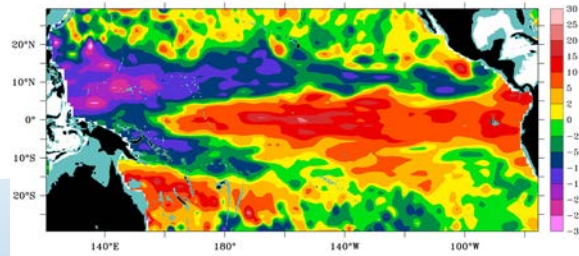


# THE INTERNATIONAL ARGO PARTNERSHIP



Argo is a collaborative partnership of more than 30 nations in North and South America, Europe, Asia, Australia, and Africa, all working together to provide a seamless global array of over 3000 floats and over 120,000 temperature/salinity/depth profiles every year. National contributions to Argo include floats, float deployment logistics and services, data communications, quality control, and data management. Other contributions include development of applications for Argo in education and operational oceanography and analysis of Argo data in basic research. Argo is a key component of the Global Ocean Observing System.



Argo measures the variations in sea level due to temperature and salinity changes. This figure from Argo data shows the sea level anomaly in December 2009 during an El Niño episode.



Argo makes visible large-scale ocean and climate processes that were once hidden to scientists. The network has made new revelations about ocean dynamics that are helping society understand and forecast global climate.

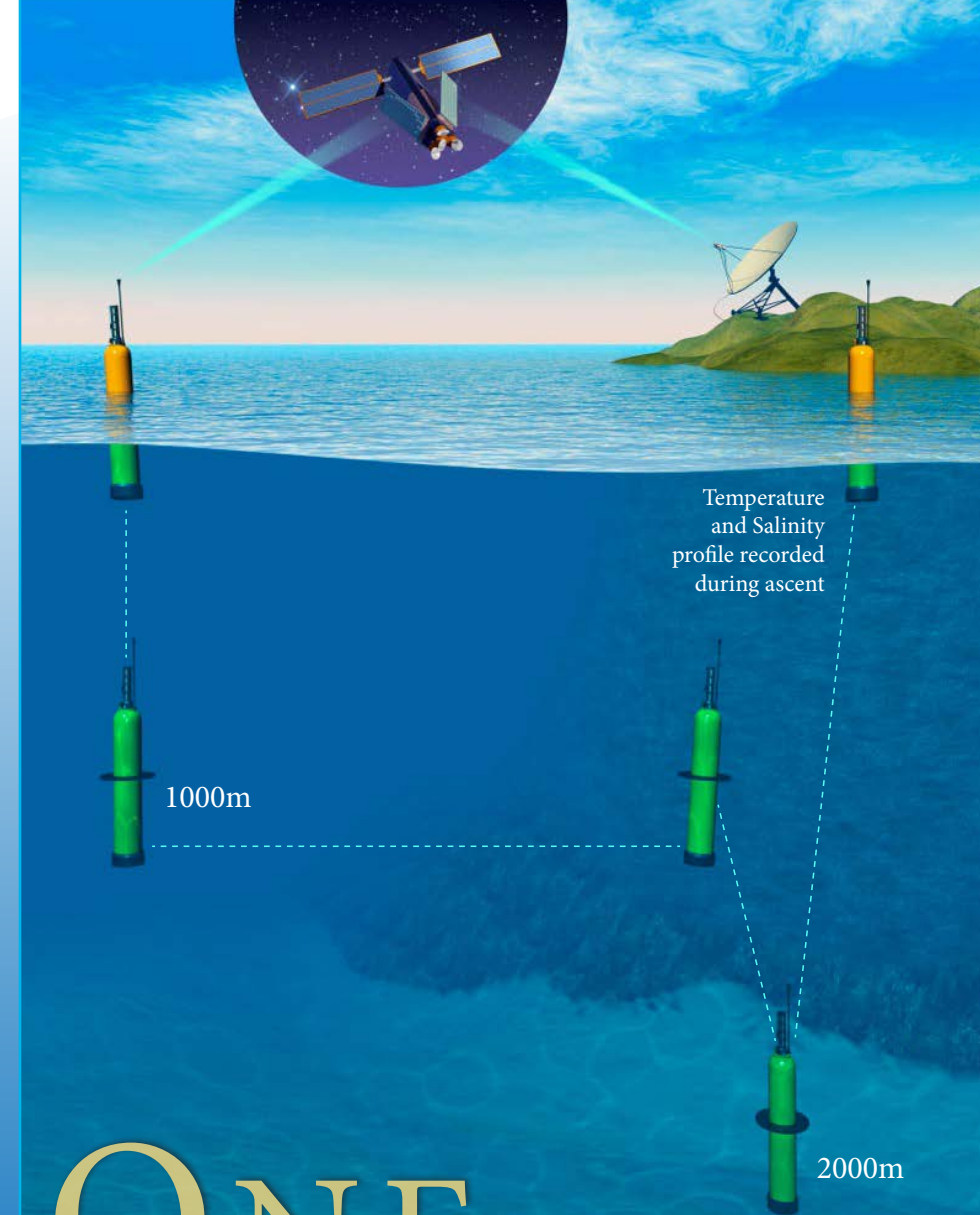
### Where can I access Argo data?

