

#MarineData4Asia



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Training Officer (MOi)*

Copernicus Marine Service Introduction



Copernicus
Marine Service



PROGRAMME OF THE
EUROPEAN UNION



MERCATOR
OCEAN
INTERNATIONAL



noLogin

FULL, FREE AND OPEN
ACCESS TO DATA



-  ATMOSPHERE MONITORING
-  MARINE ENVIRONMENT MONITORING
-  LAND MONITORING
-  CLIMATE CHANGE
-  EMERGENCY MANAGEMENT
-  SECURITY

 **opernicus**
Europe's eyes on Earth

One single access point

<http://marine.copernicus.eu/>

The screenshot shows the homepage of the Copernicus Marine Service. At the top, it states 'Implemented by Mercator Ocean International as part of the Copernicus Programme'. The navigation bar includes 'Resources', 'News', 'Events', 'Contact', and 'Register'. Below the navigation bar are the logos for the European Union, Copernicus, and Copernicus Marine Service. The main content area features a large banner with the title 'Copernicus Marine Service' and the tagline 'Providing free and open marine data and services to enable marine policy implementation, support Blue growth and scientific innovation.' Below the banner is a section titled 'Access Data' with four categories: 'OCEAN PRODUCTS', 'OCEAN STATE REPORT', 'OCEAN MONITORING INDICATORS', and 'OCEAN VISUALISATION'. At the bottom, there is a 'Quick Links' section with four items: 'User corner', 'Policy tools', 'Services', and 'User learning services'.

Online catalogue
marine.copernicus.eu

Nearly 300 scientifically
qualified products &
Ocean monitoring
indicators

User driven

Common format
(Netcdf)

Open and Free

Copernicus Marine Service Offer



BLUE OCEAN

Currents, temperature,
waves, sea level, ...



