data available: Observations cover meteorology, physical oceanography, transport of water, biogeochemistry, and parameters relevant to the carbon cycle, ocean acidification, the ecosystem, and geophysics.

Further information: OceanSITES is a worldwide system of long-term, open-ocean reference stations measuring dozens of variables and monitoring the full depth (5000m) of the ocean from air-sea interactions down to the seafloor.

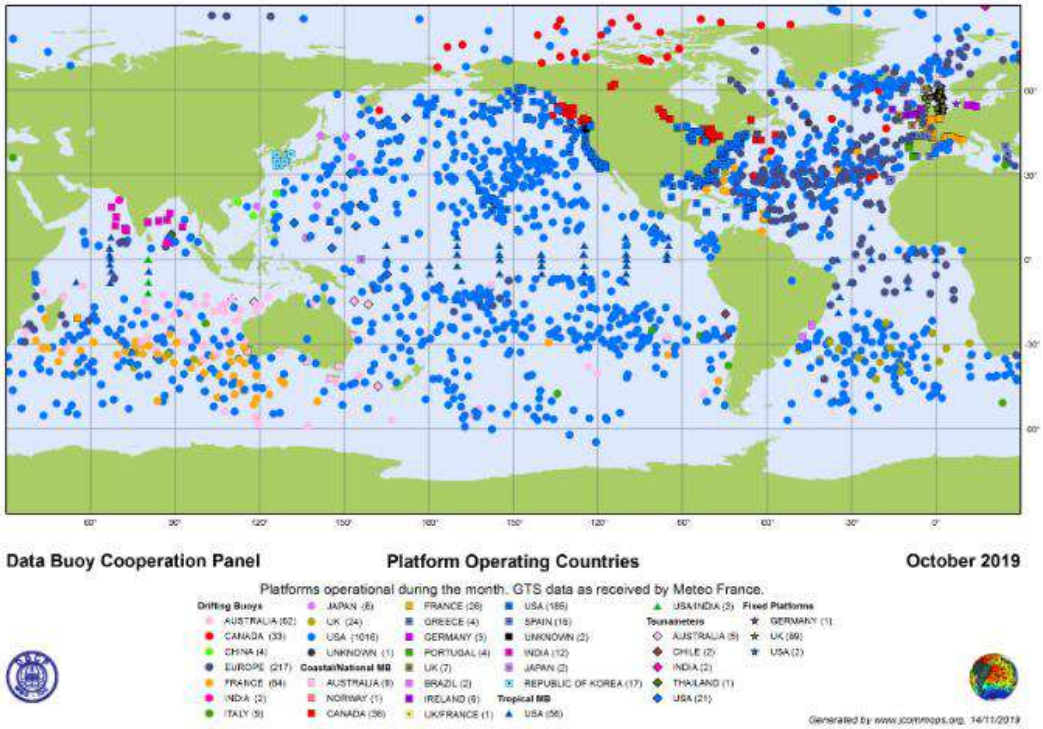
It is a network of stations or observatories measuring many aspects of the ocean's surface and water column using, where possible, automated systems with advanced sensors and telecommunications systems.

Website: http://www.oceansites.org/index.html

Introduction document:

ID: OC-030

Name: **WMO-IOC - Data Buoy Cooperation Panel (DBCP)**



Component: Ocean condition

Data format: MAP/ CSV

Status: Ongoing

Acquisition method: Buoy data, real-time ocean, near real-time and archived data

Data resolution: See each dataset

Data available: Sea surface temperature, ocean current velocity, air temperature, humidity, wave characteristics and wind velocity across all oceans.

Further information: The primary objective of the DBCP is to maintain and coordinate all components of the network of over 1250 drifting buoys and 400 moored buoys

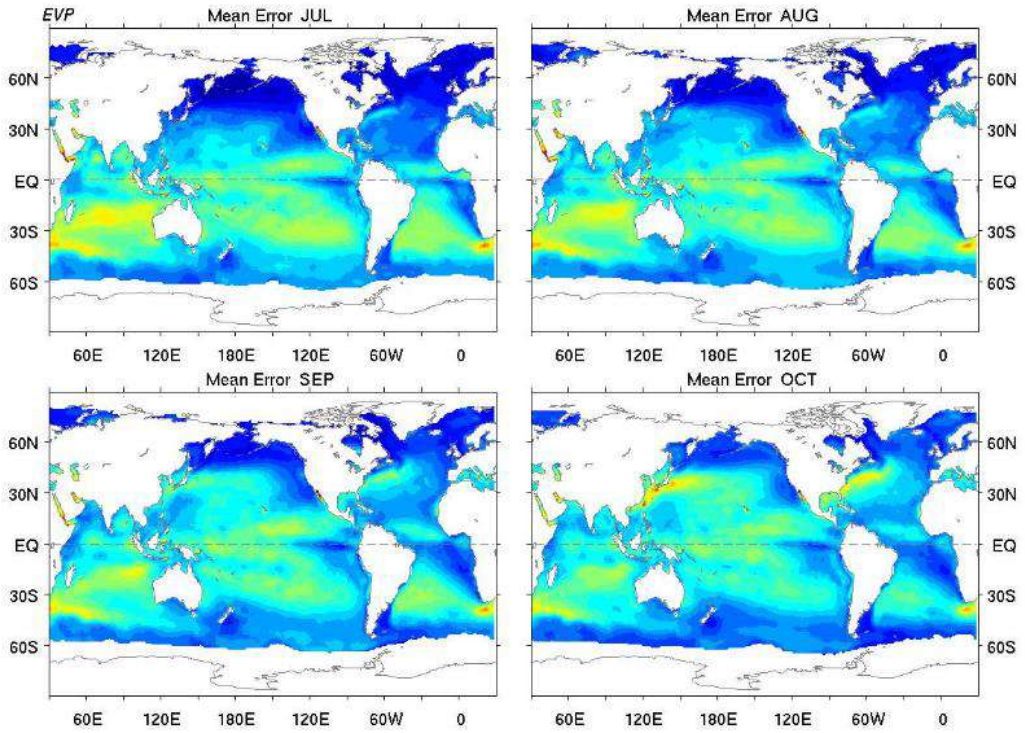
Website: http://www.jcommops.org/dbcp/data/access.html

Metadata ara available in JCOMMOPS: http://www.jcommops.org/board?t=dbcp

Introduction document:

ID: OC-031

Name: **Woods Hole Oceanographic Institution - Objective Analyzed air-sea Fluxes (OAFlux) for the Global Oceans**



Component: Ocean condition

Data format: NetCDF/ Figures

Status: Ongoing (since1958, twice-per-year update)

Acquisition method: Satellite data

Data resolution:

- heat flux &evaporation: 1-degree gridded daily-mean (1985 onward) and monthly-mean (1958 onward)
- wind: 0.25-degree gridded, daily and monthly means from July 1987 onward

Data available: Heat flux, evaporation, wind and sea surface temperature

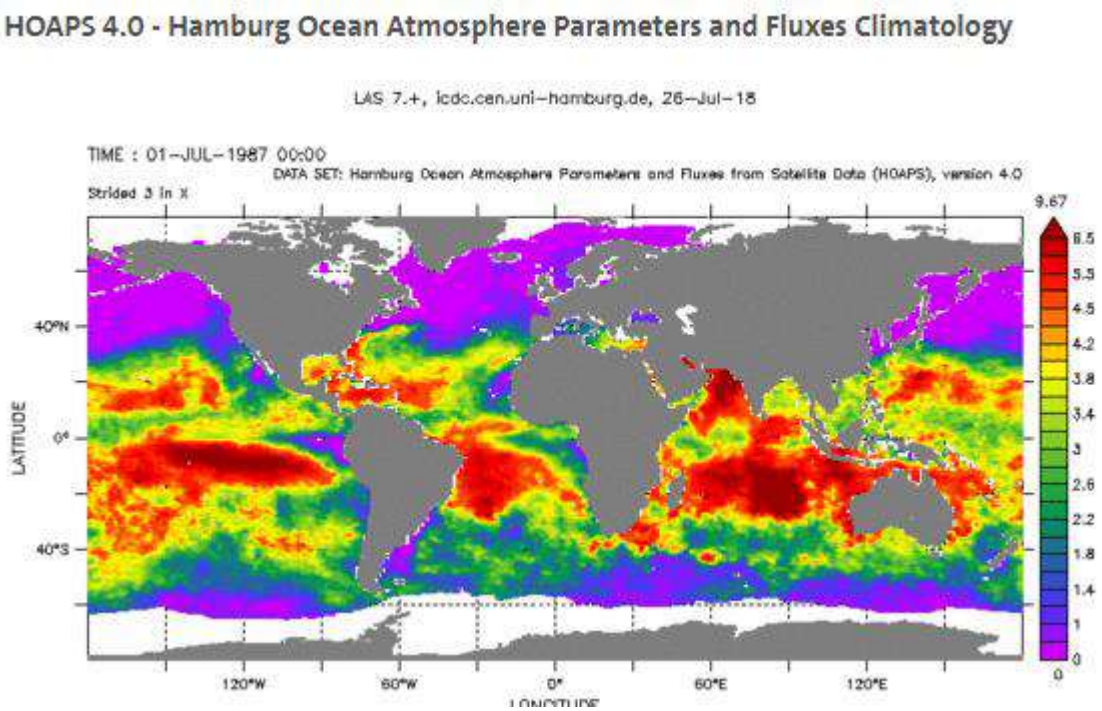
Further information: The OAFlux project aims to provide consistent, multi-decade, global analysis of air-sea heat, freshwater (evaporation), and momentum fluxes for use in studies of global energy budget, water cycle, atmosphere and ocean circulation, and climate.

Website: http://oaflux.whoi.edu/dataproducts.html

Introduction document: http://oaflux.whoi.edu/documents.html

ID: OC-032

Name: **Hamburg Ocean Atmosphere Parameters and Fluxes from Satellite Data (HOAPS)**



Component: Ocean condition

Data format: MAP/ NetCDF

Status: Ongoing

Acquisition method: Satellite data

Data resolution: Monthly averages and 6-hourly composites on a regular latitude/longitude grid with a spatial resolution of 0.5° × 0.5° degrees.

Data available: Wind speed at 10m, near surface humidity, precipitation, water vapor, total water, sea surface temperature, heat flux, evaporation, and freshwater flux

Further information: A completely satellite based climatology of precipitation, evaporation and freshwater budget (evaporation minus precipitation) as well as related turbulent heat fluxes and atmospheric state variables over the global ice free oceans.

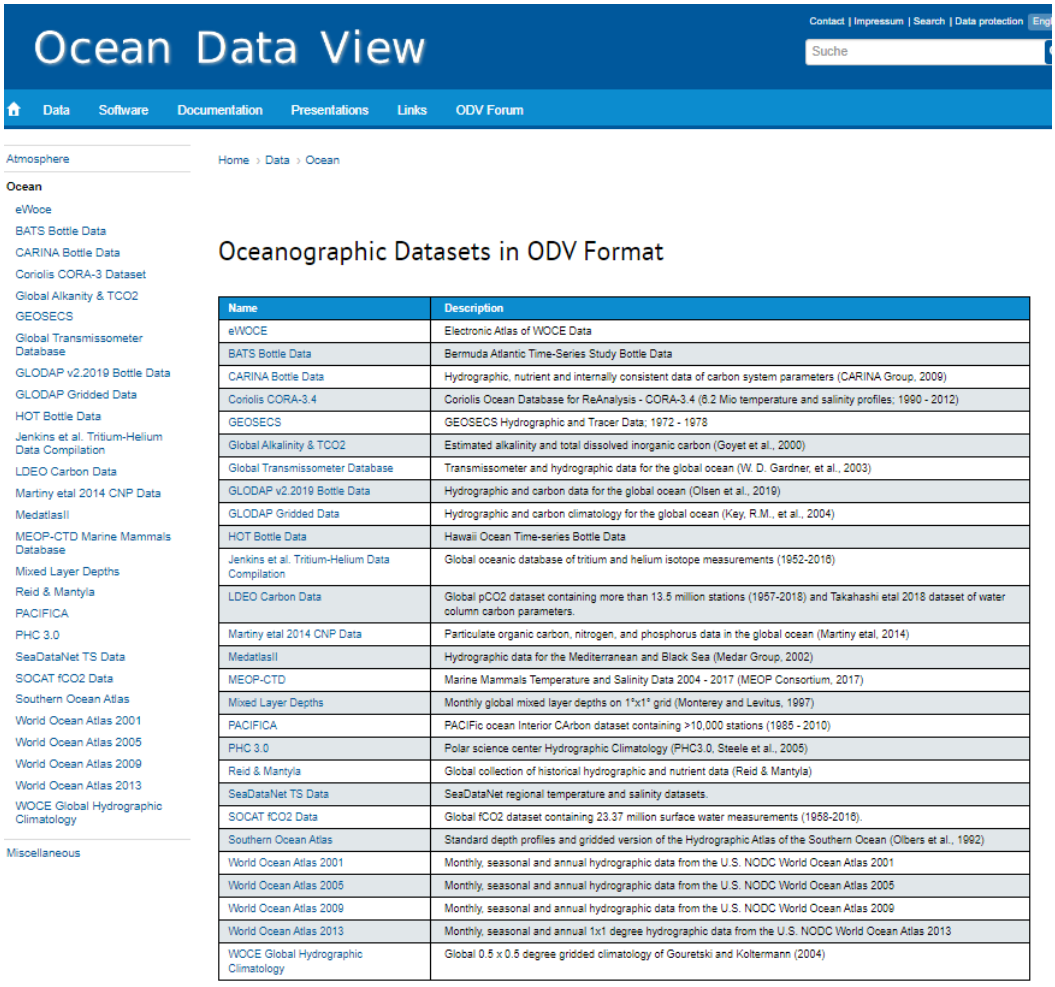
Website: V3.2 (1987-2008): http://hoaps.cen.uni-amburg.de/index.php?id=cimages

V4.0(1987-2014): https://icdc.cen.uni-hamburg.de/1/daten/atmosphere/hoaps/

Introduction document: http://hoaps.cen.uni-hamburg.de/index.php?id=docu

ID: OC-033

Name: **Ocean Data Viewer**



Name	Description
eWOCE	Electronic Atlas of WOCE Data
BATS Bottle Data	Bermuda Atlantic Time-Series Study Bottle Data
CARINA Bottle Data	Hydrographic, nutrient and internally consistent data of carbon system parameters (CARINA Group, 2009)
Coriolis CORA-3.4	Coriolis Ocean Database for ReAnalysis - CORA-3.4 (6.2 Mio temperature and salinity profiles; 1990 - 2012)
GEOSECS	GEOSECS Hydrographic and Tracer Data; 1972 - 1978
Global Alkalinity & TCO2	Estimated alkalinity and total dissolved inorganic carbon (Goyet et al., 2000)
Global Transmissometer Database	Transmissometer and hydrographic data for the global ocean (W. D. Gardner, et al., 2003)
GLODAP v2.2019 Bottle Data	Hydrographic and carbon data for the global ocean (Olsen et al., 2019)
GLODAP Gridded Data	Hydrographic and carbon climatology for the global ocean (Key, R.M., et al., 2004)
HOT Bottle Data	Hawaii Ocean Time-series Bottle Data
Jenkins et al. Tritium-Helium Data Compilation	Global oceanic database of tritium and helium isotope measurements (1952-2016)
LDEO Carbon Data	Global pCO2 dataset containing more than 13.5 million stations (1957-2018) and Takahashi etal 2018 dataset of water column carbon parameters.
Martiny etal 2014 CNP Data	Particulate organic carbon, nitrogen, and phosphorus data in the global ocean (Martiny etal, 2014)
MedatlasII	Hydrographic data for the Mediterranean and Black Sea (Medar Group, 2002)
MEOP-CTD	Marine Mammals Temperature and Salinity Data 2004 - 2017 (MEOP Consortium, 2017)
Mixed Layer Depths	Monthly global mixed layer depths on 1°x1° grid (Monterey and Levitus, 1997)
PACIFICA	PACIFic ocean Interior CArbon dataset containing >10,000 stations (1985 - 2010)
PHC 3.0	Polar science center Hydrographic Climatology (PHC3.0, Steele et al., 2005)
Reid & Mantyla	Global collection of historical hydrographic and nutrient data (Reid & Mantyla)
SeaDataNet TS Data	SeaDataNet regional temperature and salinity datasets.
SOCAT fCO2 Data	Global fCO2 dataset containing 23.37 million surface water measurements (1958-2016).
Southern Ocean Atlas	Standard depth profiles and gridded version of the Hydrographic Atlas of the Southern Ocean (Olbers et al., 1992)
World Ocean Atlas 2001	Monthly, seasonal and annual hydrographic data from the U.S. NODC World Ocean Atlas 2001
World Ocean Atlas 2005	Monthly, seasonal and annual hydrographic data from the U.S. NODC World Ocean Atlas 2005
World Ocean Atlas 2009	Monthly, seasonal and annual hydrographic data from the U.S. NODC World Ocean Atlas 2009
World Ocean Atlas 2013	Monthly, seasonal and annual 1x1 degree hydrographic data from the U.S. NODC World Ocean Atlas 2013
WOCE Global Hydrographic Climatology	Global 0.5 x 0.5 degree gridded climatology of Gouretski and Koltermann (2004)

Component: Ocean condition

Data format: MAP/NetCDF/ ODV Format

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: Ocean Data View (ODV) is a software package for the interactive exploration, analysis and visualization of oceanographic and other geo-referenced profile, time-series, trajectory or sequence data

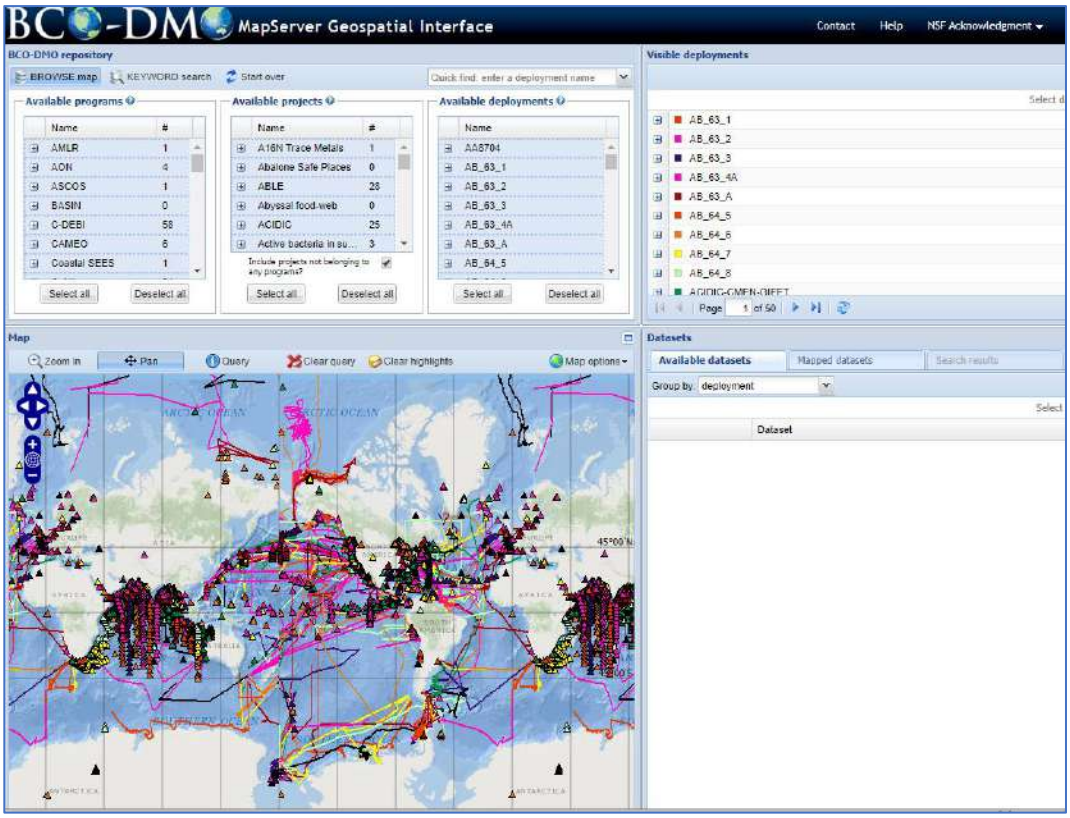
Further information:

Website: https://odv.awi.de/data/ocean/

Introduction document:

ID: OC-034

Name: **Biological and Chemical Oceanography Data Management Office (BCO-DMO)**



Component: Ocean condition

Data format: Flat (ASCII) text (comma, space or tab separated)/ Matlab binary file/ Ocean Data View (ODV) compatible file/ NetCDF

Status: Ongoing

Acquisition method: See each dataset

Data resolution: Observational data (cruises and moorings)

Data available: Biological, chemical, geological, and physical oceanographic measurements

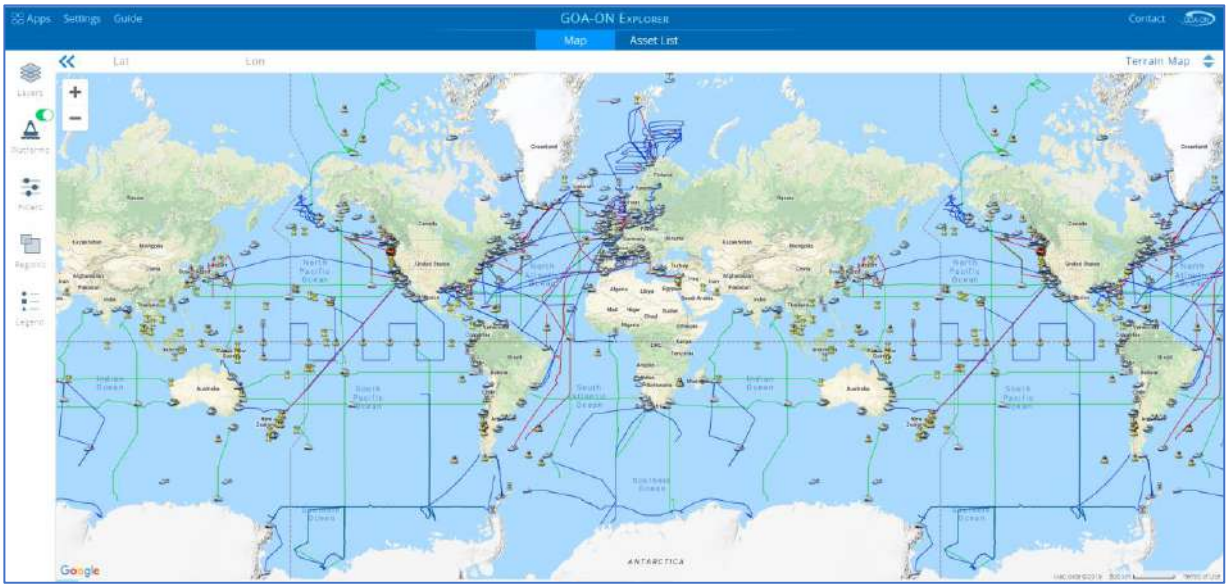
Further information: A data management platform of many ocean scientific research data.
This platform belongs to the Woods Hole Oceanographic Institution.
This platform includes 44 programs and 9435 datasets(by 1 Jul 2019).

Website: https://www.bco-dmo.org/data

Introduction document: https://www.bco-dmo.org/sites/default/files/BCO-DMO_Introduction_v3.pdf

ID: OC-035

Name: **Global Ocean Acidification Observing Network(GOA - ON) Data Portal**



Component: Ocean condition

Data format: Online Map application

Status: Ongoing

Acquisition method: Observational data (mooring, ship-based time series, volunteer observing ship, fixed time series stations)

Data resolution: See each dataset

Data available: This database includes ammonium concentration, bacteria, chlorophyll, cyanobacteria, dissolved organic carbon, dissolved organic nitrogen, dissolved organic phosphorus, nitrate, nitrite concentration, oxygen concentration, particulate organic carbon, particulate organic nitrogen, particulate organic phosphorus, phosphate concentration, phytoplankton, primary production, salinity, silicate concentration, water depth, water temperature, zooplankton...(see the http://portal.goa-on.org/Explorer)

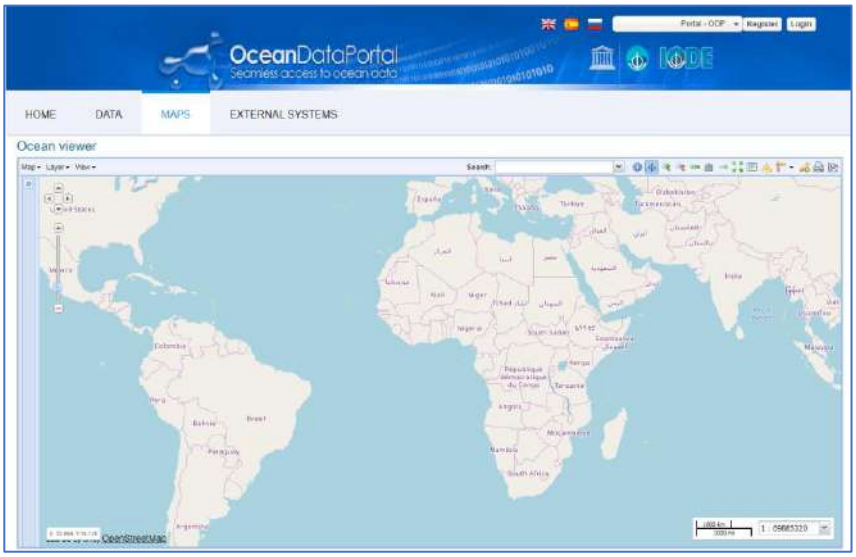
Further information: A platform of ocean acidification research data, linked with CCHDO

Website: http://portal.goa-on.org/Home

Introduction document: see the list http://portal.goa-on.org/Explorer

ID: OC-036

Name: **UNESCO/IOC - Ocean Data Portal**



Component: Ocean condition

Data format: MAP/ NetCDF/ CSV /ASCII/ XML
alphabetic-numeric data, images and documents, spatial data

Status: Ongoing

Acquisition method: Real-time (up to 7 days from the observations), delay-mode and historical data (more than 7 days after the observations), satellite data, model data, observation data, climate data, analysis and forecast data

Data resolution: See each dataset

Data available: Oceanography, marine meteorology Temperature, Salinity, Wave Height, Wind Speed, SAR Imagery

1) JCOMM Ship Observations Team (SOT):
   - Volunteer Observing Ships (VOS)
   - Ship of Opportunity Programme (SOOP)
   - Surface underway data
2) JCOMM Data Buoy Cooperation Panel (DBCP):
   - drifting buoys, moored tropical and high seas buoys and OceanSITES
3) GLOSS 4) Argo 5)GO-SHIP 6) IOCCP

Further information: At present moment ODP is providing access to 700+ ocean and meteorology datasets from IODE NODCs, metadata and data access to WMO Information System (WIS), SeaDataNet, AODN and US NOAA.

Website: http://www.oceandataportal.org/

Introduction document: http://www.oceandataportal.org/wp-content/uploads/2018/07/1-ODP_Enabling_science-1.pdf

ID: OC-037

Name: **NASA Earth Observations**

Component: Ocean condition

Data format: GeoTIF/CSV/ Figures

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: Average Sea Surface Temperature (AVHRR, 1985-97), Bathymetry, Blue Marble: Next Generation, Chlorophyll Concentration, Global Temperature Anomaly, Sea Ice and Snow Extent(Northern Hemisphere), Sea Ice Concentration and Snow Extent (Global), Sea Surface Salinity (2011-15), Sea Surface Temperature (AVHRR, 1981-2006), Sea Surface Temperature (MWOI, 1998+), Sea Surface Temperature (MODIS, 2002+), Sea Surface Temperature Anomaly (AMSR-E, 2002-11)

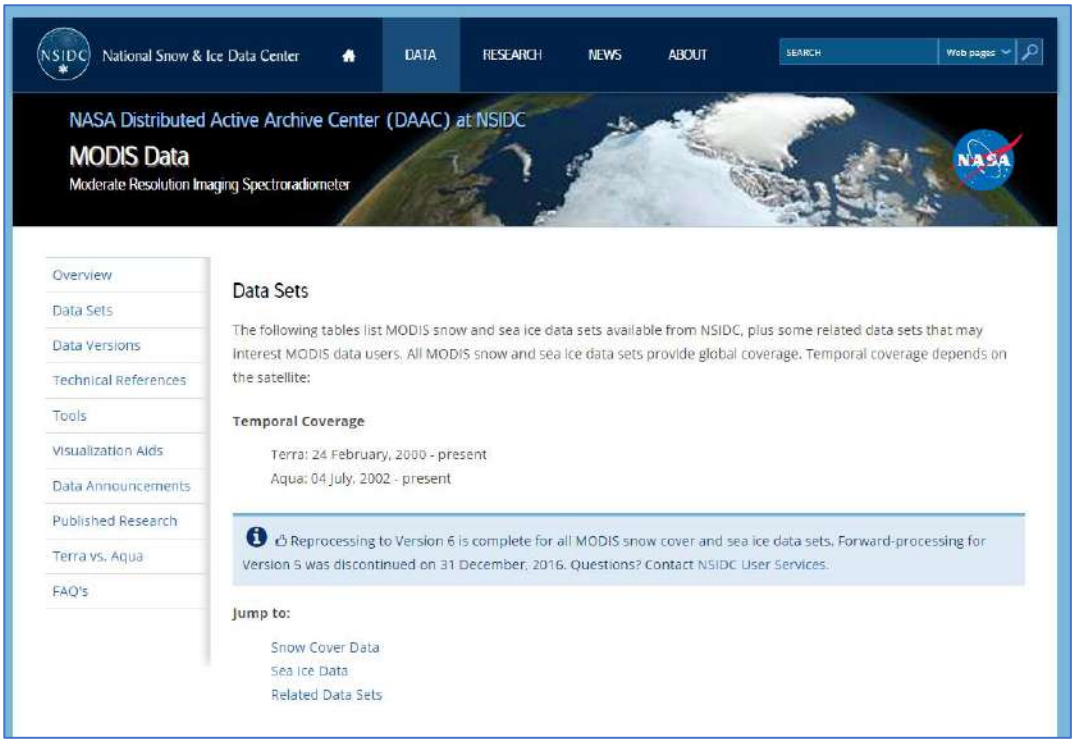
Further information: Including many well documented SHP map based on different satellite data and ocean survey research

Website: https://neo.sci.gsfc.nasa.gov/

Introduction document:

ID: OC-038

Name: **NASA National Snow & Ice Data Center**



Component: Ocean condition

Data format: HDF-EOS

Status: Ongoing

Acquisition method: Satellite data

Data resolution: See each dataset

Data available: Sea Ice

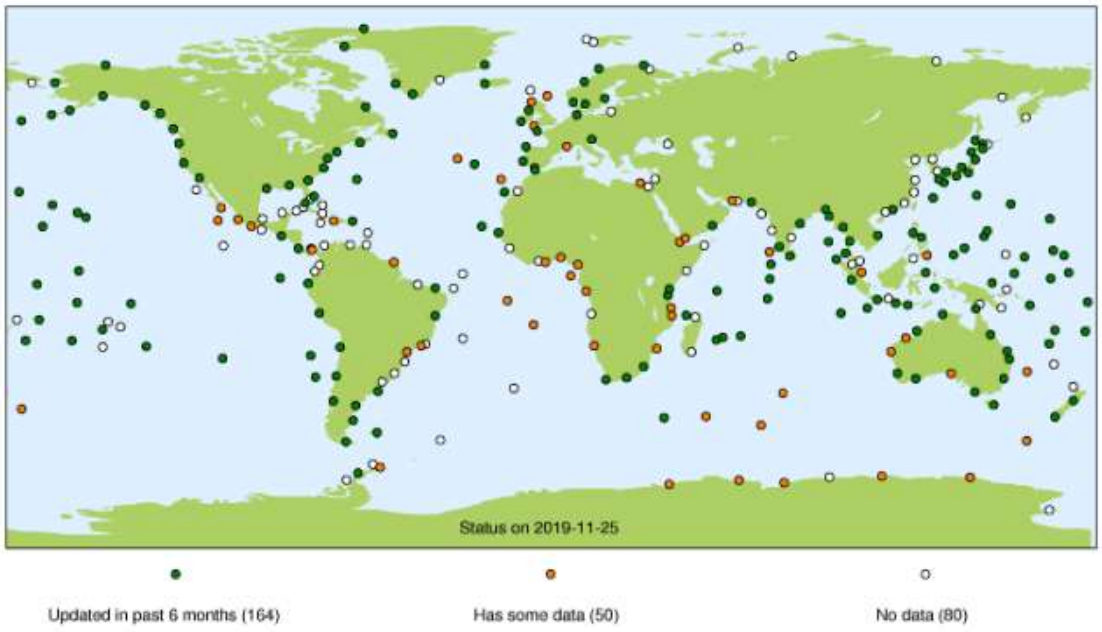
Further information: HDF-EOS (Hierarchical Data Format - Earth Observing System) is a self-describing file format based on HDF that was developed specifically for distributing and archiving data collected by NASA EOS satellites. For more information, visit the HDF-EOS Tools and Information Center.

