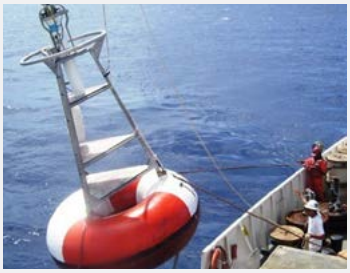
World Ocean Database and World Ocean Atlas

The largest and most comprehensive collection of scientific information about the World's Ocean

NOAA's National Centers for Environmental Information maintains both the World Ocean Database and World Ocean Atlas. These are the largest and most comprehensive collection of scientific information about the World's Ocean. Learn how these indispensable assets are broadening our understanding of Earth and its processes.



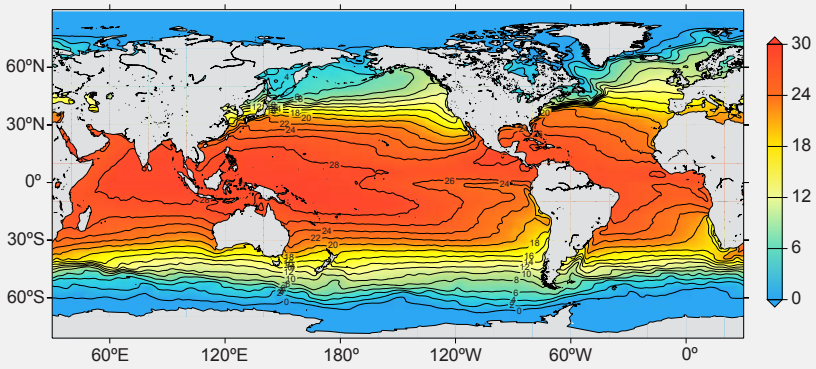
Buoy deployment; credit NOAA

The World Ocean Database

The World Ocean Database (WOD) is a powerful tool for studying climate and the ocean environment. More than 20 years of effort has gone into compiling all available subsurface ocean profile data—recent and historic—to further oceanographic, climatic, and environmental research. The WOD provides easy access to more than 19,000 datasets consisting of millions of water temperatures and salinity profiles in a uniform, easy-to-use format. With data from as far back as Captain Cook's 1772 voyage, the database also integrates ocean profile data from approximately 90 countries collected from buoys, ships, gliders, and other instruments used to measure the "pulse" of the ocean.

Why is the World Ocean Database Important?

Access to tens of millions of quality-controlled profiles of WOD data is critical to the continuous monitoring of the changing ocean and climate. Ocean heat and salt



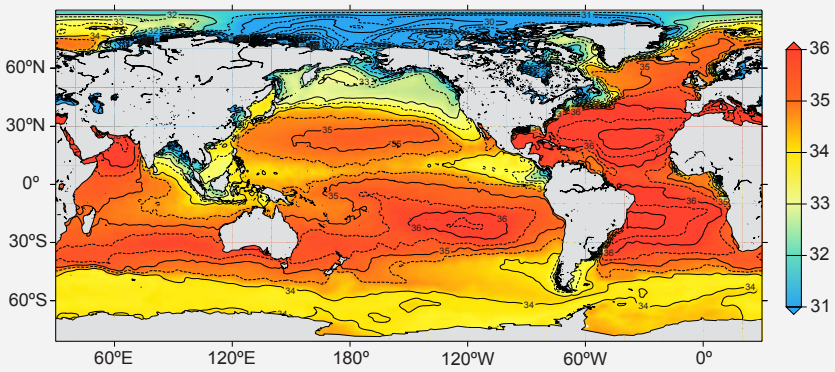
Annual temperature (°C) at the surface, (1/4° grid).

content provide a historical perspective on climate change, both regionally and globally. A water profile, for example, is a snapshot of oceanographic conditions at a precise location and time. When combined with other profiles, a view of regional and global changes in the ocean begins to emerge. Measurements of various ocean variables taken at the same time allow for a more holistic understanding of the oceanographic environment.

NOAA ship *Rainier*; credit NOAA

The World Ocean Atlas

The World Ocean Atlas (WOA) provides researchers with the data they need to determine the influence of the ocean on Earth's climate and environment. It consists of long-term climatologies of water temperature, salinity, oxygen, phosphate, silicate, and nitrate for annual, seasonal, and monthly periods, created from the observational data in the World Ocean Database.



Annual salinity at the surface, (1/4° grid).

There are 102 levels, from the ocean surface to 5,500 meters deep, which can be used in studies of many oceanographic processes. WOA can also be used in high-resolution models or in more accurate quality control of observational data sets. In addition, 1/4° and 1° horizontal resolution versions are available for annual and seasonal temperature and salinity for six decades, as well as monthly for the decadal average. The fine grid resolution enables detailed representation of global and regional temperature and salinity fields in places such as the Gulf Stream, high latitudes, and areas near coastlines.

Why is the World Ocean Atlas important?

Without a baseline for comparison, it is impossible to understand how the world's oceans are changing. The atlas provides the information needed for many studies including changes in ocean heat, dissolved oxygen, and salt content. The worldwide data are an indispensable tool for scientists in their pursuit of understanding the impact of the ocean on Earth's climate and environment.

LEARN MORE

To learn more or to access the World Ocean Database, please visit:
www.nodc.noaa.gov/OC5/WOD/pr_wod.html

To learn more or to access the World Ocean Atlas, please visit:
www.nodc.noaa.gov/OC5/woa13/