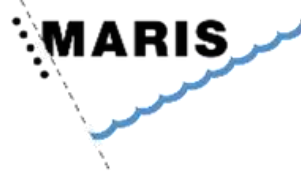


27-29 May 2024 



imdis

# International conference on Marine Data and Information Systems



An underwater scene featuring a variety of marine life. In the foreground, there are several fish of different species, including a large cod-like fish and smaller fish. There are also jellyfish, some with blue bells and others with orange bells. In the bottom left, a crab is visible near some green seaweed. The background shows a school of fish and more jellyfish swimming in the blue water.

**10 years of being a national research infrastructure  
NMDC (Norwegian Marine Data Centre)  
providing seamless access to marine data**

Helge Sagen  
IMDIS 2024

# Content

## Data policy

- data sources, licencing, certification, publication, FAIR data

## Data exchange

- licencing, embargo, standards, ICES, WOD

## National cooperation

- NMDC, NorDataNet, NorArgo, LoVe

## International cooperation,

- ICES, EU, Copernicus, WOD, IOC/IODE



# Open data policy

IMR data are freely available to all users on condition that the source is acknowledged.

Licensed CC-BY or NLOD.

<https://www.hi.no/hi/forskning/marine-data-forskningsdata>  
<https://www.hi.no/resources/imr/Data-policy-IMR.pdf>

Has changed over the last 15 -20 years used to be a 2-year embargo, not to be shared to third party, preferably co-authorship



# NMD and NMDC



**NMD Norsk Marint Datasenter** is a group of data managers and system developers, 13 employees, 12 in Bergen and 1 in Flødevigen that manage research data at Institute of Marine Research and has been the acting NODC since 1972; NMD is the coordinator of

**NMDC Norwegian Marine Data Centre** which is a national research infrastructure build of 16 Norwegian partner institutions, financed through the Infrastructure program in the Research Council of Norway in the 10-year period 2012 – 2022, and is still in operation.

# NMD certified as a (2017-2021, 2022-2025) «Trustworthy Data Repository»



NMD is certified as a Trustworthy Data Repository for research data.

- To fulfill international and national data strategies, research data has to be archived in trustworthy repositories to ensure availability and reuse.
- CoreTrustSeal is assigned to reliable infrastructures upon an application where an independent organisation evaluate the repository against a number of requirements.

NMD is accredited as national oceanographic data centre NODC by UNESCO/IOC/IODE in 2023

- NMD has been NODC since 1972
- NMD is member in WDS World Data System



# FAIR data catalogue

NMDC – Norwegian Marine Data Centre has the vision to give seamless access to data through its data catalogue:

<http://metadata.nmdc.no/UserInterface/#/>

NMDC has a data provider serving external portals harvesting the metadata. The data URL points to the repository (e.g. NMDC).

The screenshot displays the NMDC data catalogue interface. At the top, there is a search bar and a navigation menu. The main content area shows search results for 'Scientific\_Keyword (172)'. The 'Provider (29)' filter is expanded, and 'Institute of Marine Research, Bergen, Norway (41)' is highlighted with a red box. The search results list includes several entries, with 'Deep-water in the western slope of the Norwegian Trench in the northern North Sea - Utsira-StartPoint Section - Atlantic Water' highlighted with a red box. The interface also features filters for 'Geographical coverage' and 'Temporal coverage', and a list of logos for partner institutions at the bottom.

# FAIR data [www.nmdc.no](http://www.nmdc.no)

Each dataset has its own «landingpage»

All metadata including download URL

Discovery metadata on ISO 19139 format (DIF)

Persistent Identifier, DOI

The screenshot shows the NMDC website interface. At the top, there is a logo for NMDC (Norwegian Marine Data Centre) and the text 'Seamless access to Norwegian marine data'. Below this, the dataset title is displayed: 'Deep-water in the western slope of the Norwegian Trench in the northern North Sea - Utsira-StartPoint Section - Atlantic Water'. A map of the North Sea region is shown on the right, with a red line indicating the data collection section. The left side of the page contains citation information, a 'Text citation' button, and a Creative Commons Attribution 4.0 International License logo. Below the citation information, there is an 'Abstract' section and a 'Data downloads' table. The 'Data downloads' table is highlighted with a red border and contains two rows: 'GET DATA' with a URL to a CSV file, and 'VIEW RELATED INFORMATION' with a URL to a PDF file.

**Abstract**  
 The index of temperature and salinity is calculated by averaging the values over an area within the routinely monitored hydrographical fixed section. The data are from cruises in: February, April, May, July, November.

**Scientific keywords:**  
 EARTH SCIENCE> OCEANS> OCEAN TEMPERATURE> WATER TEMPERATURE  
 EARTH SCIENCE> OCEANS> SALINITY/DENSITY> SALINITY

**Key words:**

**Data downloads**

Type	Description	URL
GET DATA		<a href="https://ftp.nmdc.no/nmdc/IMR/fastesnitt/indeks/utw_aw.csv">https://ftp.nmdc.no/nmdc/IMR/fastesnitt/indeks/utw_aw.csv</a>
VIEW RELATED INFORMATION		<a href="https://ftp.nmdc.no/nmdc/IMR/fastesnitt/indeks/SJOMIL_Utsira-W.pdf">https://ftp.nmdc.no/nmdc/IMR/fastesnitt/indeks/SJOMIL_Utsira-W.pdf</a>

Entry ID	utw_aw
Entry Title	Deep-water in the western slope of the Norwegian Trench in the northern North Sea - Utsira-StartPoint Section - Atlantic Water
Data Set Citation List	
	Dataset Creator Dataset Title Dataset Release Date
	Jon Albretsen Deep-water in the western slope of the Norwegian Trench in the northern North Sea - Utsira-StartPoint Section - Atlantic Water 2016-10-13T00:00:00:00Z
Parameters List	
	Category Topic Term Variable Level 1
	EARTH SCIENCE OCEANS OCEAN TEMPERATURE WATER TEMPERATURE
	EARTH SCIENCE OCEANS SALINITY/DENSITY SALINITY
ISO Topic Category List	Oceans
Temporal Coverage	Start Date
	1986-01-01