Website: http://nsidc.org/data/modis/data_summaries#sea-ice

Introduction document:

ID: OC-039

Name: **Sea Level Station Monitoring Facility**



Component: Ocean condition

Data format: CSV/ NetCDF

Status: Ongoing

Acquisition method: Observational data

Data resolution: Hourly/ daily/ monthly resolution

Data available:

- Tide gauge data with two levels of quality-control (QC).
  - Fast Delivery (FD) data are released within 1-2 months of data collection and receive only basic QC focused on large level shifts and obvious outliers.
  - Research Quality Data (RQD) are released 1-2 years after data is received from the data originators.
- Real-Time (RT) data, which feeds the international tsunami networks, are available from the UNESCO IOC Sea Level Monitoring website hosted by the Flanders Marine Institute (VLIZ).

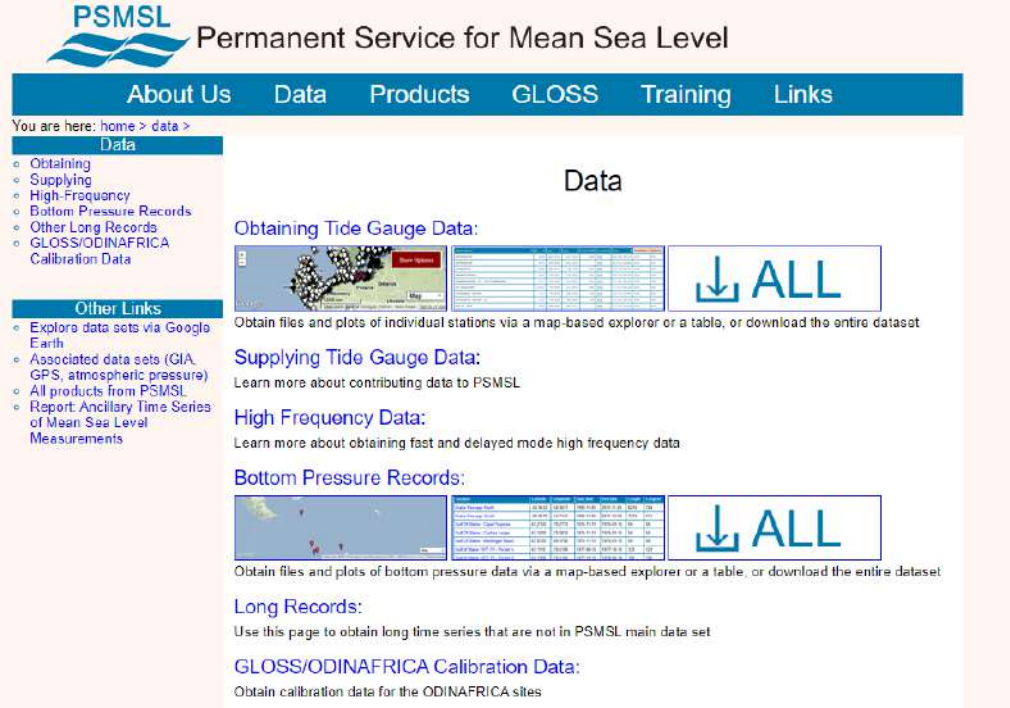
Further information: Source of GLOSS.

Website: https://uhslc.soest.hawaii.edu/datainfo/

Introduction document:

ID: OC-040

Name: **Permanent Service for Mean Sea Level (PSMSL)**



Component: Ocean condition

Data format: CSV/ NetCDF

Status: Ongoing (since 1993)

Acquisition method: Observational data

Data resolution: See each dataset

Data available: Tide gauge data

Further information: Collection, publication, analysis and interpretation of sea level data from the global network of tide gauges

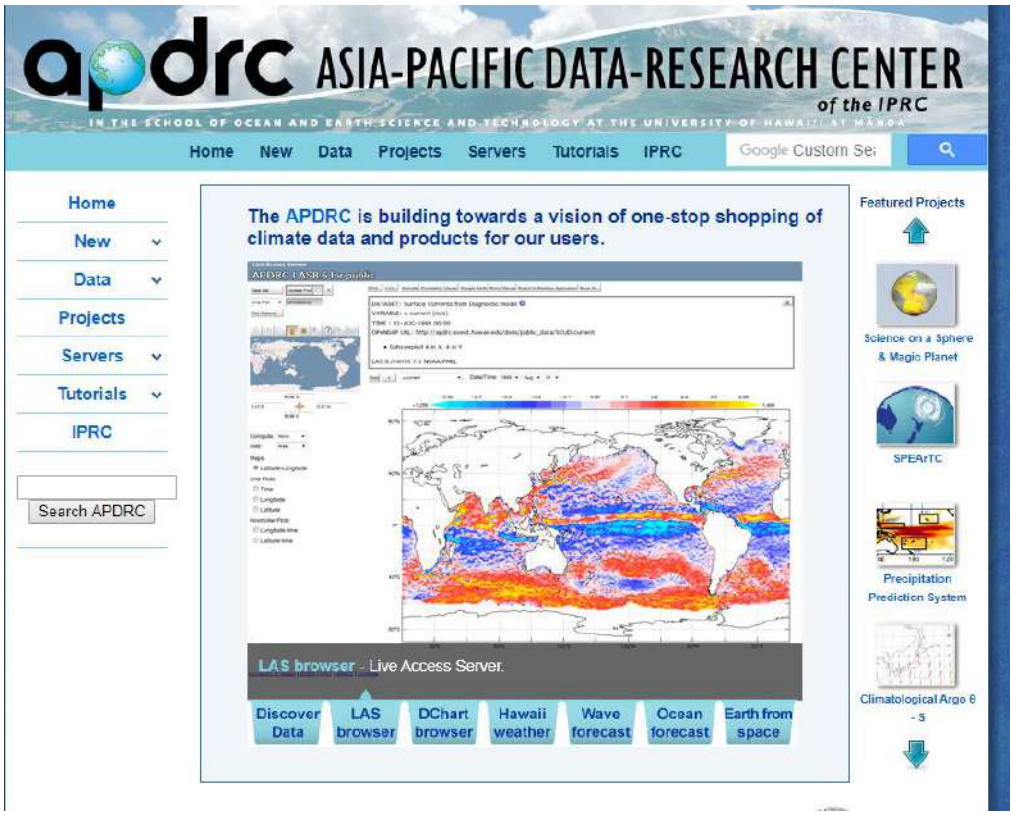
Data is now distributed as individual time series for each station. The entire dataset (including documentation) is distributed in zipped files, described further below. Separate time series files exist for the Revised Local Reference (RLR) monthly mean data, the RLR annual mean data, and the Metric monthly mean data (same strong warnings as above regarding the Metric data apply).

Website: http://www.psmsl.org/data/

Introduction document:

ID: OC-041

Name: **Asia-Pacific Data-Reseach Centre (APDRT)**



Component: Ocean condition

Data format: NetCDF/ Figures

Status: Ongoing (since 2007)

Acquisition method: In situ data, satellite data, model data, reanalysis data

Data resolution: See each dataset

Data available: Ocean temperature, salinity, nutrients, bathymetry, SST, sea level, surface pressure, surface winds, ocean currents, sensible heat flux, latent heat flux, net heat flux

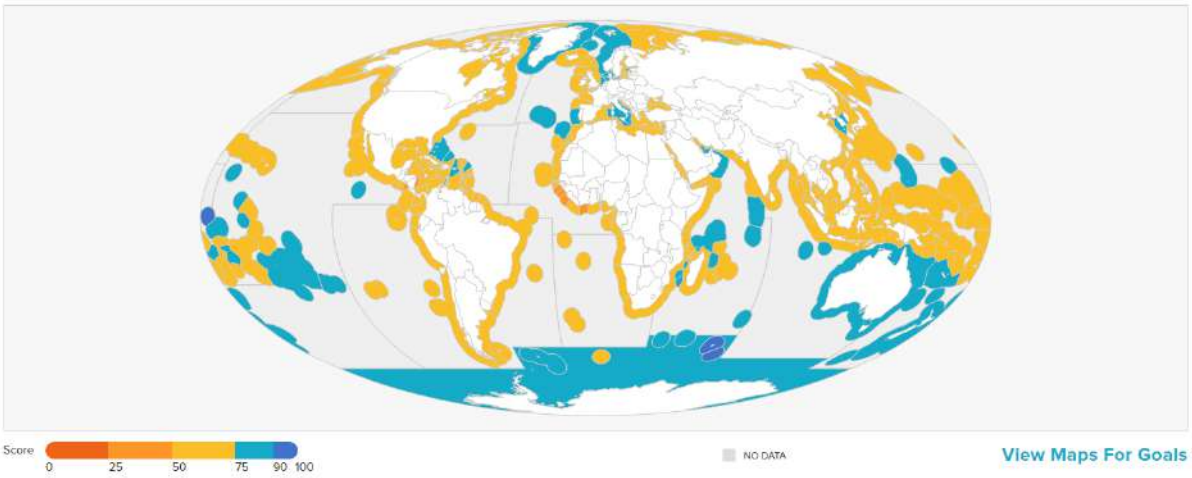
Further information:

Website: http://apdrc.soest.hawaii.edu/index.php

Introduction document:

ID: OC-042

Name: **Ocean Health Index(OHI)**



Component: Ocean condition

Data format: Maps

Status: Ongoing

Acquisition method: N/A

Data resolution: N/A

Data available: Scores for status, trend and resilience,and likely future status

Further information: The Ocean Health Index is a valuable tool for the ongoing assessment of ocean health. By providing a means to advance comprehensive ocean policy and compare future progress, the Index can inform decisions about how to use or protect marine ecosystems.

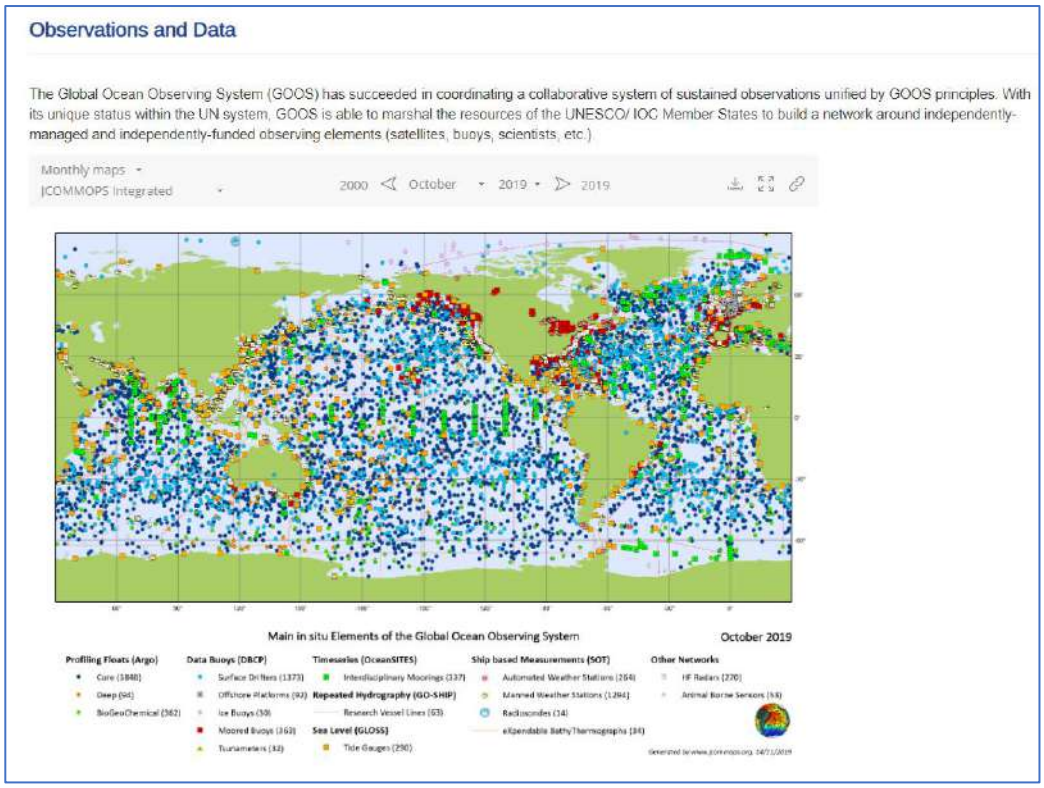
Global databases are used for the annual assessment of goals in 221 regions, including all coastal countries, territories and the Antarctic, inland to 1 km from the shore and seaward to either 200 nautical miles (Exclusive Economic Zone, EEZ) or 3 nm. Areas beyond national jurisdiction ('High Seas') are assessed less frequently.

Website: http://www.oceanhealthindex.org/

Introduction document:

ID: OC-043

Name: **UNESCO/IOC - The Global Ocean Observation System**



Component: Ocean condition

Data format: See each dataset (including CSV/ NetCDF)

Status: Ongoing

Acquisition method: Satellite data, in situ data (buoys), real-time data

Data resolution: See each dataset

Data available:

- climate: ocean heat content and sea level.
- operational services: ocean hazard early warnings, weather and ocean forecasting, and helping to define a path toward sustainable development.
- marine ecosystem health: monitor ocean acidification, biodiversity and habitat, and water quality.

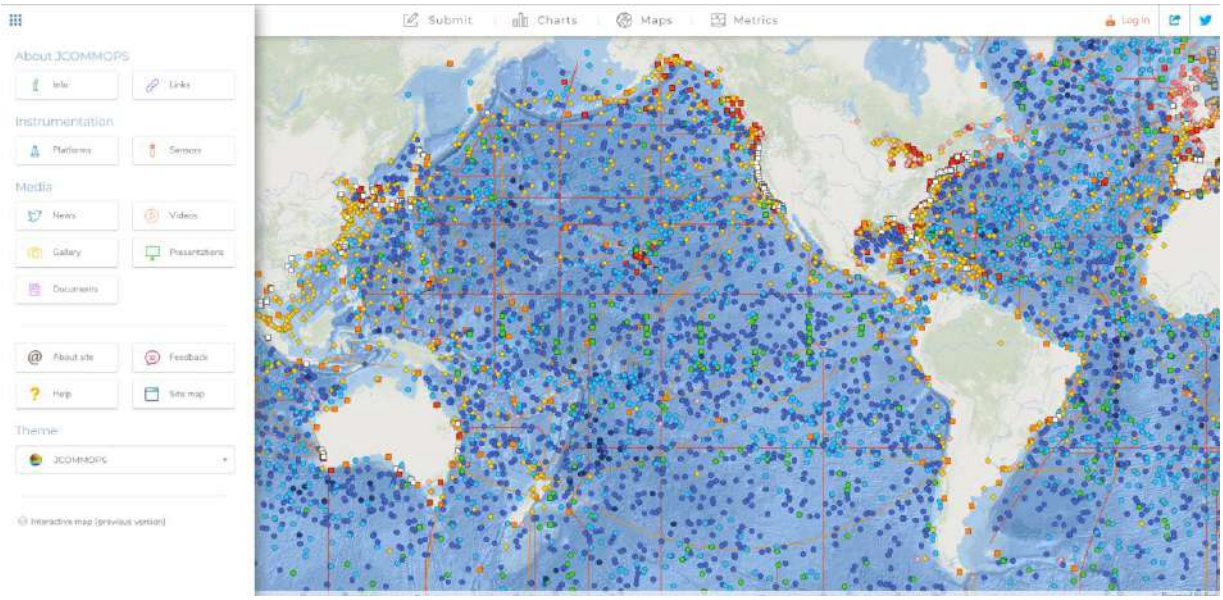
Further information: data are available in JCOMMOPS: http://www.jcommops.org/board

Website: http://www.goosocean.org/

Introduction document:

ID: OC-044

Name: **JCOMM in situ Observations Programme Support Centre (JCOMMOPS)**



Component: Ocean condition

Data format: See each dataset (including CSV/ NetCDF)

Status: Ongoing

Acquisition method: Satellite data, in situ data (buoys) and real-time data

Data resolution: See each dataset

Data available: Data from DBCP, OceanSITEs, SOT, GO-SHIP, and Argo

Further information: The JCOMM is an intergovernmental body of technical experts that provides a mechanism for international coordination of oceanographic and marine meteorological observing, data management and services, combining the expertise, technologies and capacity building capabilities of the meteorological and oceanographic communities. The creation of this Joint Technical Commission results from a general recognition that worldwide improvements in coordination and efficiency may be achieved by combining the expertise and technological capabilities of World Meteorological Organization (WMO) and UNESCO's Intergovernmental Oceanographic Commission (IOC).

Website: http://www.jcommops.org/board

Introduction document:

ID: OC-045

Name: **ESSO - Indian National Centre for Ocean Information Services (INCOIS)**

Sl.No	Service/Product	Forecast duration (days)	Frequency (hours)
Regular Daily Services			
1	Location Specific forecast	2-3 days**	3-6 hourly**
2	Forecast for the Islands	7 days	3 hourly
3	Coastal forecast	7 days	3 hourly
4	Deep Sea forecast	7 days	3 hourly
5	Indian Ocean forecast	5 days	6 hourly
6	Global forecast	5 days	6 hourly
7	Forecast along ship tracks	3 days	6 hourly
8	Webmap services	7 days	6 hourly
9	Port and Harbour forecast	2 days	3 hourly
10	Forecast for Maldives	3 days	3-6 hourly
Emergency Services			
11	Oil spill advisories	3 days	3-6 hourly
12	High Wave Alert Services	1-2 days ##	3 hourly
13	Search and Rescue Operations	As per user team requirements	
Value added services			
14	Inland Vessel Limits	1 day	3 hourly

Note: ** as per user's need ## depending on the persistence of the extreme weather feature

Component: Ocean condition

Data format: See each dataset (including CSV/ NetCDF)

Status: Ongoing

Acquisition method: Model data, satellite data, in-situ data (nearshore wave rider buoys, deep sea buoys, ship borne wave height meters and other deep sea met-ocean buoys as well as Automatic Weather Stations)

Data resolution: See each dataset

Data available: INCOIS provides information about wave height, direction and period (of both wind waves and swell waves), sea surface currents, sea surface temperature, mixed layer depth (the well mixed upper layer of the sea), depth of the 20 degree isotherm (a measure of the depth of the thermocline), astronomical tides, wind speed and direction, and oil-spill trajectory.

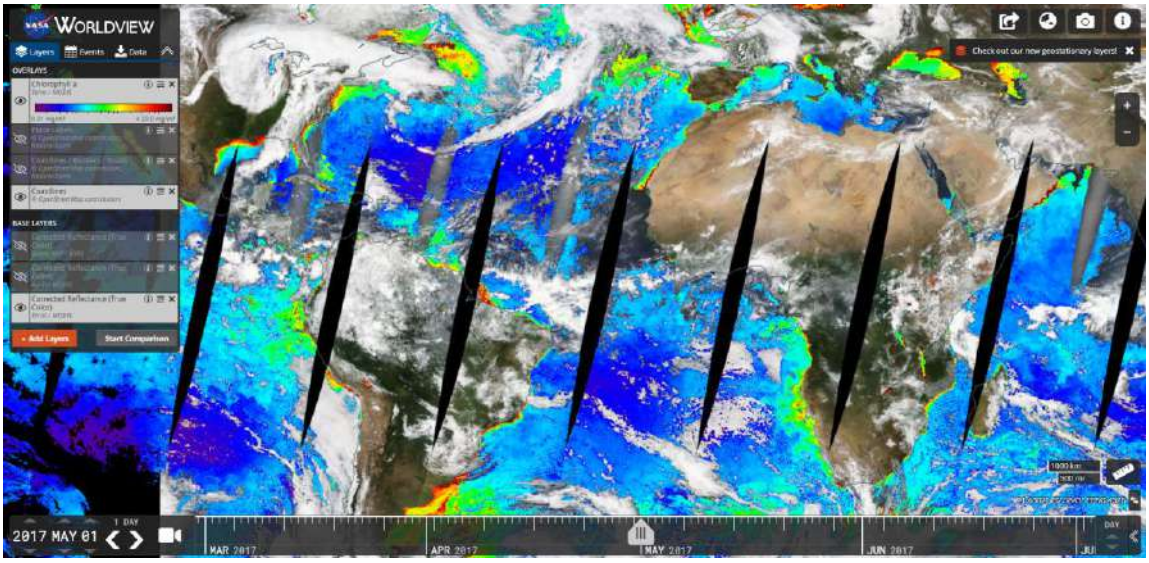
Further information:

Website: https://www.incois.gov.in/portal/osf/osf.jsp

Introduction document:

ID: OC-046

Name: **NASA - Ocean color**



Component: Ocean condition

Data format: NetCDF/ HDF

Status: Ongoing

Acquisition method: Satellite data

Data resolution: See each dataset

Data available: The Ocean Color (OC) products all include combinations of the following derived geophysical parameters: normalized water-leaving radiance (nLw) or remote sensing reflectance (Rrs) at multiple visible wavelengths; chlorophyll-A concentration (chl-a); aerosol optical thickness (AOT), τ, in one NIR or (for CZCS) red band; angstrom coefficient; the diffuse attenuation coefficient at 490 nm, K490; calcite concentration or particulate inorganic carbon (PIC); particulate organic carbon (POC); photosynthetically available radiation (PAR); fluorescence line height (FLH); and inherent optical properties (IOPs), which include absorption and backscattering coefficients in the visible bands. The MODIS SST products include 4-micron (nighttime only) and 11-micron (daytime and nighttime) SST. For the Level-3 products, each binned product contains multiple geophysical parameters, while the standard mapped image (SMI) products contain one parameter per granule.

Further information:

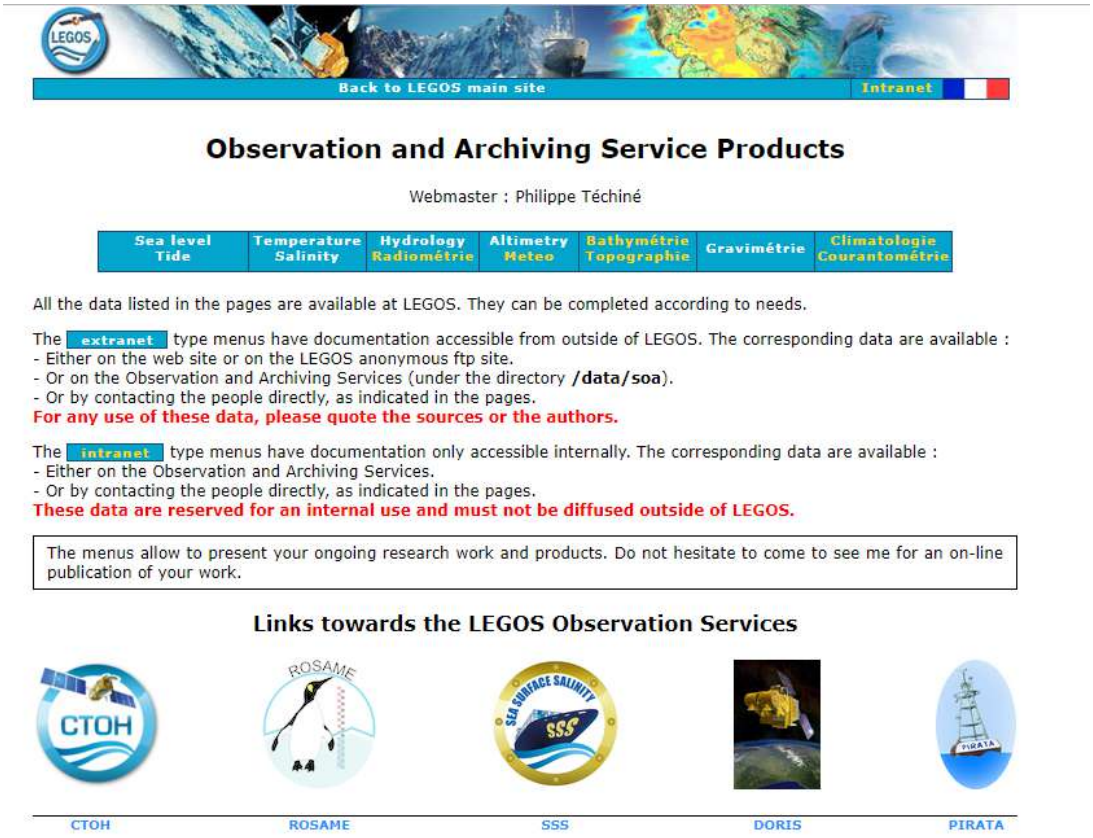
Website: https://oceancolor.gsfc.nasa.gov/about/

data: https://worldview.earthdata.nasa.gov/

Introduction document: https://oceancolor.gsfc.nasa.gov/docs/odps_opdsmp.may2018.pdf

ID: OC-047

Name: **Laboratoire d'Etudes en Géophysique et Océanographie Spatiales(LEGOS)**



Component: Ocean condition

Data format: See each dataset

Status: Ongoing

Acquisition method: In-situ observations, satellite measurements, modelling and data assimilation

Data resolution: See each dataset

Data available:

- CTOH (Centre for the Topography of Oceans and the Hydrosphere), dedicated to satellite altimetry over the oceans and the continents. Growth areas for this activity are the coastal zones, continental hydrology and the cryosphere.
- DORIS, a data treatment centre for precise orbital positioning (in cooperation with the International Earth Reference System).
- ROSAME, an observational network for monitoring sea level which was initiated in the southern ocean with the support of IPEV and has been

extended to tropical and European regions in cooperation with IRD and CNES.

- The SSS network for monitoring Sea Surface Salinity by merchant ships, which links five observational networks in the Pacific, Atlantic, Indian and Austral ocean basins.
- The moored buoy network PIRATA in the equatorial Atlantic, used for monitoring meteorological and oceanographic conditions between the surface and a depth of 500m. These data are complemented by oceanographic measuring campaigns that take place alongside routine maintenance of the buoys.

Further information:

Website: http://www.legos.obs-mip.fr/legos/Presentation

Introduction document:

ID: OC-048

Name: **LEGOS - Center for Topogaphic studies of the Ocean and Hydrosphere (CTOH)**

Component: Ocean condition

Data format: NetCDF/ Binary

Status: Ongoing

Acquisition method: Satellite data (altimetric measurements)

Data resolution: See each dataset

Data available: sea surface height, ocean currents, lake and river levels, the cryosphere, planet climate, continental surfaces, sea ice

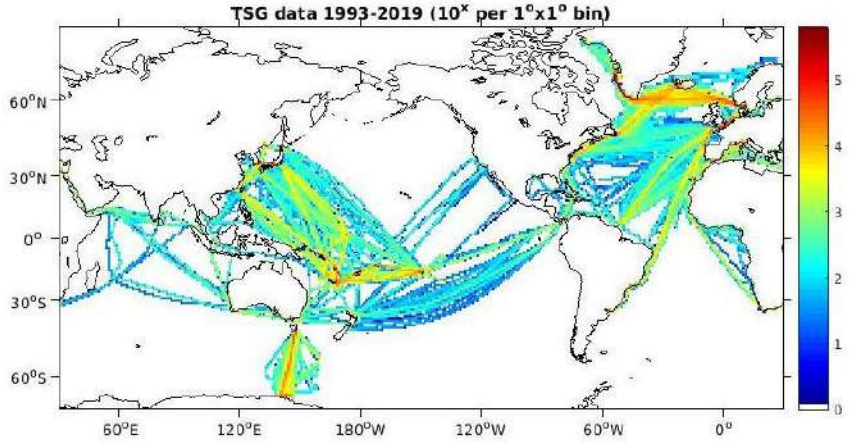
Further information: Including many datasets from several satellites
AVISO for Topex/Poseidon, Jason-1 and ENVISAT in Toulouse; ESA at ESRIN, Italy, and CERSAT for ERS1/2 in Brest

Website: http://ctoh.legos.obs-mip.fr/

Introduction document:

ID: OC-049

Name: **LEGOS - Sea Surface Salinity Observation Service**



Number of SSS observations per 1° longitude and 1° latitude, expressed in decimal logarithm scale, as obtained from voluntary observing ships during 1993-2019.

Component: Ocean condition

Data format: ASCII/ NetCDF

Status: Ongoing

Acquisition method: Real-time monitoring and Delayed Time Processing

Data resolution: 5 mn resolution data

Data available: Sea Surface Salinity, thermosalinograph (TSG)

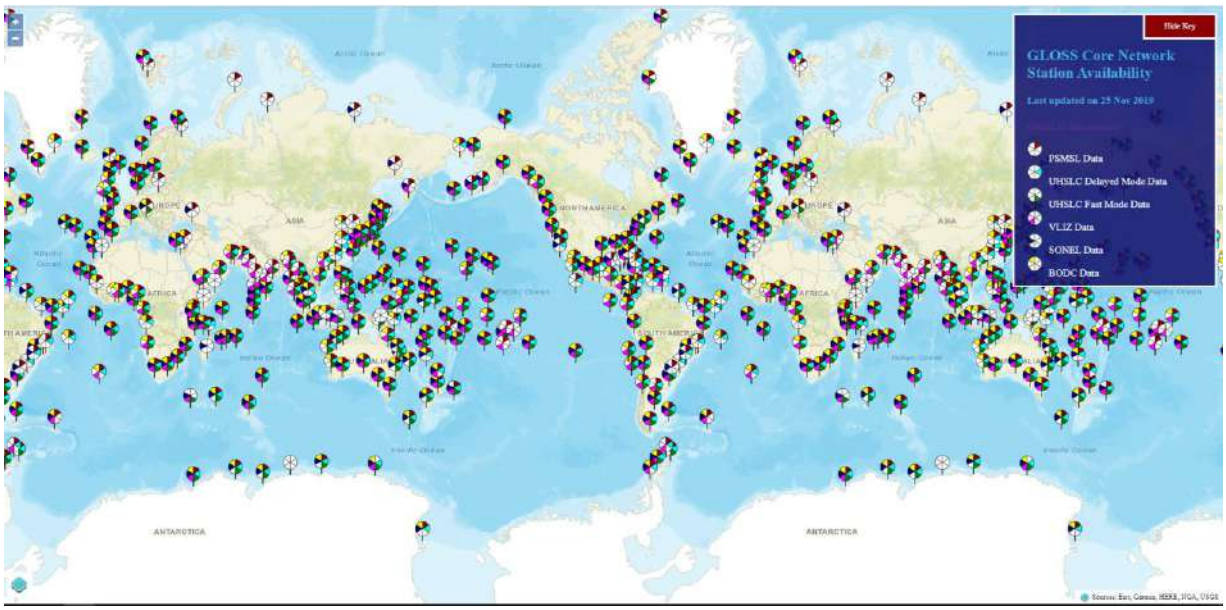
Further information: It aims at collecting, validating, archiving and distributing in situ SSS measurements derived from Voluntary Observing Ship programs.

Website: http://www.legos.obs-mip.fr/observations/sss

Introduction document:

ID: OC-050

Name: **Global Sea Level Observing System (GLOSS)**



Component: Ocean condition

Data format: Berkeley DB format
dat

Status: Ongoing (SINCE 1997)

Acquisition method: in situ data (Tide gauge analysis)

Data resolution: See each dataset

Data available: Sea level

Further information: The Global Sea Level Observing System (GLOSS) is an international sea level monitoring program designed to produce high-quality in situ sea level observations to support a broad research and operational user base. GLOSS was established by the UNESCO Intergovernmental Oceanographic Commission (IOC) in 1985 and it is currently formed by over 90 nations across the globe.

