

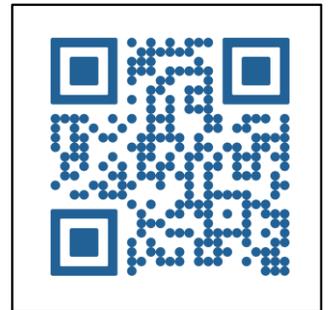
# The Copernicus Marine Polar Offer Now and in the Future

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Mercator Ocean International, France



Learn more here:



Implemented by [Mercator Ocean International](#) as part of the [Copernicus Programme](#)

Resources News Events Contact Register





Services Opportunities Access Data Use Cases User Corner About

## Copernicus Marine Service

Providing free and open marine data and services to enable marine policy implementation, support Blue growth and scientific innovation.

[Access Data >](#)

DATA	EXPERTISE	TRENDS	EXPLORATION
<p><b>OCEAN PRODUCTS</b></p> <p>A robust ocean data catalogue, to download or visualise data including hindcasts, nowcasts and forecasts.</p>	<p><b>OCEAN STATE REPORT</b></p> <p>Extensive annual analysis on the state of the ocean over nearly 20 years and severe/notable annual events.</p>	<p><b>OCEAN MONITORING INDICATORS</b></p> <p>Essential variables monitoring the health of the ocean over the past quarter of a century.</p>	<p><b>OCEAN VISUALISATION</b></p> <p>Dive into our 4D digital oceans through our visualisation tool in the past, present and future.</p>

Quick Links

<p> <b>User corner</b></p> <p>All the info you need as a new or experienced user. Get trained, connect with the forum, get support and more.</p>	<p> <b>Policy tools</b></p> <p>Learn about EU and international maritime policies and how the Copernicus Marine Service supports them.</p>	<p> <b>Services</b></p> <p>See Copernicus Marine Use Cases, the blue markets we support, and the wide range of free and open support and services we provide.</p>	<p> <b>User learning services</b></p> <p>Find all the information you need to harness our service through workshops, trainings and online resources.</p>
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Online catalogue  
[marine.copernicus.eu](https://marine.copernicus.eu)

Nearly 300  
scientifically qualified  
products & Ocean  
monitoring indicators

User driven

Common format  
(Netcdf)

Open and Free

# COPERNICUS MARINE SERVICE OFFER





1 to 25 km

Hourly Daily  
Monthly  
Mean

10-day Forecast  
every day

30 years  
Past Time series

Daily update

## Information on ...

- Sea ice concentration
- Sea ice thickness
- Sea ice velocity
- Sea ice drift
- Sea ice edge
- Snow
- Iceberg
- Sea ice age
- Ice Surface Temperature



## Examples of the offer in the Copernicus Marine catalogue



ARC

### Arctic Ocean Sea Ice Analysis And Forecast

ARCTIC\_ANALYSISFORECAST\_PHY\_ICE\_002\_011

SIC SIT SIUV SNOW ⓘ

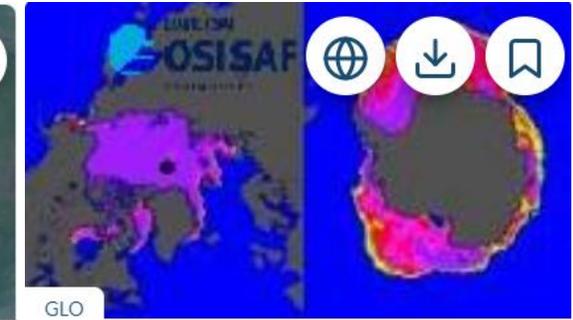
From 2019-11-01 To Present

3 km x 3 km

Model assimilation



Surface only  
🕒 hourly mean



GLO

### Global Ocean - Arctic And Antarctic - Sea Ice Concentration, Edge, Type And Drift ...

SEAICE\_GLO\_SEAICE\_L4\_NRT\_OBSERVATIONS\_011...