# FAIR ocean data DAP Data Access Protocol

**OPeNDAP** give an API interface to the data

Upload of data in OPeNDAP is netCDF formatted data



**THREDDS** <https://opendap1.nodc.no/thredds/catalog.html>



**HYRAX** <https://opendap1.nodc.no/opendap/hyrax/>



**ERDDAP**



# Raw Data

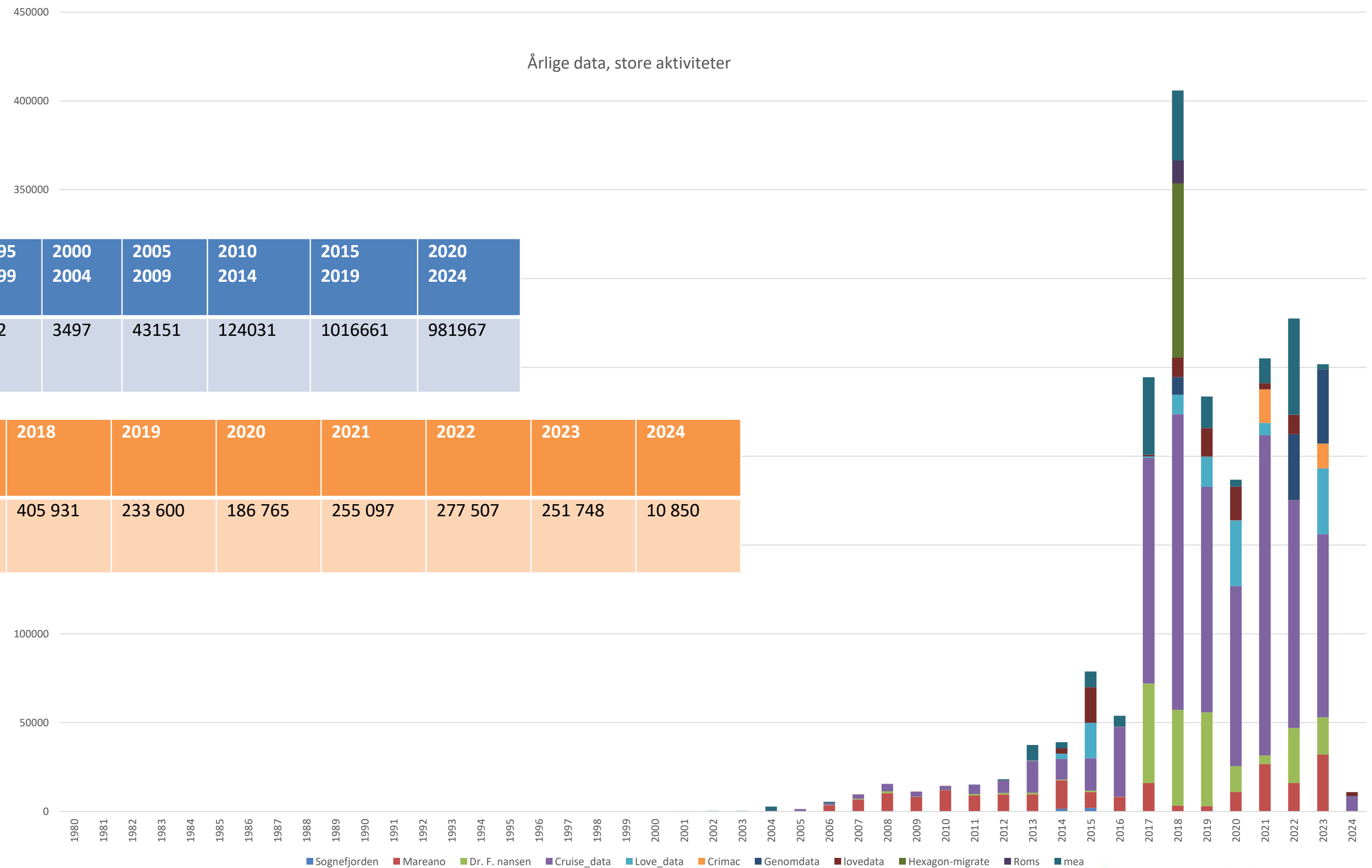
(1980-2024)

Årlige data, store aktiviteter

5-year	1980 1984	1985 1989	1990 1994	1995 1999	2000 2004	2005 2009	2010 2014	2015 2019	2020 2024
GigaByte	14	20	239	672	3497	43151	124031	1016661	981967

1-year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
GigaByte	78 539	53 873	244 468	405 931	233 600	186 765	255 097	277 507	251 748	10 850

1980-2004      5 TB  
 2005-2009      43 TB  
 2010-2014      124 TB  
 2015-2019      1016 TB  
 2020-2024      982 TB



# FAIR Object Storage IMR

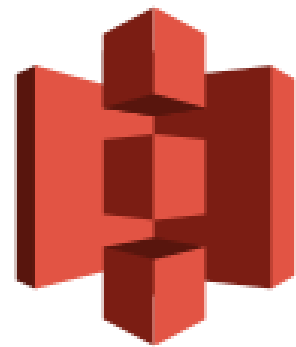
## LoVe - Lofoten Vesterålen observatory data

### DATA FROM LOVE NODE 7

Raw data from the LoVe Ocean Observatory can be accessed and downloaded from IMR using the Amazon S3 service from the following URL: <https://s3.hi.no>

User credentials are needed and can be obtained by sending a request to [datahjelp@hi.no](mailto:datahjelp@hi.no)

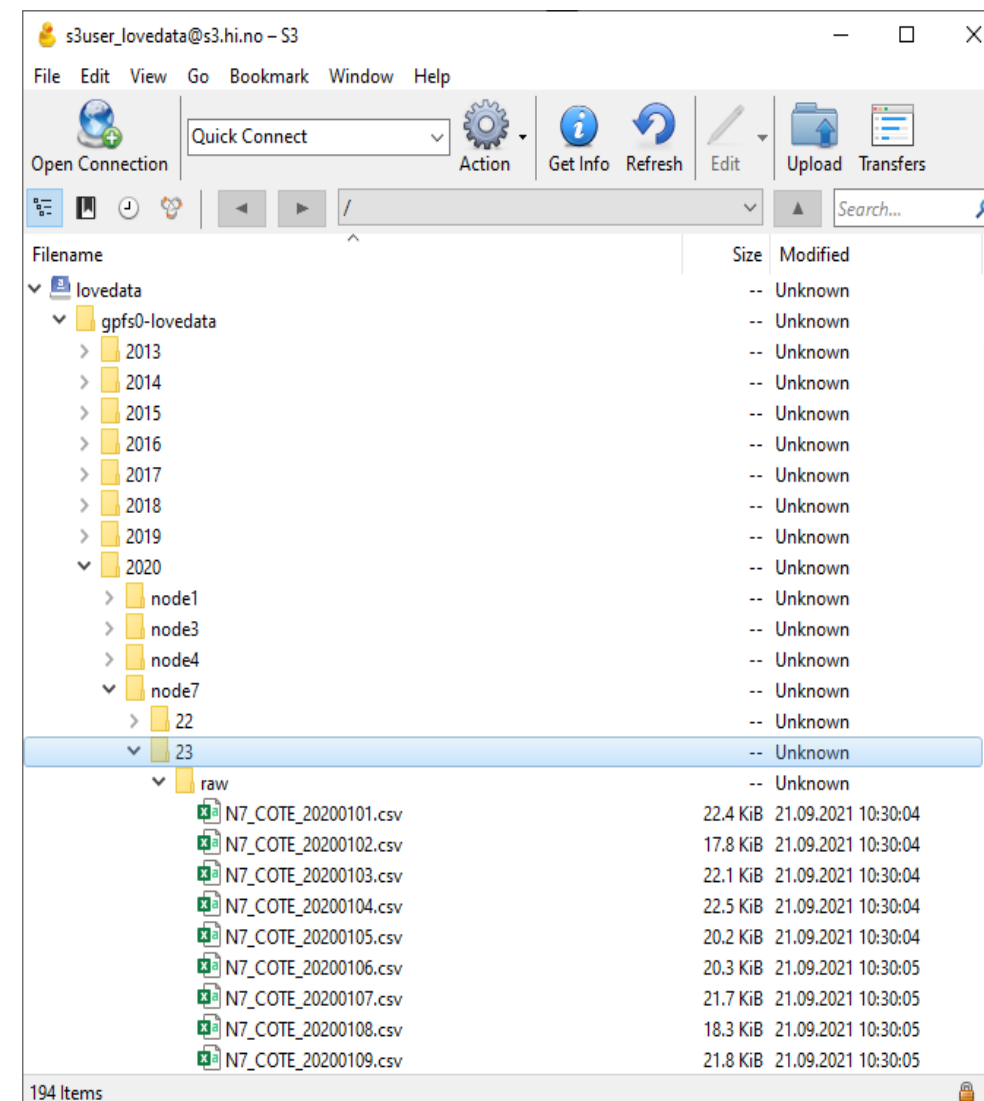
Further information about the S3 can be found here: [https://en.wikipedia.org/wiki/Amazon\\_S3](https://en.wikipedia.org/wiki/Amazon_S3)