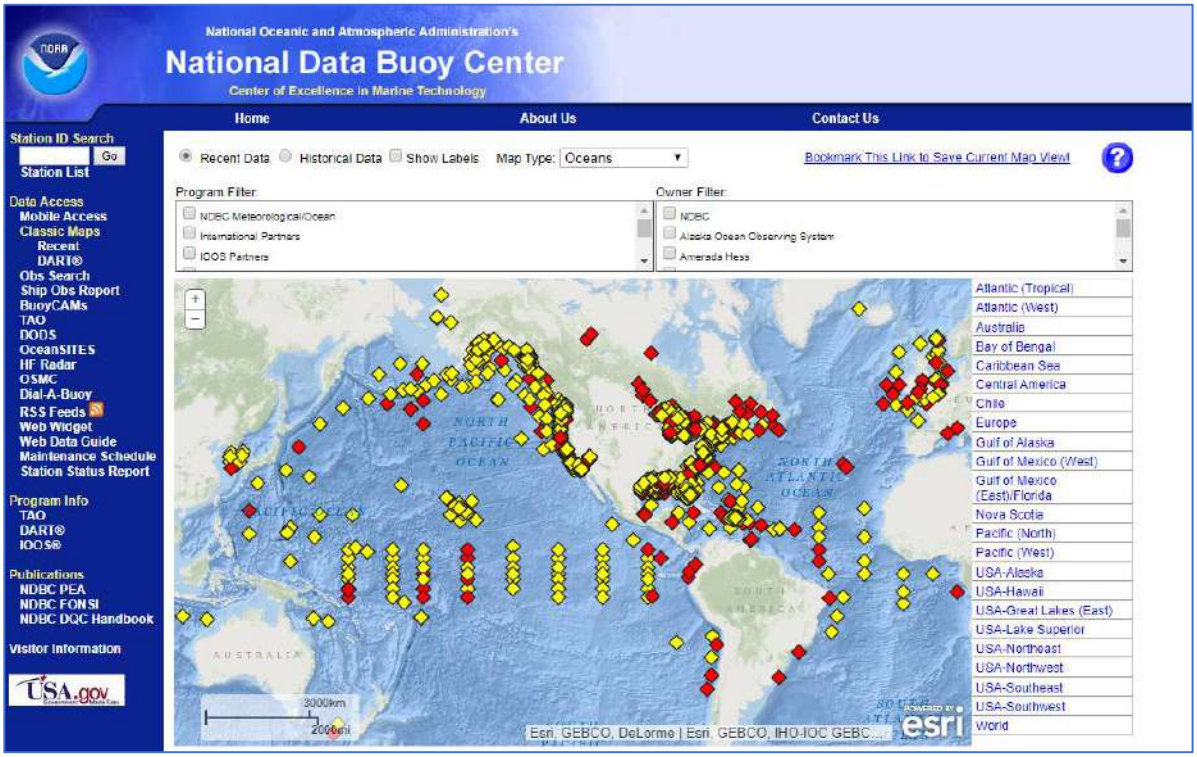
Website: https://www.gloss-sealevel.org/

Data: https://www.psmsl.org/products/gloss/glossmap.html

Introduction document:

ID: OC-051

Name: **NOAA - National Data Buoy Center (NDBC)**



Component: Ocean condition

Data format: NetCDF

Status: Ongoing

Acquisition method: Real-time data

Data resolution: See each dataset (in the Handbook)

Data available: Water Temperature, Ocean Wave Estimates, and Ocean Current Profiles

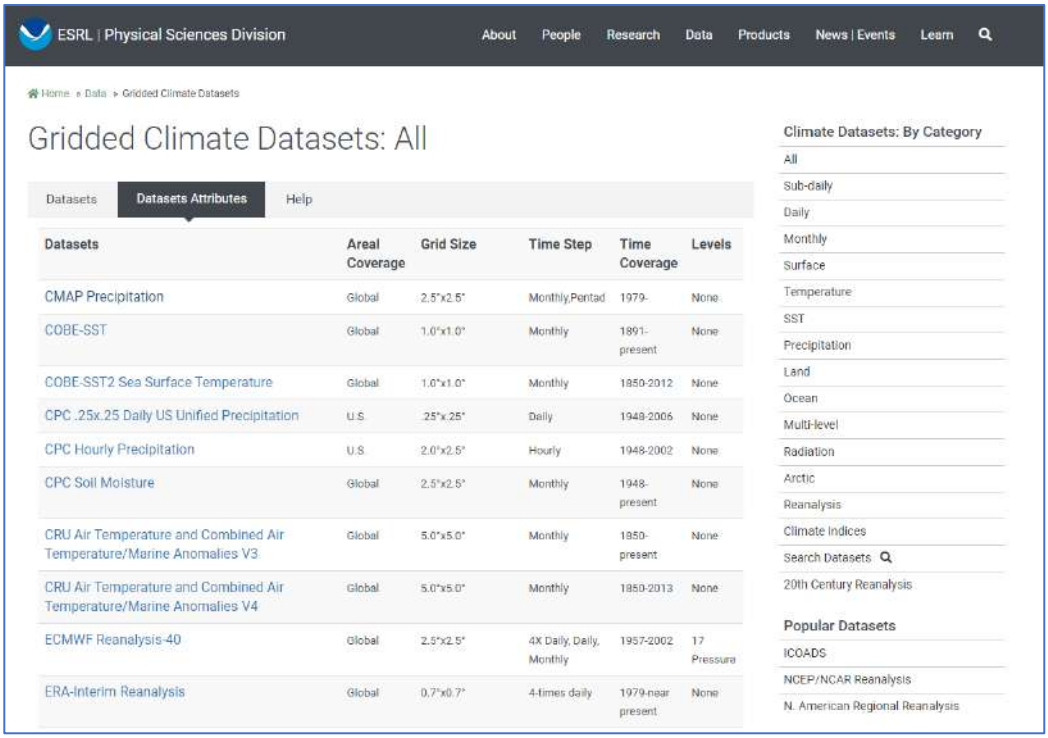
Further information: A network of data collecting buoys and coastal stations

Website: https://www.ndbc.noaa.gov/

Introduction document: Handbook: https://www.ndbc.noaa.gov/NDBCHandbookofAutomatedDataQualityControl2009.pdf

ID: OC-052

Name: **NOAA - Gridded Climate Datasets**



Component: Ocean condition

Data format: NetCDF

Status: Ongoing

Acquisition method: See each dataset
(at least includes satellite data, gauge data, model data)

Data resolution: See each dataset
from 8 times daily to monthly
from 0.04°x0.04° to 5.0°x5.0°

Data available: This a collection of climate datasets, which includes temperature, SST, precipitation, radiation, arctic, reanalysis, and climate indices data.

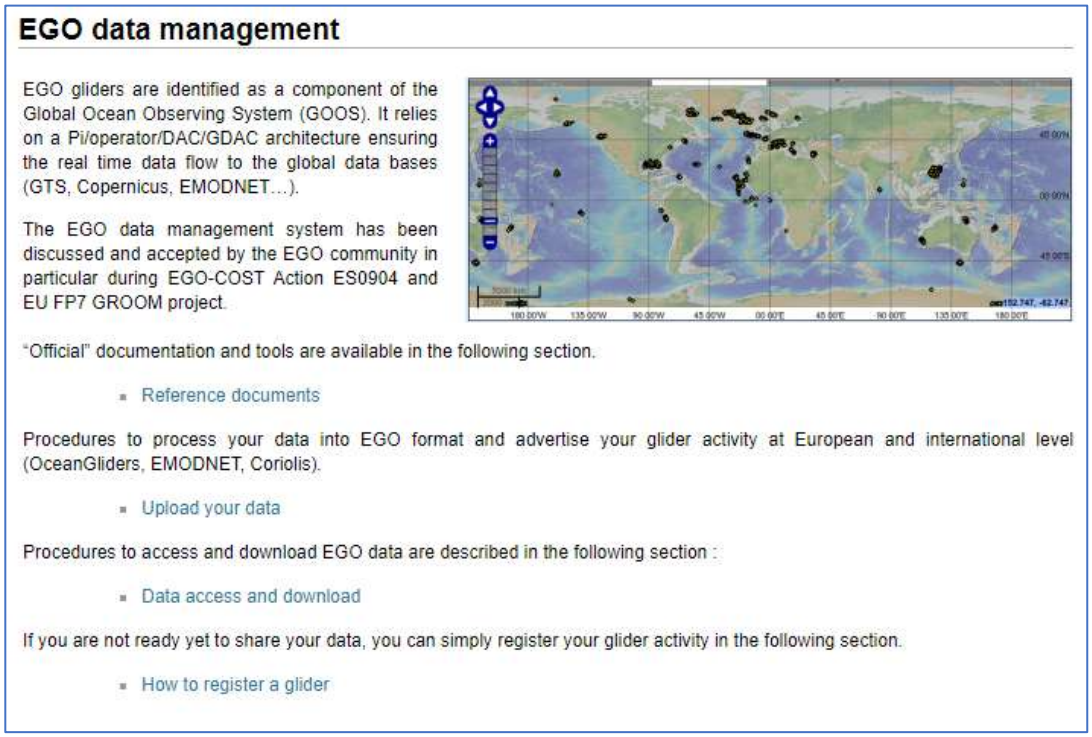
Further information: NOAA Earth System Research Laboratory

Website: https://www.esrl.noaa.gov/psd/data/gridded/

Introduction document:

ID: OC-053

Name: **Everyone's Gliding Observatories (EGO)**



EGO data management

EGO gliders are identified as a component of the Global Ocean Observing System (GOOS). It relies on a PI/operator/DAC/GDAC architecture ensuring the real time data flow to the global data bases (GTS, Copernicus, EMODNET…).

The EGO data management system has been discussed and accepted by the EGO community in particular during EGO-COST Action ES0904 and EU FP7 GROOM project.

"Official" documentation and tools are available in the following section.

- Reference documents

Procedures to process your data into EGO format and advertise your glider activity at European and international level (OceanGliders, EMODNET, Coriolis).

- Upload your data

Procedures to access and download EGO data are described in the following section :

- Data access and download

If you are not ready yet to share your data, you can simply register your glider activity in the following section.

- How to register a glider

Component: Ocean condition

Data format: NetCDF

Status: Ongoing (since 2005)

Acquisition method:
- Real-Time data : scientific data transmitted during the deployment in Real-time.
- Recovery data : scientific data recovered from the memory card after glider recovery
- Delayed Mode: scientific data quality controlled in delayed mode.

Data resolution: Full resolution

Data available: EGO provides observations of the ocean physics, biogeochemistry and biology with gliders. Sea water temperature, sea water salinity, sea water pressure, biogeochemical sea water data, and acoustic sea water data are included.

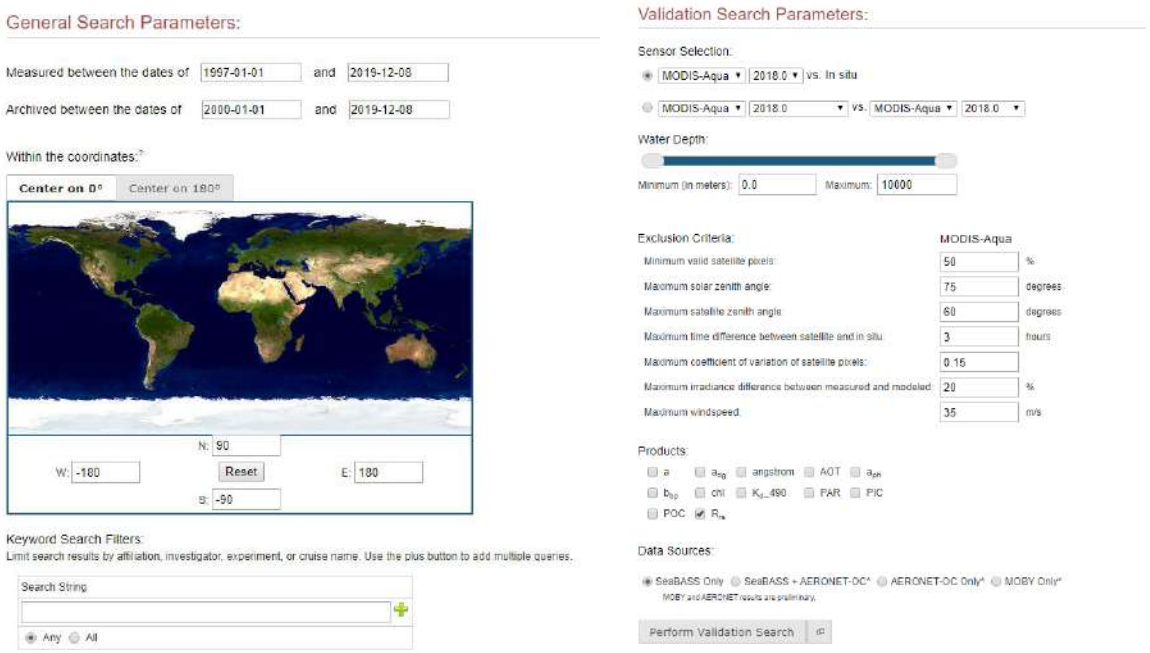
Further information: A component of the Global Ocean Observing System (GOOS)

Website: https://www.ego-network.org/dokuwiki/doku.php

Introduction document: https://www.ego-network.org/dokuwiki/doku.php?id=public:datamanagement

ID: OC-054

Name: **NASA - SeaWiFS Bio-optical Archive and Storage System (SeaBASS)**



Component: Ocean condition

Data format: ASCII/ Map

Status: Ongoing

Acquisition method: In situ data and satellite data

Data resolution: See each dataset

Data available: Archived data include measurements of apparent and inherent optical properties, phytoplankton pigment concentrations, and other related oceanographic and atmospheric data, such as water temperature, salinity, stimulated fluorescence, and aerosol optical thickness. Data are collected using a number of different instrument packages, such as profilers, buoys, and hand-held instruments, and manufacturers on a variety of platforms, including ships and moorings.

Further information:

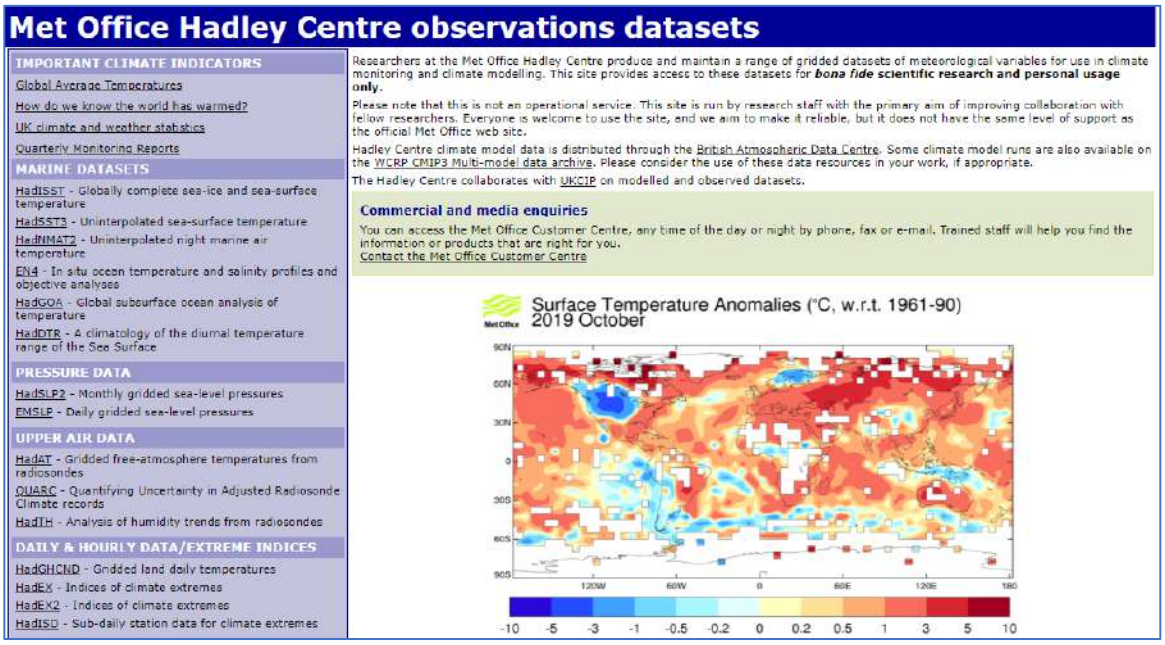
Website: https://seabass.gsfc.nasa.gov/wiki/System_Description

Data directory: https://seabass.gsfc.nasa.gov/archive/

Introduction document:

ID: OC-055

Name: **Hadley Centre Observation Datasets**



Component: Ocean condition

Data format: ASCII/ NetCDF

Status: Ongoing (since 1990)

Acquisition method: In situ data and satellite data

Data resolution: See each dataset

Data available: Sea-ice, sea-surface temperature, night marine air temperature, in situ ocean temperature and salinity profiles and objective analyses, monthly/daily gridded sea-level pressures data are included.

Further information: Researchers at the Met Office Hadley Centre produce and maintain a range of gridded datasets of meteorological variables for use in climate monitoring and climate modelling. This site provides access to these datasets for bona fide scientific research and personal usage only.

Observed subsurface ocean temperature and salinity profiles with data quality information, and, objective analyses formed from the profile data with uncertainty estimates are included.

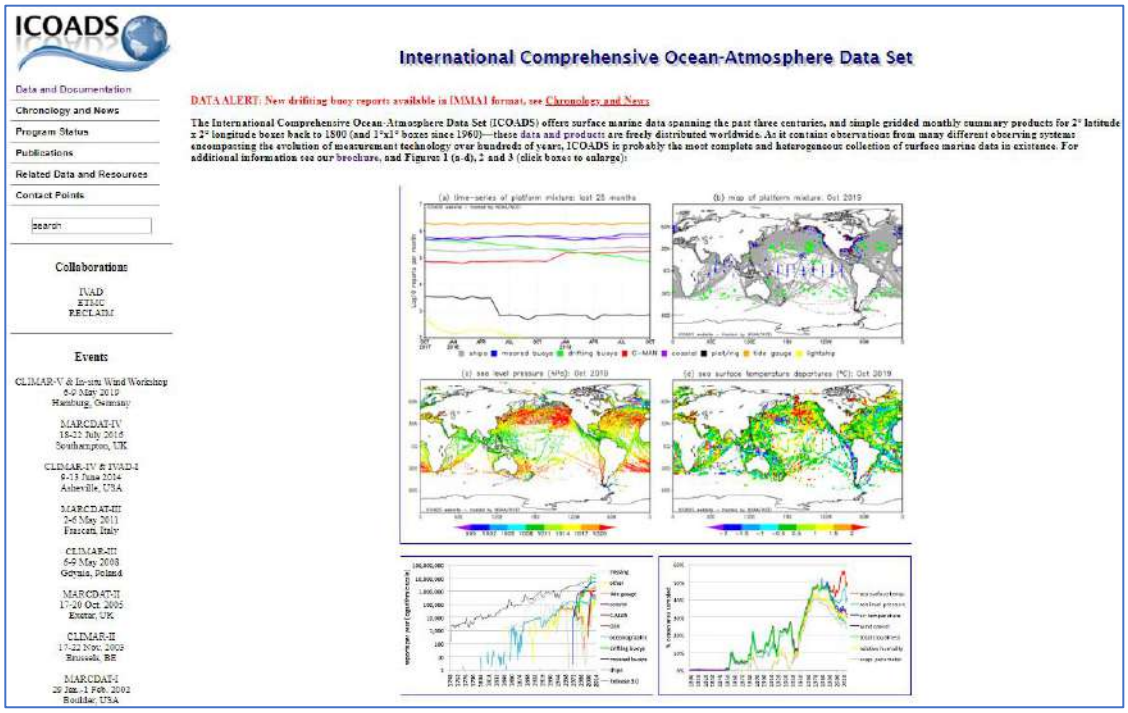
Data are available from 1900 to the present.

Website: https://www.metoffice.gov.uk/hadobs/

Introduction document:

ID: OC-056

Name: **The International Comprehensive Ocean-Atmosphere Data Set (ICOADS)**



Component: Ocean condition

Data format: IMMA format/ CSV/ ASCII/ NetCDF

Status: Ongoing (since1662)

Acquisition method: Real-time data and delayed mode data

Data resolution: See each dataset.
Spatial resolution: 2° latitude x 2° longitude boxes back to 1800 (and 1°x1° boxes since 1960)
Temperal resolution: monthly/ yearly

Data available: ICOADS includes surface marine data (air temperature, cloud frequency, heat flux, humidity, sea level pressure, sea surface temperature, surface winds, wind stress) spanning the past three centuries, and simple gridded monthly summary products.

ICOADS Release 3.1 (R3.1) was completed in October 2017 with data covering 1662-2014, plus preliminary data and products, Release 3.0.1, for 2015-present in near-real-time.

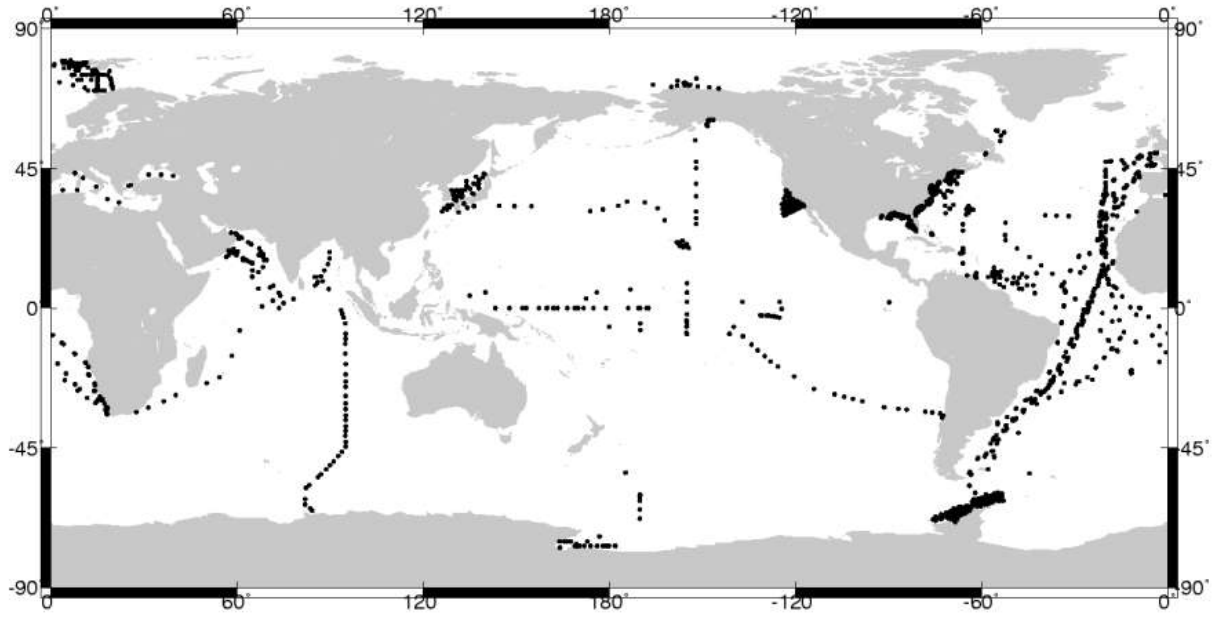
Further information: ICOADS is probably the most complete and heterogeneous collection of surface marine data in existence.

Website: https://icoads.noaa.gov/

Introduction document: https://rda.ucar.edu/datasets/ds548.1/

ID: OC-057

Name: **NASA bio-Optical Marine Algorithm Dataset (NOMAD)**



Component: Ocean condition

Data format: ASCII

Status: uncertain (newest version in 2008)

Acquisition method: In situ data (cruise) and satellite data

Data resolution: N/A

Data available: Global high quality in situ bio-optical data sets. Data products include coincident observations of water-leaving radiances and chlorophyll-a concentrations, along with relevant metadata, such as the date, time, and coordinates of data collection and binary processing flags.

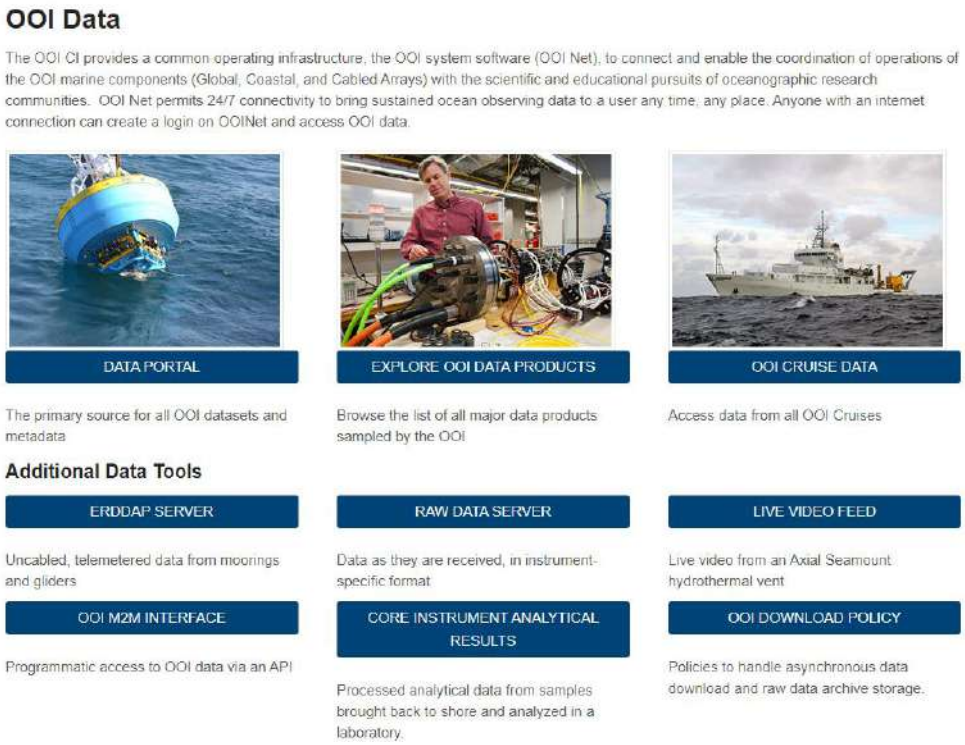
Further information:

Website: https://seabass.gsfc.nasa.gov/wiki/NOMAD

Introduction document:

ID: OC-058

Name: **Ocean Observatories Initiative (OOI)**



Component: Ocean condition

Data format: NetCDF/ CSV/ JSON

Status: Ongoing

Acquisition method: Near-real time,model data, in situ data(cruises)

Data resolution: See each dataset

Data available: An integrated infrastructure program composed of science-driven platforms and sensor systems that measure physical, chemical, geological and biological properties and processes from the seafloor to the air-sea interface. See the list of the data: http://oceanobservatories.org/data-products/

Further information: OOI deploys sensors in arrays of moorings, mobile assets, and cabled sensors to measure oceanographic variables.

OOI provides data products for a 25-year-plus time period within an expandable architecture.

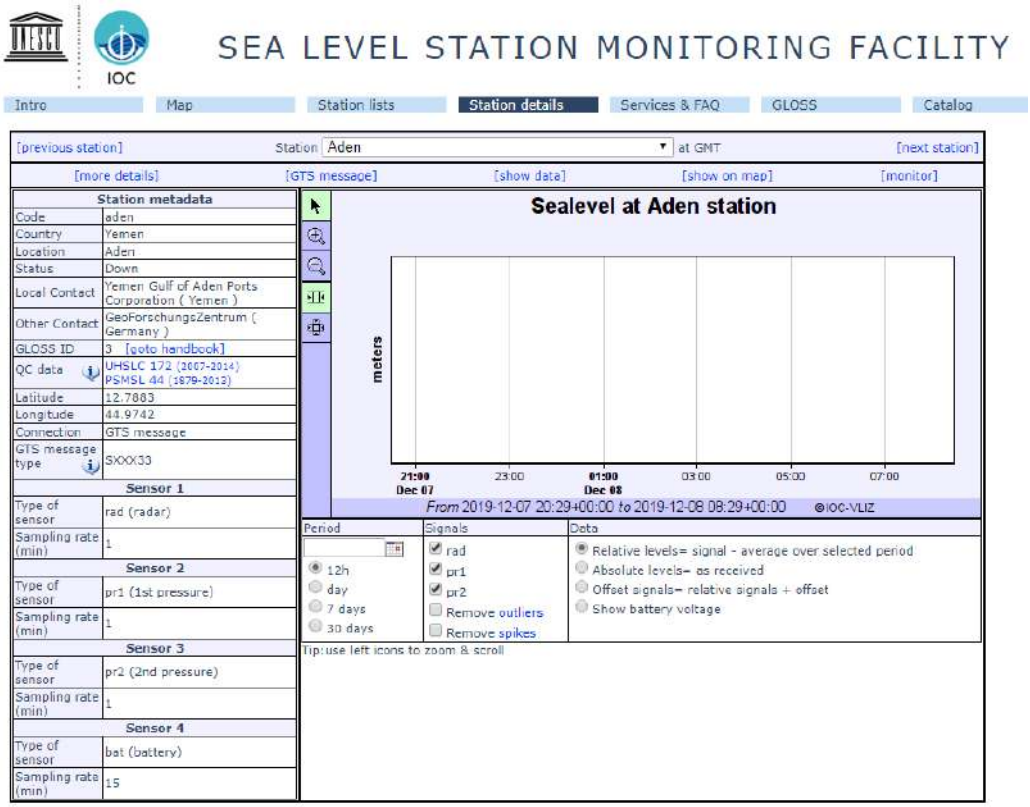
WHOI is the leader, owner, and operator.

Website: http://oceanobservatories.org/data/

Introduction document:

ID: OC-059

Name: **UNESCO/ IOC - Sea Level Facility**



Component: Ocean condition

Data format: Map/ ASCII

Status: Ongoing

Acquisition method: Real time data and delayed data

Data resolution: See each dataset
12h/ day/ 7 days/ 30 days

Data available: Sea Level

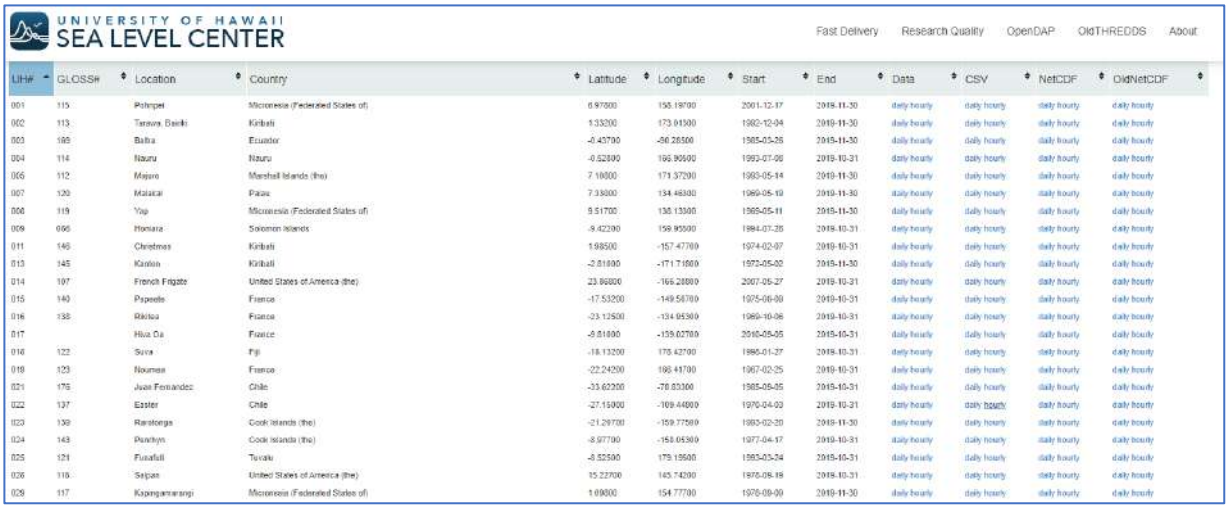
Further information: This platform provides information about the operational status of global and regional networks of Real time sea level stations as well as a display service for quick inspection of the raw data stream from individual stations.