All Argo data is made publicly available as quickly as possible, usually within 24 hours of collection. Argo data can be accessed via <http://www.argo.net>



<http://www.argo.net>

Argo Project Office: [argo@ucsd.edu](mailto:argo@ucsd.edu) • Argo Information Center:  
M. Belbeoch [belbeoch@jcommops.org](mailto:belbeoch@jcommops.org)



# ONE million

*In recognition of Argo's collection of 1,000,000 temperature/salinity profiles, each of which consist of up to 1,000 measurements of temperature and salinity as a function of depth.*

pocket

# ONE million

# THE ARGO MISSION

As satellites have revolutionized systematic observations of the surface of the oceans, so Argo has transformed how we observe and monitor the oceans below the sea surface, making data that were once impossible to acquire now in easy reach to all who wish to study them.

**The Argo Program** is a global array of 3,500 free-drifting instruments, spaced about every 3° of latitude and longitude, moving up and down in the water column from the sea surface to 2,000 meters (6,500 feet) every 10 days, and making up to 1,000 measurements of temperature, salinity, and depth during every ascent to the sea surface. Argo is providing the first-ever global observations of subsurface oceans.

**Before Argo**, the temperature and salinity of the subsurface oceans could only be measured from ships or fixed point moorings. **In November 2012, Argo collected its millionth**

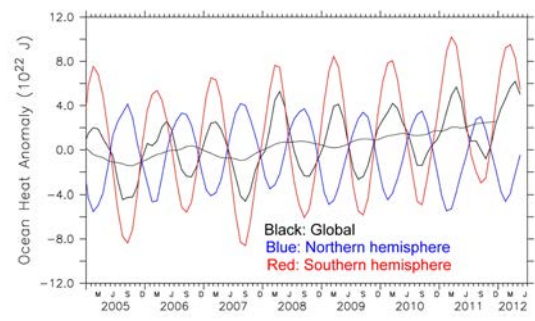
**profile, twice the number obtained by research vessels during all of the 20<sup>th</sup> century.** Argo is collecting 120,000 new profiles every year.

**Argo sampling** is global and year-round. Previously there were many fewer observations in the southern hemisphere than in the northern, and many fewer in winter than in summer.

**In the future**, while sustaining present Argo observations, new Argo floats will also sample below 2,000 meters to the ocean bottom, and many Argo floats will carry new sensors to measure biological and geochemical parameters.

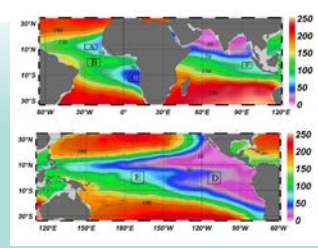


By measuring ocean temperature and salinity, Argo tracks the changes in heat content and in rainfall minus evaporation (net freshwater input) on a regional and global basis. Below right, the pronounced annual variability is seen, and the warming of the global ocean.



## ARGO AND OCEAN RESEARCH

**Argo is an unprecedented dataset** for researchers studying the temperature, salinity, and circulation of the global oceans and how these change over periods ranging from days to decades. Argo data are compared with other Argo data to reveal recent variability, or with historical datasets to see multi-decadal changes.

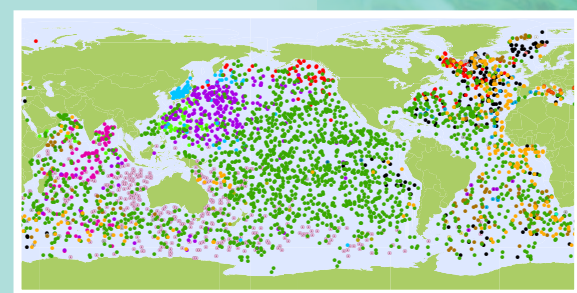


**Oceans contribute** to the planet's climate by storing heat and moving it from the tropics to mid-latitudes. More than 90 percent of the heat absorbed by Earth over the past 50 years is stored in the oceans.

**Changes in ocean salinity** observed by Argo reveal variations in the hydrological cycle – the oceans become fresher where rainfall increases relative to evaporation, and saltier where it decreases. Observed trends could have global-scale consequences for rainfall and drought patterns.

**Argo data are also used** to study ocean circulation, water mass characteristics, and ocean variability ranging from mesoscale eddies, to the seasonal cycle, to interannual variability (e.g. El Niño), and decadal oscillations (e.g. Pacific Decadal Oscillation, Southern Annular Mode).

*Temperature of the sea surface sets the temperature at the base of the atmosphere and determines evaporation and hence the Earth's water cycle. Warming and expansion of sea water accounts for 1/3 of global sea rise. Ocean temperature is a fundamental index for the state of climate.*



### OPERATIONAL APPLICATIONS OF ARGO

Argo data, along with satellite and other ocean data, feed into regional and global forecast models used for ocean and climate prediction over seasons, years, and decades

### THE VALUE OF ARGO IN EDUCATION AND OUTREACH

High school students, university undergraduates, graduate students, and postdoctoral investigators all can use Argo to explore the global ocean and its evolution from their desktops.

### ACCESS TO ARGO DATA AND FURTHER INFORMATION

*Where can I learn more about the Argo Program?*

Information on the Argo Program is available from the International Argo Project Office and from the Argo Information Center. For both of these, see <http://www.argo.net>

