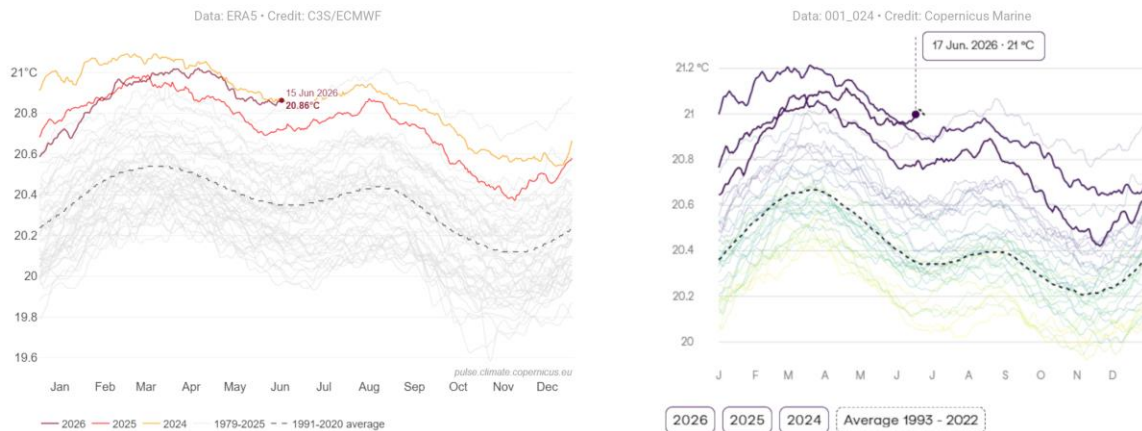


Copernicus Marine and Copernicus Climate Change: global ocean temperatures break daily records for June

Both services confirm highest ocean warmth for the period, as the situation evolves

Global ocean temperatures break 2024 records for time of the year

Daily sea surface temperature for 60°S–60°N



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The Copernicus Climate Change Service (C3S) and the Copernicus Marine Service (CMEMS) both confirmed that the global sea surface temperatures (SST) have now exceeded the record levels for the time of the year observed in 2023 and 2024. C3S daily SST data exceeded the 2024 levels on 21 June at 20.86°C, marginally above the 20.83°C observed in 2023 and 2024. Copernicus Marine daily SST data also indicate record-high temperatures on 21 June, reaching 21.0 °C and beating the previous records from 2023 and 2024 by 0.1 °C.

This new global sea surface temperature record for the time of year was expected with the onset of El Niño conditions in the Equatorial Pacific, [announced by the World Meteorological Organization \(WMO\) on 2 June 2026](#), in addition to unusually high SST observed in several ocean regions over recent months. This record is expected to have consequences for both weather patterns, global climate, and marine ecosystems.

Over the past three years, the global ocean outside the polar regions (between the 60°N and 60°S latitude) has been between 0.35 - 0.73° C warmer than the long-term average, and in June these anomalies have now reached record-high levels for the time of year.

The Copernicus Climate Change Service, implemented by the European Centre for Medium-Range Weather Forecasts (ECMWF) and the Copernicus Marine Service, implemented by Mercator Ocean International jointly announce this unprecedented level of warming of the global extrapolar ocean for the time of year, reflecting both our changing climate and the onset of an El Niño event whose strength, according to the C3S ensemble of seasonal forecast models, is likely to reach levels not seen in decades.

“Current conditions could indicate the beginning of a new phase, leading, once more, to uncharted territory. With ocean temperatures at these levels and El Niño on the horizon, we are likely to see more temperature records fall in the coming months. That Copernicus Marine data reaches the same conclusion through independent methods speaks to the strength of European science — and to why open, robust data matters now more than ever.” said Carlo Buontempo, Copernicus Climate Change Service Director at ECMWF.

“Continuous monitoring of the ocean by the Copernicus Marine Service helps public authorities, scientists and decision-makers understand how the ocean is changing and supports policies to protect the marine environment. One of the key strengths of the EU Copernicus programme is the close cooperation between the Copernicus Climate Change Service and the Copernicus Marine Service: C3S provides the broader Earth-system climate perspective while Copernicus Marine delivers detailed ocean analyses and forecasts, from the physical environment to marine ecosystems,” said Pierre-Yves Le Traon, Scientific Director of the Copernicus Marine Service at Mercator Ocean International.

Whether this exceedance is temporary or indicative of conditions in the months ahead remains to be seen. While temperatures reaching record levels for this time of year is significant, it is consistent with the onset of El Niño — [announced by WMO](#) and [declared by NOAA](#) on 11 June — and with the record sea surface temperatures observed in the northern Pacific in previous months. By contrast, when global SST last reached record levels for this date in June 2024, ENSO conditions were returning to neutral after the El Niño event starting in spring 2023.

A warmer ocean has wide-ranging impacts. Higher ocean temperatures, keep the atmosphere warm for longer, provide extra energy to storms and increase evaporation, thus enhancing the potential for extreme precipitation and flooding. Ocean warming also contributes to sea level rise and ice melt, and stresses marine ecosystems.

Higher SSTs are also associated with more frequent and intense marine heatwaves—periods of unusually high ocean temperatures that disrupt ecosystems and fisheries, affect coastal economies, which can also intensify heat extremes over nearby land areas.

Additionally, an El Niño event is a source of heat for the atmosphere, increasing global temperature and shifting weather patterns across the globe.