Website: http://www.ioc-sealevelmonitoring.org/

Introduction document:

ID: OC-060

Name: **University of Hawaii - Sea Level Center**


UNIVERSITY OF HAWAII
SEA LEVEL CENTER

Fast Delivery | Research Quality | OpenDAP | OldTHREDDS | About

UH#	GLOSS#	Location	Country	Latitude	Longitude	Start	End	Data	CSV	NetCDF	OldNetCDF
001	115	Pohnpei	Micronesia (Federated States of)	6.97500	158.19700	2001-12-17	2019-11-30	daily hourly	daily hourly	daily hourly	daily hourly
002	113	Tarawa, Betio	Kiribati	1.33200	173.01500	1992-12-04	2019-11-30	daily hourly	daily hourly	daily hourly	daily hourly
003	169	Baltra	Ecuador	-0.45700	-90.28500	1985-05-28	2015-11-30	daily hourly	daily hourly	daily hourly	daily hourly
004	114	Nauru	Nauru	-0.52300	166.90500	1993-07-06	2019-10-31	daily hourly	daily hourly	daily hourly	daily hourly
005	112	Majuro	Marshall Islands (the)	7.10000	171.37200	1993-05-14	2019-11-30	daily hourly	daily hourly	daily hourly	daily hourly
007	120	Malakal	Palau	7.33000	134.46300	1989-05-19	2019-11-30	daily hourly	daily hourly	daily hourly	daily hourly
008	119	Yap	Micronesia (Federated States of)	9.51700	138.13300	1989-05-11	2015-11-30	daily hourly	daily hourly	daily hourly	daily hourly
009	666	Honiara	Solomon Islands	-9.42200	159.95500	1994-07-26	2019-10-31	daily hourly	daily hourly	daily hourly	daily hourly
011	146	Christmas	Kiribati	1.98500	-157.47700	1974-02-07	2019-10-31	daily hourly	daily hourly	daily hourly	daily hourly
013	145	Kanton	Kiribati	-2.81000	-171.71000	1972-05-02	2015-11-30	daily hourly	daily hourly	daily hourly	daily hourly
014	197	French Frigate	United States of America (the)	23.86800	-166.28000	2007-05-27	2019-10-31	daily hourly	daily hourly	daily hourly	daily hourly
015	140	Papeete	France	-17.53200	-149.56700	1975-06-09	2019-10-31	daily hourly	daily hourly	daily hourly	daily hourly
016	138	Rikitea	France	-23.12500	-134.95300	1989-10-06	2019-10-31	daily hourly	daily hourly	daily hourly	daily hourly
017		Hiva Oa	France	-9.81000	-139.02700	2010-05-05	2015-10-31	daily hourly	daily hourly	daily hourly	daily hourly
018	122	Suva	Fiji	-18.13200	178.42700	1986-01-27	2019-10-31	daily hourly	daily hourly	daily hourly	daily hourly
019	123	Noumea	France	-22.24200	166.41700	1967-02-25	2019-10-31	daily hourly	daily hourly	daily hourly	daily hourly
021	176	Juan Fernandez	Chile	-33.62200	-78.83300	1985-05-05	2015-10-31	daily hourly	daily hourly	daily hourly	daily hourly
022	137	Easter	Chile	-27.15900	-109.44000	1970-04-03	2019-10-31	daily hourly	daily hourly	daily hourly	daily hourly
023	139	Rarotonga	Cook Islands (the)	-21.20700	-159.77500	1993-02-20	2019-11-30	daily hourly	daily hourly	daily hourly	daily hourly
024	143	Penrhyn	Cook Islands (the)	-8.97700	-158.05300	1977-04-17	2019-10-31	daily hourly	daily hourly	daily hourly	daily hourly
025	121	Funafuti	Tuvalu	-8.52500	179.19500	1983-03-24	2015-10-31	daily hourly	daily hourly	daily hourly	daily hourly
026	116	Saipan	United States of America (the)	15.22700	145.74200	1976-08-18	2019-10-31	daily hourly	daily hourly	daily hourly	daily hourly
029	117	Kapingamarangi	Micronesia (Federated States of)	1.09800	154.77700	1976-09-09	2019-11-30	daily hourly	daily hourly	daily hourly	daily hourly

Component: Ocean condition

Data format: CSV/ NetCDF

Status: Ongoing

Acquisition method: Real-time data

Data resolution: Daily/ hourly

Data available: Global sea level rise

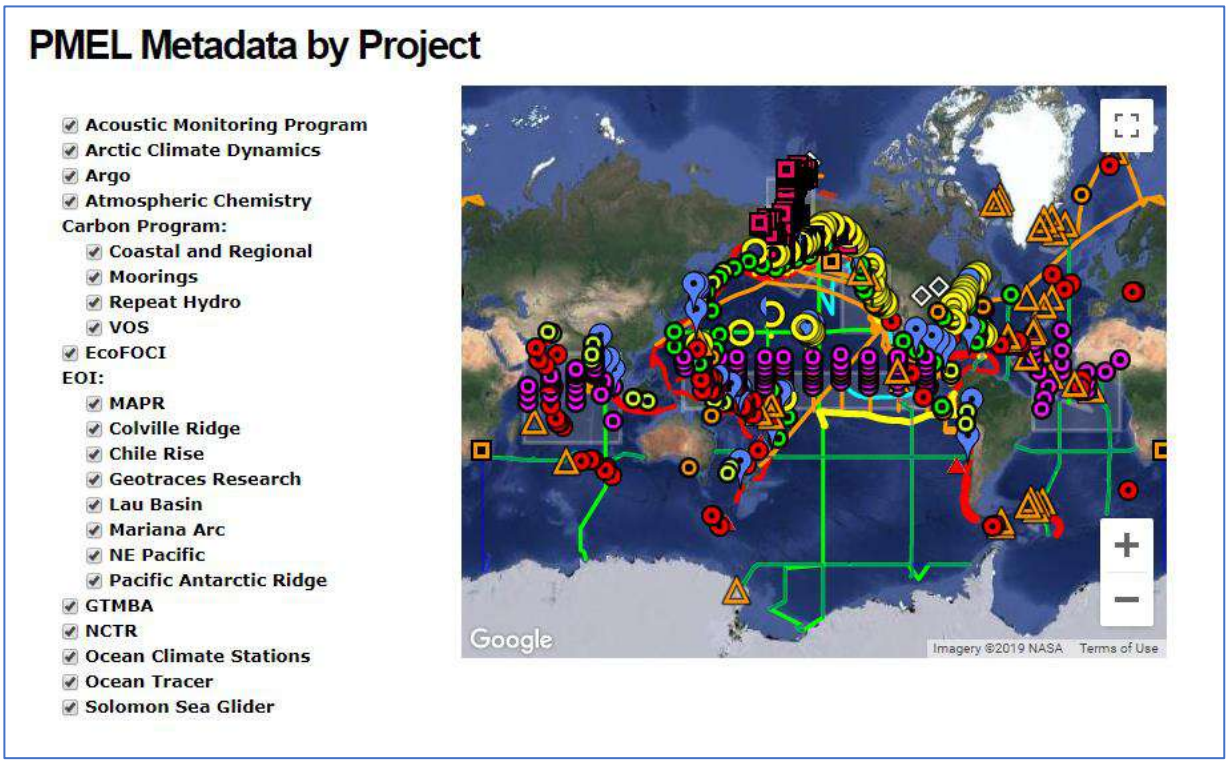
Further information: Tide gauges data around the world from GLOSS (Global Sea Level Observing System).

Website: http://uhslc.soest.hawaii.edu/datainfo/

Introduction document:

ID: OC-061

Name: **NOAA - Pacific Marine Environmental Laboratory (PMEL)**



Component: Ocean condition

Data format: See each dataset (at least includes ASCII)

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: A regional data laboratory but provides global data in earth, atmosphere, ecosystems, and climate.
Project-based data list: https://www.pmel.noaa.gov/data-links

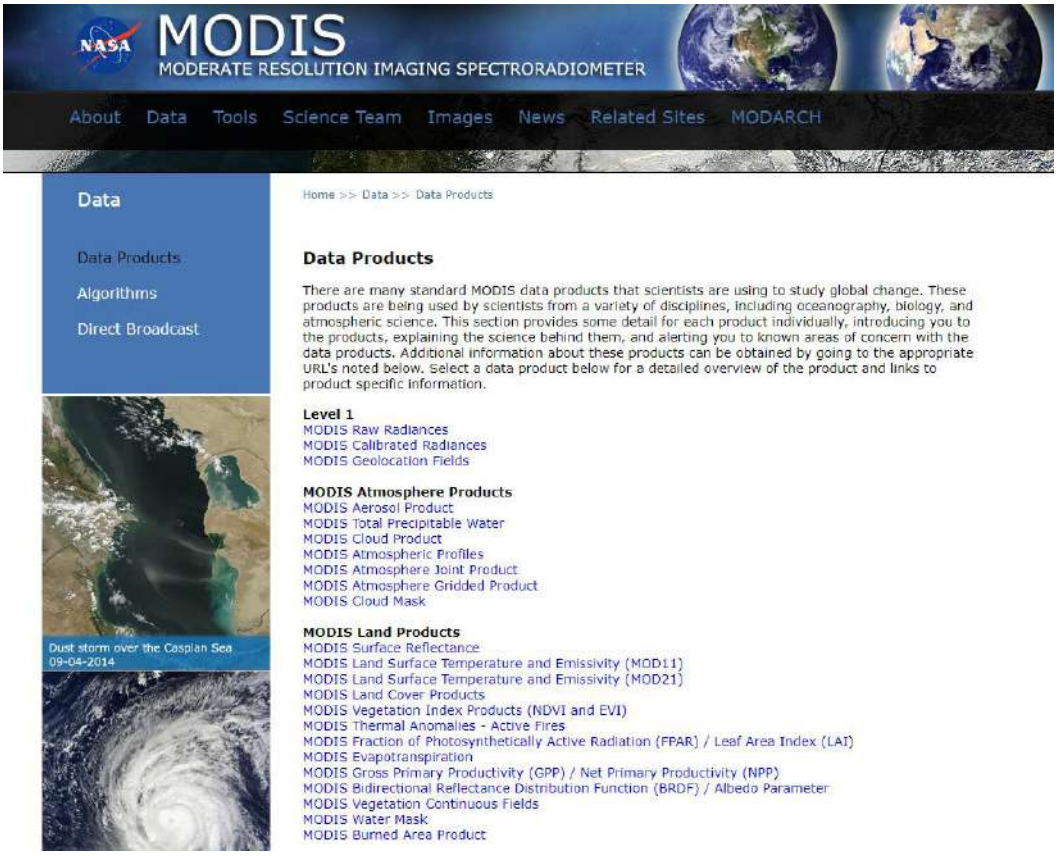
Further information:

Website: https://www.pmel.noaa.gov/public/pmel/globe/

Introduction document:

ID: OC-062

Name: **Moderate Resolution Imaging Spectroradiometer (MODIS)**



Component: Ocean condition

Data format: See each dataset (at least includes ASCII)

Status: Ongoing

Acquisition method: Satellite data

Data resolution: See each dataset

Data available: MODIS Sea Surface Temperature,
MODIS Remote Sensing Reflectance,
MODIS Chlorophyll-a Concentration,
MODIS Diffuse Attenuation at 490 nm,
MODIS Particulate Organic Carbon,
MODIS Particulate Inorganic Carbon,
MODIS Normalized Fluorescence Line Height (FLH),
MODIS Instantaneous Photosynthetically Available Radiation,
MODIS Daily Mean Photosynthetically Available Radiation,
MODIS Sea Ice and Ice Surface Temperature

Further information: The MODIS instrument is operating on both the Terra and Aqua spacecraft. It has a viewing swath width of 2,330 km and views the entire surface of the Earth every one to two days. Its detectors measure 36 spectral bands between 0.405 and 14.385 μm, and it acquires data at three spatial resolutions -- 250m, 500m, and 1,000m.

Website: https://modis.gsfc.nasa.gov/data/

Introduction document:

ID: OC-063

Name: **UNESCO/IOC - Harmful Algal Bloom Program (HAIS)**

Component: Ocean condition

Data format: online map/ PDF/ CSV

Status: Ongoing (since 1985)

Acquisition method: N/A

Data resolution: N/A

Data available: HAIS provides access to information on harmful algal events, harmful algae monitoring and management systems worldwide, current use of taxonomic names of harmful algae, and information on biogeography of harmful algal species. Supplementary components are an expert directory and a bibliography. Algal bloom data are CSV data by country.

Further information:

- Dynamic mapping: On-line mapping tool for all data, and combination of data, on species distribution, events, syndromes, etc.
- Species fact sheets and a species identification system: An easy-to-use key for identification of genera and species within a genus, for the relevant taxa.
- High-quality visualizations: Pre-prepared maps and graphics with, e.g. yearly and decadal distribution of syndromes, species and events, ready for download as high-resolution PDF files. User surveys will define specific maps and graphics.

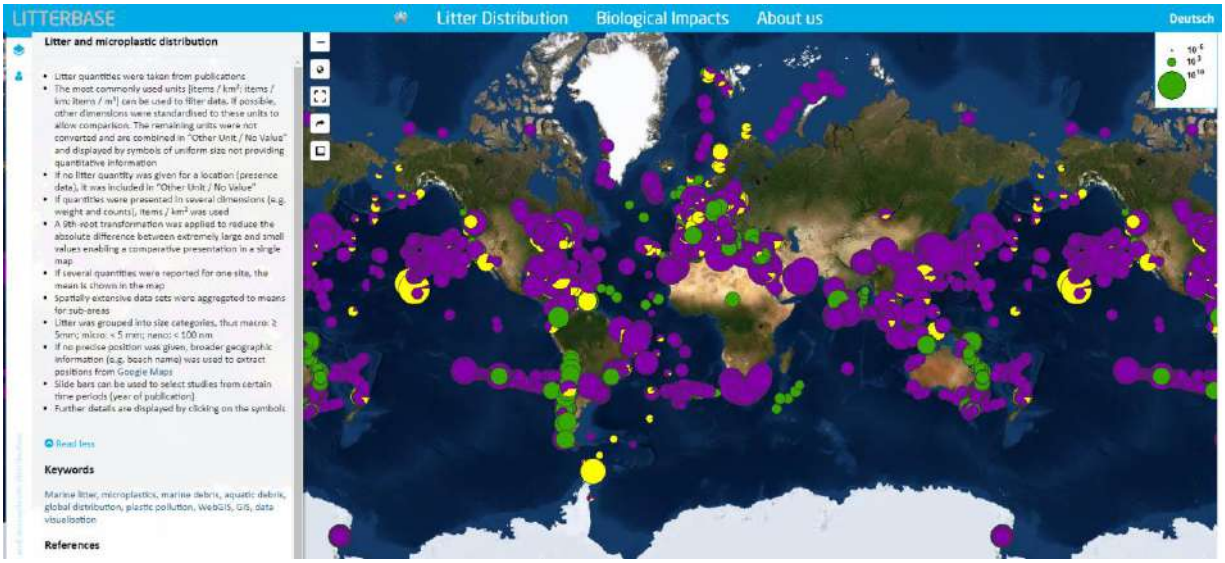
- HAIS publication series: Pending the assessment of a user survey, selected high-quality visualizations may be published as an annual printed report to serve the users and to stimulate and justify continued and additional new data submission.
- Discussion forum: A dynamic, participatory forum for discussion and direct access to other platforms.

Website: http://hab.ioc-unesco.org/
Online Map: http://envlit.ifremer.fr/var/envlit/storage/documents/param maps/ haedat/
CSV Data: http://haedat.iode.org/browseEvents.php

Introduction document: http://hab.ioc-unesco.org/index.php?option=com_oe&task=documents&Itemid=10

ID: OC-064

Name: **LITTERBASE**



Component: Ocean condition

Data format: Online Map Viewer

Status: Ongoing

Acquisition method: Research data

Data resolution: N/A

Data available: LITTERBASE provides information about the amount and distribution of litter and microplastic, and interactions between aquatic life and marine litter.

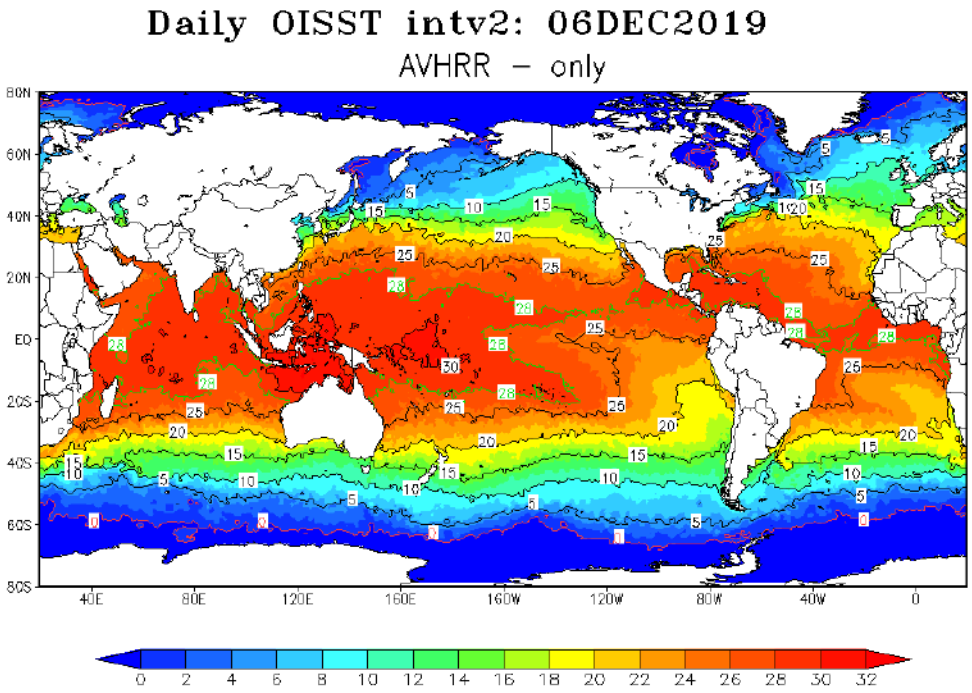
Further information: LITTERBASE summarises results from 1,960 scientific studies in understandable global maps and figures and opens scientific knowledge on marine litter to the public.

Website: https://litterbase.awi.de/

Introduction document:

ID: OC-065

Name: **NOAA - Optimum Interpolation Sea Surface Temperature (OISST)**



Component: Ocean condition

Data format: NetCDF

Status: Ongoing

Acquisition method: Analysis constructed by combining observations from different platforms (satellites, ships, and buoys)

Data resolution: 1/4° daily

Data available: Sea Surface Temperature

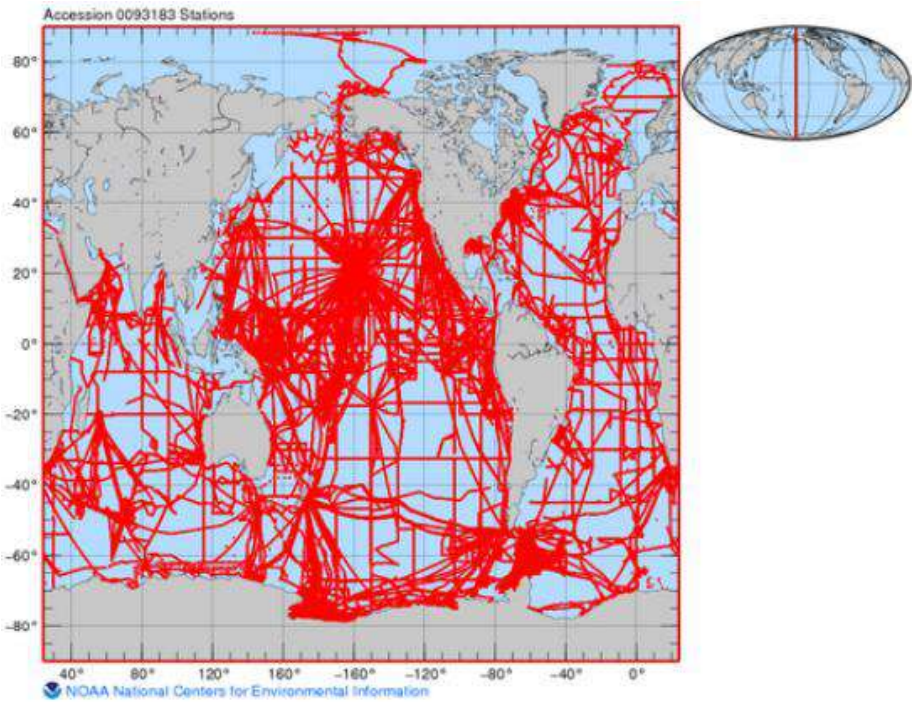
Further information: There are two kinds of daily OISST, named after the relevant satellite SST sensors. These are the Advanced Very High Resolution Radiometer (AVHRR) and Advanced Microwave Scanning Radiometer on the Earth Observing System (AMSR-E). AVHRR has the longest record (from late 1981 to the present) of SST measurements from a single sensor design. Infrared instruments, like AVHRR, can make observations at relatively high resolution but cannot see through clouds. Microwave instruments like AMSR-E can measure SSTs in most weather conditions (except heavy rain) but not adjacent to land.

Website: https://www.ncdc.noaa.gov/oisst

Introduction document:

ID: OC-066

Name: **NOAA - Global Ocean Currents Database (GOCD)**



Component: Ocean condition

Data format: NetCDF/ ASCII

Status: Finished (1962 - 2013)

Acquisition method: In situ data

Data resolution: High resolution

Data available: Currents

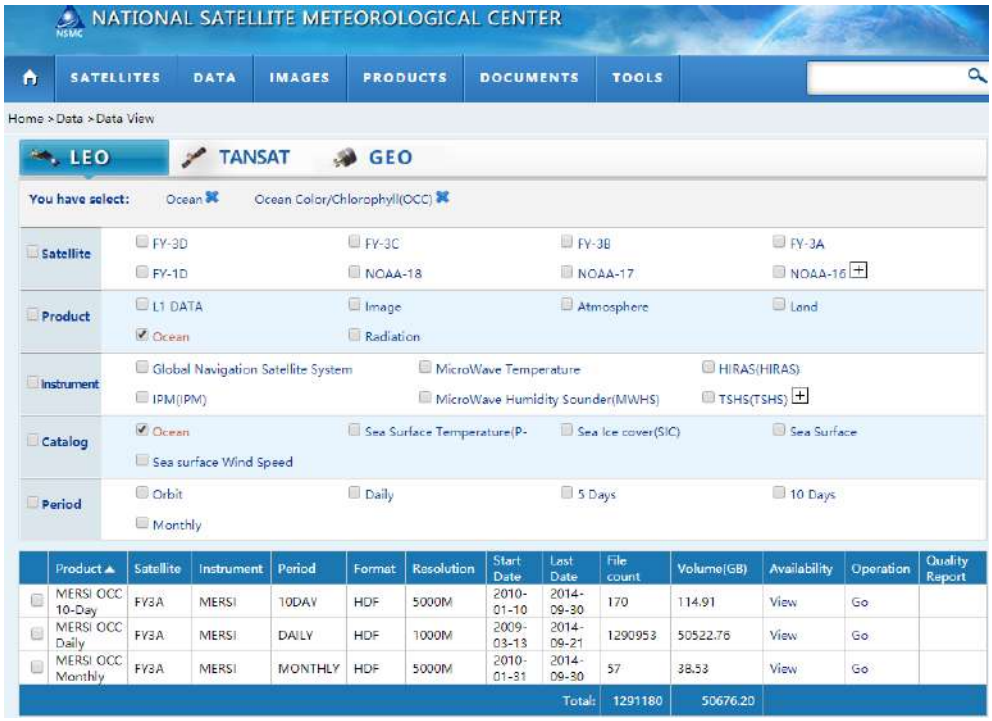
Further information: This National Centers for Environmental Information (NCEI) archival information package (AIP) contains a product generated by NCEI-- the Global Ocean Currents Database (GOCD). It is derived from NCEI AIPs that hold in situ ocean current data from a diverse range of instruments, collection protocols, processing methods, and data storage formats. For acceptance into the GOCD, the data must have sufficient quality control and thorough documentation. From the shipboard acoustic Doppler current profiler sets, the GOCD creates files that hold single vertical ocean currents profiles. The GOCD spans 1962 to 2013.

Website: https://www.nodc.noaa.gov/gocd/index.html

Introduction document:

ID: OC-067

Name: **CMA - Fengyun Satellite data centre**



Component: Ocean condition

Data format: NetCDF

Status: Ongoing

Acquisition method: Satellite data

Data resolution: daily, 10-days, monthly

Data available: Sea Surface Temperature and wind speed

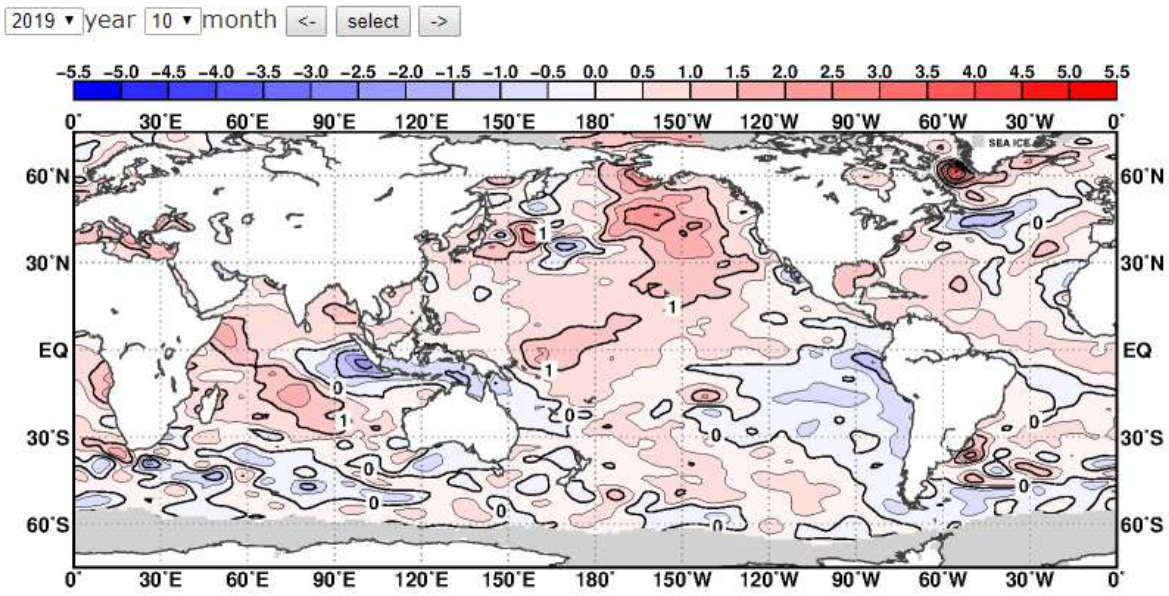
Further information: FengYun-3, or FY-3 satellites, are China's second generation polar-orbiting meteorological satellites, with substantively enhanced functionalities and technical capabilities. They are designed to enhance China's three dimensional atmospheric sounding capability and global data acquisition capability, in an effort to collect more cloud and surface characteristics data, from which meteorologists may infer out atmospheric, land surface and sea surface parameters that are global, all-weather, three-dimensional, quantitative, and multi-spectral.

Website: http://satellite.nsmc.org.cn/PortalSite/Data/DataView.aspx?SatelliteType=0&DataCategoryCode=Ocean&DataTypeCode=OCC

Introduction document:

ID: OC-068

Name: **JMA - Monthly Mean Sea Surface Temperature Anomalies**



Component: Ocean condition

Data format: Figures

Status: Ongoing

Acquisition method: Satellite data

Data resolution: N/A

Data available: Sea Surface Temperature

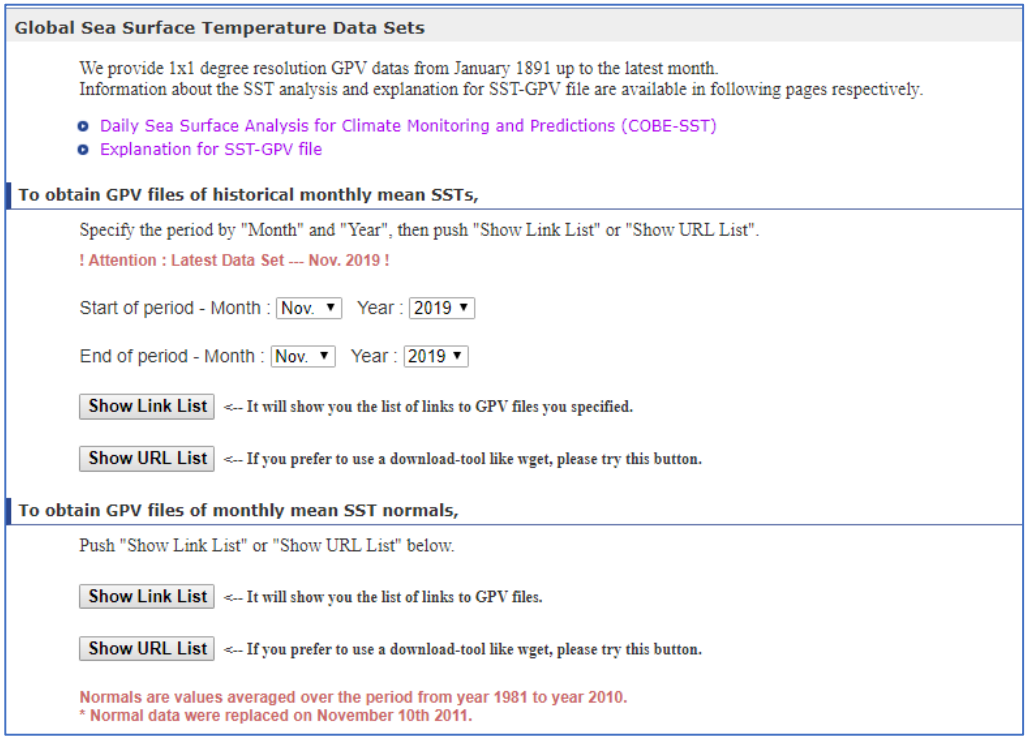
Further information:

Website: https://ds.data.jma.go.jp/tcc/tcc/products/elnino/ocean/sst-ano-global_tcc.html

Introduction document:

ID: OC-069

Name: **JMA - Description of Daily Sea Surface Temperature Analysis for Climate Monitoring (COBE-SST)**



Component: Ocean condition

Data format: SST-GPV file

Status: Ongoing(since 1891)

Acquisition method: In situ data, historical data

Data resolution: 1x1º

Data available: Sea Surface Temperature

Further information: SST analysis involves a resolution of 1º latitude and 1º longitude. The east-west grid points run eastward from 0.5ºE to 0.5ºW, while the north-south grid points run northward from 89.5ºS to 89.5ºN. The daily analysis scheme is based on the optimum interpolation method, and the SST deviation from the normal for the previous day's analysis is multiplied by 0.95 for use as a first guess. The inputs of daily analysis are marine meteorological data for the seven-day period centered on the day in question. Observed data averaged daily in 1.5º x 1.5º boxes are used as super-observations to save processing time.

Website: http://ds.data.jma.go.jp/tcc/tcc/products/elnino/cobesst_doc.html

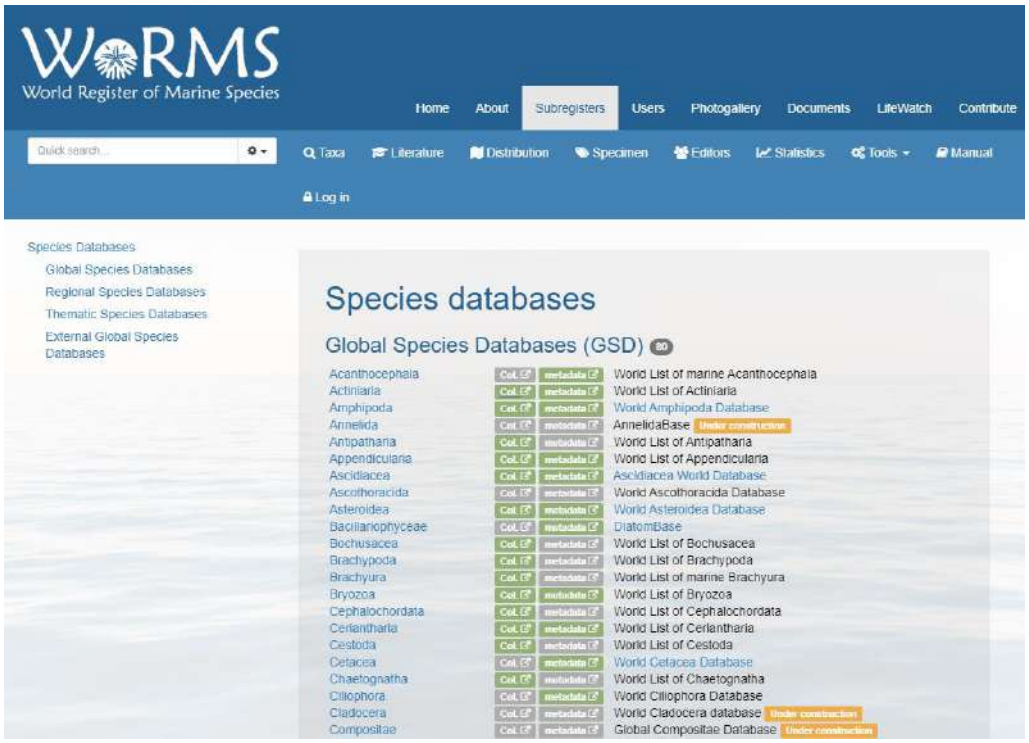
Introduction document:

Section 5

Ocean asset

ID: OA-001

Name: **Global Species Databases (GSD)**



Component: Ocean asset

Data format: Classification of taxa

Status: Ongoing

Acquisition method: Lists of information

Data resolution: N/A

Data available: GSD is a global database of all marine life, including marine life taxonomic information.

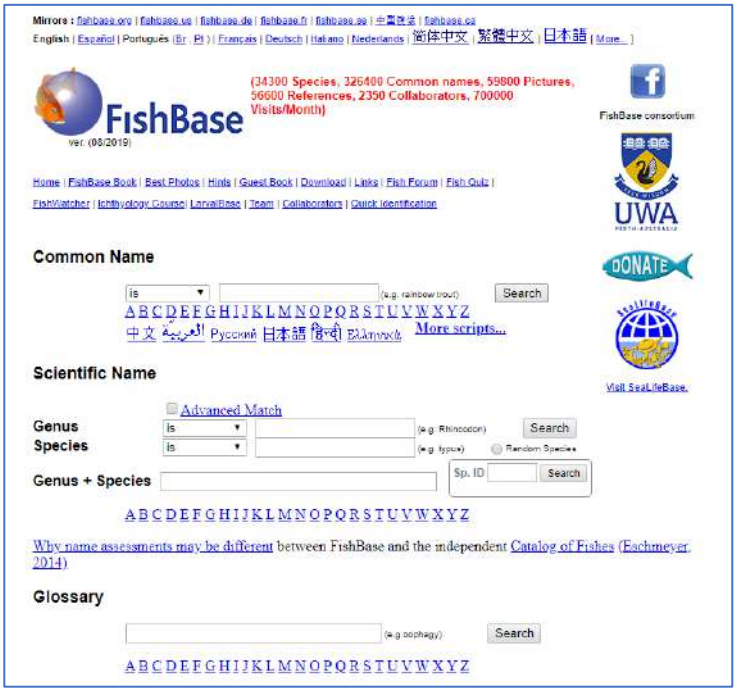
Further information:

Website: http://marinespecies.org/subregisters.php#species_dbs_GSD

Introduction document:

ID: OA-002

Name: **FishBase**



Component: Ocean asset

Data format: CD-ROM/ Online database

Status: Ongoing

Acquisition method: Taxonomy, biology, trophic ecology, life history, and uses, as well as historical data reaching back to 250 years.