Amazon S3



Cyberduck  
(S3 client)



Seamless access to Norwegian marine data

Institute of Marine Research  
Lofoten-Vesterålen Ocean Observatory – Node 7

Recommended citation:  
Nils Olav Handegard, Geir Pedersen, Guosong Zhang, Øyvind Jakobson, Sjur Ringheim Lid, Espen Johnsen (2020) Lofoten-Vesterålen Ocean Observatory – Node 7

To cite this dataset use the following:  
[Test citation](#)

Usage:  
CC BY Creative Commons Attribution 4.0 International License

Abstract  
The Lofoten-Vesterålen Ocean Observatory (LoVe Ocean) is located in a highly productive coastal shelf-slope area, and in an environment sensitive to external stressors. LoVe Ocean is a cabled multi-purpose observatory network with several nodes forming a westward transect, where the first shelf node and land infrastructure went into operation in 2013. The observatory nodes are equipped with a range of chemical, physical, and biological sensors. Data from the nodes are streamed continuously to the on-shore infrastructure through fiber optic subsea umbilicals. The data services are following best practice for findability, accessibility, interoperability and reproducibility. The discoverability metadata are available through the Norwegian Marine Data Centre. The data is accessible through standard file transfer protocols (ftp) and open data protocol (opendap), depending on the datatype. The sensor data that follows the SeaDataNet definitions are exposed through OpenDap, whereas data that does not have a defined standard are exposed in the native format through ftp, including echosounder data, hydrophone data and images. The data are organized by node and sensor id, and a dynamic list of sensor ids and data types is provided.

Data downloads

Type	Description	URL
VIEW RELATED INFORMATION		<a href="https://ftp.nmdc.no/nmdc/IMR/Doc/S3-Node7.pdf">https://ftp.nmdc.no/nmdc/IMR/Doc/S3-Node7.pdf</a>
GET DATA		<a href="https://s3.hi.no">https://s3.hi.no</a>

File hierarchy:  
`/lovedata/<YEAR>/<Node>/SensorID/`

### SENSORS:

SensorID	Sensor type
22	AMT pH sensor
23	Seabird SBE 37 SMP CT with Plastic Housing
24	Seabird UV nitrate sensor
63	Keller pressure sensor
74	Seabird fluorometer and scattering meter
75	Franatech CO2 sensor
76	Nortek ADCP
85	Hydrophone
97	Aanderaa O2 sensor
99	EK80
100	Chelsea Polycyclic Aromatic Hydrocarbons Sensor
101	Franatech methane sensor
103	Turner CDOM sensor
107	Develogic underwater camera
128	EK80



# FAIR data

## NMDC data policy

The national research infrastructure NMDC with its 15 partners has worked on developing data policies <https://nmdc.no/datapolitikk>

Educating the partners in why a data policy is needed and advising on licensing, NLOD or CC-BY.

Started in 2012 with a few partners that had a data policy and in 2024 the last data policy came in place.

Partner	Data Policy	License
1 IMR	Open FAIR-Principle's	NLOD/CC BY
3 FFI	Data policy for oceanographic - non-restricted data	Share data
4 NORD	Open FAIR-Principle's	CC-BY v4 and other CC
5 METNO	Open	NLOD/CC BY v4
6 NERSC	Open	CC BY v4
7 NGU	Open	NLOD/CC BY v4
8 NINA	Open	NLOD/CC BY v4
9 NPOLAR	Open	NLOD/CC BY v4
10 UIB	Open ( <u>DataverseNO</u> )	CC0
11 UIO	Open FAIR-Principle's	Restrictions may occur
12 UIT	<u>Open</u> ( <u>DataverseNO</u> )	CC0
13 NIVA	Open	CC BY v4
14 AKPLNIVA	Open	NLOD/CC BY
15 NORCE	Open FAIR <u>principle's</u>	CC0/CC-BY
16 NBIC	Open	NLOD/CC BY v4
	Videos and Pictures	CC BY-SA

# FAIR data User license

## Norwegian Licence for Open Government Data (NLOD) 2.0

### Preface of licence

This licence grants **you** the right to **copy, use** and **distribute information**, provided **you** acknowledge the contributors and comply with the terms and conditions stipulated in this licence. By **using information** made available under this licence, **you** accept the terms and conditions set forth in this licence. As set out in Section 7, the **licensor** disclaims any and all liability for the quality of the **information** and what the **information** is **used** for.

This licence shall not impose any limitations on the rights or freedoms of the **licensee** under the Norwegian Freedom of Information Act or any other legislation granting the general public a right of access to public sector information, or that follow from exemptions or limitations stipulated in the Norwegian Copyright Act. Further, the licence shall not impose any limitations on the **licensee's** freedom of expression recognized by law.



## Attribution 4.0 International (CC BY 4.0)

This is a human-readable summary of (and not a substitute for) the [license](#). [Disclaimer](#).

### You are free to:

**Share** — copy and redistribute the material in any medium or format

**Adapt** — remix, transform, and build upon the material for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.



### Under the following terms:



**Attribution** — You must give [appropriate credit](#), provide a link to the license, and [indicate if changes were made](#). You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