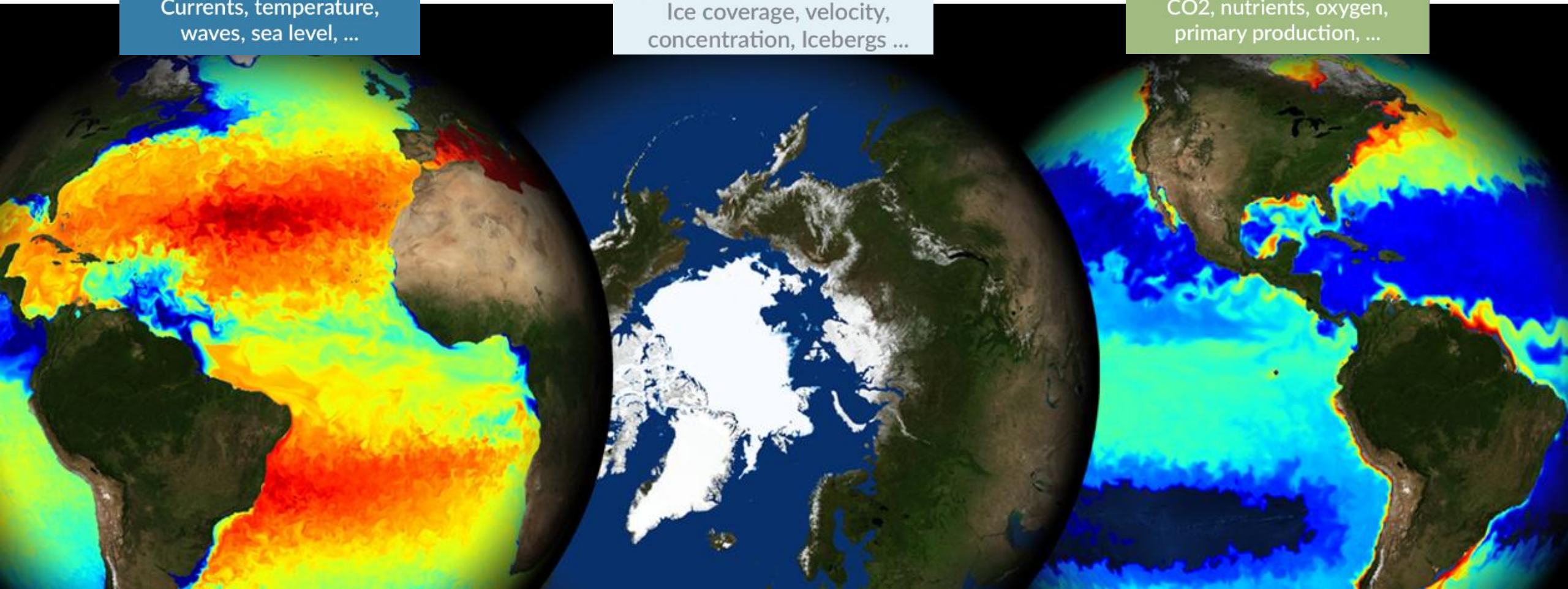
WHITE OCEAN

Ice coverage, velocity,
concentration, Icebergs ...

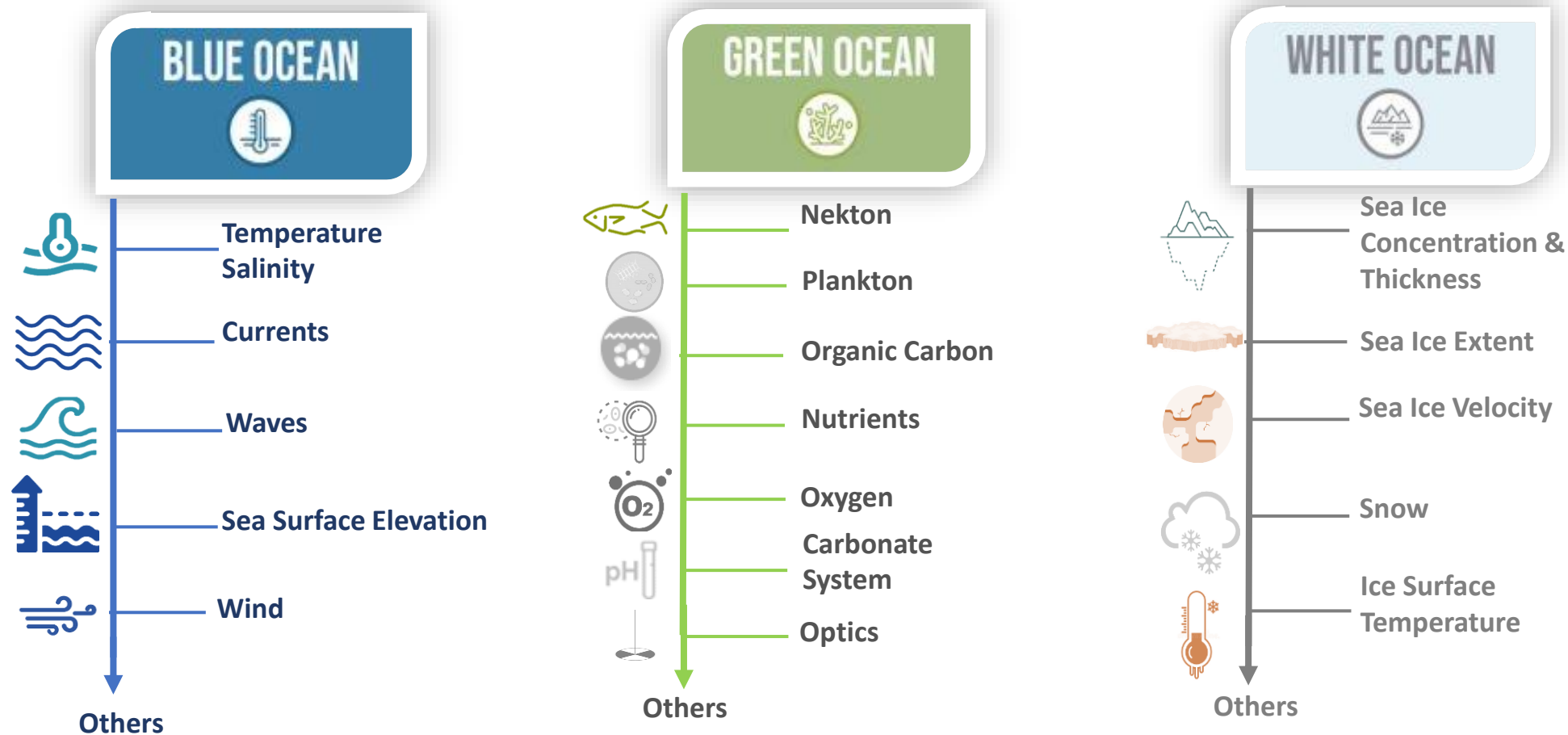


GREEN OCEAN

CO₂, nutrients, oxygen,
primary production, ...