Data resolution: N/A

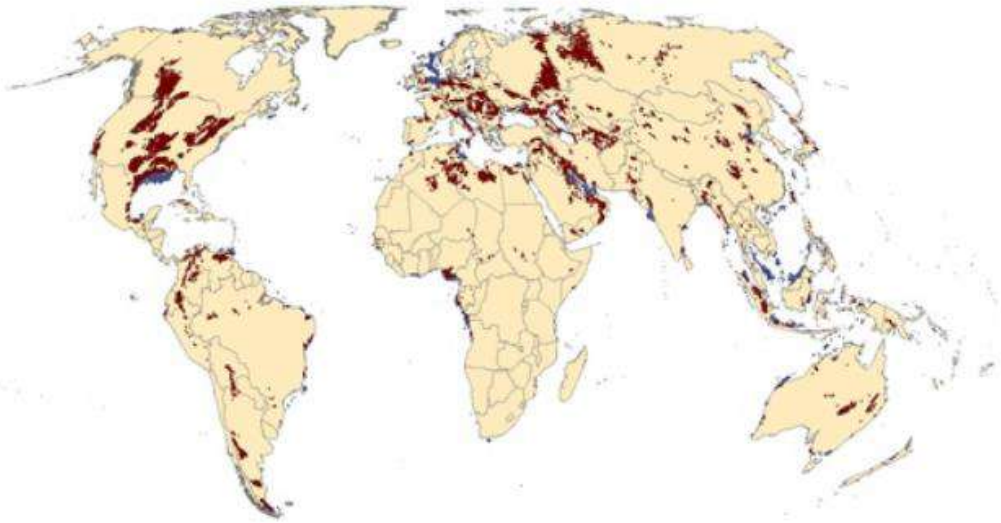
Data available: FishBase covers >33,000 fish species compiled from >52,000 references in partnership with >2,000 collaborators: >300,000 common names and >55,000 pictures.

Further information: FishBase provides comprehensive species data, including information on taxonomy, geographical distribution, biometrics and morphology, behaviour and habitats, ecology and population dynamics as well as reproductive, metabolic and genetic data. There is access to tools such as trophic pyramids, identification keys, biogeographical modelling and fishery statistics and there are direct species level links to information in other databases such as LarvalBase, GenBank, the IUCN Red List and the Catalog of Fishes.
A new version of the database is released every even month of the year.

Website: https://www.fishbase.se/home.htm

Introduction document:

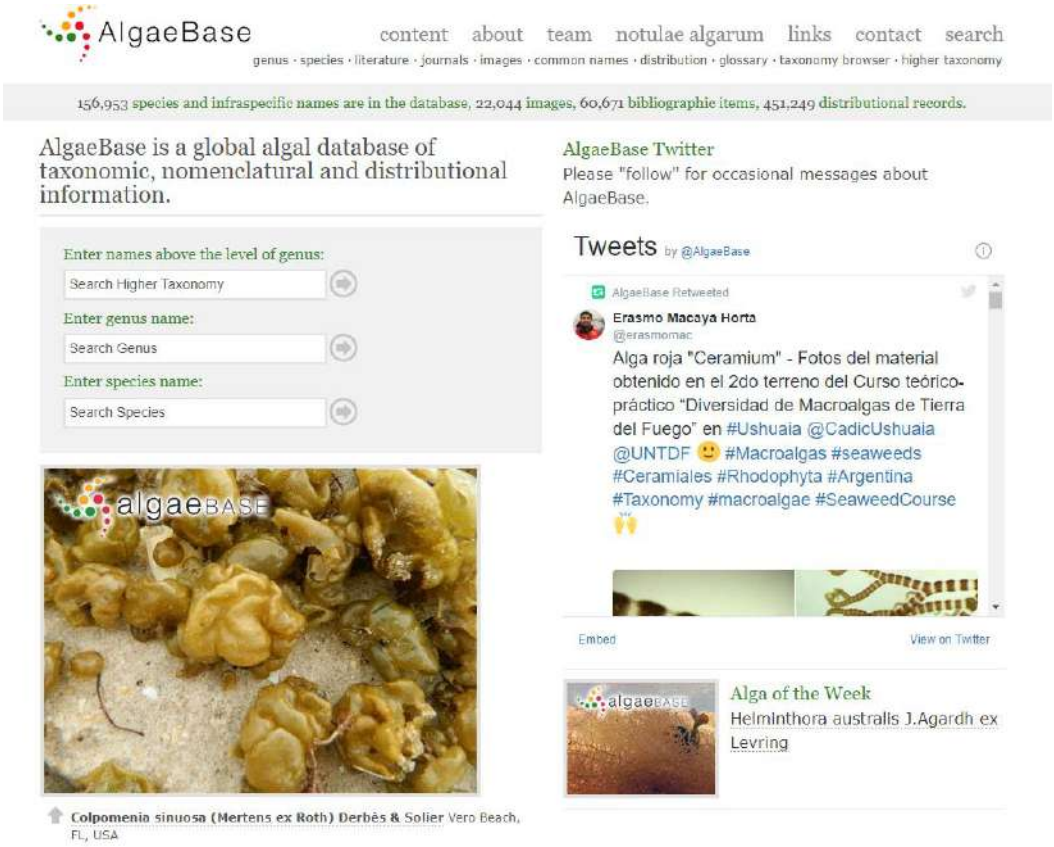
ID:	OA-003
Name:	**Peace Research Institute Oslo (PRIO) - Petroleum Dataset**



Component:	Ocean asset
Data format:	SHP
Status:	Ongoing
Acquisition method:	In situ data (Survey)
Data resolution:	N/A
Data available:	This dataset includes all known oil and gas deposits throughout the world. Two datasets are available: one for on-shore deposits and another one for off-shore deposits
Further information:	This dataset provides locational information, type of resource (oil and/or gas), discovery- and production dates (whenever known), name of petroleum basin, geographic coordinates of polygon centroid, and primary source of information. Newest version: Petroleum Dataset v. 1.2
Website:	https://www.prio.org/Data/Geographical-and-Resource-Datasets/Petroleum-Dataset/Petroleum-Dataset-v-12/
Introduction document:	https://www.prio.org/Global/upload/CSCW/Data/Geographical/codebook.pdf

ID: OA-004

Name: **AlgaeBase**



Component: Ocean asset

Data format: website

Status: Ongoing

Acquisition method: Species introduction

Data resolution: N/A

Data available: AlgaeBase is a database of information on algae that includes terrestrial, marine and freshwater organisms. At present, the data for the marine algae, particularly seaweeds, are the most complete.

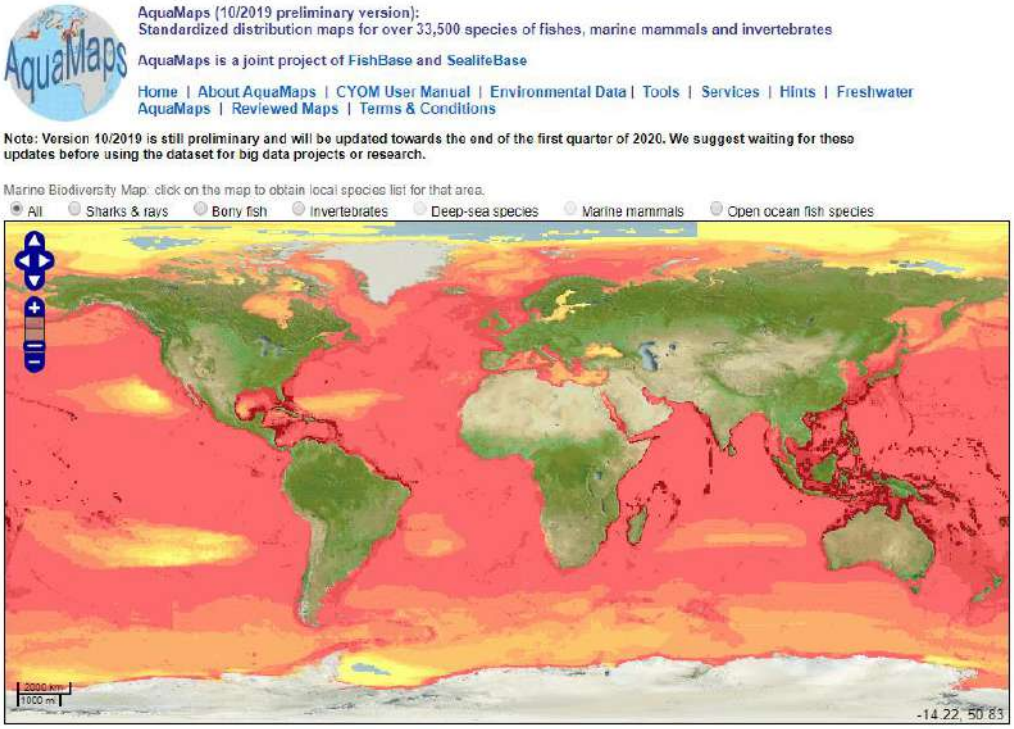
Further information: AlgaeBase includes 155,780 species and infraspecific names are in the database, 21,968 images, 60,212 bibliographic items, 439,333 distributional records.

Website: http://www.algaebase.org/

Introduction document:

ID: OA-005

Name: **AquaMaps**



Component: Ocean asset

Data format: Online maps/ CVS

Status: Ongoing (latest version 08 / 2016)

Acquisition method: survey data
model data

Data resolution: half-degree

Data available: Standardized distribution maps for over 25,000 species of fishes, marine mammals and invertebrates.
As of August 2015, data included:

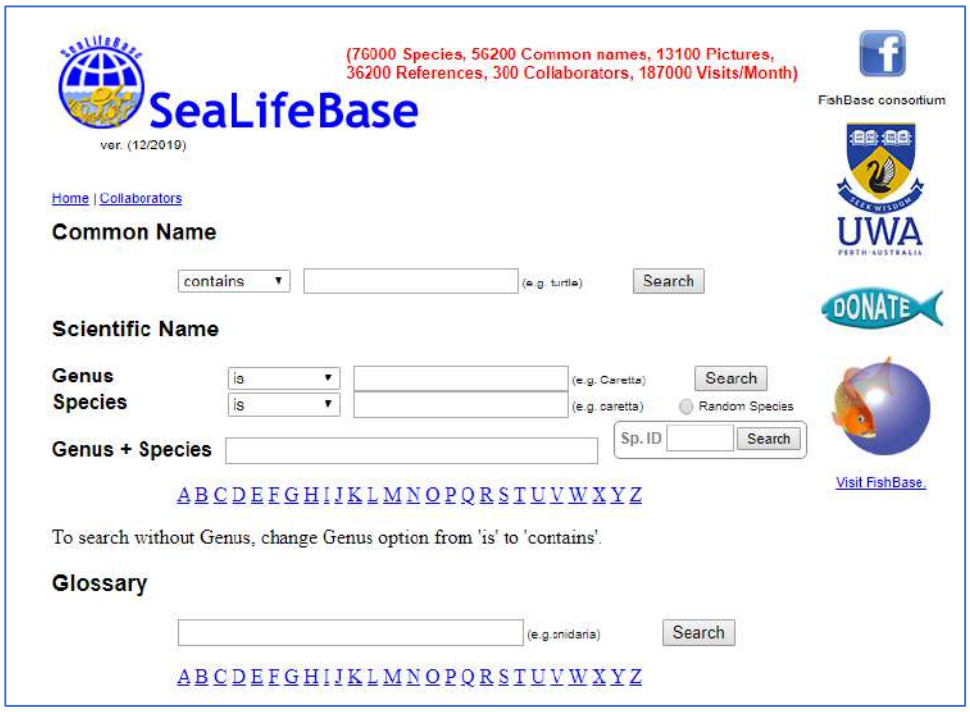
- 22889 total maps for marine species
- 12068 marine fishes
- 118 marine mammals
- 10159 other marine metazoans (=Kingdom Animalia and not Fish and not Class Mammalia)
- 116 biodiversity maps by pre-defined phylogenetic groups
- 66 checklists by LMEs
- 240 checklists by country or island/territory

Further information: AquaMaps is a tool for generating model-based, large-scale predictions of natural occurrences of species. For marine species, the model uses

	estimates of environmental preferences with respect to depth, water temperature, salinity, primary productivity, and association with sea ice or coastal areas.
Website:	https://www.aquamaps.org/search.php
Introduction document:	https://www.aquamaps.org/main/AquaMaps_Algorithm_and_Data_Sources.pdf#page=1

ID: OA-006

Name: **SeaLifeBase**



Component: Ocean asset

Data format: NetCDF/ CVS

Status: Ongoing

Acquisition method: Historical data

Data resolution: See each dataset

Data available: 75800 Species, 55800 Common names, 13100 Pictures,
36000 References, 300 Collaborators, 187000 Visits/Month

Further information: The long-term goal of this project is to create and maintain a FishBase-like information system for all non-fish marine organisms, ca. 400,000 spp. Of these, marine organisms (about 240,000 spp) are the target of the current project phase.

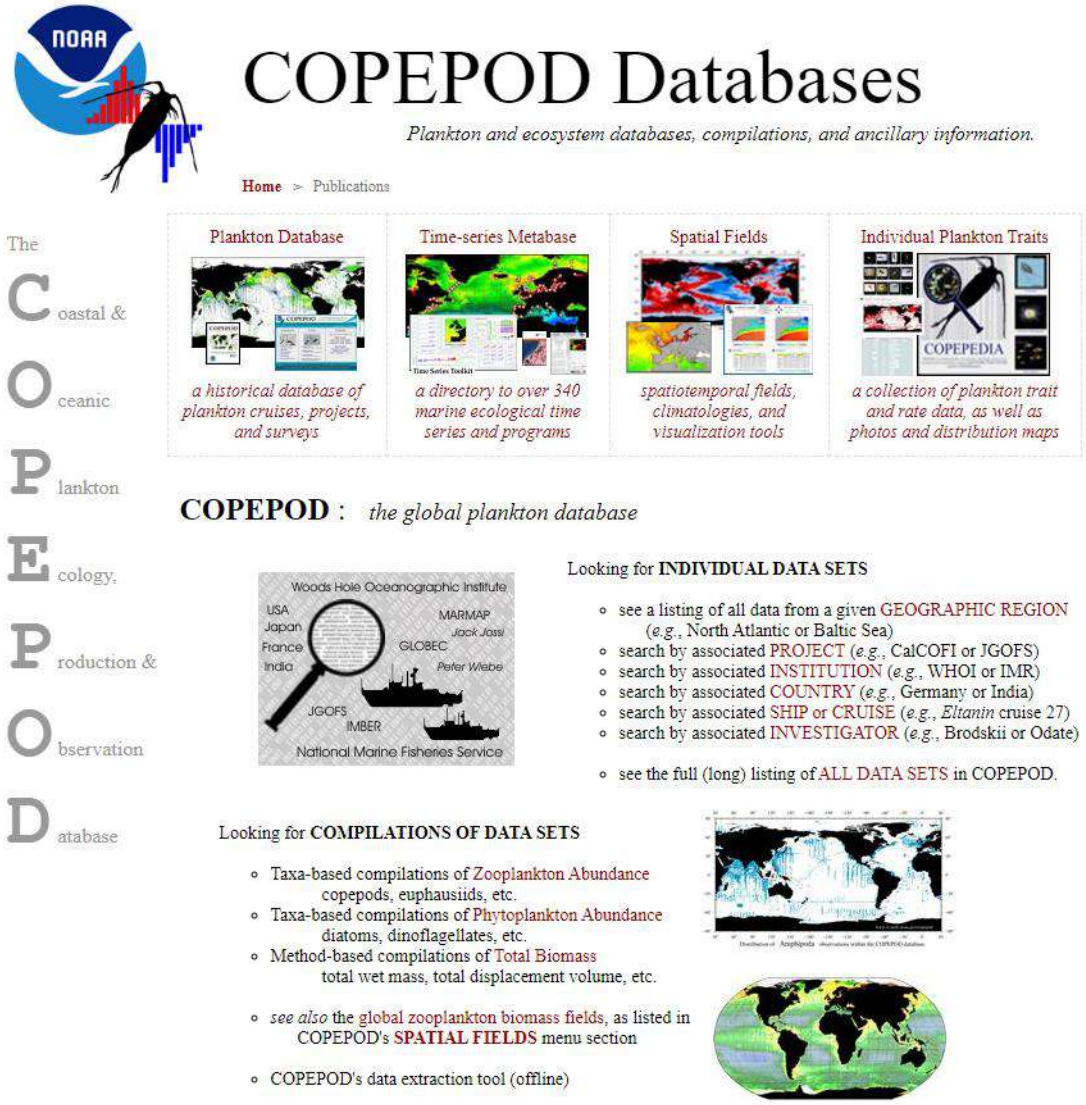
Since the number of species is huge, SeaLifeBase has made a list of priorities in its encoding strategy with short-term goals being set on an annual basis. Working on one or two island ecosystems at a time, the project gears closer toward its goal to assign species to large marine ecosystems (66 ecosystems worldwide).

Website: https://www.sealifebase.ca/

Introduction document:

ID: OA-007

Name: **Coastal & Oceanic Plankton Ecology, Production, & Observation Database (COPEPOD)**



Component: Ocean asset

Data format: Text/ Html/ CVS/ Maps

Status: Ongoing

Acquisition method: Observational data

Data resolution: See each dataset

Data available:

A global plankton database that contains over 400,000 observations of copepods, along with other zooplankton, phytoplankton, and microbial plankton taxa.

- COPEPOD: The global plankton database
- COPEPODITE: The global time-series directory and time-series analysis toolkit
- NAUPLIUS: Ecosystems data products and visualization tools
- COPEPEDIA: Taxonomic information, photos, and biometric data

Further information:

This database provides fisheries and marine ecosystems investigators with an integrated data set of quality-reviewed, globally distributed plankton data, along with any available co-sampled environmental hydrographic and meteorological data. These data are provided in a variety of forms (e.g., spatial mean fields, time-series, graphical maps and figures) and compilations (e.g., from individual data sets to regional or taxa-based compilations).

Website:

https://www.st.nmfs.noaa.gov/plankton/about/databases.html

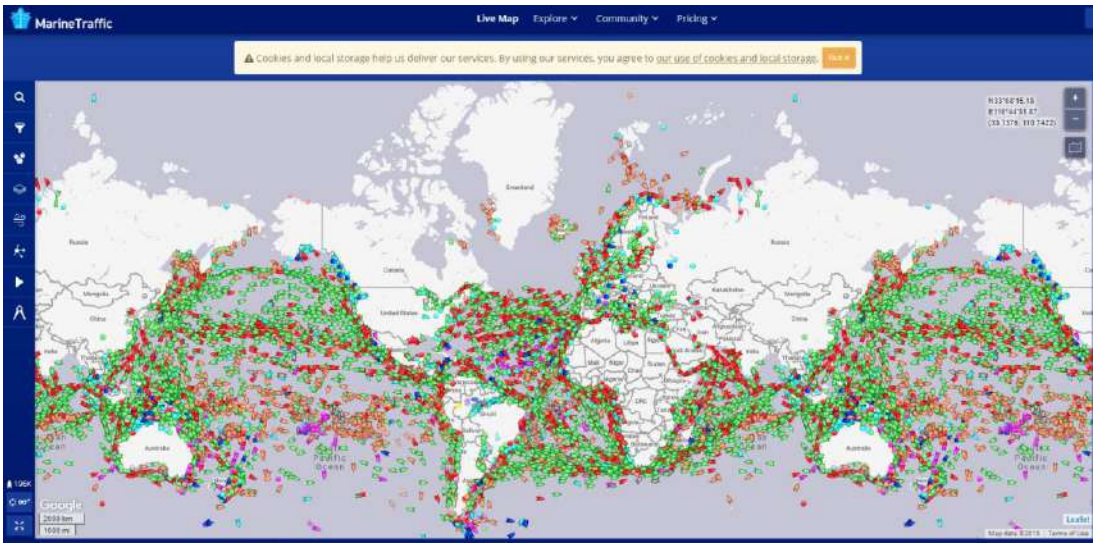
Introduction document:

Section 6

Ocean service use

ID: OSU-001

Name: **Marine traffic**



Component: Ocean service use

Data format: CSV/ online maps

Status: Ongoing

Acquisition method: Near-Real time data, satellite data and coastal AIS-receiving stations

Data resolution: Tempotal resolution of data depends on a number of parameters at the specific point and time.

Data available: Vessel-tracking (public regarding vessels' positions and movements), ports' traffic, voyage details, and shipping

Further information: Marine traffic is a commercial company but provides some free data.
This company combines satellite data with a vast network of terrestrial stations. The initial data collection is based on the Automatic Identification System (AIS).
For each position, the company provides:

LON, LAT, VESSEL MMSI, STATUS, SPEED, COURSE, HEADING and TIMESTAMP (UTC)

For each port call the company provides:

PORT ID, PORT NAME, VESSEL MMSI, TIMESTAMP, ARR/ DEP

This company may also provide additional vessel parameters, e.g. vessel name, type, dimensions, flag, etc.
Free for online map, charge for data download.

Website: https://www.marinetraffic.com/

Introduction document: https://help.marinetraffic.com/hc/en-us/articles/205413457-Introduction-

ID: OSU-002

Name: **Partnership for Observation of the Global Oceans (POGO) - ocean-going Research Vessels**

Component: Ocean service use

Data format: Online Map

Status: Ongoing

Acquisition method: In situ data

Data resolution: See each dataset

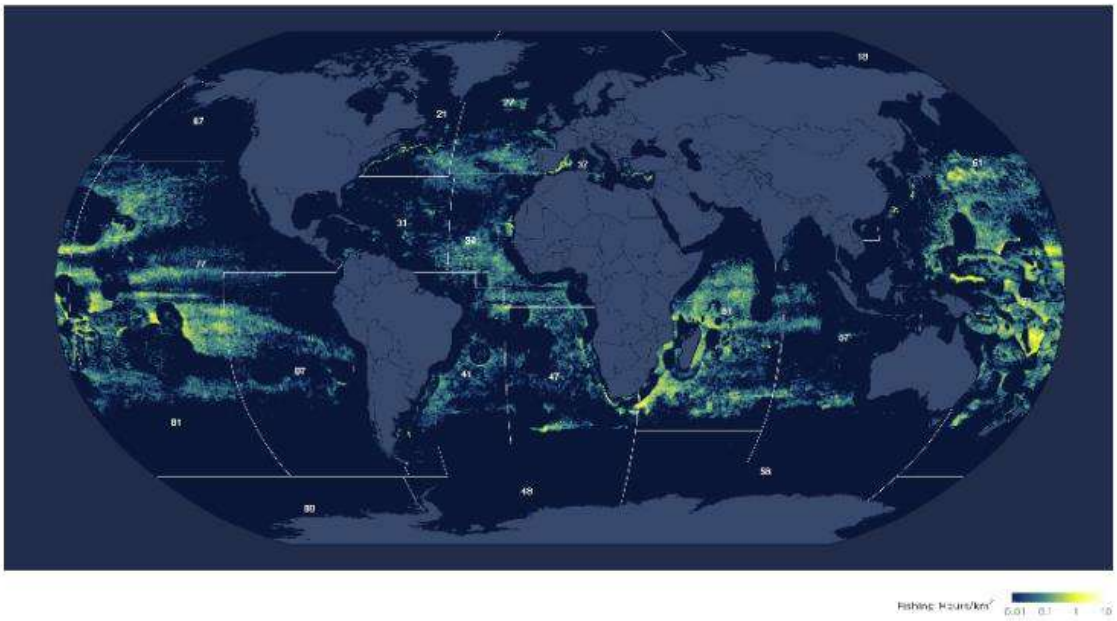
Data available: This directory contains characteristics, owners and operator information for all marine and oceanographic research vessels, larger than 60 meters. Parameters measured are listed

Further information:

Website: http://www.pogo-oceancruises.org/v_pogo_v1/browse_step.asp

Introduction document:

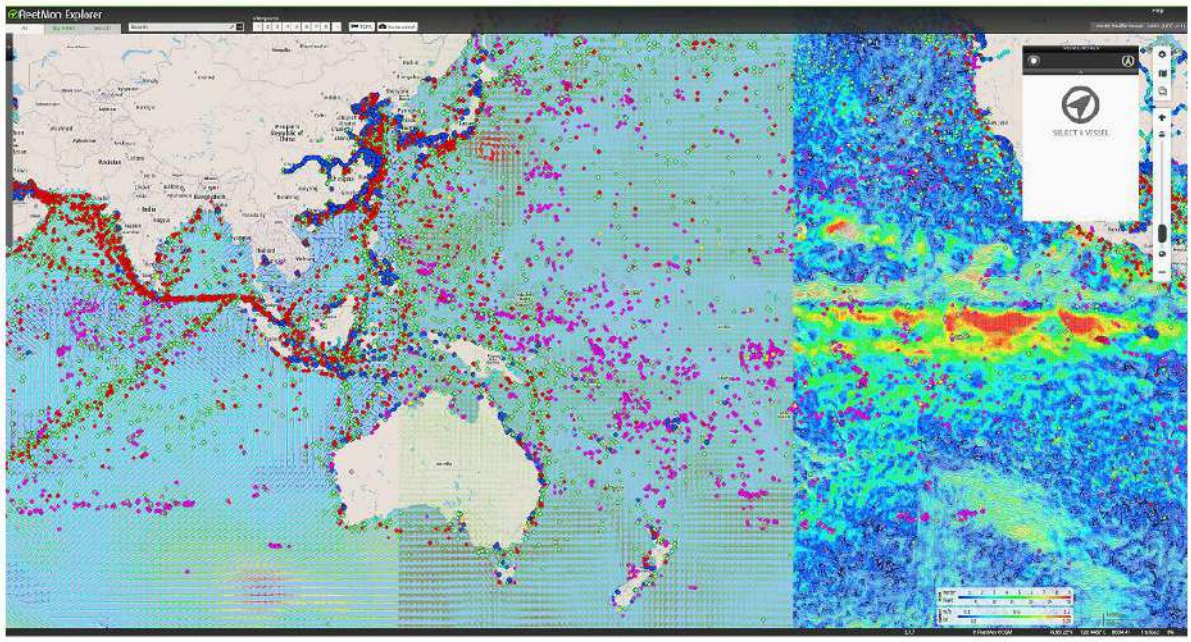
ID:	OSU-003
Name:	**Global Fishing Watch**



Component:	Ocean service use
Data format:	BigQuery Tables/ CSVs/ Geotiff Rasters in Google Earth Engine
Status:	Ongoing
Acquisition method:	Vessel Monitoring System (VMS) data, Automatic Identification Systems (AIS) data, and historical data dating to 2012
Data resolution:	See each dataset
Data available:	Global Fishing Watch provides gridded fishing activity data, vessel identity and classification lists, encounters between refrigerated cargo vessels and fishing vessels, future data products: ports, AIS On/Off events, and gridded VMS
Further information:	The project observes fishing vessels at sea, could see the tracks of about 60,000 commercial fishing vessels at sea in near real-time, along with their name and flag state. Data shows all activity from 1 January 2012 until 72 hours ago.
Website:	http://globalfishingwatch.org/research/research-accelerator-program/
Introduction document:	Need registration

ID: OSU-004

Name: **FleetMon**



Component: Ocean service use

Data format: CSV/ XLSX

Status: Ongoing (since 2007)

Acquisition method: Real-time vessel position data

Data resolution: Tempotal resolution of data depends on a number of parameters at the specific point and time.

Data available: FleetMon is a commercial companry that provides vessel data and shipping data.

See detailed information: https://www.fleetmon.com/services/historical-ais-data/

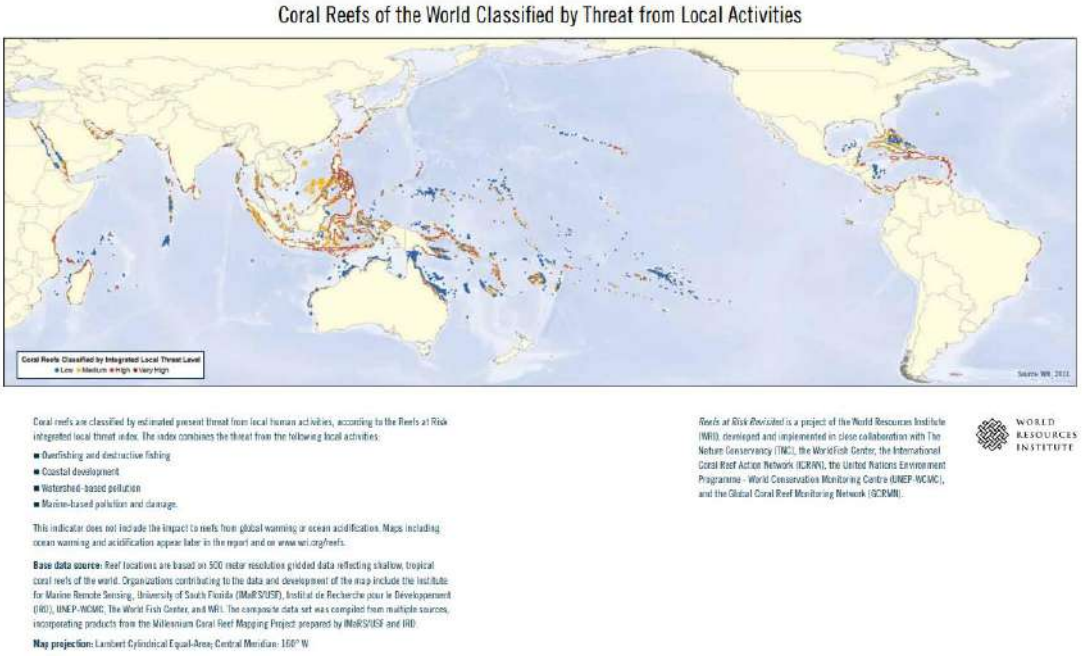
Further information: FleetMon has customers across 164 countries and around a half million users.

Website: https://www.fleetmon.com/

Introduction document:

ID: OSU-005

Name: **Reefs at Risk Revisited**



Component: Ocean service use

Data format: SHP/KML/ PDF

Status: 2011

Acquisition method: Sampling data and satellite data

Data resolution: 500-m resolution

Data available: It contains a global assessment of the vulnerability of nations and territories to coral reef degradation. Data of global threats and local threats of reefs could be found in SHP.

Further information: It evaluates threats to coral reefs from a wide range of human activities, and includes an assessment of climate-related threats to reefs

Website: http://www.wri.org/publication/reefs-risk-revisited

Introduction document:

ID: OSU-006

Name: **Shipmap**

Component: Ocean service use

Data format: MAP

Status: Finished (2012)

Acquisition method: AIS data

Data resolution: High-resolution animation

Data available: Shipmap includes the movement of different types of ship: Container, Dry bulk, Tanker, Gas bulk, and Vehicles. Also, it has a counter for emitted CO2 (in thousand tonnes) and the maximum freight carried by represented vessels (varying units).

Further information: The movements of the global merchant fleet over the course of 2012.

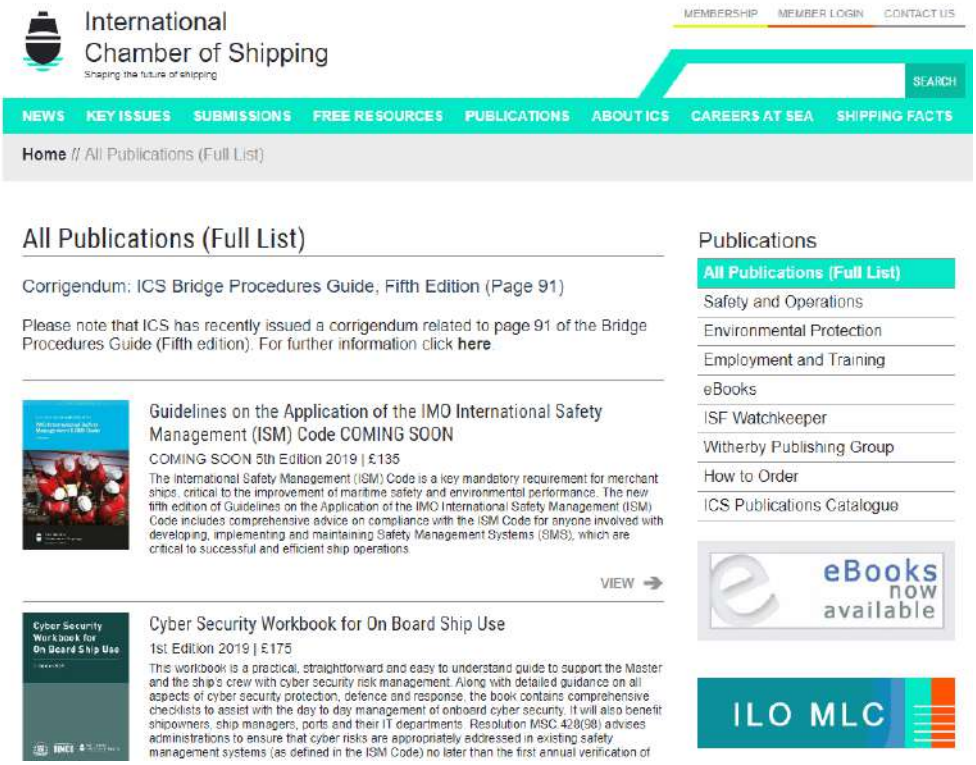
The project's aim is to highlight for a broad audience the extraordinary scale of modern commercial shipping, the routes these huge vessels take around the world, the geographic spread of different types of cargo boats, and the amount of carbon dioxide they produce.