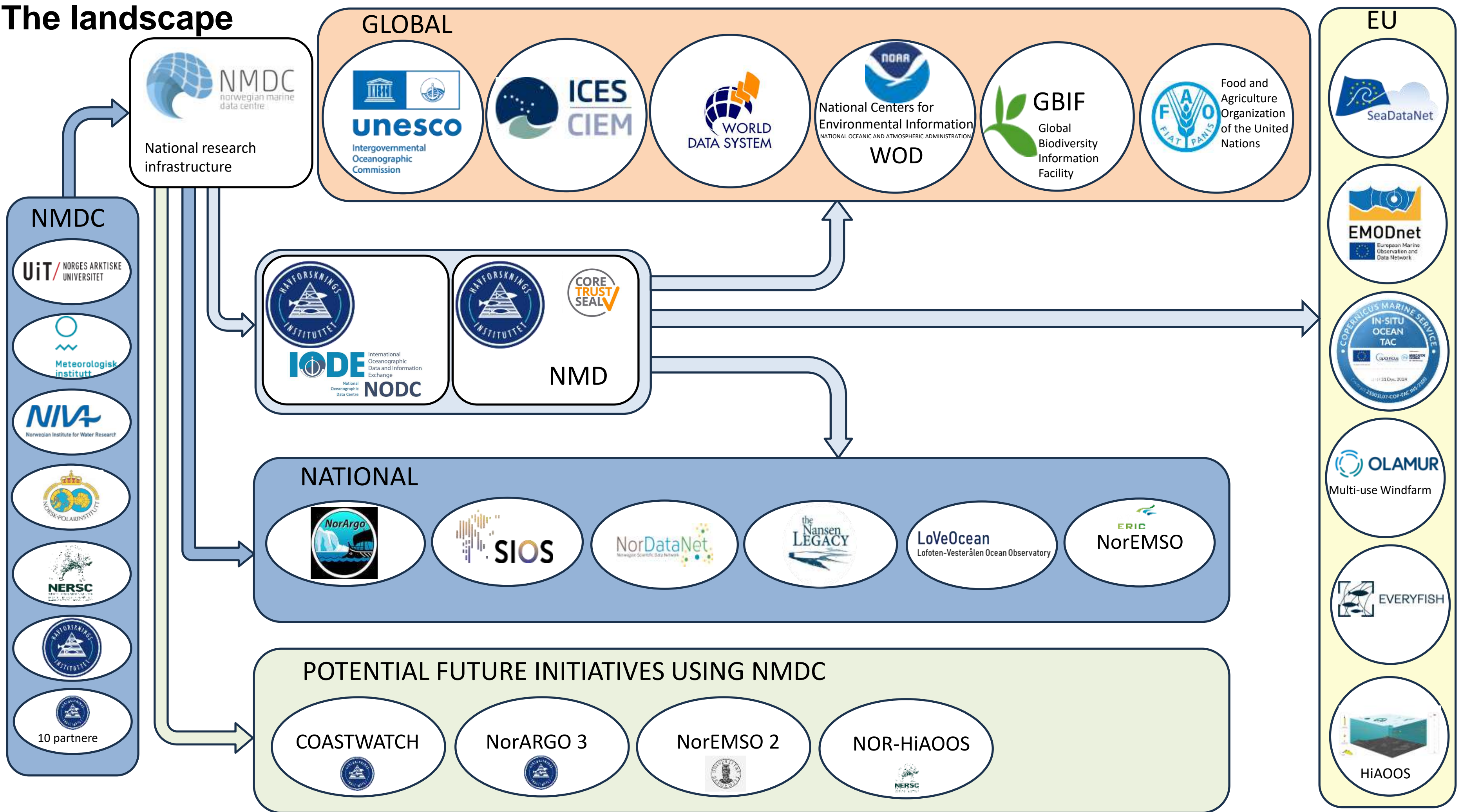
**No additional restrictions** — You may not apply legal terms or [technological measures](#) that legally restrict others from doing anything the license permits.

### Notices:

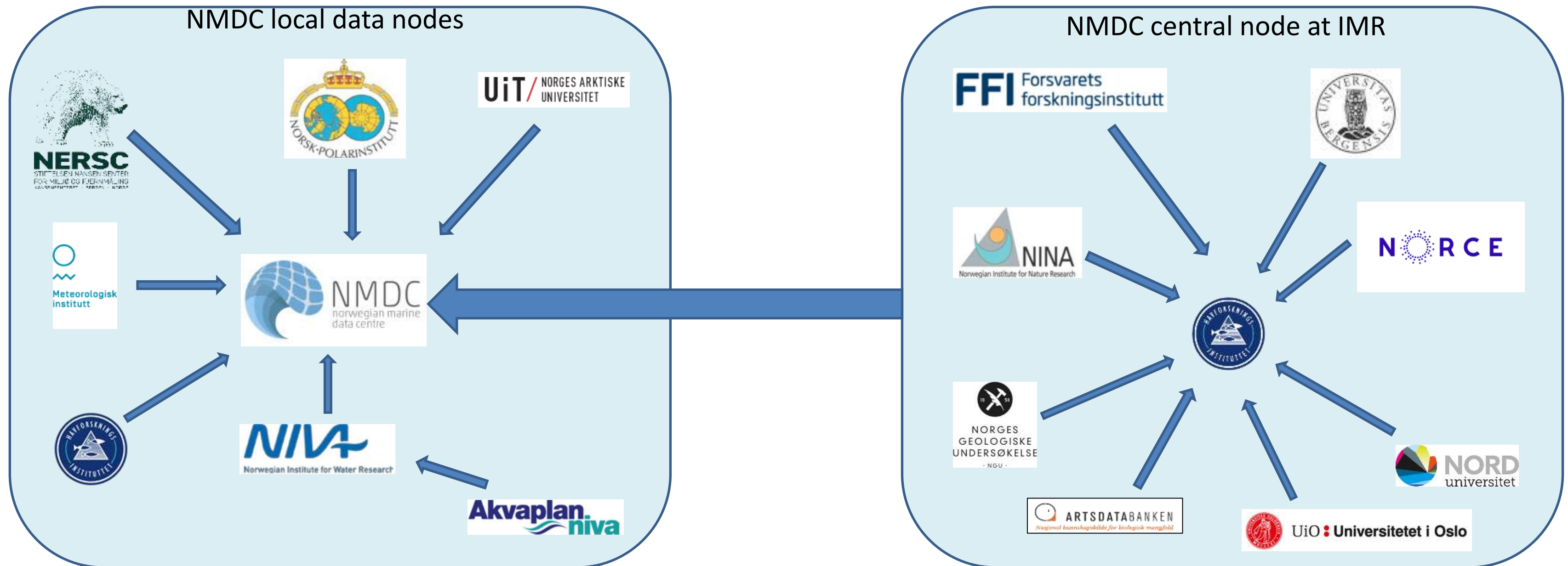
You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable [exception or limitation](#).

No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as [publicity, privacy, or moral rights](#) may limit how you use the material.