SIC SIUV ⓘ

From 2019-05-04 To Present

10 km x 10 km

Observation  
L4

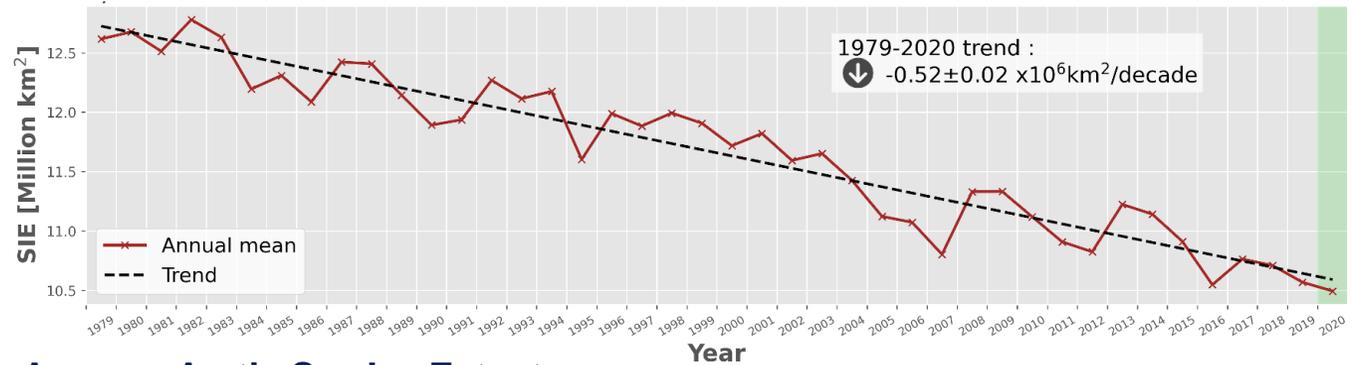
Surface only  
🕒 daily mean

- The Arctic is subject to unprecedented change from global warming with adverse implications for the environment, society and economy
- The Antarctic is hosting critical climate tipping points, and experienced unusual change recently which affect polar ecosystems.
- The Copernicus Marine Service offers a wide range of products in its catalogue for monitoring the Arctic and Antarctic ocean climate
- The Copernicus Ocean reporting provides access to key climate indicators and science-based knowledge critical for polar climate.
- Upcoming new products (albedo, ice type, iceberg density, ...) & new indicators (averaged sea ice volume, trends for polar sea level & ice surface temperature, ...),

ARTIC SEA ICE EXTENT

- 1993 - 2014
- 2021

## Trends up to and in 2021



Average Arctic Sea Ice Extent



## Copernicus Ocean Monitoring Indicators

The steady decline of sea ice extent is a serious challenge facing the Arctic. Results from the Copernicus Ocean reporting show the severe decline of sea ice in recent years.

Copernicus Ocean State Report 6,  
Summary for policy makers (Launch: 29. September 2022)