Copernicus Marine Service Offer



Copernicus Marine Service Portfolio

DATA SOURCES

MODEL DATA

INSITU DATA

SATELLITE DATA

TEMPORAL COVERAGE

Multi-Year
~30 years

REAL-TIME
Daily, hourly, 15'

FORECAST
10 days

GEOGRAPHICAL COVERAGE

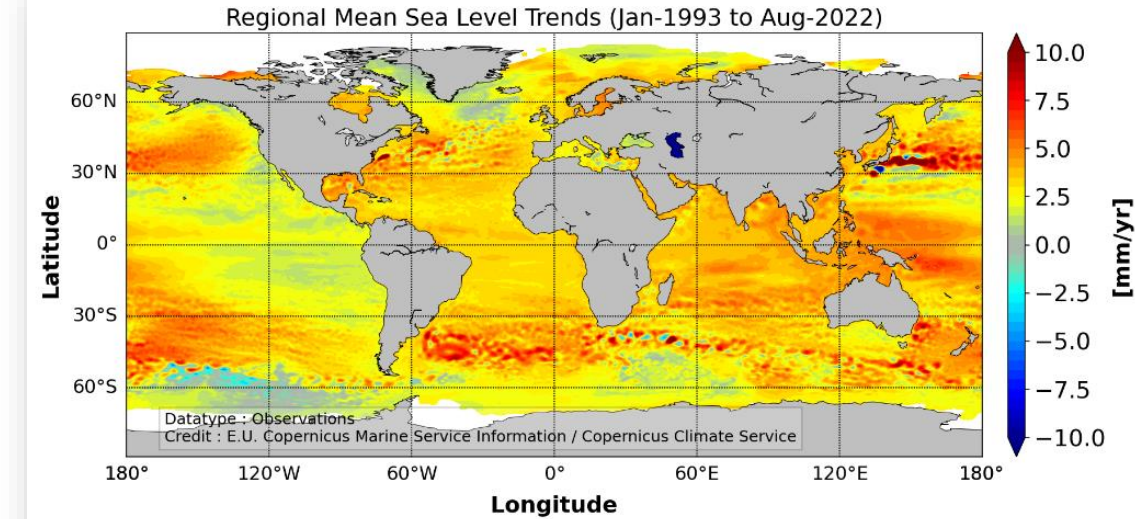
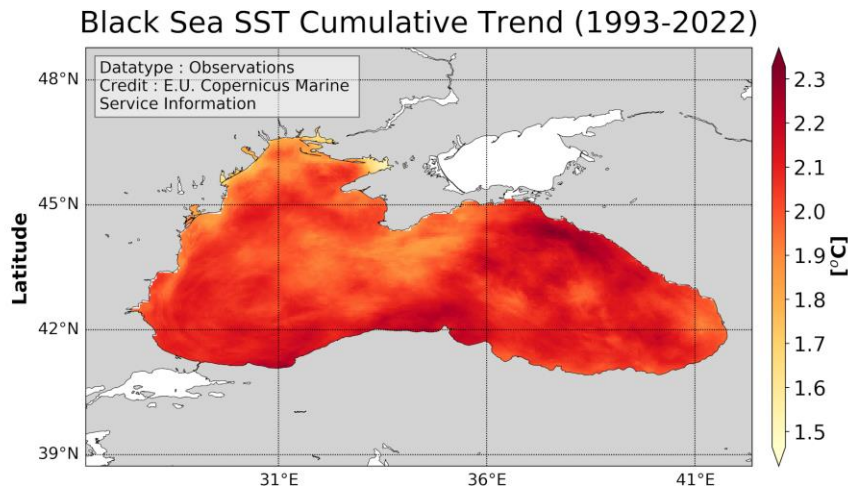
- 1 Global
- 2 Arctic
- 3 Baltic
- 4 NWS
- 5 IBI
- 6 Med Sea
- 7 Black Sea



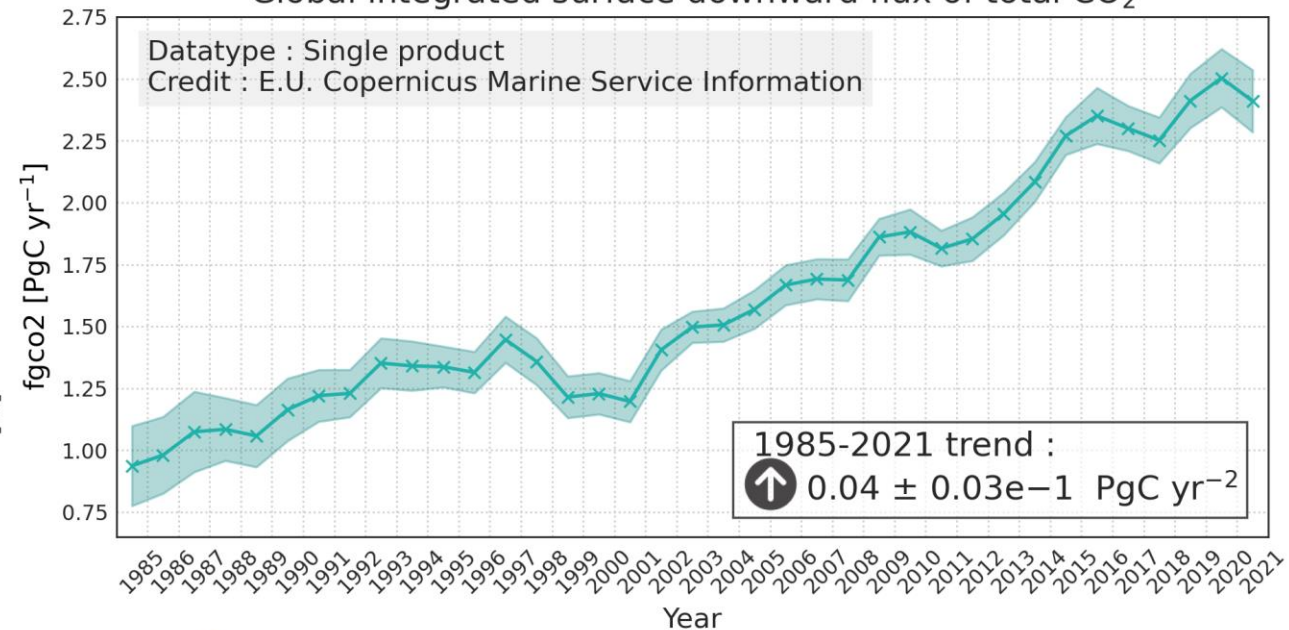
Ocean Monitoring Indicators



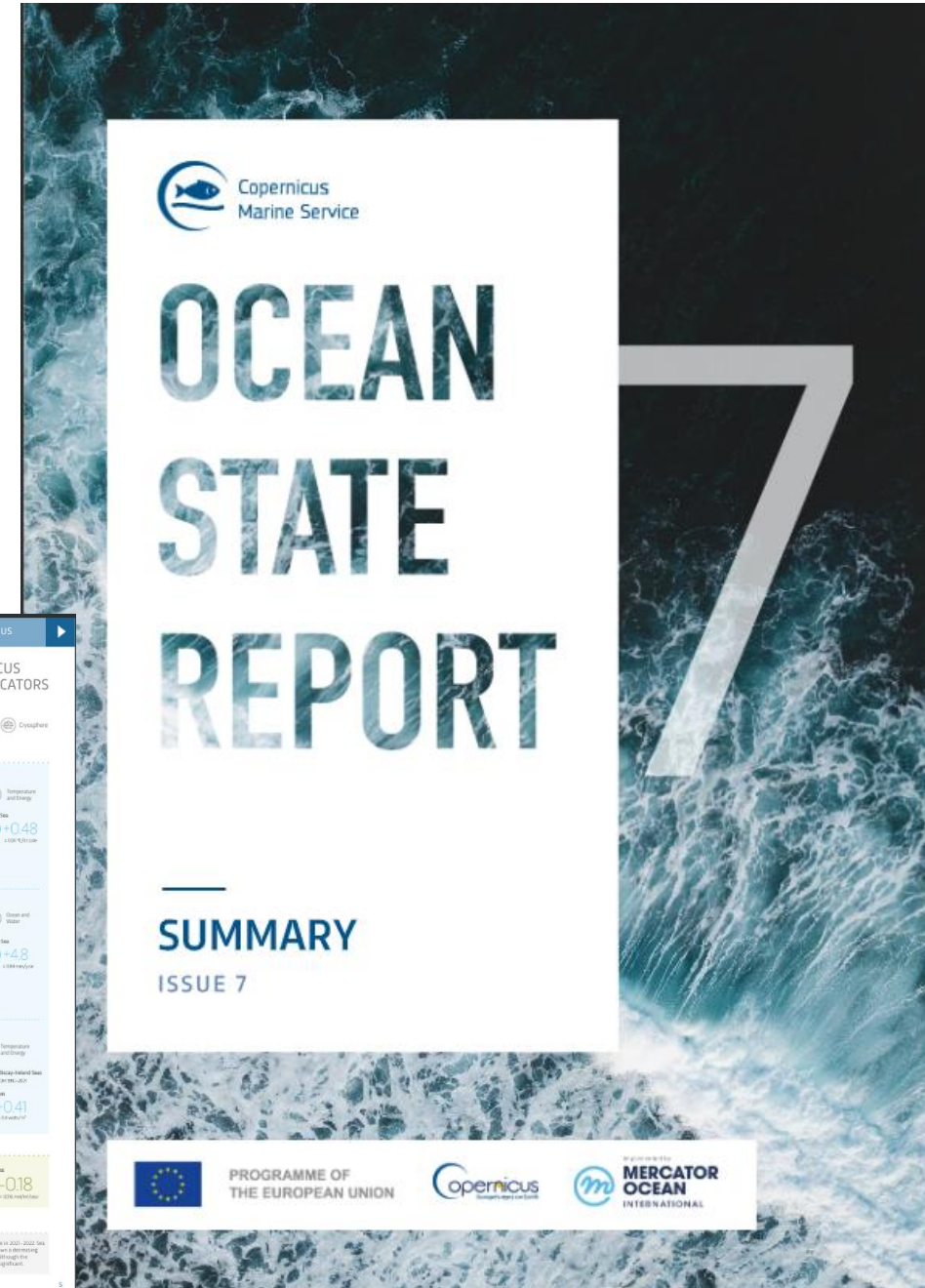
- Key variables to monitor the state of the Ocean
- Free and downloadable Ocean climate trends
- Covering the last 30 years



Global integrated surface downward flux of total CO₂



The Ocean State Report & Summary



HOW DOES THIS IMPACT THE OCEAN AND BEYOND?

SEA LEVEL

Global sea levels are rising due to human-induced global warming. The warming of Earth's climate system causes land ice to melt, such as glaciers and ice sheets in Greenland and Antarctica. Additionally, ocean waters are absorbing increasing heat, expanding, and further contributing to the rise in sea levels. Human communities in close connection with the ocean, especially low-lying and coastal areas, are particularly vulnerable to changes in sea level, posing risks to coastal infrastructure (e.g. ports, roads, and tourism facilities).

EU Strategy on Adaptation to Climate Change
UN Sustainable Development Goals

SEA SURFACE TEMPERATURE

Long-term rising sea surface and subsurface temperatures and marine heatwaves can dangerously impact the survivability of species, such as coral, seagrasses, fish, and fur, and cause mass mortality events and more marine species migration, leading to lower catch amounts and placing economic pressure on fishing industries.

EU Marine Strategy Framework Directive
UN Sustainable Development Goals

SALINITY & FRESHWATER CONTENT

Differences in salinity and freshwater levels in the ocean can alter ocean circulation currents and water cycles. A decrease in freshwater content can be an indicator for species that favour higher salinity conditions. Additionally, salinity and freshwater can affect the freezing point of freshwater, leading to less sea ice and warmer ocean water temperatures.

EU Strategy on Adaptation to Climate Change
UN Sustainable Development Goals

TRENDS IN THE COPERNICUS OCEAN MONITORING INDICATORS

WMO GLOBAL CLIMATE INDICATORS

- Temperature and Energy
- Clean and Water
- Oceans

BLUE OCEAN

SEA SURFACE TEMPERATURE

UNITS: °C/decade

Region	Trend from 1993-2022	Indicator
Mediterranean Sea	+0.34	Temperature and Energy
North West Shelf	+0.16	Temperature and Energy
North Sea	+0.48	Temperature and Energy
Black Sea	+0.70	Temperature and Energy
North Atlantic	+0.13	Temperature and Energy

SEA LEVEL

UNITS: mm/year

Region	Trend from 1993-2022	Indicator
Mediterranean Sea	+25	Clean and Water
North West Shelf	+31	Clean and Water
North Sea	+48	Clean and Water
Black Sea	+14	Clean and Water
North Atlantic	+39	Clean and Water

OCEAN HEAT CONTENT

UNITS: WTTU/m²

Region	Trend from 1958-2022	Indicator
Mediterranean Sea	+14	Temperature and Energy
Black Sea	+10	Temperature and Energy
North Atlantic	+0.41	Temperature and Energy

GREEN OCEAN

OXYGEN INVENTORY

UNITS: km³/year

Region	Trend from 1993-2022	Indicator
Black Sea	-0.18	Temperature and Energy

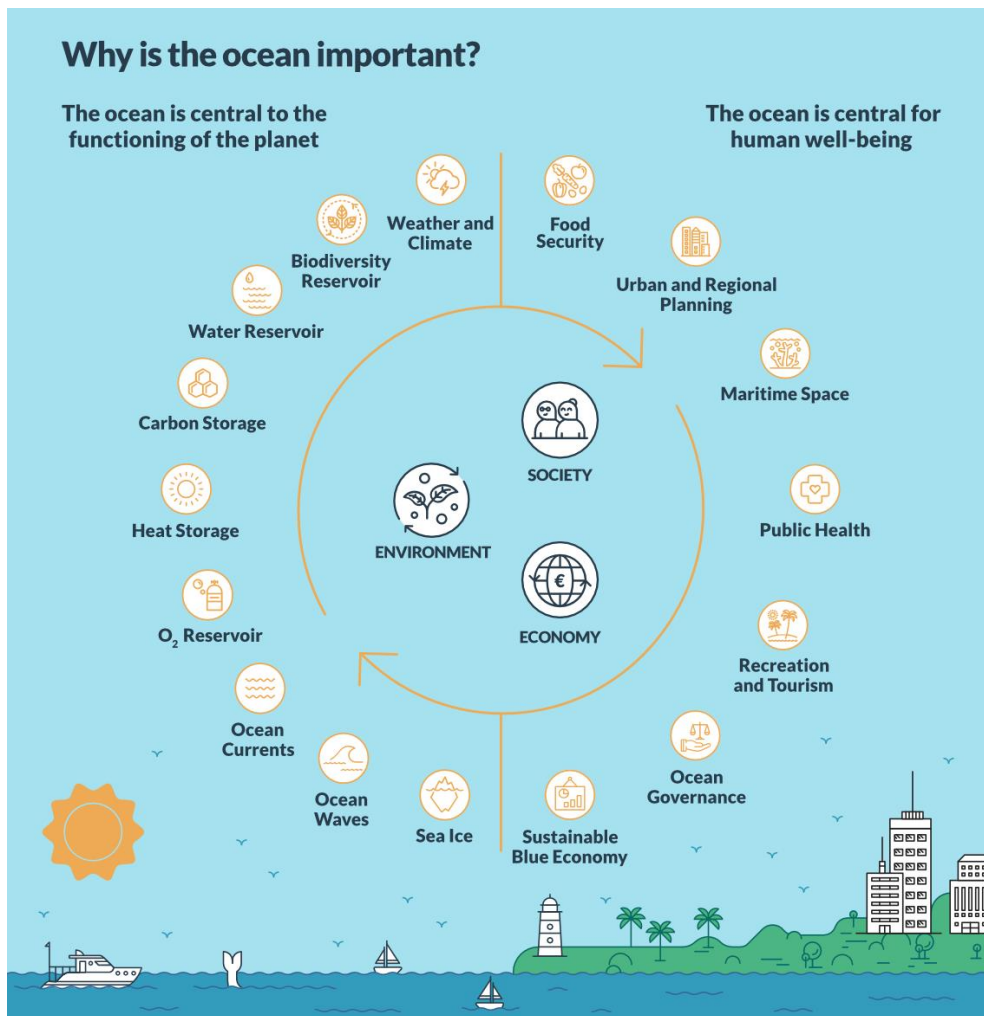
WHITE OCEAN

15%

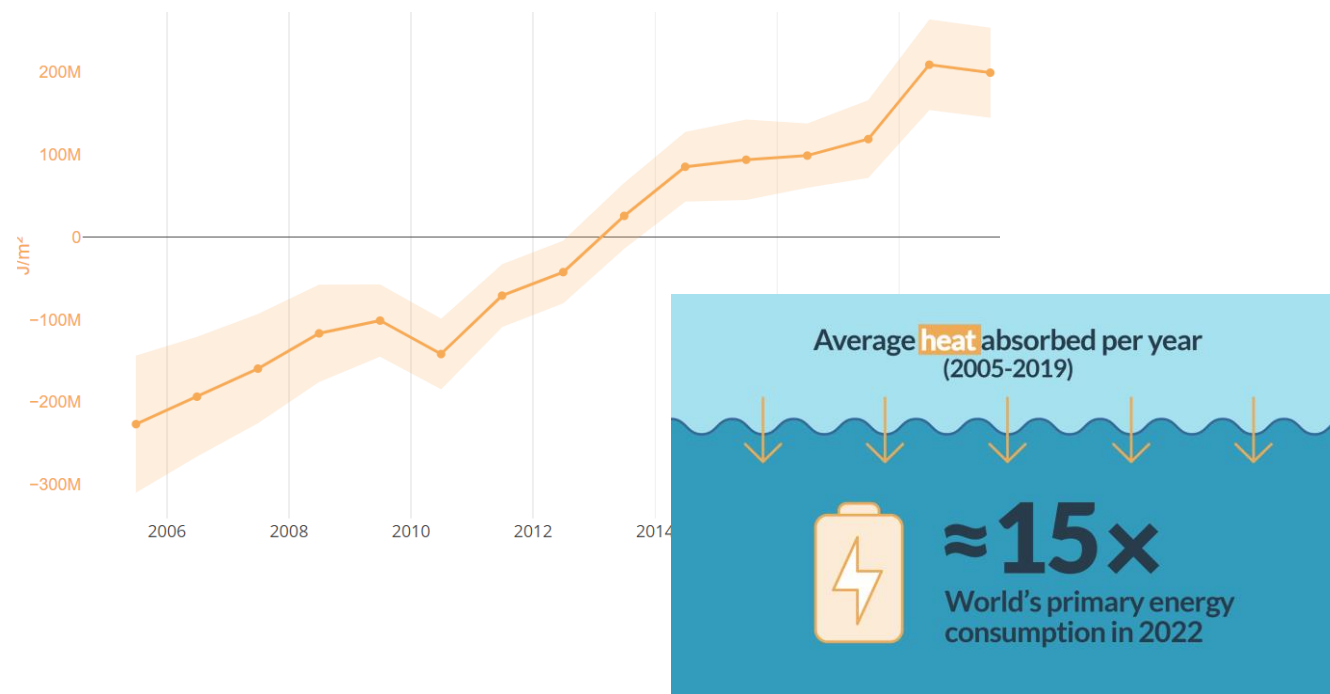
of the Black Sea was covered by ice in 2021. This was more than in the Black Sea for almost a century. It lasted over the period 1920-2021, although the observed trends are not statistically significant.

PROGRAMME OF THE EUROPEAN UNION | Copernicus | Mercator Ocean International

Ocean Literacy



- Ocean Explainers
- Ocean Climate Portal



Blue Markets

- 1 POLAR ENVIRONMENT MONITORING
- 2 CLIMATE & ADAPTATION
- 3 OCEAN HEALTH
- 4 MARINE CONSERVATION & BIODIVERSITY
- 5 SCIENCE & INNOVATION
- 6 POLICIES & OCEAN GOVERNANCE & MITIGATION
- 7 EDUCATION, PUBLIC HEALTH & RECREATION
- 8 EXTREMES, HAZARDS & SAFETY
- 9 MARINE FOOD
- 10 COASTAL SERVICES
- 11 TRADE & MARINE NAVIGATION
- 12 NATURAL RESOURCES & ENERGY



Training and Capacity Building Events

- E-Learning Material
- Strong User Support
- Webinars and Training Workshops
- Participation to MOOCs, Courses, Hackathons