# The landscape



# NMDC distributed system



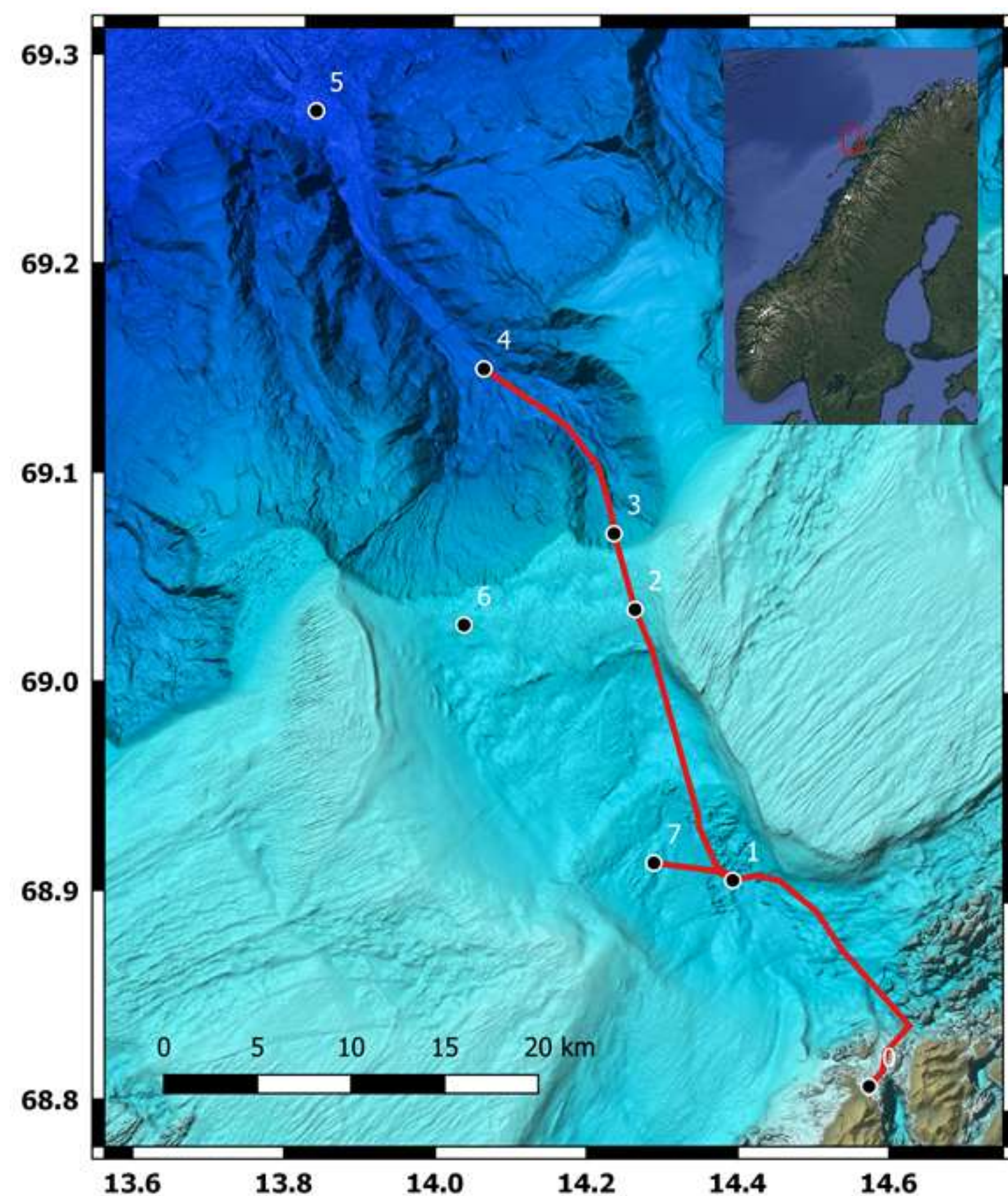
# NRT data from LoVe Lofoten Vesterålen Ocean Observatory

The Lofoten-Vesterålen Ocean Observatory (LoVe Ocean)

- is a cabled ocean observatory with additional autonomous nodes. LoVe Ocean is located in a highly productive coastal shelf-slope area, and in an environment sensitive to external stressors. LoVe Ocean is a multi-purpose observatory network with scientific nodes forming a westward transect.

OPeNDAP/ftp

- The data is accessible through standard file transfer protocols (ftp) and open data protocol (OPeNDAP), depending on the datatype.
- <http://metadata.nmdc.no/metadata-api/landingpage/3bd3bfad47ff9cee89c99abcf96bf9c6>





# NRT data from One Ocean Expedition

In August 2021, Statsraad Lehmkuhl, one of the world's largest sailing ships in full operation, set sail from Norway and began The One Ocean Expedition, a twenty-month long circumnavigation of the globe.

The expedition aims to share knowledge and raise awareness about the importance of the ocean for our common, sustainable future.





# The data from One Ocean Expedition



## Seamless access to Norwegian marine data

[Back to search](#) [About](#)

Institute of Marine Research

<https://doi.org/10.21335/NMDC-1572929066>

Overview - One Ocean Expedition

Recommended citation:

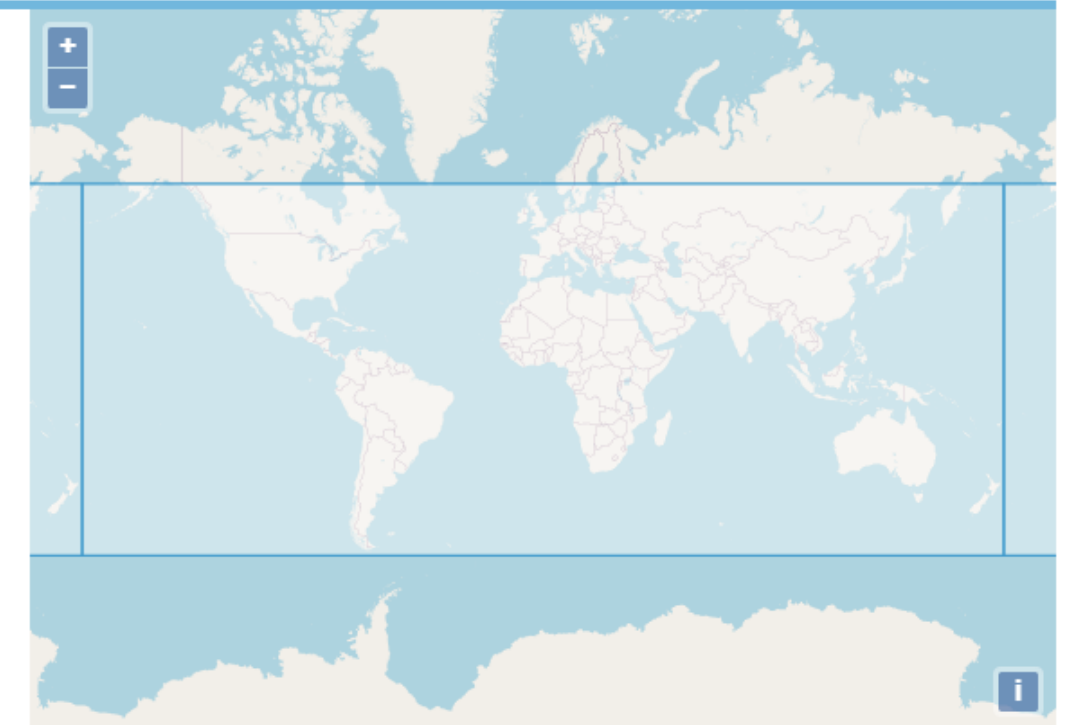
**IMR (2021)** One Ocean Expedition <https://doi.org/10.21335/NMDC-1572929066>

To cite this dataset use the following:

[Text citation](#)

Usage :

[Creative Commons Attribution 4.0 International License](#)