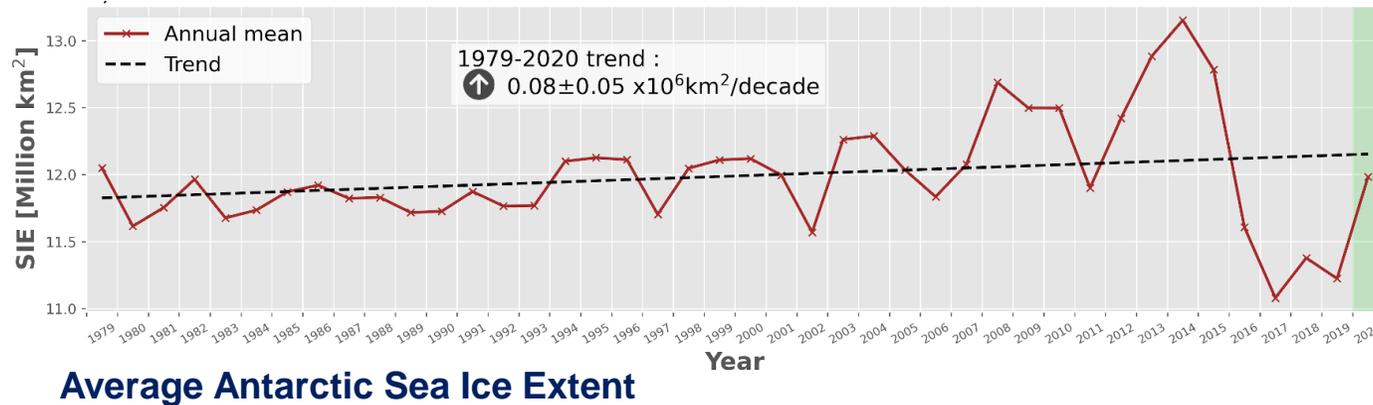
PROGRAMME OF  
THE EUROPEAN UNION



implemented by



Like in the Arctic, Antarctic sea ice in the Southern Ocean plays an essential role in regulating the global climate and the polar marine ecosystem.



Changes in sea ice extent could affect these key parameters, impacting the circulation and physics of global ocean currents.



## Copernicus Ocean Monitoring Indicators

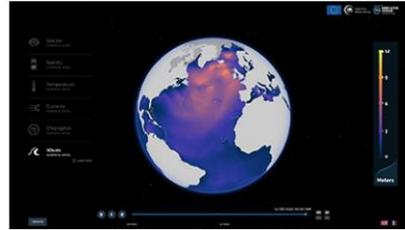
- The last quarter of the years 2016, 2017, and 2018 experienced unusual losses of ice (OSR4).
- Despite alarming ocean warming, which contributed to ice sheet melt, the sea ice extent in 2020 remained relatively stable (OSR5).
- In February 2022, the Antarctic summer sea ice extent minimum reached a record low, ranking second lowest in a 44-year data record (OSR6).



User-friendly VIEWERS  
to discover the Arctic  
Copernicus Marine data  
Visualisation tools |  
CMEMS (copernicus.eu)

MYOCEAN LEARN

(BEGINNER) GLOBE

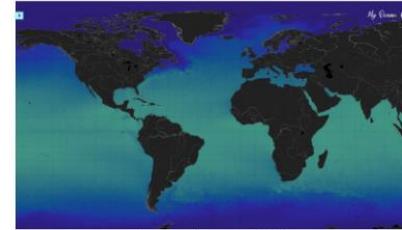


Understand key variables

Explore MyOcean Learn

MYOCEAN LIGHT

(INTERMEDIATE) PLANISPHERE



Access key variables

Explore MyOcean Light

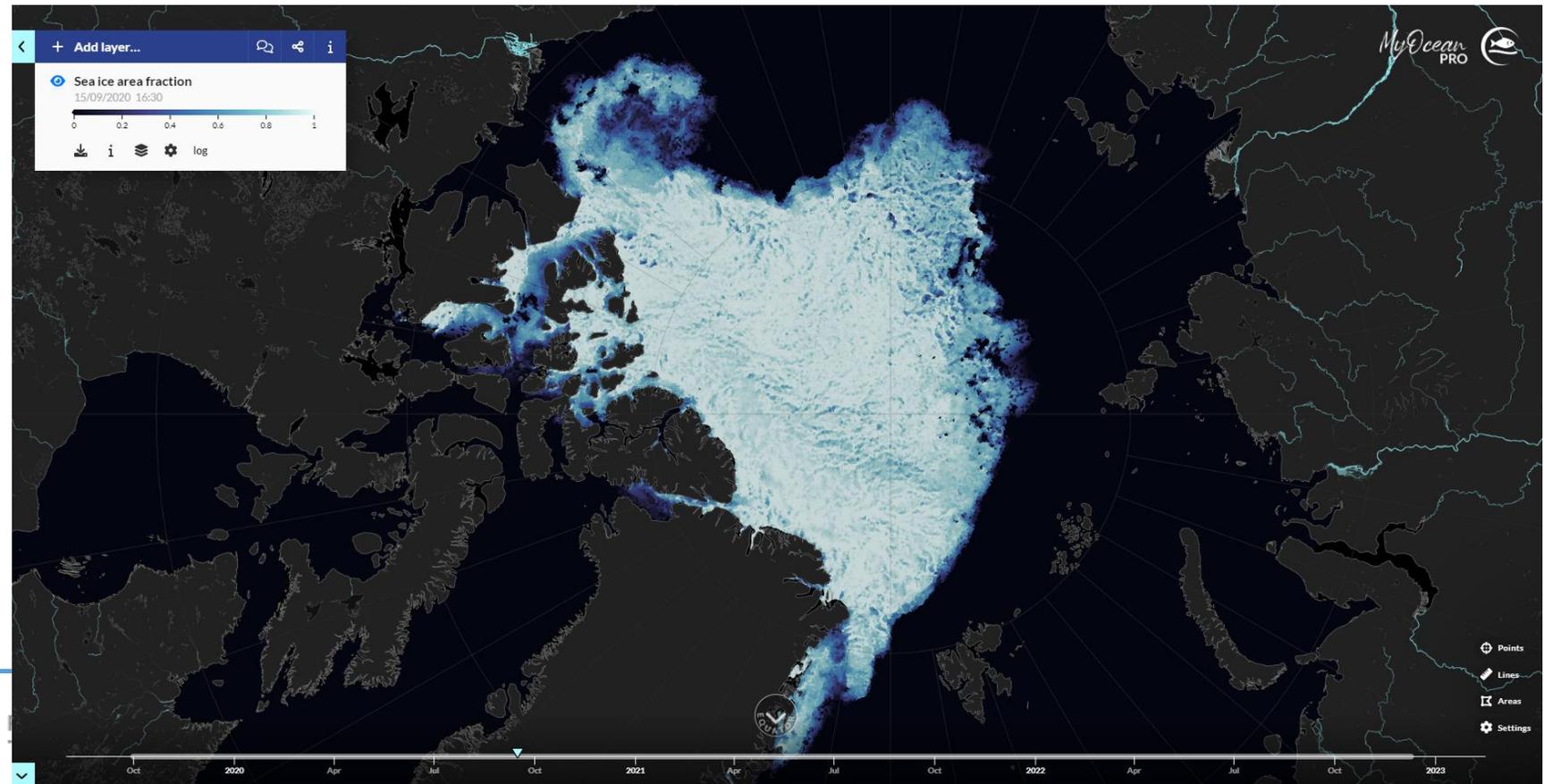
MYOCEAN PRO

(EXPERT) PLANISPHERE

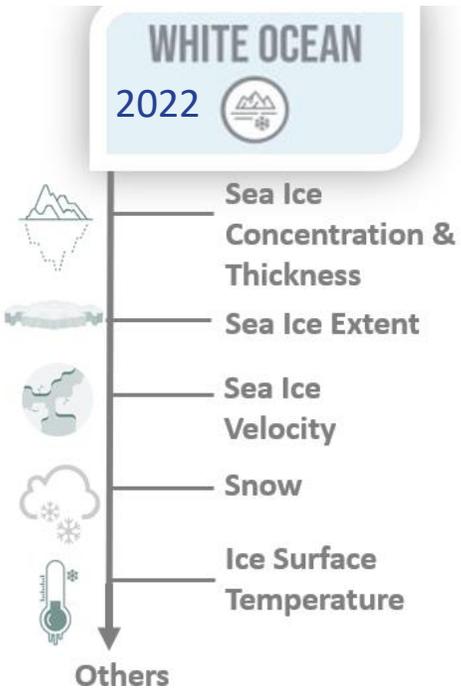


Access full catalogue

Explore MyOcean Pro

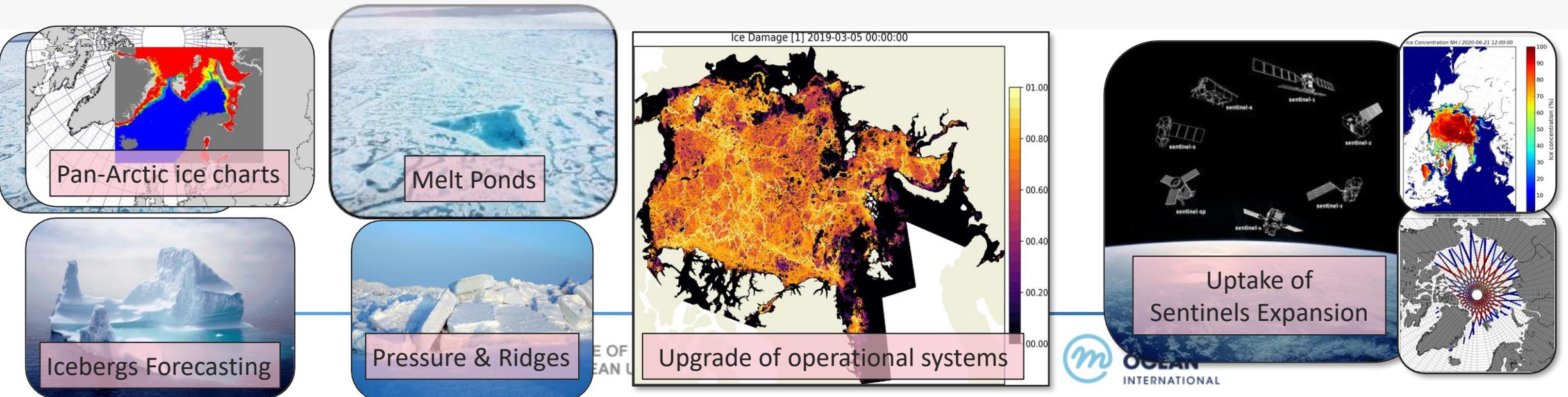


# Copernicus Marine Sea Ice products : short-term evolution 2023-2024



MODEL PRODUCTS	2023	2024
Arctic Sea Ice Analysis and Forecast	Assimilation of ice thickness CS2SMOS New parameters : <b>categories of ice, melt ponds</b>	Increase spatial resolution 1.5 km instead of 3km
Muti-Year physical and sea-ice products	<ul style="list-style-type: none"> <li>New Physical multi_year product 1950-Y-2 at 12km of resolution including glacier mass loss (from GEUS / H2020 INTAROS / 4DGreenland)</li> <li>New Sea Ice multi-year reanalysis 1993- Y-1</li> </ul>	
Ocean Monitoring Indicator	New Regional Sea Level for Nordic Seas indicator with thermosteric and halosteric components Sea ice acceleration (Follow-up of Rampal et al. 2011)	
SATELLITE PRODUCTS	2023	2024
Near Real Time products	<ul style="list-style-type: none"> <li>Inclusion of <b>Sentinel-3A/B</b> data in Arctic Sea Ice Thickness derived from merging CryoSat-2 and SMOS ice thickness</li> </ul>	<ul style="list-style-type: none"> <li>Addition of the Sea Ice deformation (sea ice classification) parameter in the Baltic L4 product</li> </ul>