Website: https://www.shipmap.org/

Introduction document:

ID: OSU-007

Name: **International Chamber of Shipping (ICS)**



Component: Ocean service use

Data format: Publications/ Interactive Flag State Performance Table

Status: Ongoing

Acquisition method: N/A

Data resolution: N/A

Data available: Publications on shipping and CO2, maritime security, and environment protection

Further information: ICS is the principal international trade association for merchant shipowners and operators, representing all sectors and trades and over 80% of the world merchant fleet.

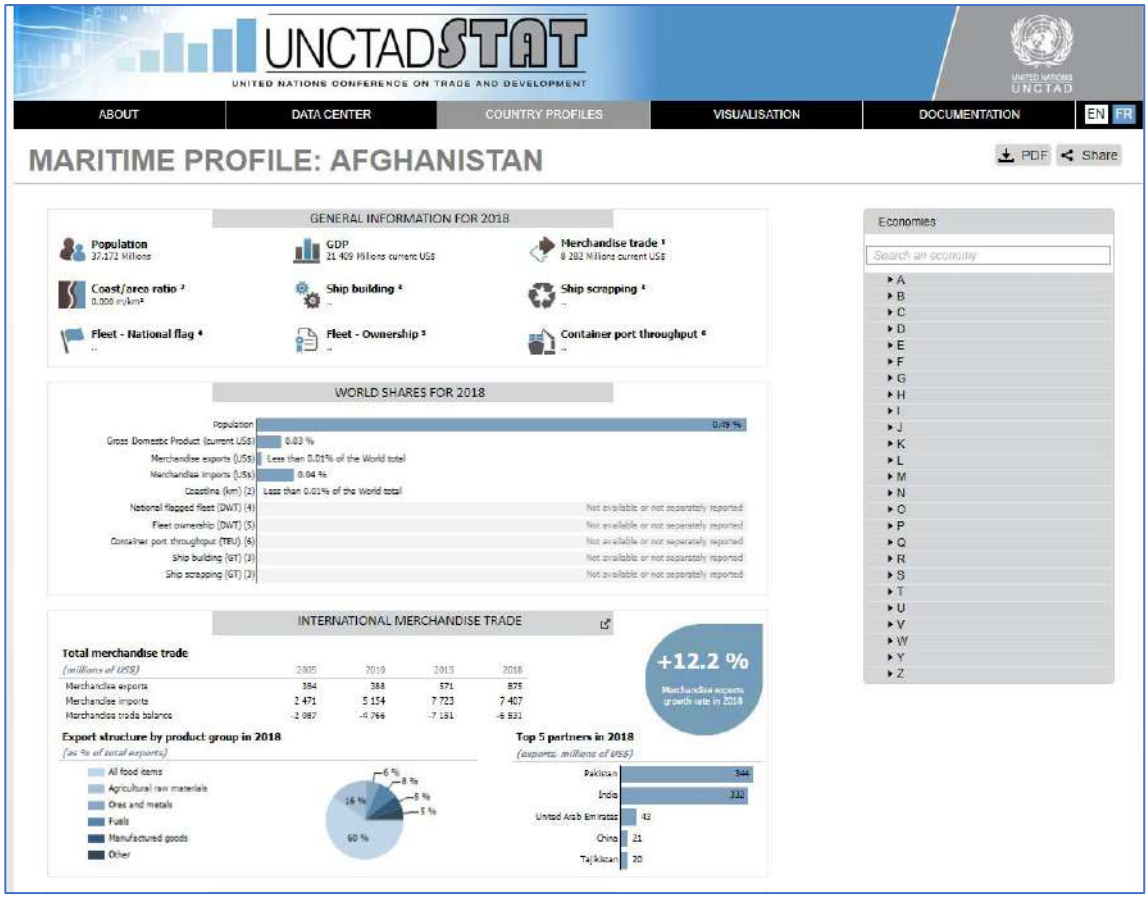
The ICS Shipping Industry Flag State Performance Table brings together data available in the public domain regarding the performance of flag states in terms of, inter alia, Port State Control records, ratification of international Conventions, and IMO meeting attendance.

Website: http://www.ics-shipping.org

Introduction document:

ID: OSU-008

Name: **UNCTADstat**



Component: Ocean service use

Data format: Excel/ SHP

Status: Ongoing (since 1981)

Acquisition method: N/A

Data resolution: N/A

Data available: Maritime transport:

World merchant fleetWorld merchant fleet

Maritime transport indicatorsMaritime transport indicators

World seaborne tradeWorld seaborne trade

Further information: All statistics of UNCTAD are harmonized and integrated into UNCTADstat-free to use dissemination platform. It gives access to basic and derived indicators built upon common rules, harmonized environment and clear methodology supported by powerful data browsing system.

The statistical series are regularly updated and classified into easy-to-navigate themes. UNCTADstat offers ready-to-use analytical groupings, with a unique coverage for countries and products and a particular focus on developing and transition economies. This approach ensures data consistency across multiple data series, and enables users to harness its full potential by mixing and matching data from various domains.

Website: https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx

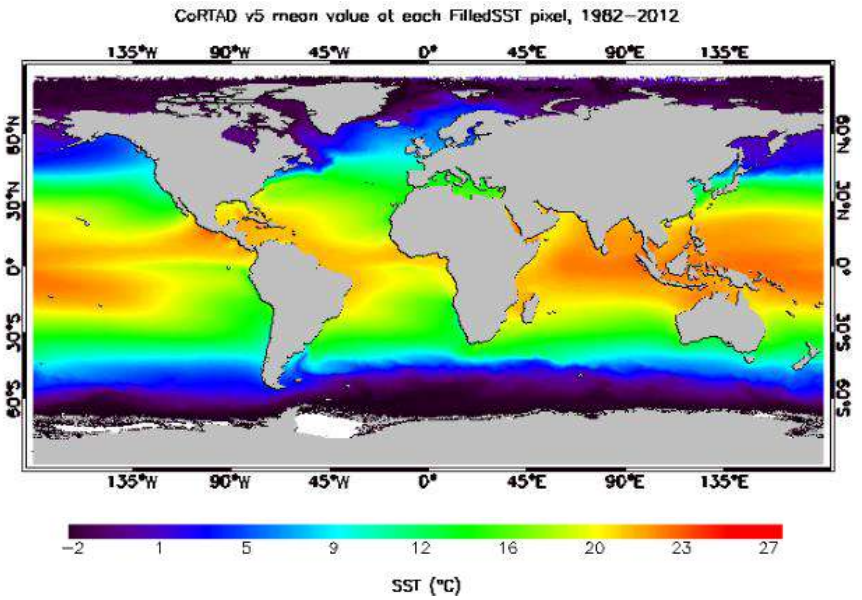
Introduction document:

Section 7

Multiple components

ID: Mul-001

Name: **NOAA - Coral Reef Temperature Anomaly Database (CoRTAD)**



Component: Ocean condition
Ocean extent

Data format: NetCDF

Status: Ongoing(since 1989)

Acquisition method: Satellite data

Data resolution: Version 4/ 5 (approximately 4 km for spatial resolution)

Data available: Sea surface temperature, sea surface temperature anomaly, wind speed, sea ice fraction, and thermal stress anomaly

Further information: The Coral Reef Temperature Anomaly Database (CoRTAD) is a collection of sea surface temperature (SST) and related thermal stress metrics, developed specifically for coral reef ecosystem applications but relevant to other ecosystems as well. The CoRTAD is intended primarily for climate and ecosystem related applications and studies and was designed specifically to address questions concerning the relationship between coral disease and bleaching and temperature stress.

Version 5 - Global, 4 km Sea Surface Temperature and Related Thermal Stress Metrics for 1982-2012

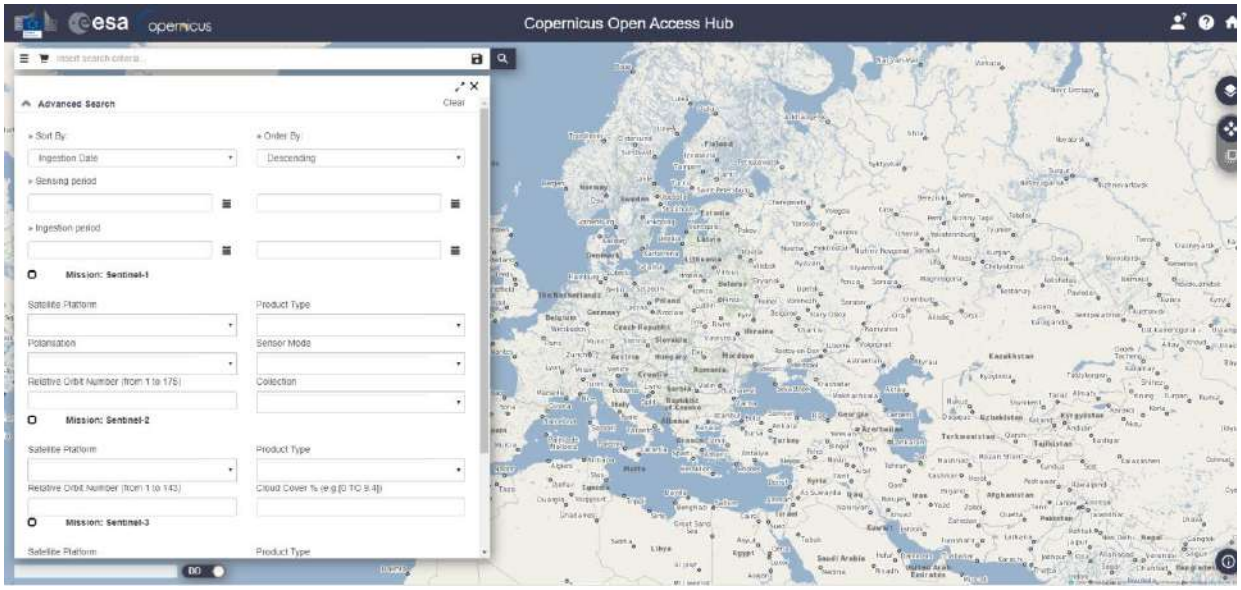
Version 4 - Global, 4 km Sea Surface Temperature and Related Thermal Stress Metrics for 1981-10-31 to 2010-12-31

Website: https://www.nodc.noaa.gov/SatelliteData/Cortad/

Introduction document:

ID: Mul-002

Name: **Sentinel Online**



Component: Ocean condition
Ocean service use

Data format: See each dataset

Status: Ongoing

Acquisition method: Near-Real time data, in situ data, satellite data, model data

Data resolution: See each dataset

Data available: Sentinel provides information on the physical and biogeochemical state and dynamics of the ocean:

- Marine safety: hydrodynamic forecasts and remote sensing blended products and forecasts for sea ice (support applications like marine operations, oil spill combat, ship routing, defence, search & rescue).
- Marine resources: long time-series of in-situ and remote-sensing products, as well as analysis, reanalysis and forecasts of hydrodynamic and ecosystem models (supporting applications such as fish stock management).
- Marine and coastal environment: supporting environmental applications such as monitoring water quality, pollution, coastal activities.
- Seasonal and weather forecasting, with services such as long time-series of in situ and remote-sensing products, as well as reanalysis of physical parameters at various temporal resolutions (monthly, seasonal, yearly) and short-term forecast of ocean properties at global and regional scale – supporting applications like climate monitoring, ice surveys.

Further information:

Website: https://sentinels.copernicus.eu/web/sentinel/thematic-areas/marine-monitoring

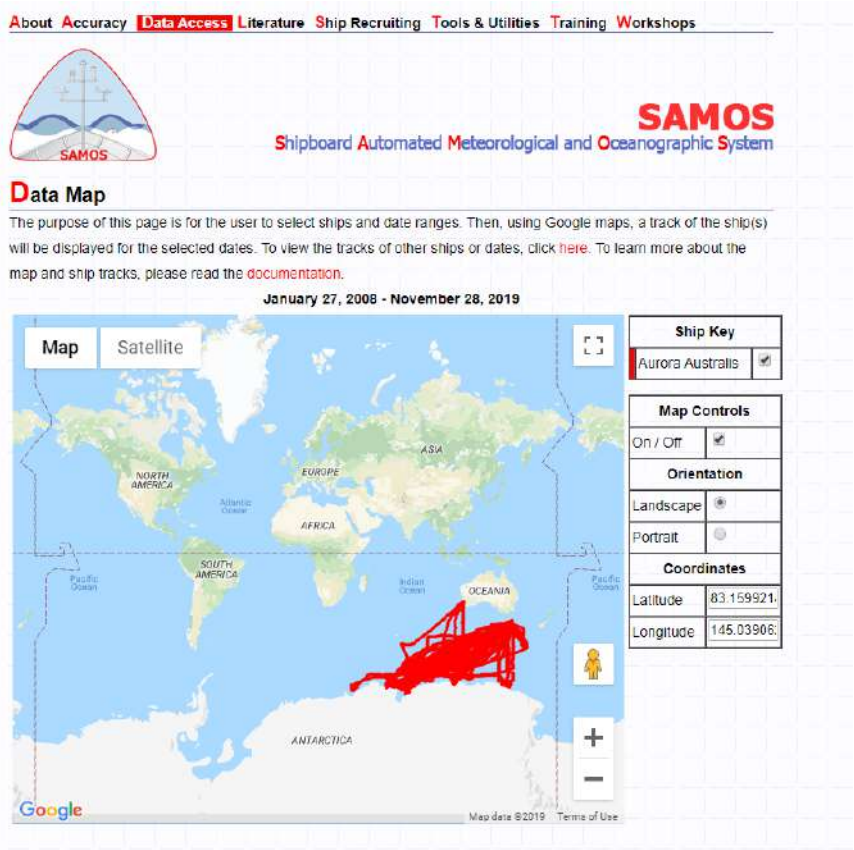
http://www.esa.int/Our_Activities/Observing_the_Earth/Copernicus/Marine_services

Data hub: https://scihub.copernicus.eu/dhus/#/home

Introduction document:

ID: Mul-003

Name: **Shipboard Automated Meteorological and Oceanographic System (SAMOS)**



Component: Ocean condition
Ocean service use

Data format: See each dataset

Status: Ongoing (since 2005)

Acquisition method: In-situ on research vessels (R/Vs)

Data resolution: High-temporal sampling rates (typically 1 minute or less)

Data available: Navigational (ship's position, course, speed, and heading), meteorological (winds, air temperature, pressure, moisture, rainfall, and radiation), and near-surface oceanographic (sea temperature and salinity)

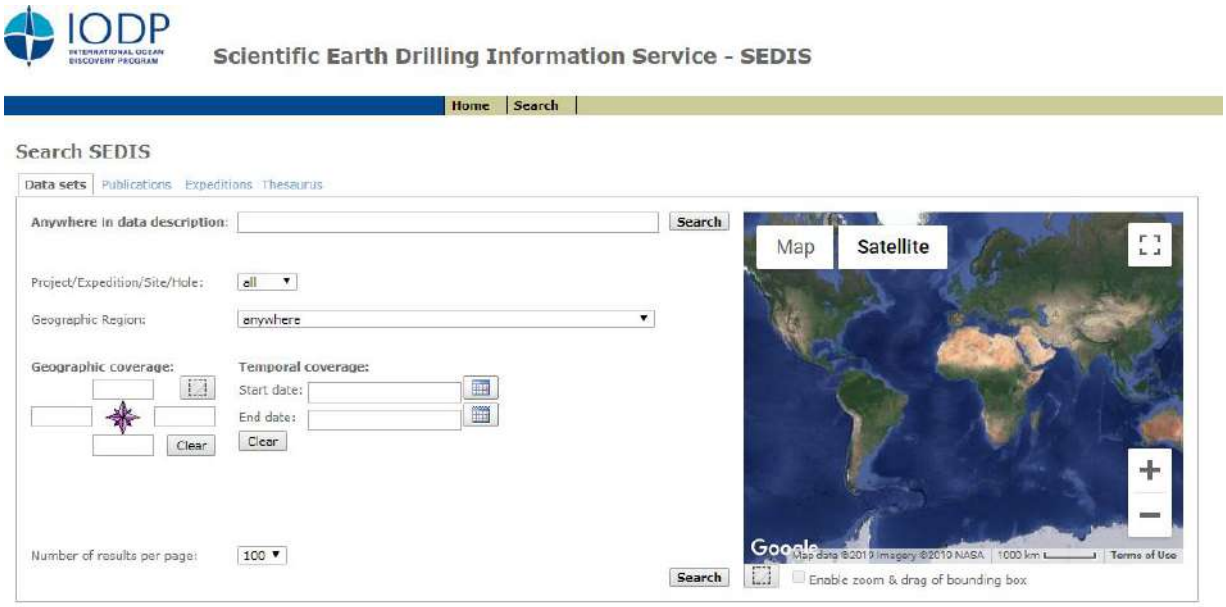
Further information:

Website: https://samos.coaps.fsu.edu/html/

Introduction document: https://samos.coaps.fsu.edu/html/docs/NOAA-TM_OAR_PSD-311.pdf

ID: Mul-004

Name: **International Ocean Discovery Program (IODP)**



Component: Ocean condition
Ocean asset

Data format: Maps/ KML/ CSV

Status: Ongoing (since 2003)

Acquisition method: Sample data

Data resolution: N/A

Data available: IODP provides ocean drilling data recorded in seafloor sediments and rocks and to monitor subseafloor environments

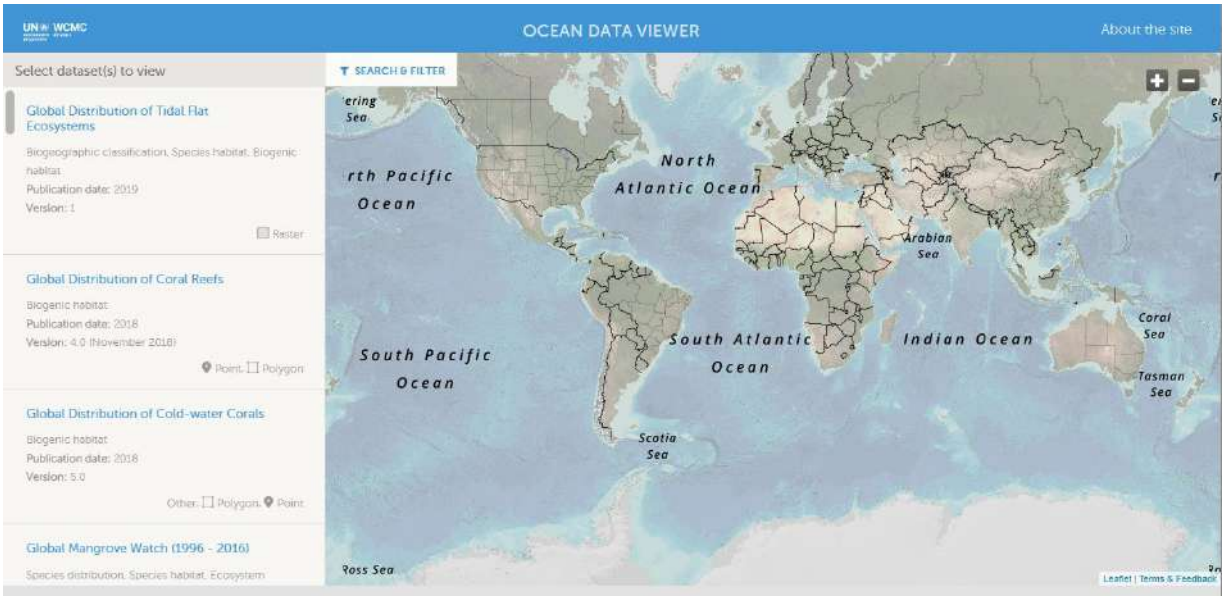
Further information: IODP is an international marine research collaboration that explores Earth's history and dynamics using ocean-going research platforms.

Website: http://www.iodp.org/resources/access-data-and-samples

Introduction document:

ID: Mul-005

Name: **UN - WCMC Ocean data viewer**



Component:
Spatial units
Ocean extend
Ocean asset
Ocean service use

Data format: SHP

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: This database provides data on corals, seagrasses, saltmarshes, protected areas, chlorophyll-a, shannon's biodiversity index, mangrove, whales, dolphins, seamounts, sea turtles, dive centers and EEZ

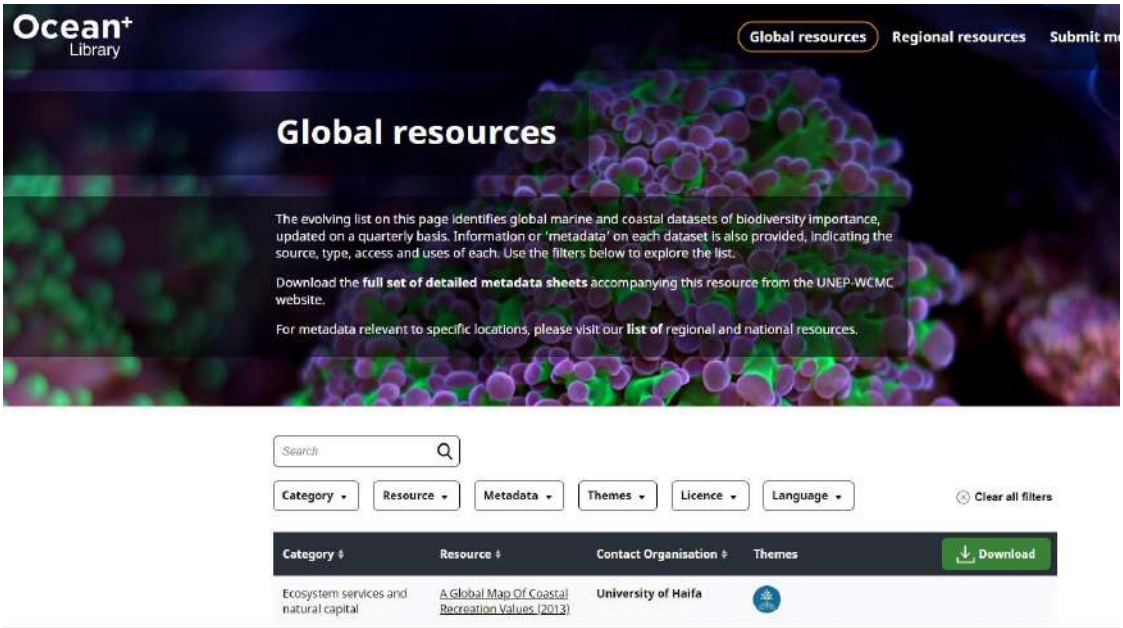
Further information: It Includes over 30 distribution map datasets of many species

Website: http://data.unep-wcmc.org/

Introduction document: https://www.unep-wcmc.org/system/dataset_file_fields/files/000/000/488/original/Atlas_Manual.pdf?1517488900

ID: Mul-006

Name: **WCMC - Ocean+ Library**



Component:
Spatial units
Ocean extend
Ocean asset
Ocean service use

Data format: See each dataset

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: It is a inventory of more than 180 known datasets, database, and data portals containing marine and coastal data and information of biodiversity importance.
Those datasets are divided by marine spatial plannning, education, environmental impact assessment, ecosystem assessment, ecosystem services and natural capital

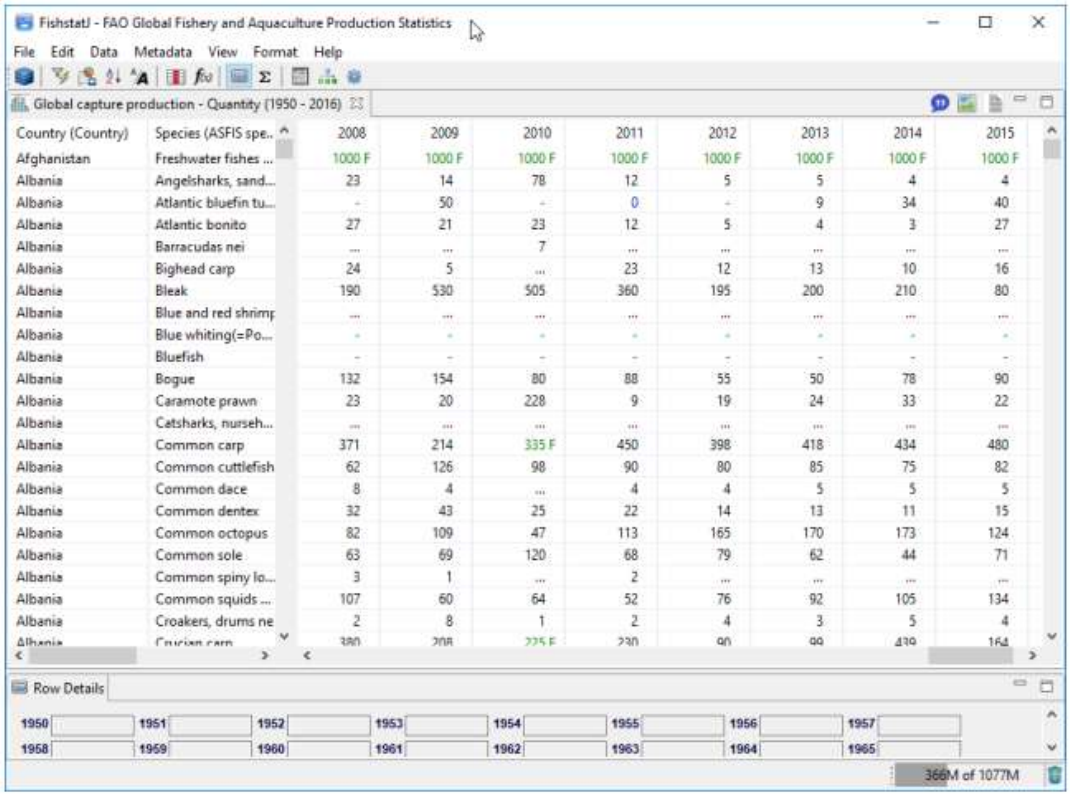
Further information:

Website: https://library.oceanplus.org/

Introduction document: https://www.unep-wcmc.org/system/dataset_file_fields/files/000/000/341/original/McDermott_Long_et_al_-_OceanPlus_Library_-_8_Mar_2019.pdf?1552301984#page=27

ID: Mul-007

Name: **FAO - Global fishery databases**



Country (Country)	Species (ASFIS spe...	2008	2009	2010	2011	2012	2013	2014	2015
Afghanistan	Freshwater fishes ...	1000 F	1000 F	1000 F	1000 F	1000 F	1000 F	1000 F	1000 F
Albania	Angelsharks, sand...	23	14	78	12	5	5	4	4
Albania	Atlantic bluefin tu...	-	50	-	0	-	9	34	40
Albania	Atlantic bonito	27	21	23	12	5	4	3	27
Albania	Barracudas nei	...	...	7	...	...	...	...	...
Albania	Bighead carp	24	5	...	23	12	13	10	16
Albania	Bleak	190	530	505	360	195	200	210	80
Albania	Blue and red shrimp	...	...	...	...	...	...	...	...
Albania	Blue whiting(=Po...	-	-	-	-	-	-	-	-
Albania	Bluefish	-	-	-	-	-	-	-	-
Albania	Bogue	132	154	80	88	55	50	78	90
Albania	Caramote prawn	23	20	228	9	19	24	33	22
Albania	Catsharks, nurseh...	...	...	...	...	...	...	...	...
Albania	Common carp	371	214	335 F	450	398	418	434	480
Albania	Common cuttlefish	62	126	98	90	80	85	75	82
Albania	Common dace	8	4	...	4	4	5	5	5
Albania	Common dentex	32	43	25	22	14	13	11	15
Albania	Common octopus	82	109	47	113	165	170	173	124
Albania	Common sole	63	69	120	68	79	62	44	71
Albania	Common spiny lo...	3	1	...	2	...	...	...	...
Albania	Common squids ...	107	60	64	52	76	92	105	134
Albania	Croakers, drums ne	2	8	1	2	4	3	5	4

Component: Ocean asset
Ocean service supply

Data format: CSV

Status: Ongoing

Acquisition method: Statistical data
GIS layers

Data resolution: N/A

Data available: It is a set of global fishery statistics databases maintains 10 global time series and 5 regional capture time series.

This database contains the volume of aquatic species caught by country or area, by species items, by FAO major fishing areas, and year, for all commercial, industrial, recreational and subsistence purposes. The harvest from mariculture, aquaculture and other kinds of fish farming are also included.

All information collections: (http://www.fao.org/fishery/statistics/collections/en)

- Statistical Collections
  - Global Production
  - Global Aquaculture Production
  - Global Capture Production
  - Global Tuna Catches by Stock
  - Atlas of Tuna and Billfish Catches
  - Global Number of Fishers
  - Fishery Commodities and Trade
  - Consumption of Fish and Fishery Products
  - CECAF (Eastern Central Atlantic) Capture Production
  - GFCM (Mediterranean and Black Sea) Capture Production
  - RECOFI (Regional Commission for Fisheries) Capture Production
  - Southeast Atlantic Capture Production
- Records Collections
  - ASFIS List of Species for Fishery Statistics Purposes
  - Database on Introductions of Aquatic Species (DIAS) - fact sheets
  - Database on Port State Measures
  - FAO Fisheries Glossary
  - FAO Fishing Vessels Finder (FVF)
  - Glossary of Aquaculture
  - High Seas Vessels Authorization Record (HSVAR)
  - Institutions mailing list
- Fact Sheets Collections
  - Cultured Aquatic Species Information Programme (CASIP) - fact sheets
  - EAF Planning and Implementation Tools
  - National Aquaculture Legislation Overview (NALO) fact sheets
  - National Aquaculture Sector Overview (NASO) - fact sheets
  - National Fishery Sector Overview (NFSO)
  - Regional fishery bodies (RFB) - fact sheets
- Maps Collections
  - Compilation of aquatic species distribution maps of interest to fisheries
  - NASO aquaculture maps collection

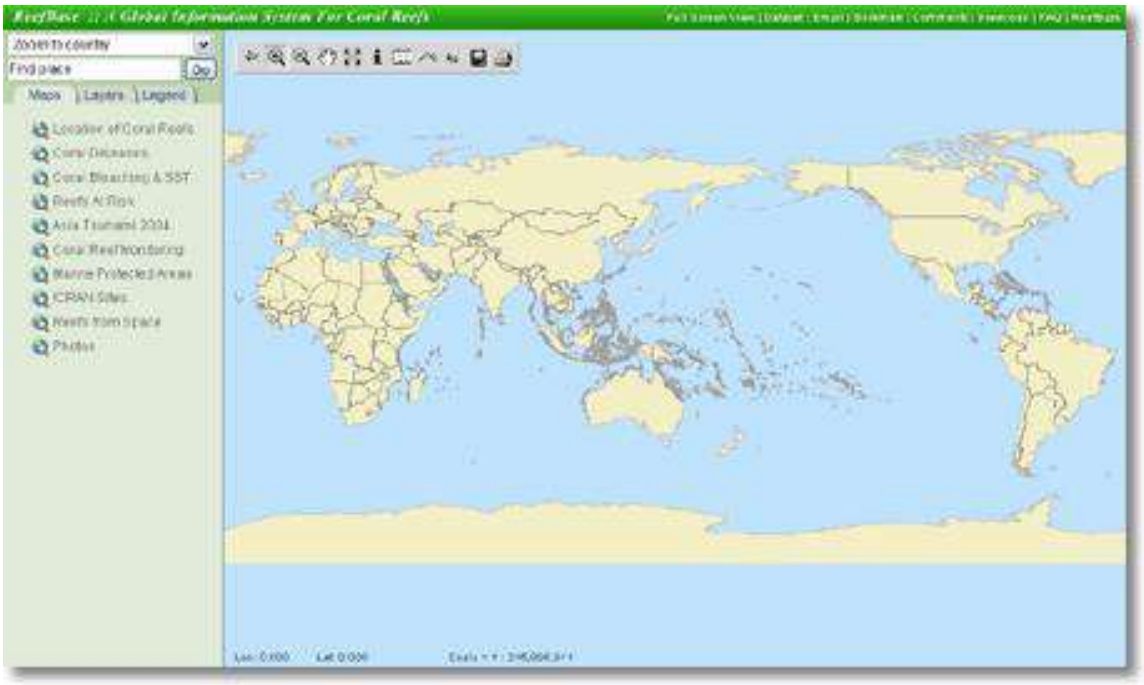
Further information: Global fishery databases has its own software to explore data: **FishStatJ**.
Introduction: http://www.fao.org/fishery/statistics/software/fishstatj/en
Manual: http://www.fao.org/fishery/static/FishStatJ/FishStatJ_3.05.1-Manual.pdf

Website: http://www.fao.org/fishery/topic/16054/en

Introduction document:

ID: Mul-008

Name: **WorldFish - ReefBase**



Component: Ocean extent
Ocean assets

Data format: CSV/ RTF/ PDF

Status: Uncertain

Acquisition method: Country-level data

Data resolution: N/A

Data available: The ReefBase Global Database provides country-level data and information, organized by

- **Resources**: a description on the location and structure of Coral Reefs, information on the country's Reef Fish resources and Fisheries, and coastal and marine biodiverstiy.
- **Status**: country-level information summaries on the status and health of the Coral Reefs and Reef Fish resources, and trends in Fisheries.
- **Threats**: various threats and impacts to coral reefs, including Natural (e.g. biological infestations or diseases), Human (e.g. over-fishing or coastal development), Climate (e.g. storms or excessive rainfall), and Bleaching (both narrative and quantitative bleaching reports).