Two systems, same conclusion

These record values are seen independently in both the C3S ERA5 reanalysis, produced by ECMWF, and the Copernicus Marine GLO12, produced by Mercator Ocean International. ERA5's SST can be monitored with the [Climate Pulse application](#), and GLO12' SST data can be monitored through the [MyOceanHealth platform](#).

Together, the two services rely on a combination of in-situ and satellite observations, including data from ESA and EUMETSAT, which are integrated into Copernicus models to provide short-term, high-resolution ocean and marine ecosystems forecasts (Marine Service) and, longer-term ocean and atmosphere-scale seasonal forecasts (Climate Change Service).

Copernicus scientists continue to monitor the situation to determine whether the exceedance is temporary or persistent. Nevertheless, with forecasts pointing to a likely strong El Niño, it is anticipated that global temperatures will see new records in the coming months, both in the ocean and in the surface atmosphere.

End -

Note to Editors:

C3S regular monitoring is based on the fifth generation of the ECMWF reanalysis ERA5, that reconstructs the global weather hourly back to 1940 through observations integrated through data assimilation and computed with ECMWF state-of-the-art numerical weather prediction modelling.

ERA5's SST is directly based on the OSTIA product produced by the UK Met Office. The dataset is an observation-based estimate of sea surface temperature that combines measurements from satellites, ships, and buoys. OSTIA delivers a daily estimate of the so-called foundation temperature, the SST at a depth of approximately 10m, that is largely free of the variations of the diurnal cycle.

ERA5's SST can be monitored with the [Climate Pulse application](#) and downloaded from the C3S [Climate Data Store](#). C3S publishes monthly climate bulletins monitoring temperatures, hydrological variables and sea ice, and more extensive analysis and reports throughout the year such as the [European State of the Climate](#) and the [Global Climate Highlights](#).

Copernicus Marine uses Mercator Ocean's Global Ocean Physics Analysis and Forecast System (GLO12) for data from 2021 onwards. The analysis corresponds to the output of a 3-dimensional high-resolution ocean model that uses data assimilation to combine observations from satellites and in situ instruments with simulations of ocean circulation. SST is estimated from the model's uppermost layer, at about 0.5m below the surface. Uncertainty information associated with the global mean SST is provided by including several high-resolution global SST estimates available from the Copernicus Marine Service (OSTIA, ODYSSEA and GLO12) and Optimum Interpolation SST from NOAA.

The data can be monitored through the [My Ocean Health platform](#), which provides regular updates compared to previous years since 1993 and brings together several high-quality SST datasets produced by the Copernicus Marine Service and the European oceanographic

community. Copernicus Marine publishes annual reports on the state of the ocean such as the [2025 Copernicus Ocean State Report](#), alongside regular updates through the [Ocean Health Bulletins](#).

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About Copernicus and ECMWF

Copernicus is the Earth observation component of the European Union's Space programme, looking at our planet and its environment to benefit all European citizens. The programme is coordinated and managed by the European Commission and implemented in partnership with the Member States and European organisations.

The European Centre for Medium-Range Weather Forecasts (ECMWF) is both a research institute and a 24/7 operational service, producing global numerical weather predictions and other data for our Member and Co-operating States and the broader community. It operates a world-class supercomputer facility for weather forecasting and holds one of the largest meteorological data archives.

ECMWF is a key player in Copernicus, the Earth Observation component of the European Union's Space programme, by implementing quality-assured information on climate change (Copernicus Climate Change Service), atmospheric composition (Copernicus Atmosphere Monitoring Service), and contributing to information on flooding and fire danger (Copernicus Emergency Management Service). Together with ESA and EUMETSAT, ECMWF also delivers the EU's Destination Earth initiative, which is developing prototype digital twins of the Earth.

More information on Copernicus: www.copernicus.eu

The ECMWF website: <https://www.ecmwf.int>

Climate Pulse: <https://pulse.climate.copernicus.eu/>

About Copernicus Marine Service

The Copernicus Marine Service is one of the six services of Copernicus, the European Union's Earth Observation Programme. The service operates ocean analysis and forecasting and is funded by the European Union. The Copernicus Marine Service delivers regular and systematic reference information on the Blue (physical), White (sea ice) and Green (biogeochemical and biological) ocean at both global and European scales. Its data and products support key EU and international policies, contributing to efforts in pollution reduction, marine protection, maritime safety and routing, sustainable resource management, marine renewable energy, blue growth, climate monitoring, and weather forecasting. The service also seeks to raise public awareness by providing citizens in Europe and worldwide with accessible information on ocean issues.

About Mercator Ocean International

Mercator Ocean International is a global leader in ocean monitoring, forecasting, and Digital Ocean systems. It provides operational ocean information services for public authorities, international organizations, and the scientific community worldwide. It operates the Copernicus Marine Service for the European Commission and plays a central role in the development of the EU Digital Twin of the Ocean, working with a pan-European network of scientific and operational partners. By combining ocean observations, numerical modelling, high-performance computing and artificial intelligence, Mercator Ocean delivers operational digital ocean services supporting ocean prediction and decision-making. Mercator Ocean is currently transitioning towards the creation of a new intergovernmental organization dedicated to Digital Ocean systems and information services.

www.mercator-ocean.fr

<https://marine.copernicus.eu>

<https://myoceanhealth.marine.copernicus.eu>