	Introduction of <b>sentinel-1C</b> in L4 NRT products	
Multi-Year products	New Global High resolution sea ice drift, Northern and Southern hemisphere	
Ocean Monitoring Indicator	New Indicator based on the Arctic Reprocessed Sea ice Surface Temperature product for the period 1982-2022	

- **Extended forecast length**
- **Advances** in high-resolution sea-ice **modelling** and forecasting (multi variate and multi data assimilation)
- Uptake of **future Sentinel missions** (expansion)
- Improved satellite products on sea-ice detection for **European sea-ice services** (Basin Scale, adequate format)
- Relevant climate change information for climate assessment of the current changing Arctic: new user-requested sea-ice variables and derived quantities (models and satellite)





# NEW COPERNICUS THEMATIC HUBS: The Copernicus ARCTIC Thematic Hub

	HEALTH	COASTAL ZONES	ARCTIC	ENERGY
CMEMS	Orange	Green	Green	Orange
CEMS	Orange	Orange	Orange	Orange
CAMS	Green	Grey	Orange	Orange
C3S	Orange	Orange	Orange	Green
CLMS	Orange	Orange	Grey	Grey
CSS	Grey	Grey	Grey	Grey

Mercator Ocean was recently entrusted by EC DG DEFIS to implement the Copernicus Coastal and Arctic Thematic Hubs

-> **Launch by mid 2023**

-> Will gather all Copernicus (Marine, land, Climate, atmosphere) data and information over the Arctic area.