<https://doi.org/10.21335/NMDC-1572929066>

### Abstract

In August 2021, the 107-year-old 98-meter-long tall ship Statsraad Lehmkühl will depart Norway only to return in April 2023, having sailed 55,000 nautical miles and visited 36 ports worldwide. The main goal is to create attention and share knowledge about the crucial role of the ocean for a sustainable development in a global perspective. The ship is equipped with modern instrumentation and will collect high-quality data of ocean physics, chemistry and biology continuously throughout the journey. It will also serve as a floating university, bringing crews of students and young leaders together at different legs. High-level meetings and public events will happen during port visits. Real-time access to data, video and stories from the ship will serve to inspire and engage not only scientists but also citizens for ocean-based action towards sustainable development worldwide. When the ship returns to Bergen on 15th April 2023, it will start the One Ocean Week – a week hosted by the Bergen Municipality with conferences, workshops and activities related to ocean science and public engagement. As a recognized part of the UN Decade of Ocean Science for Sustainable Development, the expedition aims to create attention and share knowledge about the ocean’s crucial role for a sustainable future in a global perspective. The ship will serve as a powerful tool for outreach, inspiration and engagement for the ocean, contributing in particular to the following UN Sustainable Development Goals: 14 - Life below water, 13 - Climate action, 4 - Quality Education, 17 - Partnership for the goals.

Scientific keywords:

[EARTH SCIENCE > BIOLOGICAL CLASSIFICATION > ANIMALS/VERTEBRATES > FISH](#)  
[EARTH SCIENCE > OCEANS > OCEAN CHEMISTRY](#)

Key words: Fish, Hydrography, Oceanography

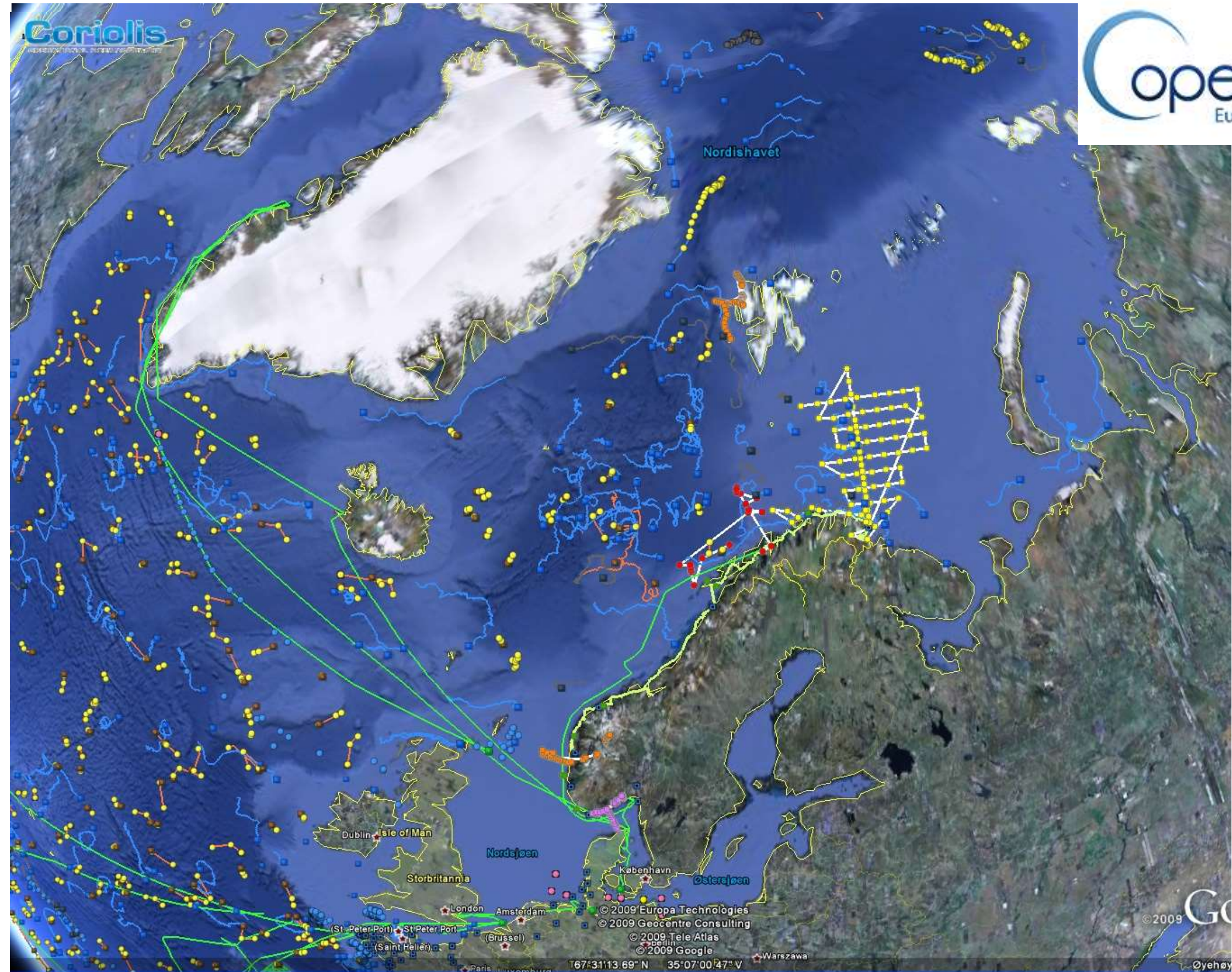
### Data downloads

Type	Description	URL
VIEW PROJECT HOME PAGE		<a href="https://oneoceanexpedition.com/">https://oneoceanexpedition.com/</a>
PART	LEG 7	<a href="http://metadata.nmdc.no/metadata-api/landingpage/4b50314c127625e1a08706a052803be3">http://metadata.nmdc.no/metadata-api/landingpage/4b50314c127625e1a08706a052803be3</a>
PART	LEG 1	<a href="http://metadata.nmdc.no/metadata-api/landingpage/633e94372824de483de614fbc297f385">http://metadata.nmdc.no/metadata-api/landingpage/633e94372824de483de614fbc297f385</a>
PART	LEG 2	<a href="http://metadata.nmdc.no/metadata-api/landingpage/1761cf047c7ec44a90bc9b7a8c4439bf">http://metadata.nmdc.no/metadata-api/landingpage/1761cf047c7ec44a90bc9b7a8c4439bf</a>
PART	LEG 3	<a href="http://metadata.nmdc.no/metadata-api/landingpage/f07576e043ee7009e7b12f8e546ecbd6">http://metadata.nmdc.no/metadata-api/landingpage/f07576e043ee7009e7b12f8e546ecbd6</a>
PART	LEG 4	<a href="http://metadata.nmdc.no/metadata-api/landingpage/a6e6b49198392ca5b18d8c9f07fcd463">http://metadata.nmdc.no/metadata-api/landingpage/a6e6b49198392ca5b18d8c9f07fcd463</a>
PART	LEG 5	<a href="http://metadata.nmdc.no/metadata-api/landingpage/142f443b65f2c637e25c542dc48dac7a">http://metadata.nmdc.no/metadata-api/landingpage/142f443b65f2c637e25c542dc48dac7a</a>
PART	LEG 6	<a href="http://metadata.nmdc.no/metadata-api/landingpage/be08908fe292a07cc372c84980f69a17">http://metadata.nmdc.no/metadata-api/landingpage/be08908fe292a07cc372c84980f69a17</a>
PART	LEG 8	<a href="http://metadata.nmdc.no/metadata-api/landingpage/e01a54ab3bef7541ca6cd12c65363444">http://metadata.nmdc.no/metadata-api/landingpage/e01a54ab3bef7541ca6cd12c65363444</a>
PART	LEG 9	<a href="http://metadata.nmdc.no/metadata-api/landingpage/736897b4f15586771e8ffc98f8048e9">http://metadata.nmdc.no/metadata-api/landingpage/736897b4f15586771e8ffc98f8048e9</a>
PART	LEG 10	<a href="http://metadata.nmdc.no/metadata-api/landingpage/94a2503a709e741d2bdea82d1cafb88e">http://metadata.nmdc.no/metadata-api/landingpage/94a2503a709e741d2bdea82d1cafb88e</a>

# NRT data (Near Real Time)

NMD is insitu TAC for Arctic  
in Copernicus.

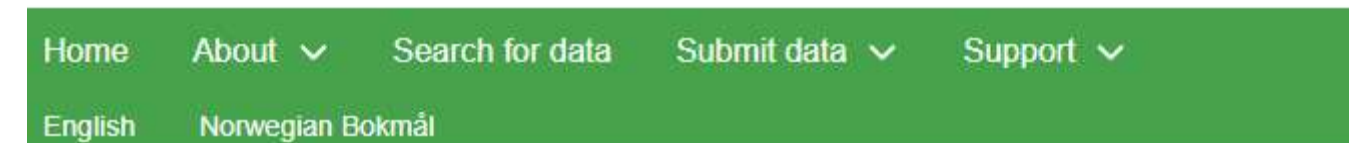
1 month of IMR data .. and  
then more data from  
nearby areas



# Coordination between NMDC - NorDataNet

NMD is partner in the national research infrastructure NorDataNet – Norwegian Scientific Data Network which is an umbrella infrastructure harvesting from several thematic sources

[https://www.nordatanet.no/metadata\\_search](https://www.nordatanet.no/metadata_search)



Search

Contains all of these words

Enter your search here

Start Date: mm/dd/yyyy

End Date: mm/dd/yyyy

Has children  
Select whether datasets are parents with children (i.e. records of the same type)

Advanced options

Search Reset

### Dataset Level

Parent (728975)

### Iso Topic Category

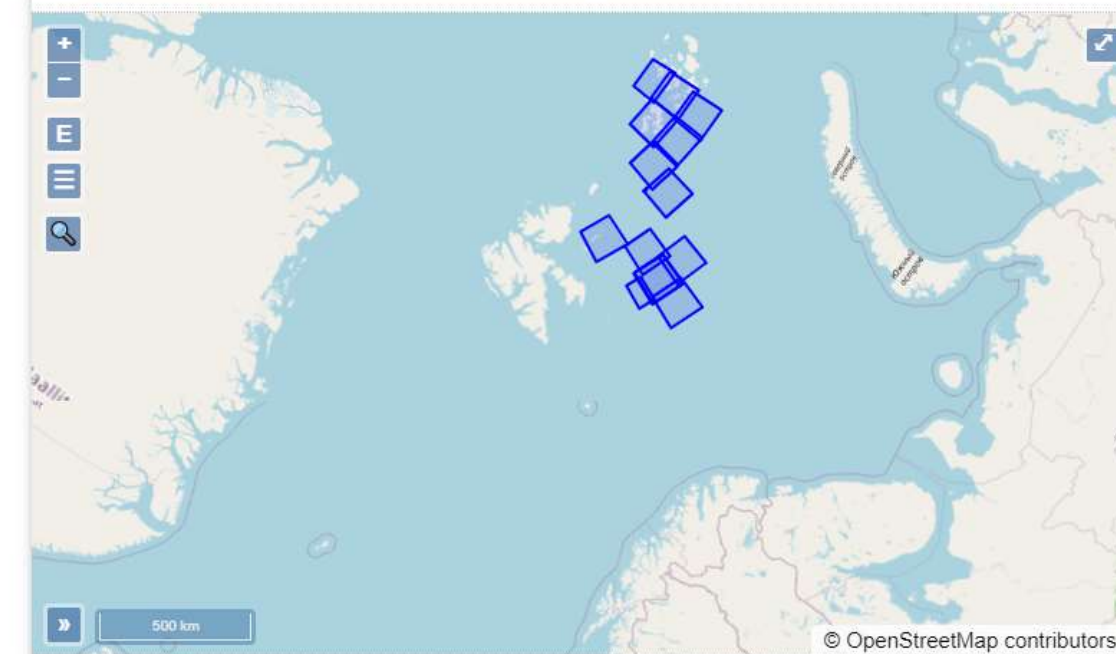
- climatologyMeteorologyAtmosphere (825858)
- oceans (811020)
- imageryBaseMapsEarthCover (809058)
- geoscientificInformation (309)
- environment (181)
- biota (172)
- elevation (50)
- society (24)
- inlandWaters (22)

- Distributed data management
- Citation of data and service
- Brief user guide

Select projection:  EPSG:4326  UPS North  UPS South

Select spatial filter:  Within  Intersects

Create bounding box filter Visualise all Sentinel products in Map Reset search Reset map



831031 datasets found. Showing datasets 1 - 15 on page 1 of 55403 pages.

### Project

- NBS (808972)
- Nansen Legacy (1280)
- APPLICATE (510)
- YOPP (452)
- SIOS (450)

Show more

### Collection

- NBS (808972)
- SIOS (551430)
- ADC (22059)
- NSDN (19261)
- GCW (1589)

Show more

### Personnel

- NBS Helpdesk (808972)
- NBS team (649316)
- Amfinn Morvik (1882)
- NSIDC User Services (877)
- Elke Bieber (801)

Show more

### Organisation

- Norwegian Meteorological Institute (809593)
- NO01L, Norwegian Institute for Air Research, NILU, Instituttveien 18, 2007, Kjeller, Norway (1186)
- NO01L, Norwegian Institute for Air Research, NILU, Atmosphere and Climate Department, Instituttveien 18, 2007, Kjeller, Norway (1110)
- DE03L, Umweltbundesamt, UBA-LA, Langen, Paul-Ehrlich-Str. 29, 63225, Langen, Germany (1079)
- SE01L, Swedish Environmental Research

# International data exchange

IMR/NMD is partner in several European infrastructures/projects sharing marine data

SeaDataNet AISBL <https://www.seadatanet.org/About-us/SeaDataNet-AISBL>

SeaDataNet <https://www.seadatanet.org/>

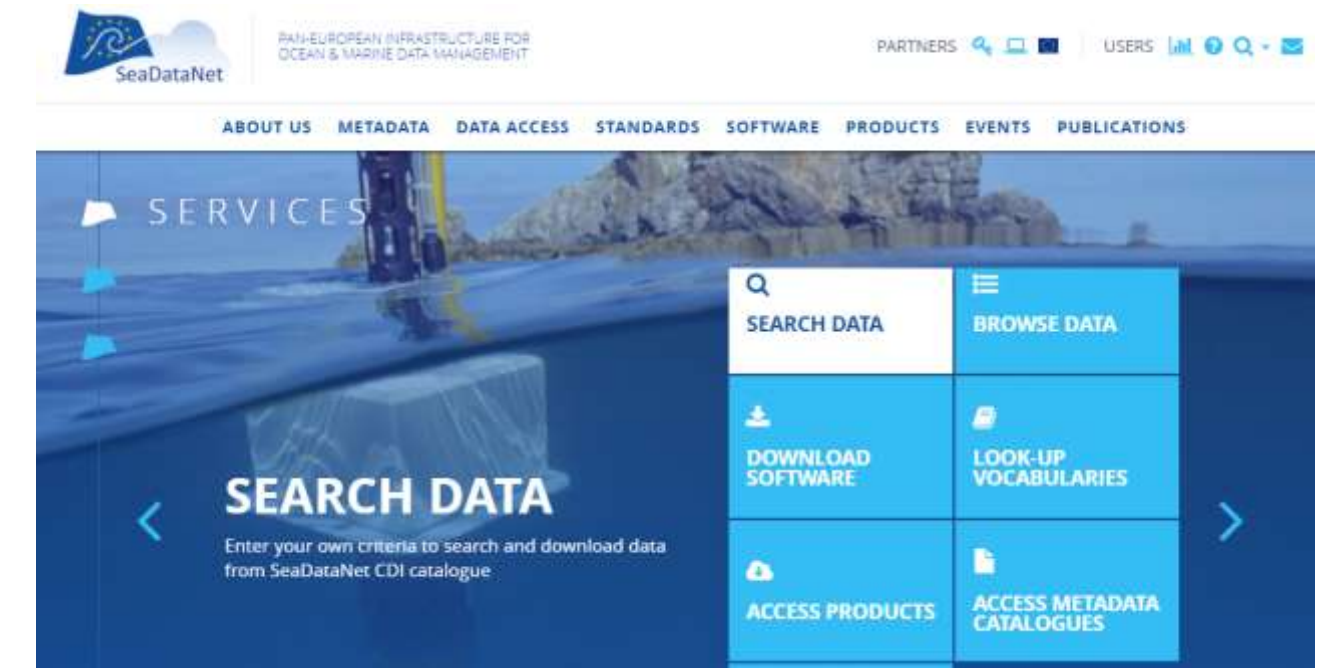
SeaDataCloud

EMODnet Chemistry <http://www.emodnet.eu/>

EMODnet Biology

EMODnet Data Ingestion

EMODnet Physics



# ICES DC

NMD coordinates IMR data exchange to ICES.

Looking into automating these exchanges

## DATASET COLLECTIONS

### GEOGRAPHY

- > by ICES area
- > by HELCOM area
- > by OSPAR area

### BIOLOGY

- > Biological communities
- > Biological effects
- > Environmental contaminants
- > Fish trawl surveys
- > Catch statistics
- > Fish eggs and larvae
- > Fish stomach
- > Plankton
- > Vulnerable Marine Ecosystems

### HYDROCHEMISTRY

- > CTD and bottle
- > Surface data

## ICES Datasets

ICES has a well established Data Centre, which manages a number of large dataset collections related to the marine environment.

Dataset	Measurements	No of Years
Biological community	1 983 073	38
Contaminants and biological effects	12 629 656	41
Eggs And Larvae	1 073 423	95
Fish predation (stomach contents)	1 149 608	12
Fish trawl survey	7 686 784	53
Historical datasets	334 837	58
Oceanographic	159 098 461	129
Vulnerable Marine Ecosystems	26 376	44

Print it Send to f Share it



MAKE A DATA REQUEST

CONTACT US

## OTHER DATASETS

- > Cruise summary reports (CSR) (ROSCOPS)
- > Project datasets
- > Station dictionary (Sampling station location and information)

## ADDITIONAL RESOURCES

- > ICES data policy
- > ISO 19139 Metadata

# IOC/IODE



NMD acts as Norwegian NODC among approx. 70 IODE data centres

QMF accreditation of the NODC.  
IODE-XXVII 22-24 March 2023

IODE mirrors WOD World Ocean Database which NMD serves CTD data through ICES DC.

**IODE** International Oceanographic Data and Information Exchange

## World Ocean Database

Mirror at the UNESCO/IOC Project Office for IODE

The World Ocean Database (WOD) is a product of NOAA's National Centers for Environmental Information (NCEI). While the data is freely available to the public, use of appropriate citation, image, or byline credit is requested when publishing data from the World Ocean Database application, or its mirror site application hosted at the International Oceanographic Data and Information Exchange (IODE).

### WORLD OCEAN DATABASE SELECT AND SEARCH

Note: At this time, World Ocean Database 2018 (WOD18) contains [prereleased data](#) and flags for the WOA18.

The WOD is an NCEI product and an [IODE](#) (International Oceanographic Data and Information Exchange) project. This work is funded in partnership with the NOAA OAR [Ocean Observing and Monitoring Division](#).

The WODselect retrieval system allows a user to search *World Ocean Database* and new (quarterly updated/added) data using a user-specified search criteria. A distribution map and cast count of these search criteria will give the user the option to have the data extracted and placed on the NODC FTP site in the *WOD* native, 'csv', and netCDF data formats.

**To build a user defined search query:**

1. Place check mark in front of any number of criteria.
2. Press the "Build a query" button.

(If any criteria below are not checked, the default will apply).

SEARCH CRITERIA: ( <a href="#">definitions</a> )	DEFAULT:
<input type="checkbox"/> <b>Geographic Coordinates</b>	- whole world
<input type="checkbox"/> <b>Observation Dates</b> - e.g., Year(s), Month(s), Day(s)	- all years/months/days
<input type="checkbox"/> <b>Dataset</b> - e.g., OSD, CTD, XBT	- all datasets
<input type="checkbox"/> <b>Measured Variables</b> - e.g., Temperature, Salinity, Nutrients	- all available variables
<input type="checkbox"/> <b>Biology</b> - e.g., Phytoplankton, Zooplankton	- all available plankton
<input type="checkbox"/> <b>Deepest Measurement</b>	- all depths
<input type="checkbox"/> <b>Country</b>	- all countries
<input type="checkbox"/> <b>Ship/Platform</b>	- all ships/platforms
<input type="checkbox"/> <b>Cruise</b>	- all cruises
<input type="checkbox"/> <b>Accession #</b>	- all accessions
<input type="checkbox"/> <b>Project</b>	- all projects
<input type="checkbox"/> <b>Institute</b>	- all institutes
<input type="checkbox"/> <b>Data Exclusion Using WOD Quality Control Flags</b>	- no exclusion
<input type="checkbox"/> <b>Data Additions</b>	- WOD18 released data

Build a query    Reset

27-29 May 2024 



imdis

# International conference on **Marine Data** and Information **Systems**