- **Management**: coral reef Monitoring activities within a country, Protected Areas with coral reefs, coastal/marine related Legislation, research and management Capacity and Gaps therein, Recommendations to strengthen research and management of coral reef resources.

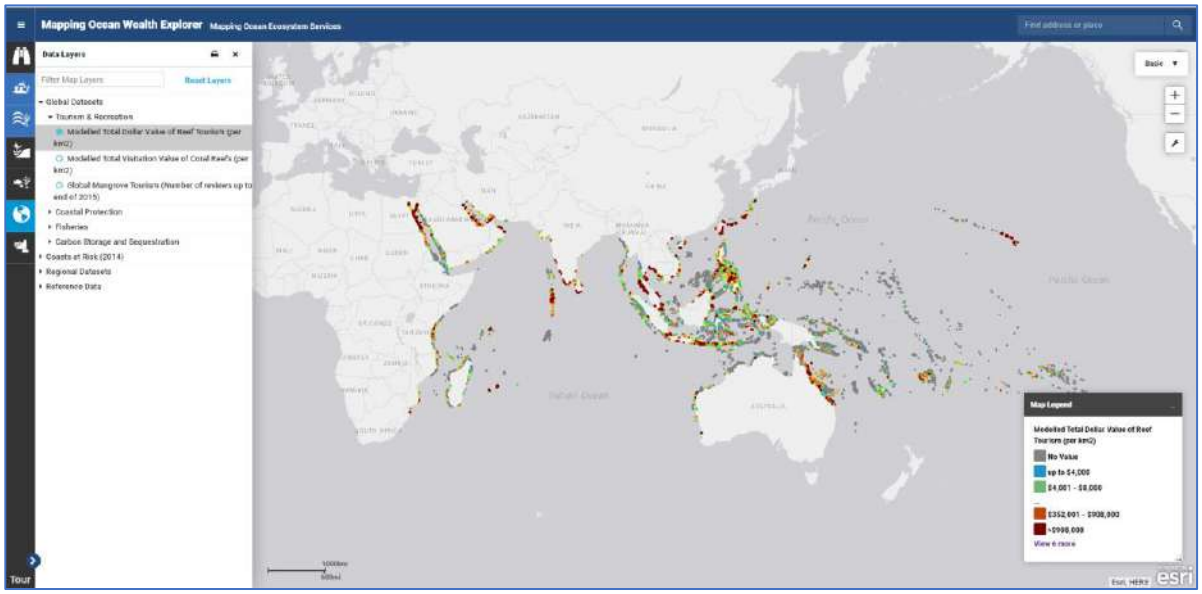
Further information: ReefBase is the official database of the Global Coral Reef Monitoring Network (GCRMN), as well as the International Coral Reef Action Network (ICRAN).

Website: http://www.reefbase.org/main.aspx

Introduction document:

ID: Mul-009

Name: **The Nature Conservancy - Atlas of Ocean Wealth**



Component: Ocean condition
Ocean service supply

Data format: Online Map application

Status: Ongoing (since 2014)

Acquisition method: Field data, modelling data and expert knowledge

Data resolution: High resolution

Data available: Recreation and tourism, natural coastal protection, blue carbon, fisheries

Further information: It is a collection of data of tourism, mangroves, coral reef and fishing. The map explorer also shows some other datasets. The work includes more than 35 novel and critically important maps that show how nature's value to people varies widely from place to place.

Website: http://oceanwealth.org/resources/atlas-of-ocean-wealth/

Introduction document: https://oceanwealth.org/wp-content/uploads/2016/07/Atlas_of_Ocean_Wealth.pdf

ID: Mul-010

Name: **NOAA - One Stop**

Component: Ocean condition
Ocean asset
Ocean extent

Data format: See each dataset (at least includes NetCDF)

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: It is a new version search engine of all NOAA datasets, including geophysical, oceans, coastal, weather and climate data

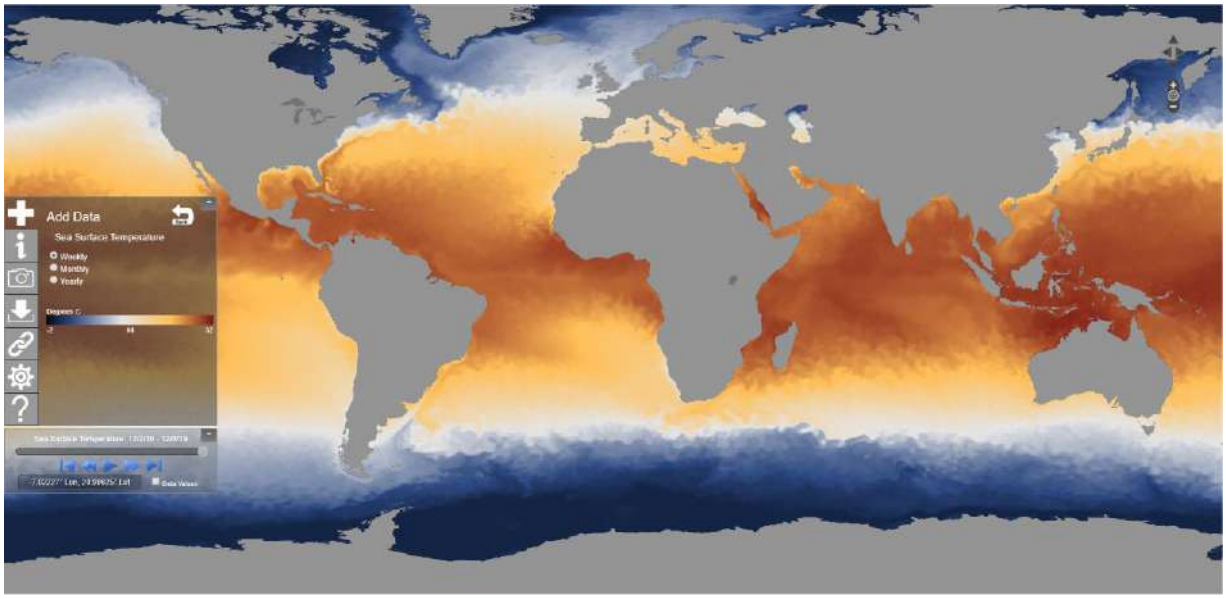
Further information:

Website: https://data.noaa.gov/onestop/#/

Introduction document:

ID: Mul-011

Name: **NOAA - Global Data Explorer**



Component: Ocean condition
Ocean extent

Data format: Map/ Google Earth file

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: This database provides data on the ocean, atmosphere, land, cryosphere, climate, and weather.
Ocean data include:

Temperature: SST, sea temperature, heat content
Chemistry: salinity, Dissolved Nitrate, Dissolved Silicate, Dissolved Phosphate, Dissolved Oxygen
Life: coral, chlorophyll
Physical: sea surface height departure, bathymetry

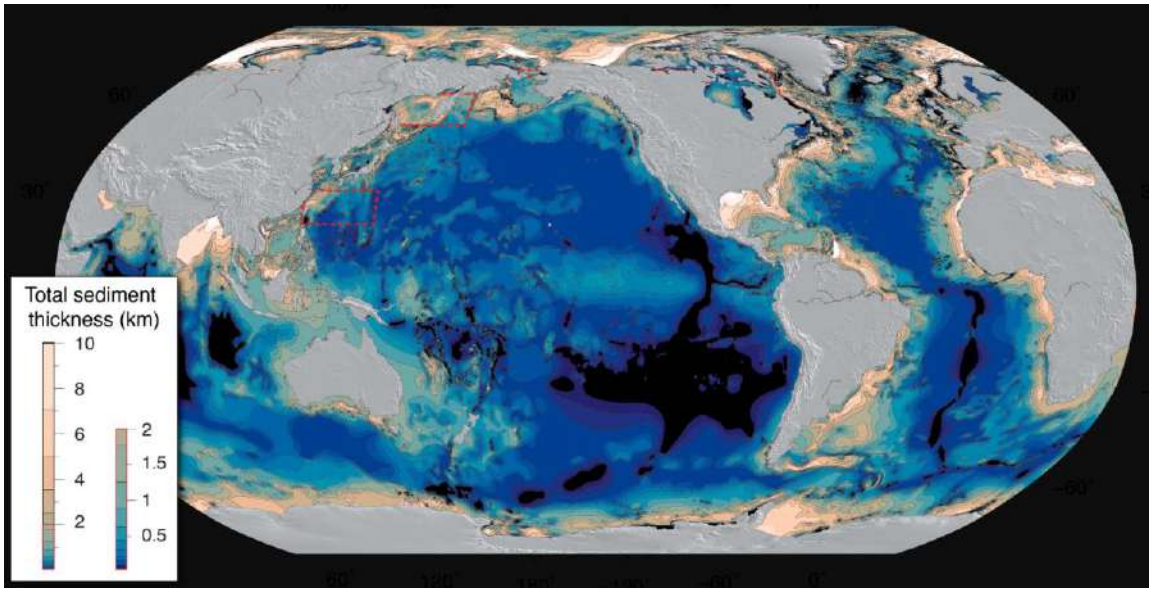
Further information: Ocean component of this site includes data on temperature, chemical, biological, and physical properties

Website: https://www.nnvl.noaa.gov/view/globaldata.html

Introduction document:

ID: Mul-012

Name: **NOAA - Marine Geology and Geophysics**



Component: Ocean extent
Ocean service supply
Ocean asset

Data format: See each dataset (at least includes MGD77T Exchange/ MAG88T Exchange/ Map/ NetCDF)

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available:

- Marine Trackline Geophysical database: bathymetry (single-beam), magnetics, gravity and seismic reflection data collected during marine cruises from 1939 to the present.
- Marine Geology: analyses, descriptions, and images of sediment and rock
- Bathymetry and Global Relief: Bathymetric & Fishing Maps, Estuarine Bathymetry, Great Lakes, IHO Data Center for Digital, Bathymetry (IHO DCDB), International Projects for Ocean Mapping, Multibeam Data, NOS Hydrographic Survey Data, Paleobathymetry of the Circum-Antarctic, Trackline Data, Coastal Elevation Models, Coastal Relief Model (CRM), Coastlines & Coastline Extractor, Global Relief (ETOPO1, ETOPO2, ETOPO5)

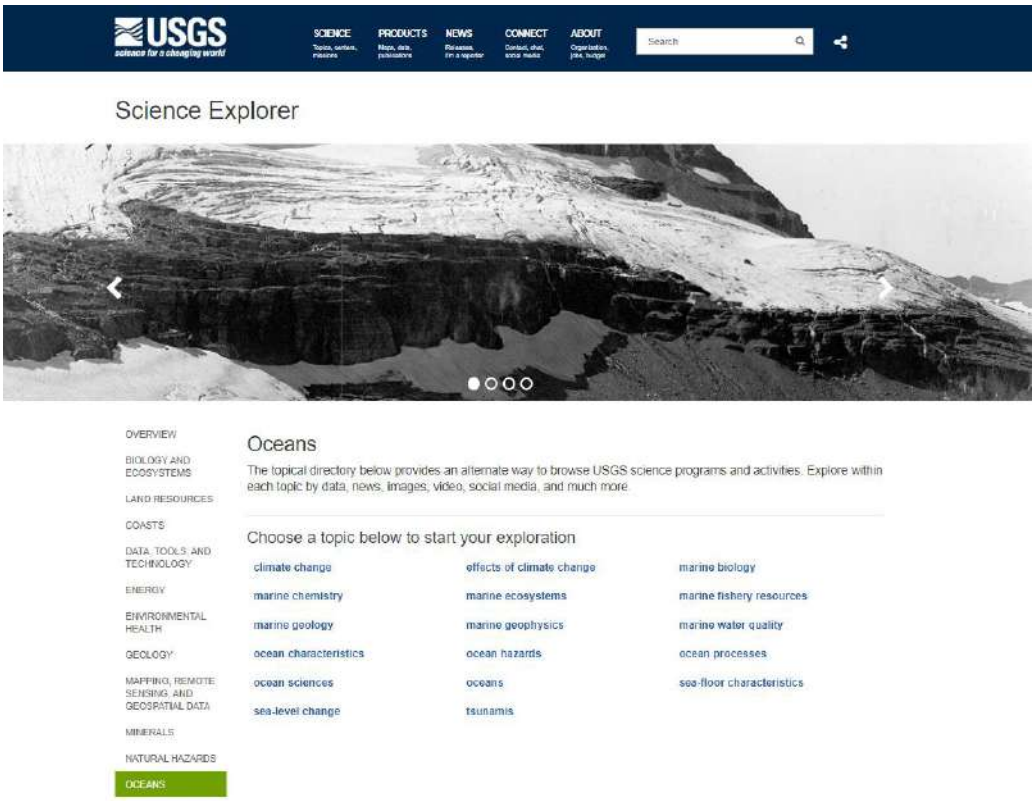
Further information:

Website: https://www.ngdc.noaa.gov/mgg/mggd.html

Introduction document:

ID: Mul-013

Name: **The United States Geological Survey (USGS)**



Component: Spatial units
Ocean extent
Ocean service supply

Data format: See each dataset

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: Climate change, effects of climate change, marine biology, marine chemistry, marine ecosystems, marine fishery resources, marine geology, marine geophysics, marine water quality, ocean characteristics, ocean hazards, ocean processes, ocean sciences, oceans, sea-floor characteristics, sea-level change, and tsunamis

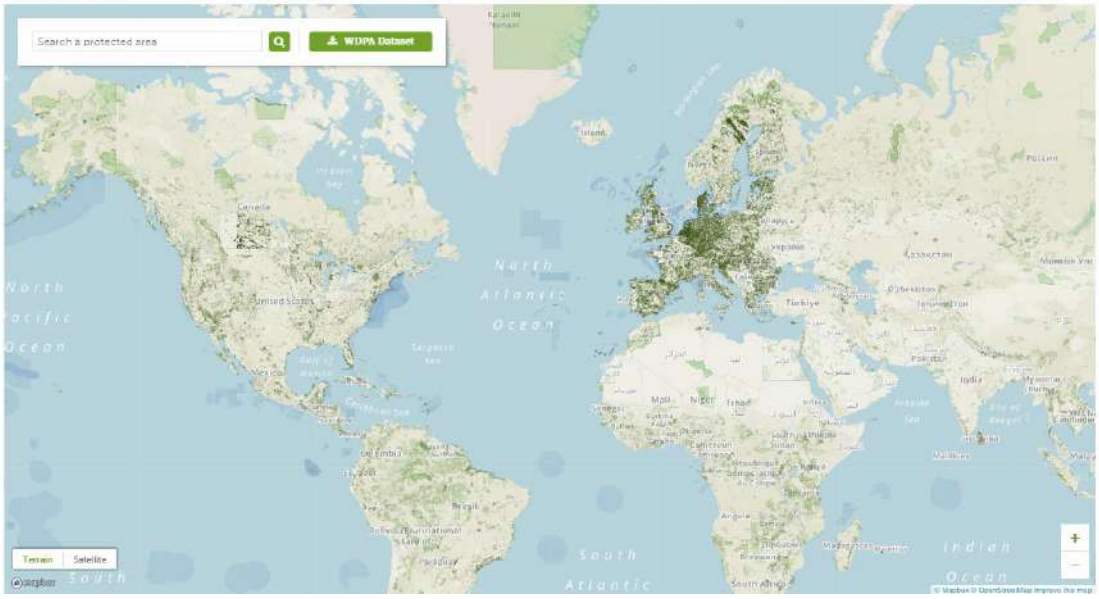
Further information: It is a comprehensive database with a special part of oceans

Website: https://www.usgs.gov/science/science-explorer/Oceans

Introduction document:

ID: Mul-014

Name: **IUCN & UNEP-WCMC - Protect Planet Ocean**



Component: Ocean extent
Use (designated)

Data format: See each dataset

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: Marine Protected Areas, Marine Reserves, and Marine World Heritage Sites

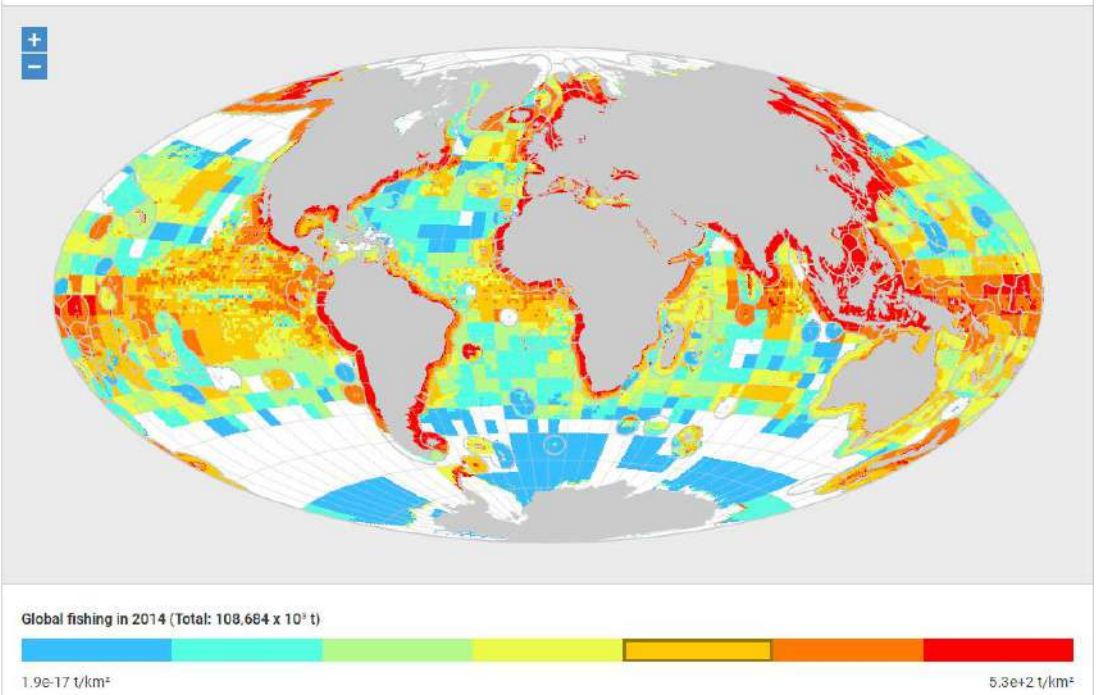
Further information: Protected Planet is the most up to date and complete source of information on protected areas, updated monthly with submissions from governments, non-governmental organizations, landowners and communities. It is managed by the United Nations Environment World Conservation Monitoring Centre (UNEP-WCMC).

Website: http://www.protectplanetocean.org/

Introduction document:

ID: Mul-015

Name: **Sea Around Us**



Component: Ocean service supply
Ocean extent

Data format: GeoTIF/CSV

Status: Ongoing (since 1999)

Acquisition method: Official reported data and estimated data

Data resolution: See each dataset

Data available: Fisheries and fisheries-related data at spatial scales that have ecological and policy relevance, such as by Exclusive Economic Zones, High Seas, Large Marine Ecosystems and other spatial scales.

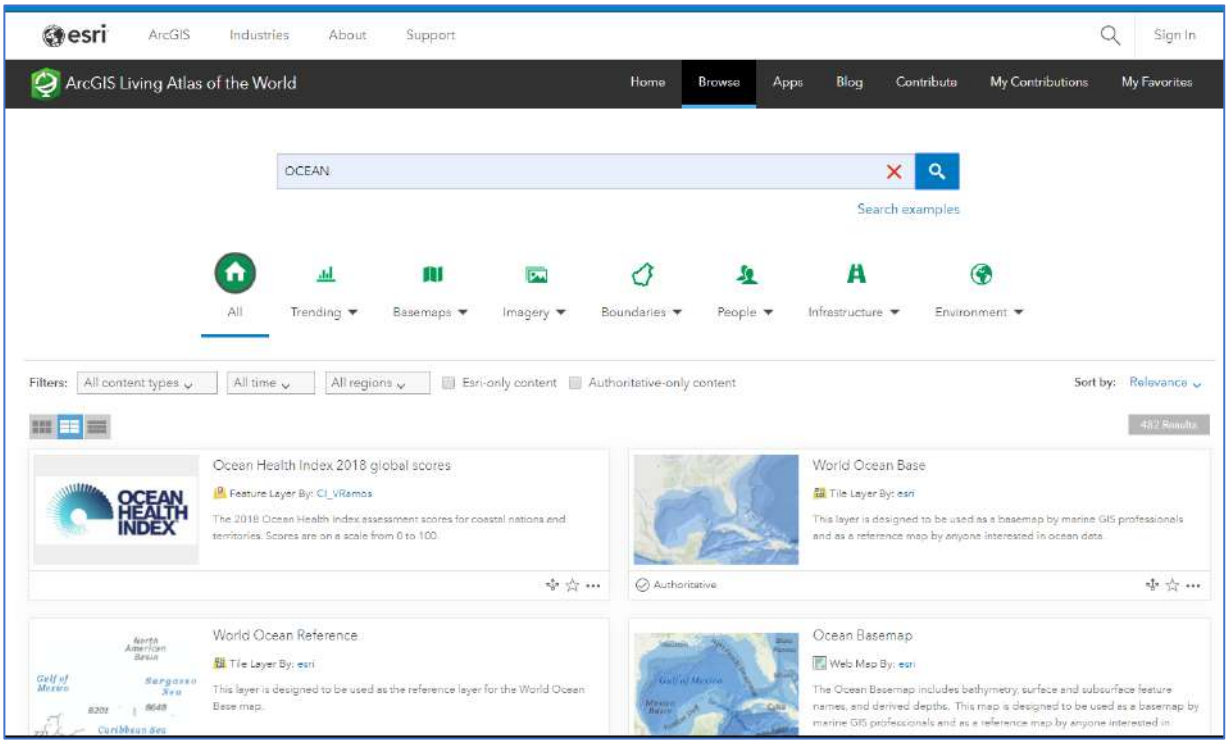
Further information: We emphasize catch time series starting in 1950, and related series (e.g., landed value and catch by flag state, fishing sector and catch type), and fisheries-related information on every maritime country (e.g., government subsidies, marine biodiversity). Information is also offered on sub-projects, e.g., the historic expansion of fisheries, the performance of Regional Fisheries Management Organizations, or the likely impact of climate change on fisheries.

Website: http://www.seaaroundus.org/

Introduction document:

ID: Mul-016

Name: **ESRI Living Atlas**



Component: Ocean extent
Ocean condition

Data format: SHP

Status: Ongoing

Acquisition method: N/A

Data resolution: N/A

Data available: The ArcGIS Living Atlas of the World is the foremost collection of geographic information from around the globe. It includes maps, apps, and data layers related to some physical ocean data.

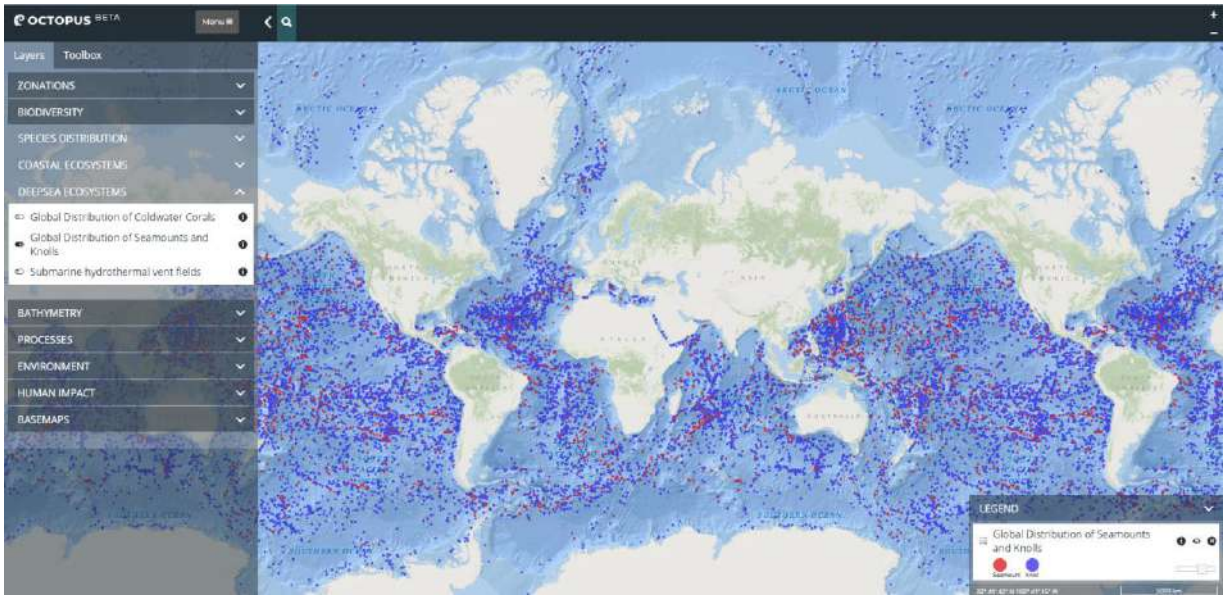
Further information:

Website: https://livingatlas.arcSHP.com/en/

Introduction document:

ID: Mul-017

Name: **Oxford - Ocean Tool for Public Understanding and Science (OcToPUS)**



Component: Ocean extent
Ocean condition
Ocean service use

Data format: See each dataset (at lesat including PNG/ GeoTIFF/ NetCDF)

Status: Ongoing

Acquisition method: See each dataset

Data resolution: A resampled spatial resolution of 0.09 degrees (approximately 10km), at various temporal resolutions (1 month, 1 year, 10 years, 50 years)

Data available:

- Zonations: Exclusive economic zones (EEZ), oceans and seas, Marine protected areas (MPA), Marine ecoregions of the world
- Biodiversity: species distribution, coastal ecosystems, and deepsea ecosystems
- Bathymetry: bathymetry (depth), bathymetry (aspect), bathymetry (slope), bathymetry (roughness), ocean water volume, distance from land to sea
- Processes: sea surface temperature, sea surface salinity, sea ice fraction, net primary production, chlorophyll chl1, turbidity kd490
- Environment: Sea water temperature (10 years mean), Sea water salinity (10 years mean), Sea water phosphate (60 years mean), Sea

water oxygen (60 years mean), Sea water nitrate (60 years mean), Sea water silicate (60 years mean)
- Human impact: Marine Mining Contract for Exploration Areas,
- World Port Index, Global Population
- Ship density: Maritime traffic density (All types), Maritime traffic density (Cargo), Maritime traffic density (Tanker), Maritime traffic density (Fishing)
- Bathymetric: ESRI Ocean

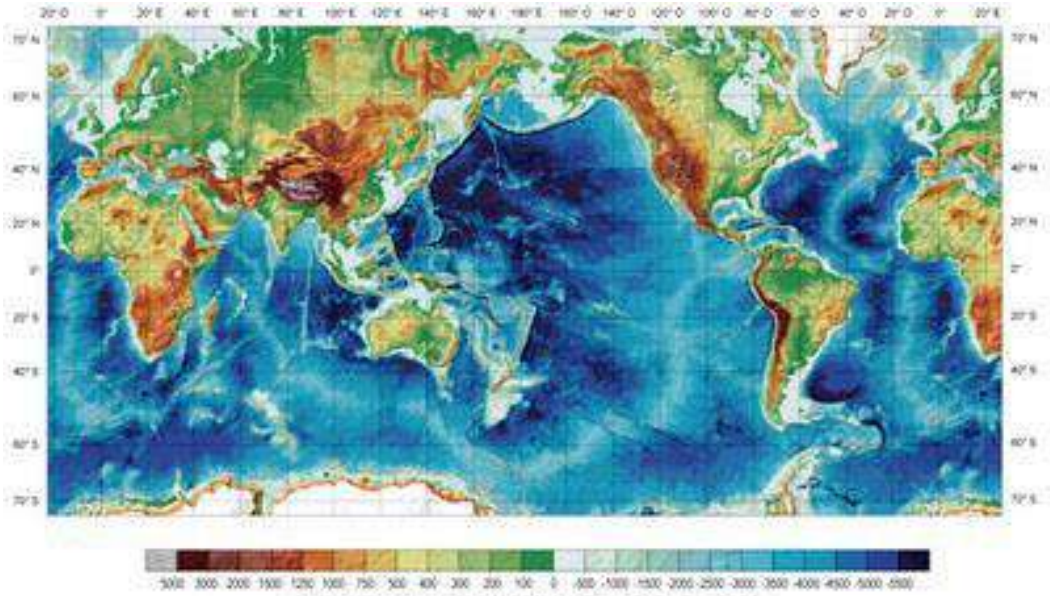
Further information: This portal includes 137 standard depth levels (if applicable) and spanning over a time range of up to 52 years (1964 – present). Metadata are ingested into the file headers and a unified coastline is applied to all datasets. Vector datasets are provided with an adaptive scale-dependent coastline

Website: https://octopus.zoo.ox.ac.uk/beta

Introduction document:

ID: Mul-018

Name: **LEGOS - Doppler Orbitography and Radiopositioning Integrated by Satellite (DORIS)**



Sea floor topography map (from Calmant et al., 2002)

Component: Ocean condition
Ocean extent

Data format: See each dataset (at least includes NetCDF)

Status: Ongoing (since early 1990s)

Acquisition method: Satellite data (altimetric measurements)

Data resolution: High resolution

Data available: sea level variations and seafloor tectonic structures

Further information: Seafloor topography by altimetry (high-resolution altimetry data of the ERS-1 mission led to the production of a global bathymetric map)

Website: http://www.legos.obs-mip.fr/observations/doris/resultats

http://www.legos.obs-mip.fr/observations/doris/resultats/niveau-de-la-mer/reconstruction-1950-2000

Introduction document:

ID: Mul-019

Name: **The International Council for the Exploration of the Sea (ICES)**

Component:
Ocean condition
Ocean asset
Ocean service supply

Data format: See each dataset (at least include CSV/ SHP/ ASCII/ Map)

Status: Ongoing (since 1902)

Acquisition method: See each dataset (at least includes in situ data(survey), historical data)

Data resolution: See each dataset

Data available:

- Biodiversity database hosts seabird and seals abundance and distribution records and is linked to OSPAR, and ICES groups (JWGBIRD, WGMME)
- Contaminants, biological effects, and biological community data are made available through the DOME web portal (Database on Oceanography and Marine Ecosystems).
- Eggs and Larvae database makes available data collected by ichthyoplankton surveys for use by ICES and the wider marine community.
- Fish Trawl Survey datasets collected in connection with the Data Collection Framework (EU-DCF) are managed under the DATRAS portal.
- Fish predation is the focus of the fish stomach data portal.

- Historical plankton is an 'historical' dataset collection, where the dataset is considered complete and there are no immediate plans to update it.
- Oceanographic data which includes temperature, salinity, oxygen, chlorophyll-a, and nutrients measurements are made available through the OCEAN web applications.
- Impulsive underwater noise collates data on licensed events such as pile driving, controlled explosions from naval operations across the OSPAR and HELCOM areas.
- Vulnerable Marine Ecosystems(VME) hosts data on deep-water VMEs in the North Atlantic.

Further information: Advance and share scientific understanding of marine ecosystems and the services they provide - and to employ this knowledge to generate state of the art advice on meeting conservation, management and sustainability goals.

Website: https://ices.dk/marine-data/data-portals/pages/default.aspx

Introduction document:

ID: Mul-020

Name: **US National Center for Atmospheric Research/research data archive (NCAR/RDA)**

Component: Ocean extent
Ocean condition

Data format: ASCII/ Binary/ NetCDF

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: This portal contains a large and diverse collection of meteorological and oceanographic observations, operational and reanalysis model outputs, and remote sensing datasets to support atmospheric and geosciences research, along with ancillary datasets, such as topography/bathymetry, vegetation, and land use.

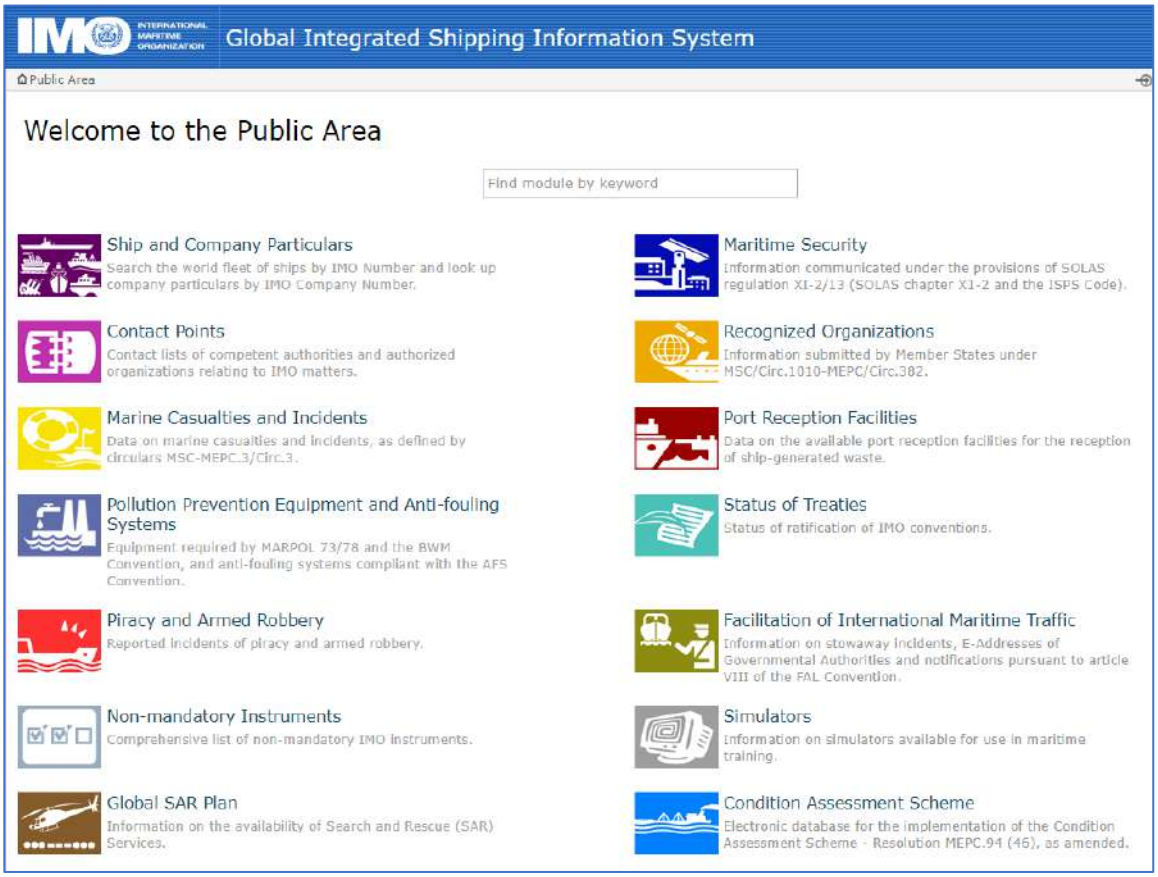
Further information: This portal has a rank of monthly/ yearly most Popular Datasets and Usage Statistics and the function of comparing 2 datasets.

Website: https://rda.ucar.edu/

Introduction document:

ID: Mul-021

Name: **IMO - Global Integrated Shipping Information System**



Component: Ocean service use
Use (designated)

Data format: Description

Status: Ongoing

Acquisition method: N/A

Data resolution: N/A

Data available: Shipping, marine safety, and ports

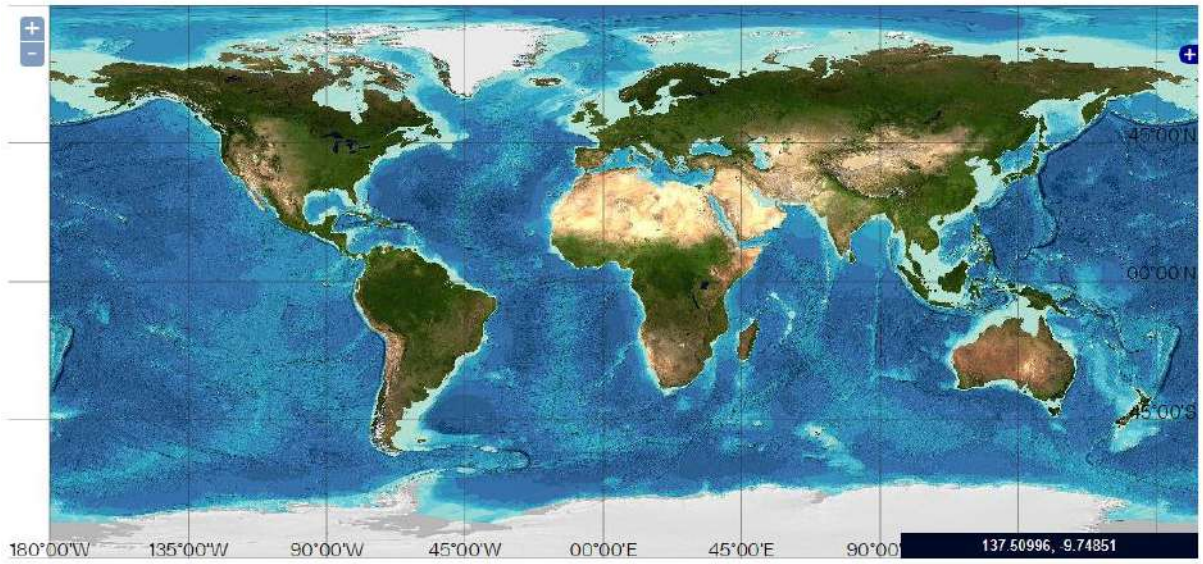
Further information: It requires registration to explore the data information.

Website: https://gisis.imo.org/Public/Default.aspx

Introduction document:

ID: Mul-022

Name: **British Oceanographic Data Centre (BODC)**



Component: Ocean extent
Ocean condition

Data format: NetCDF/ ASCII/ Ocean Data View (ODV)

Status: Ongoing (since 1975)

Acquisition method: See each dataset

Data resolution: See each dataset

Data available:

- International sea level (high frequency delayed-mode data): https://www.bodc.ac.uk/data/hosted_data_systems/sea_level/international/
- GEBCO gridded bathymetry data (see more details in this inventory)

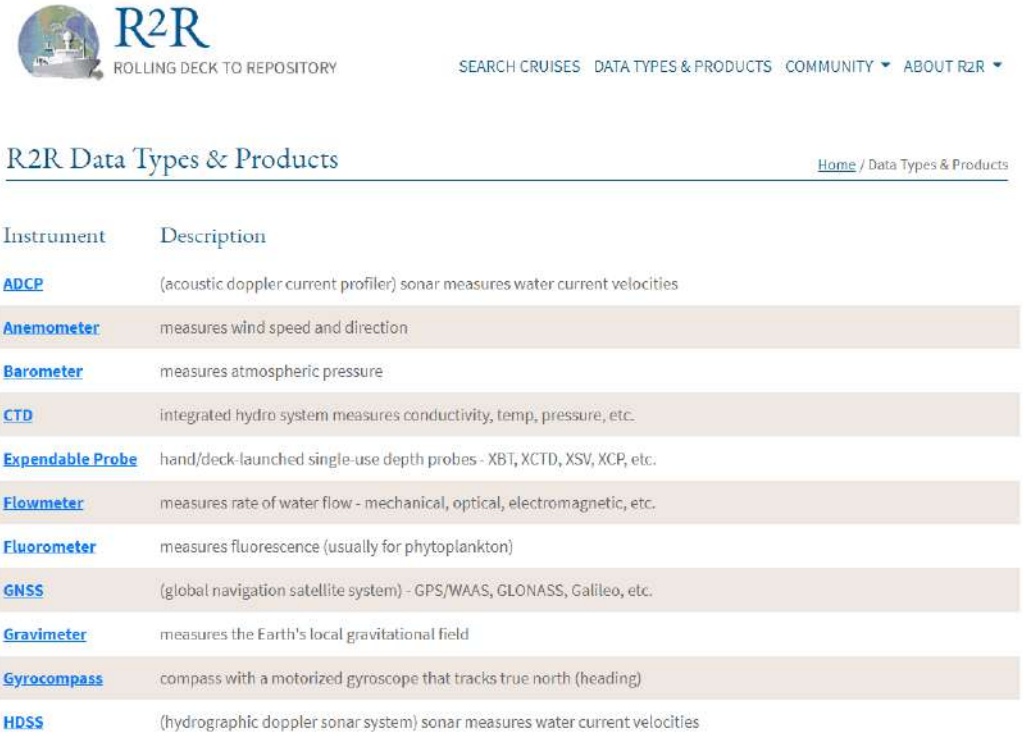
Further information:

Website: https://www.bodc.ac.uk/about/#

Introduction document:

ID: Mul-023

Name: **Rolling Deck to Repository (R2R) Data Repository**



Component: Ocean extent
Ocean condition

Data format: N/A

Status: Ongoing

Acquisition method: In situ data (vessels), meteorology station (MET) and thermosalinograph (TSG) data (delivered in real-time), as well as navigation, trackline geophysics and hydrographic (CTD) data.

Data resolution: See each dataset

Data available: R2R provides geophysical trackline profiles (underway gravity, magnetics, bathymetry, etc) for vessels equipped with these instrument types; and Hydrographic profiles (depth, temperature, salinity, etc from CTD).

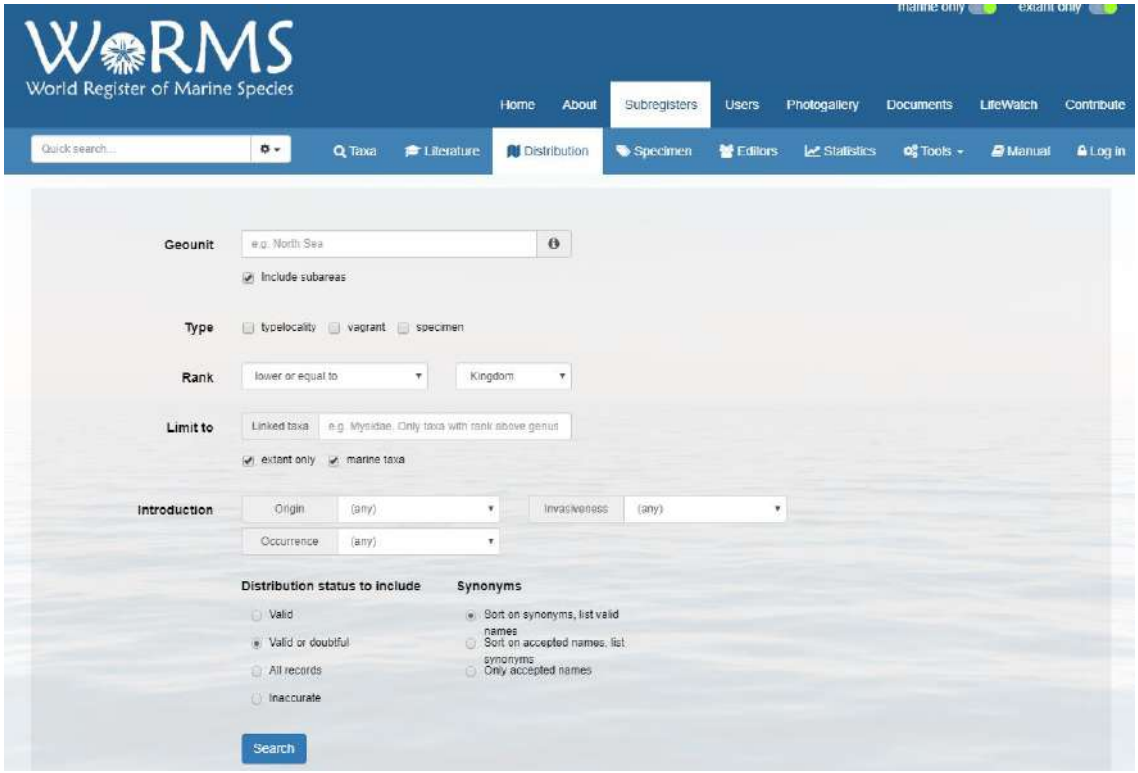
Further information: R2R provides a gateway through which data are routinely cataloged and deposited in long-term archives, including the NOAA National Centers for Environmental Information (NCEI) (for data) and Chronopolis (for documents). Data are submitted to R2R by vessel operators rather than by individual science parties.

Website: https://www.rvdata.us/data

Introduction document:

ID: Mul-024

Name: **World Register of Marine Species (WORMS)**



Component: Ocean asset
Ocean service use

Data format: Aphia structure (10 modules: taxonomy, distribution, traits, specimen information, vernacular names, notes, links, images, identification keys and sources)

Status: Ongoing

Acquisition method: Lists of information

Data resolution: N/A

Data available: It provides an authoritative and comprehensive list of names of marine organisms, including information (e.g. habitat and species distribution).

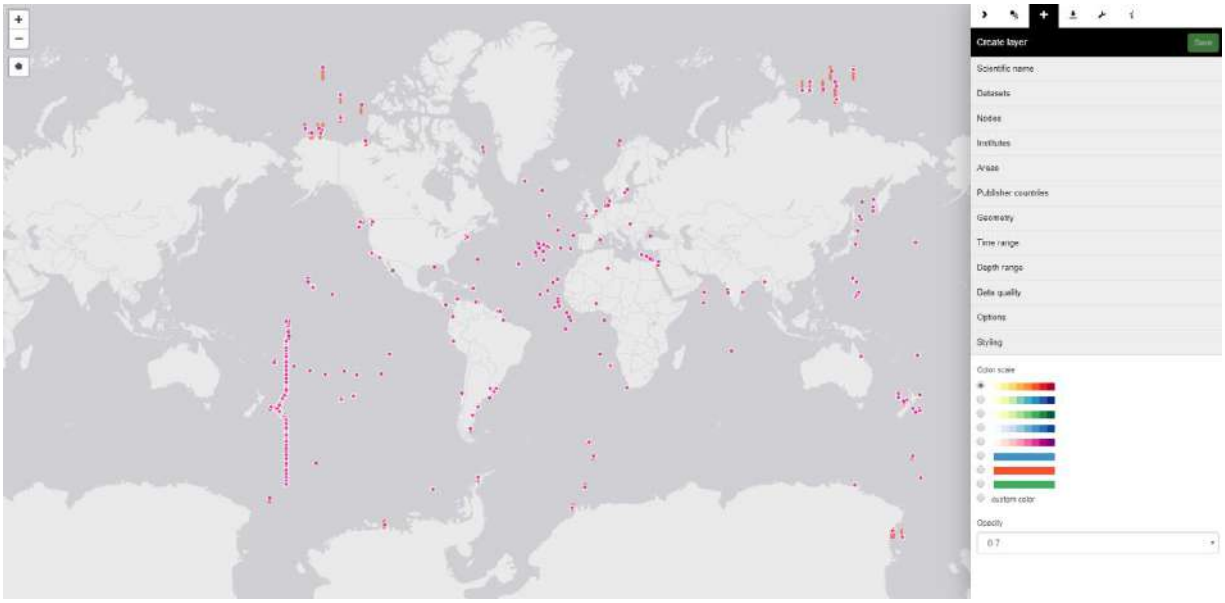
Further information:

Website: http://marinespecies.org/aphia.php?p=checklist

Introduction document: http://marinespecies.org/aphia.php?p=manual

ID: Mul-025

Name: **Ocean Biogeographic Information System (OBIS)**



Component: Ocean condition
Ocean asset

Data format: Online Map/ OBIS-ENV-DATA format

Status: Ongoing

Acquisition method: N/A

Data resolution: N/A

Data available: OBIS provides information of over 45 million observations of nearly 120 000 marine species, from Bacteria to Whales, from the surface to 10 900 meters depth, and from the Tropics to the Poles. The datasets are integrated so users can search and map them all seamlessly by species name, higher taxonomic level, geographic area, depth, time and environmental parameters.

Further information: OBIS is a global open-access data and information clearing-house on marine biodiversity for science, conservation and sustainable development.

Website: http://www.iobis.org/data/

Introduction document: https://obis.org/manual/

ID: Mul-026

Name: **NASA - Physical Oceanography Distributed Active Archive Center (PODAAC)**

Component: Ocean extend
Ocean condition

Data format: NetCDF

Status: Ongoing

Acquisition method: Satellite data

Data resolution: See each dataset

Data available: PODAAC provides data on bathymetry/seafloor topography, glaciers/ice sheets, ocean chemistry, ocean circulation, ocean heat budget, ocean optics, ocean pressure, ocean temperature, ocean waves, ocean winds, salinity/density, sea ice, sea surface topography, and surface water

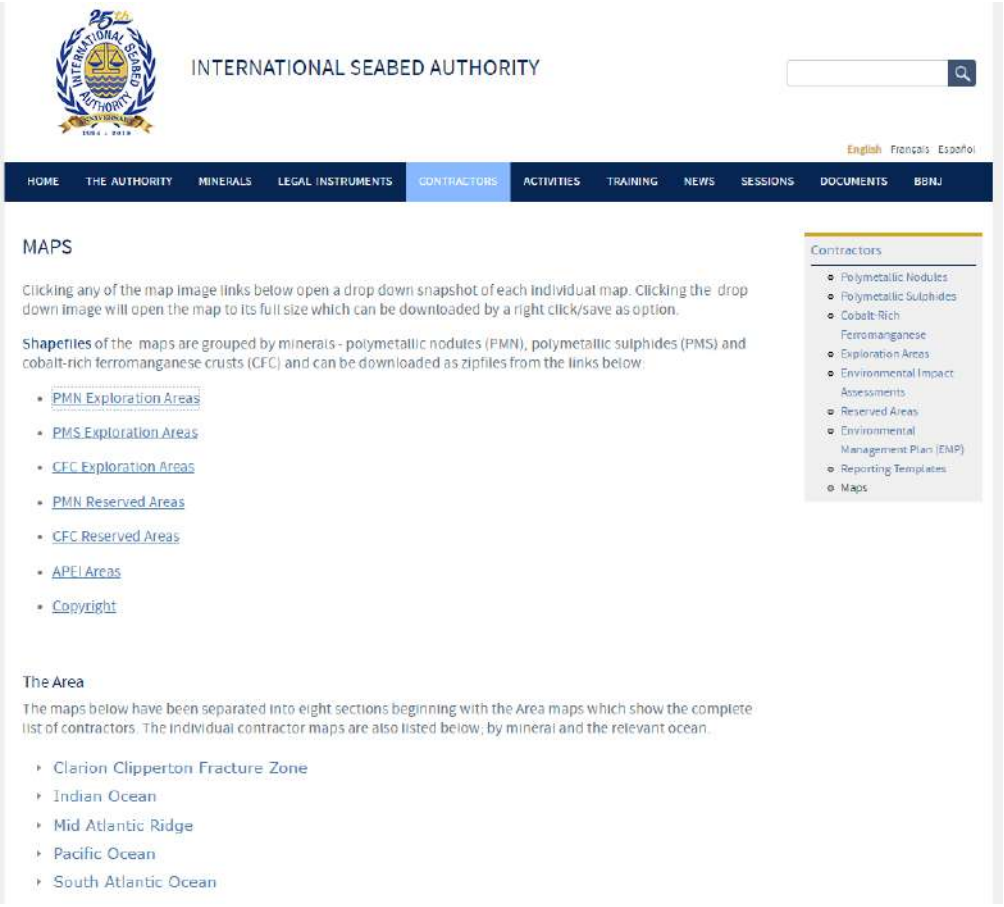
Further information:

Website: https://podaac.jpl.nasa.gov/datasetlist

Introduction document:

ID: Mul-027

Name: **International Seabed Authority Maps**



Component: Use (designated)
Ocean asset

Data format: SHP

Status: Ongoing

Acquisition method: N/A

Data resolution: N/A

Data available: Shapefiles of the maps are grouped by minerals - polymetallic nodules (PMN), polymetallic sulphides (PMS) and cobalt-rich ferromanganese crusts (CFC) ; Area maps show the complete list of contractors; individual contractor maps by mineral and the relevant ocean.

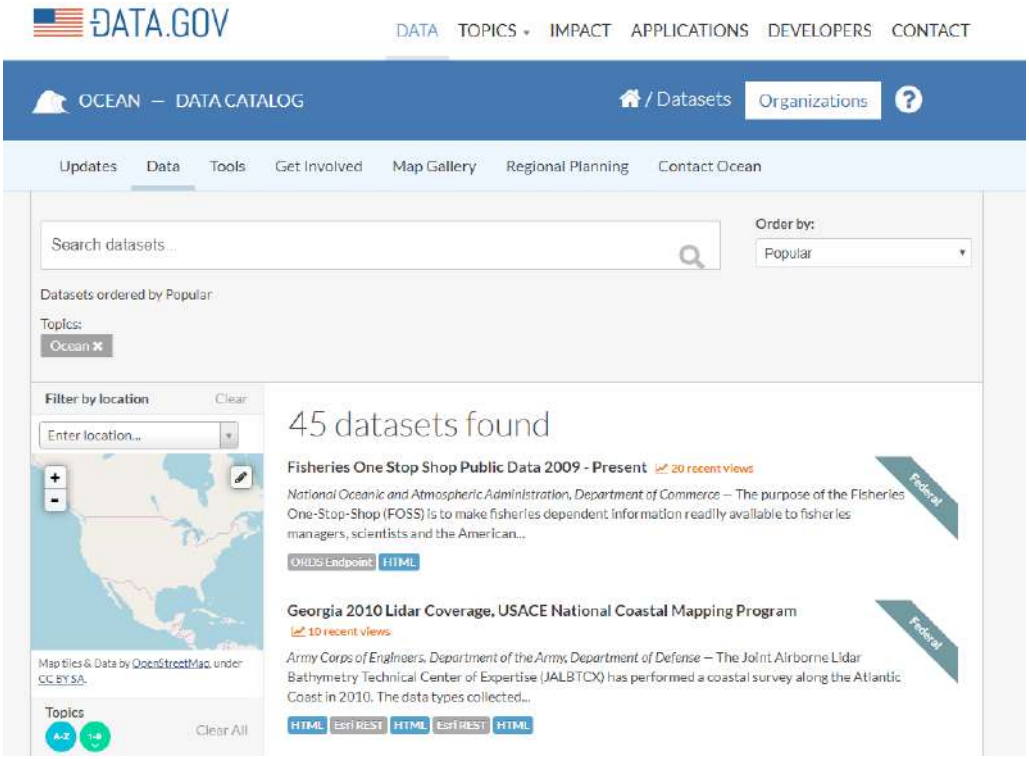
Further information:

Website: https://www.isa.org.jm/maps

Introduction document:

ID: Mul-028

Name: **DATO.GOV - OCEAN DATA CATALOG**



Component: Ocean extent
Ocean condition
Ocean service use

Data format: See each dataset

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: The home of the U.S. Government's open data. Most data in this site are limited to US but some are global.

Further information:

Website: https://catalog.data.gov/dataset?groups=ocean9585#topic=ocean_navigation

Map gallery: https://www.geoplatform.gov/

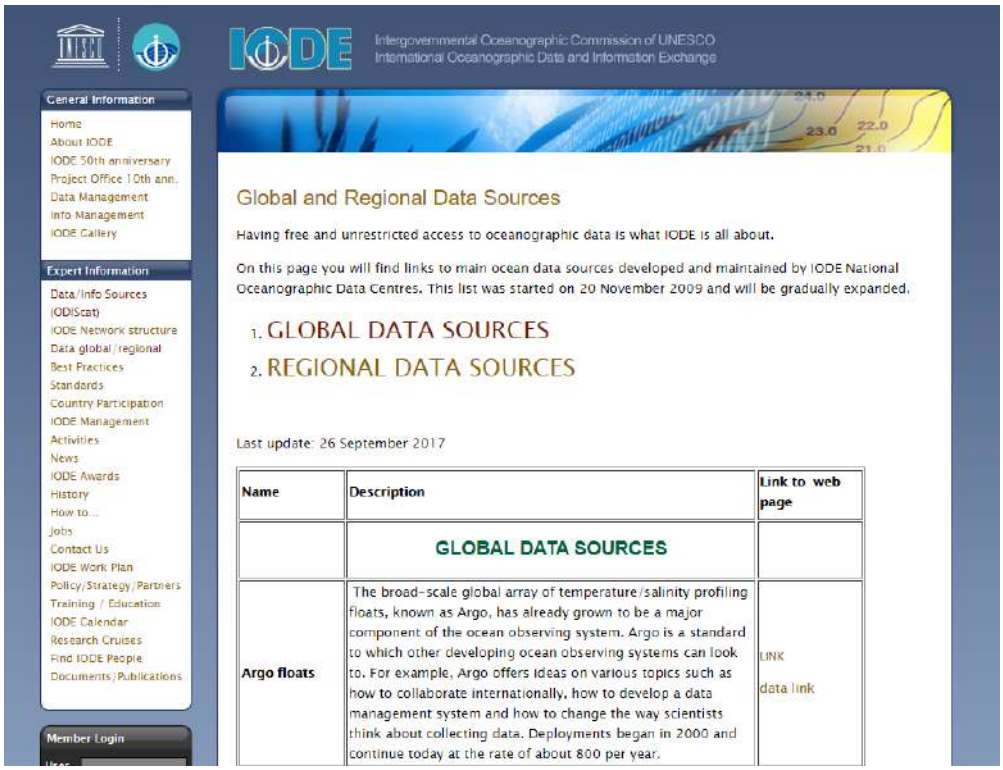
Introduction document:

Section 8

Non-specific classification

ID: Non-001

Name: **Long Term Ecological Research (LTER) Network Data Portal**



Component: Non-specific classification

Data format: See each dataset

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: Long-term ecological research sites

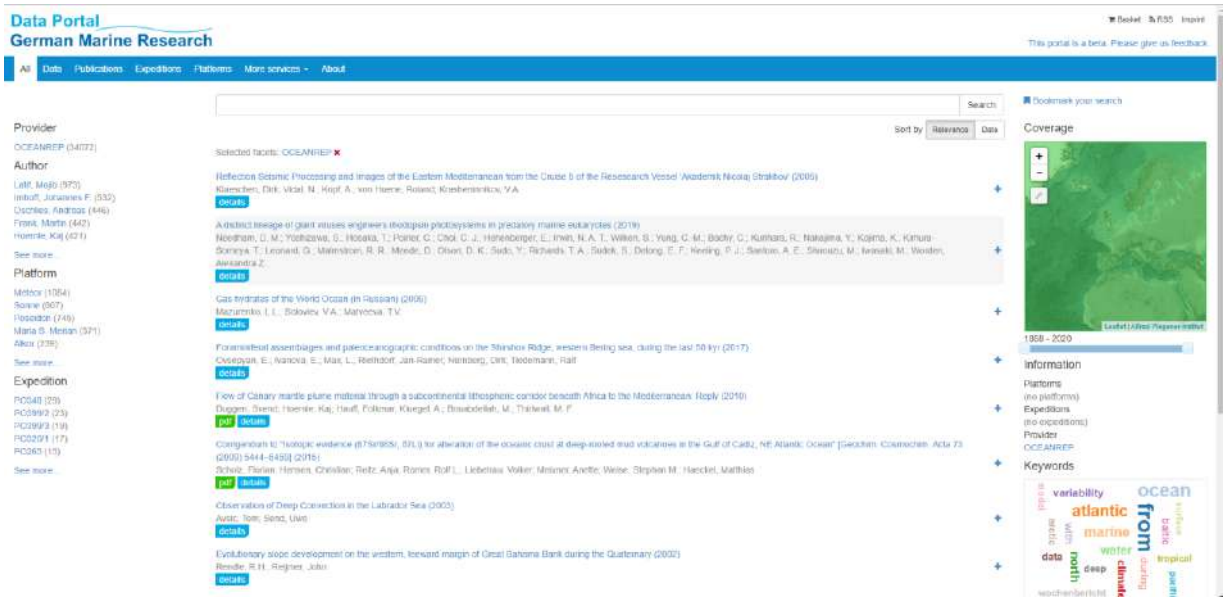
Further information:

Website: https://www.iode.org/index.php?option=com_content&view=article&id=178:data-access&catid=33&Itemid=141#global

Introduction document:

ID: Non-002

Name: **Data Portal German Marine Research**



Component: Non-specific classification

Data format: See each dataset

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: In this portal, a huge amount of marine data sets are commonly made searchable with direct access and without any registration procedure. Currently this portal provides access to metadata and data from these partner institutes: AWI, BSH, GEOMAR, HZG and MARUM.

Further information: It is a product of the Marine Network for Integrated Data Access (MaNIDA) funded cooperatively by the Helmholtz Association

Website: https://www.manida.org/

Data Portal German Marine Research: https://manida.awi.de/

Introduction document:

ID: Non-003

Name: **PANGAEA Data Publisher**

Component: Non-specific classification

Data format: See each dataset

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: It is a collection of sea scientific open data publication and linked with data used in the research (oceans, biological classification, ecology, biosphere, fisheries)

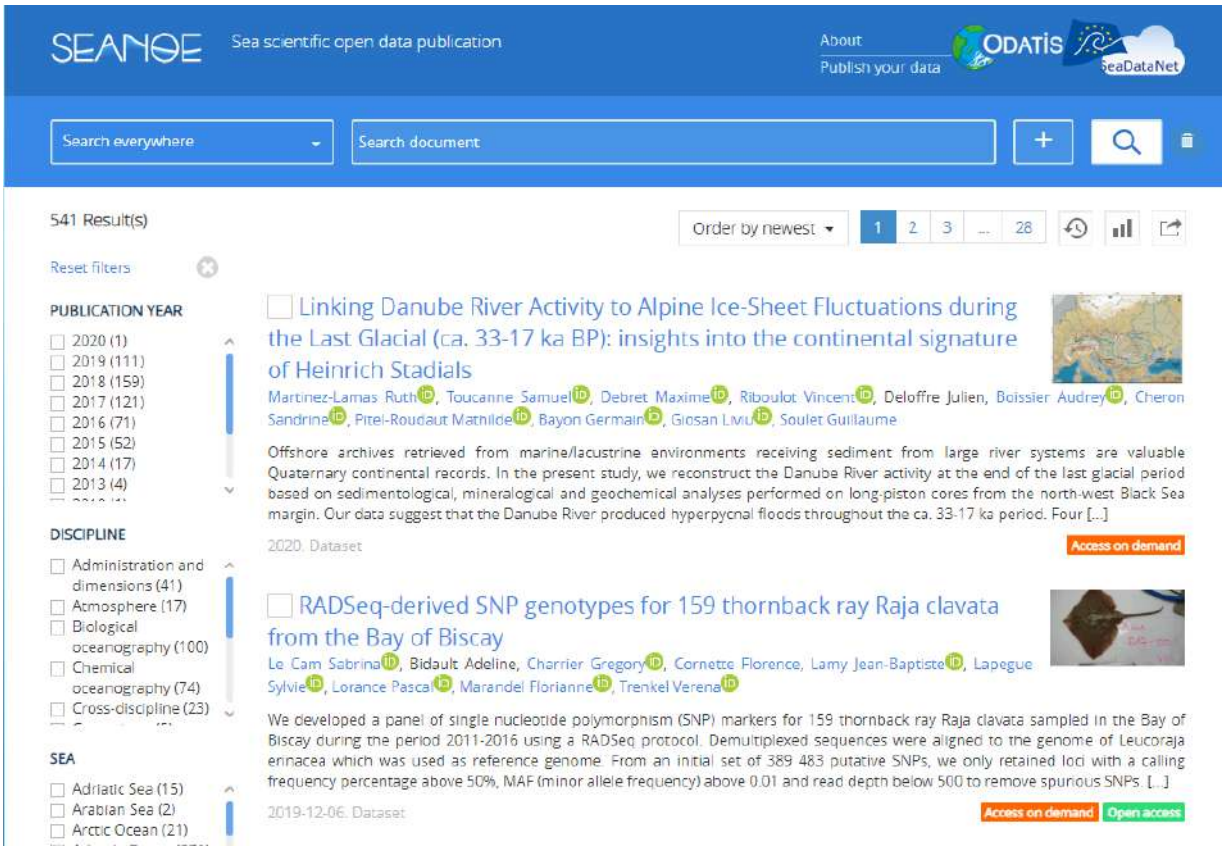
Further information: It is a data Publisher for Earth and Environmental Science. The information system PANGAEA is operated as an Open Access library aimed at archiving, publishing and distributing georeferenced data from earth system research. The system guarantees long-term availability of its content through a commitment of the operating institutions.

Website: https://pangaea.de/

Introduction document:

ID: Non-004

Name: **SEA scieNtific Open data Edition(Seanoe)**



Component: Non-specific classification

Data format: See each dataset

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: A publisher of scientific data in the field of marine sciences

Further information:

Website: http://www.seanoe.org/

Introduction document:

ID: Non-005

Name: **Global Earth Observation System of Systems' Platform(GEOSS Platform)**

Component: Non-specific classification

Data format: See each dataset

Status: Ongoing

Acquisition method: See each dataset

Data resolution: See each dataset

Data available: An earth observation data portal

Further information:

Website: http://www.earthobservations.org/gci.php
http://www.geoportal.org/

Introduction document: