

SMALL DATA FOR A BIG OCEAN A Tale of Fire and Ice (Cream)

Steve Diggs
Research IT Faculty Showcase
2019.04.23

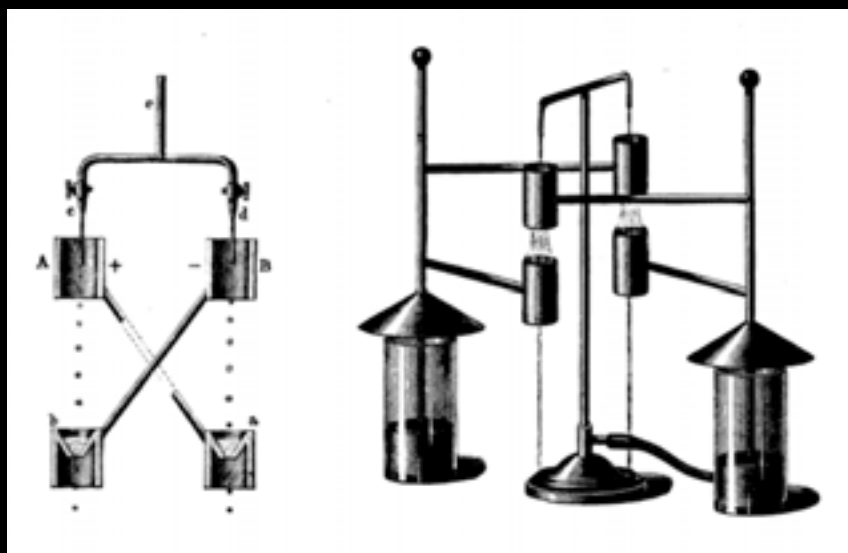


UC San Diego



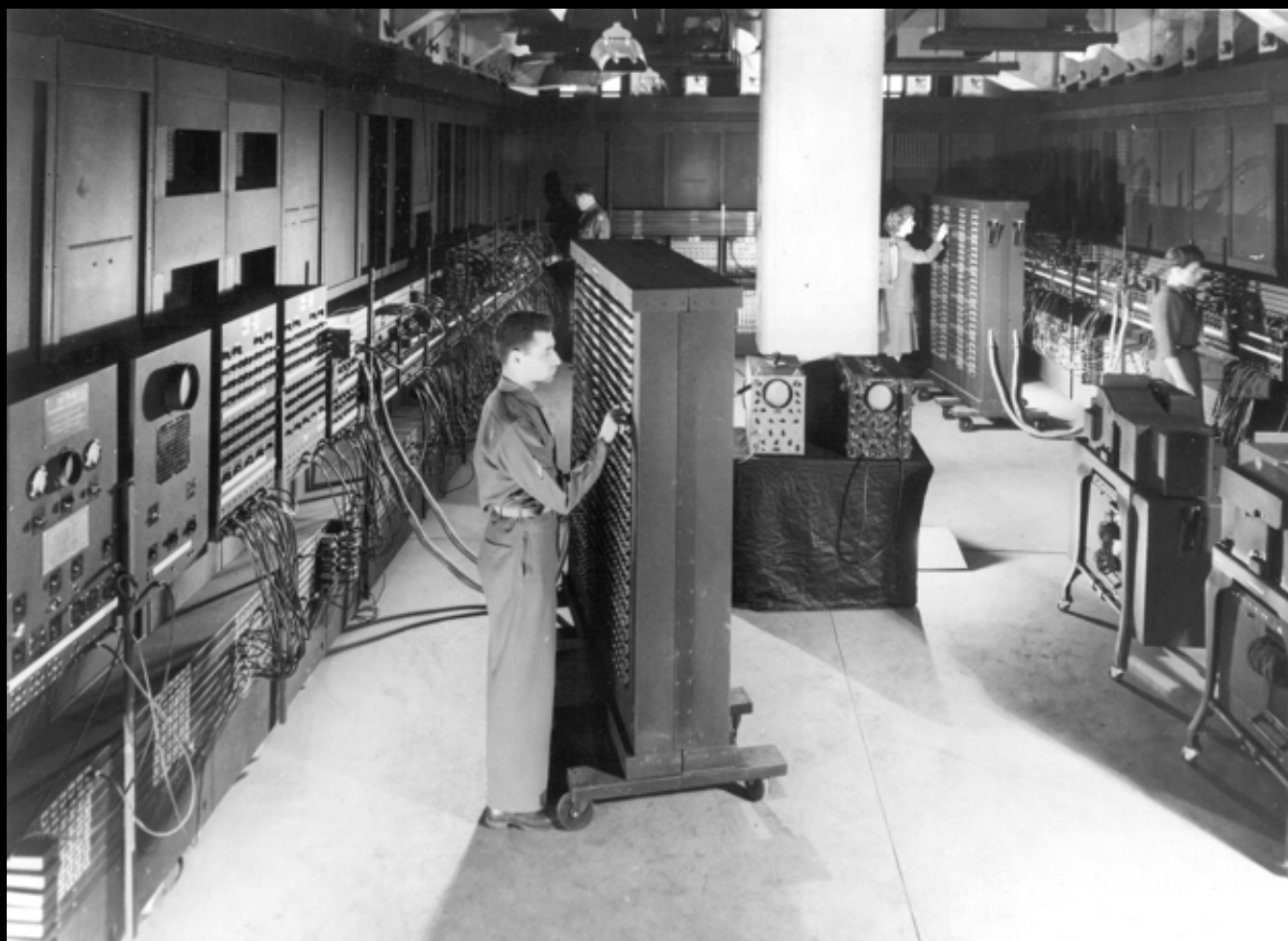
SCRIPPS INSTITUTION OF
OCEANOGRAPHY

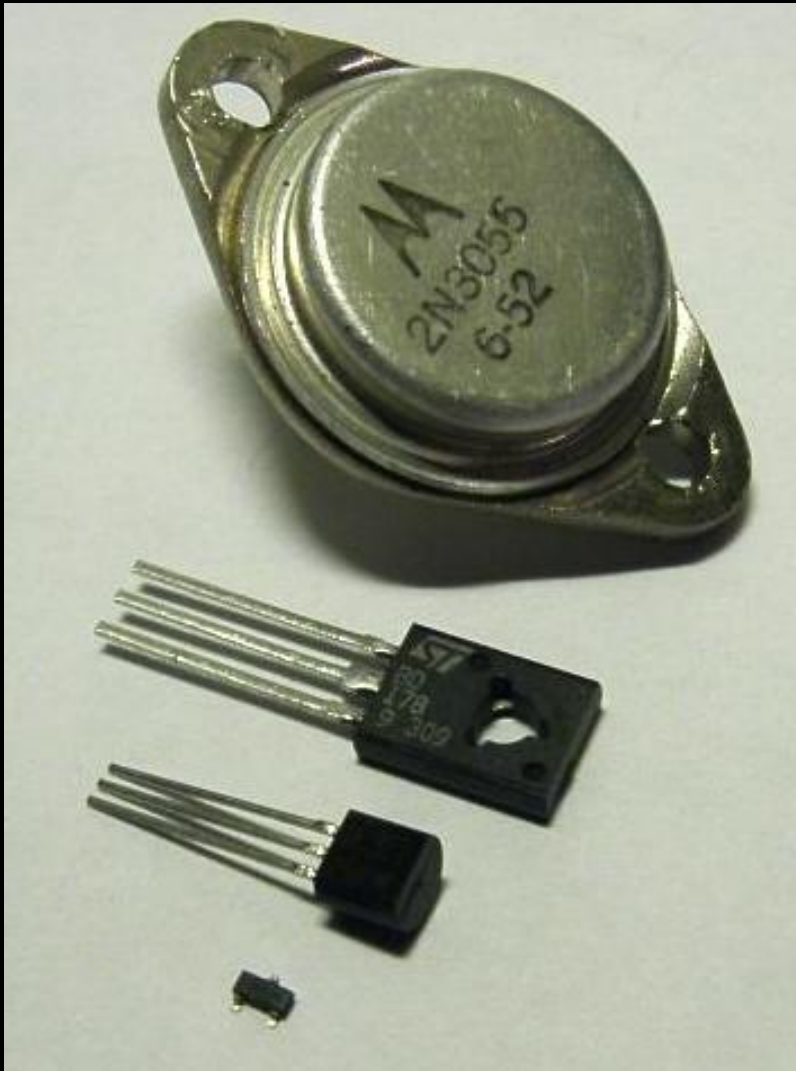




B^+









Constant Change



1998





(No Change)

"There should be a **World Ocean Circulation Experiment** to understand quantitatively the present state of the general circulation, in order to assess the sensitivity of the climate system to changes in external forcing, whether natural or anthropogenic, on time scales of decades to centuries should be implemented vigorously".

*The Joint Scientific Committee
The Committee on Climatic Changes and the Ocean*

*Tokyo
1982*





CCHDO:

Officially:

Location:

Data:

Purpose:

CLIVAR & Carbon Hydrographic Data Office

Data Office for GO-SHIP, CLIVAR, WOCE, pre-WOCE

Scripps Institution of Oceanography / UCSD

2295 Cruises / **100,026** profiles

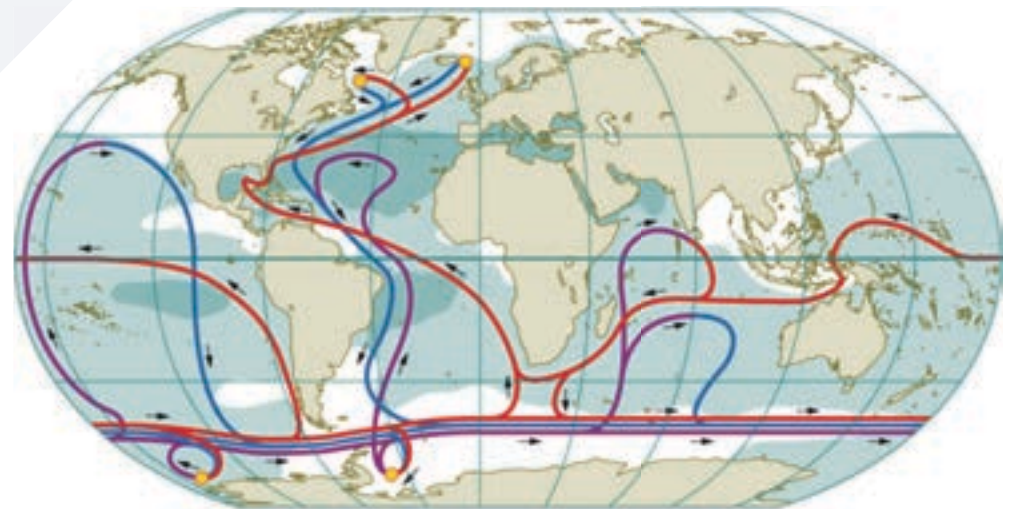
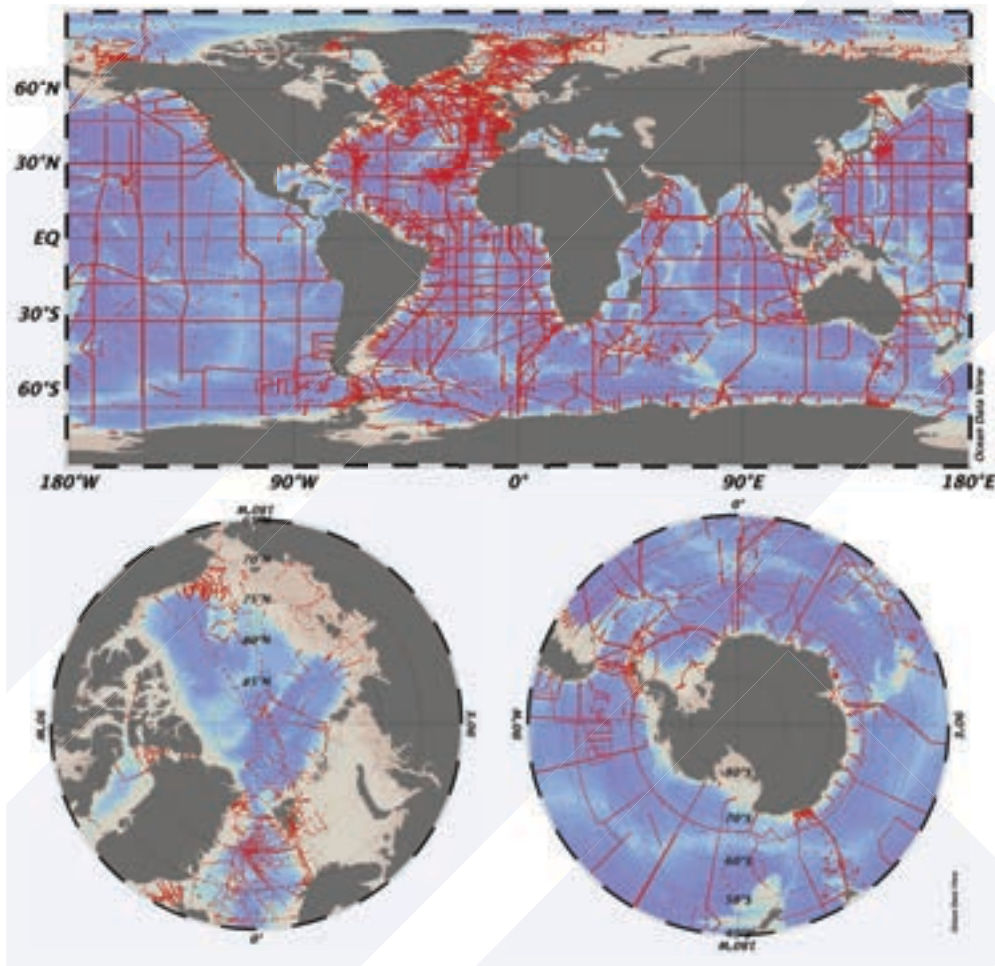
Data Assembly and Dissemination Center

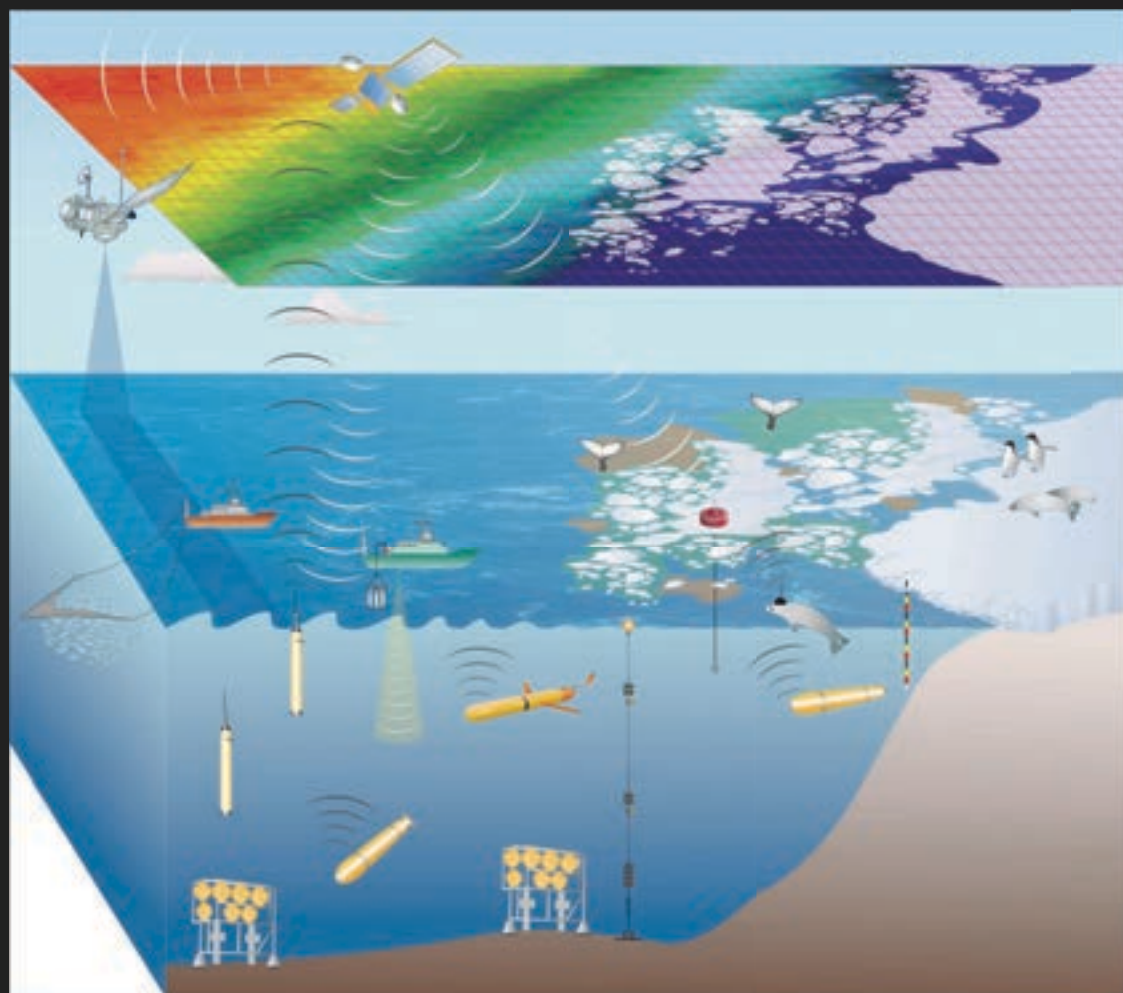
Contacts:

- Technical Dir. : **Steve Diggs**
- Scientific Adv. : **Sarah Purkey**
- Director : **Karen Stocks**

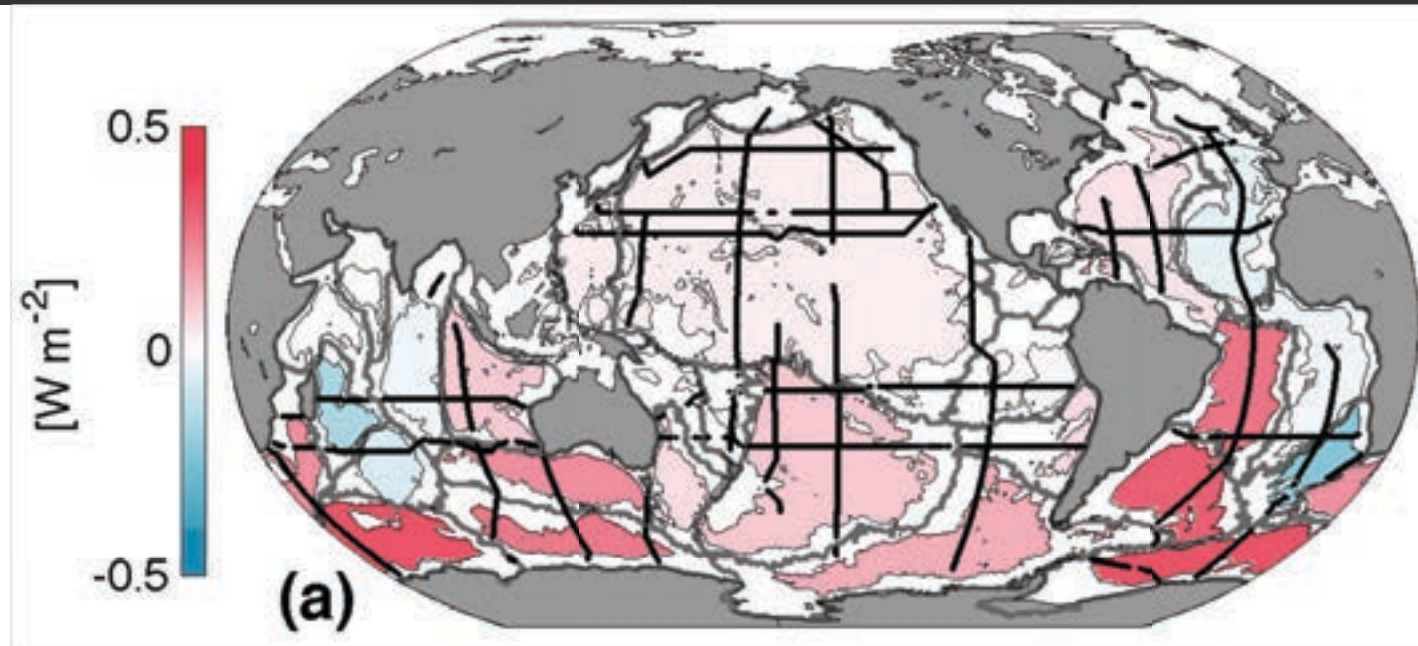
Type of Data Managed: Sustained hydrographic observations of *trans-oceanic reference quality hydrographic*, ocean carbon, and tracer measurements.

Understanding the Ocean





The Deep Ocean is Warming



(Purkey and Johnson 2010)

- The deep ocean is warming around the global on decadal time scales
- Strongest warming in the Southern Ocean, weaker but significant warming along the bottom limb of the MOC

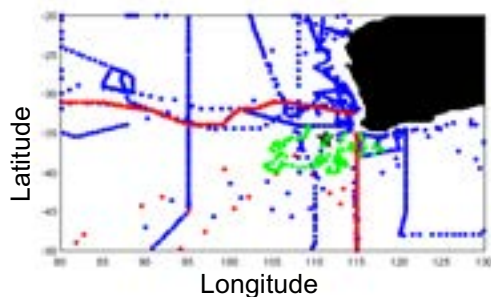


Use of Historical CTD to assess Argo float salinity drift

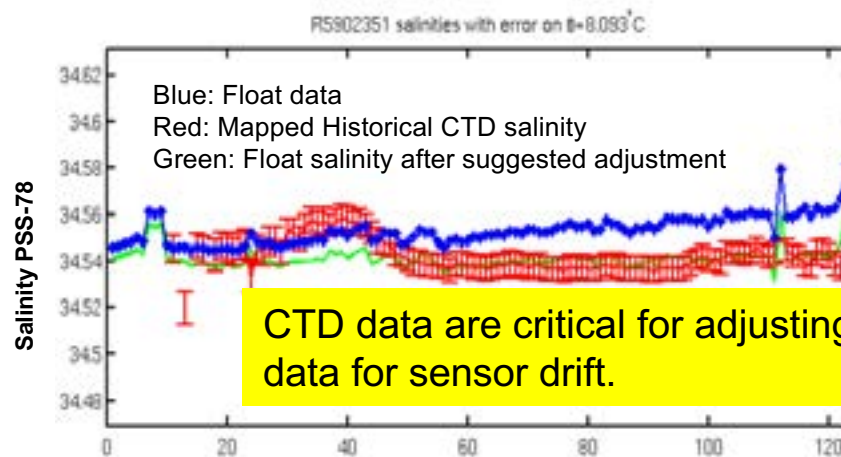


WMO: 5902351 (Green)
SIO SOLOII
Deployed: 23 Oct 2014
Star: Present Location

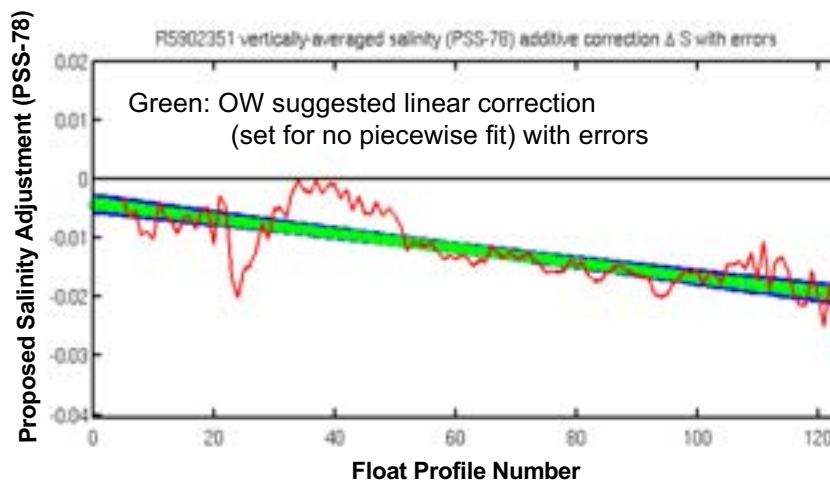
Background:
Argo Historical CTD dataset (Ver2017)
Red: Since 2008
Blue: Prior to 2008



The OW software suggests an adjustment to the positively drifting salinity of amplitude 0.02 psu by profile 120



CTD data are critical for adjusting Argo data for sensor drift.



Slide courtesy of John Gilson, SIO

INTERNATIONAL IMPACT

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United Nations, The Ocean Conference

Understanding and Protecting the Planet

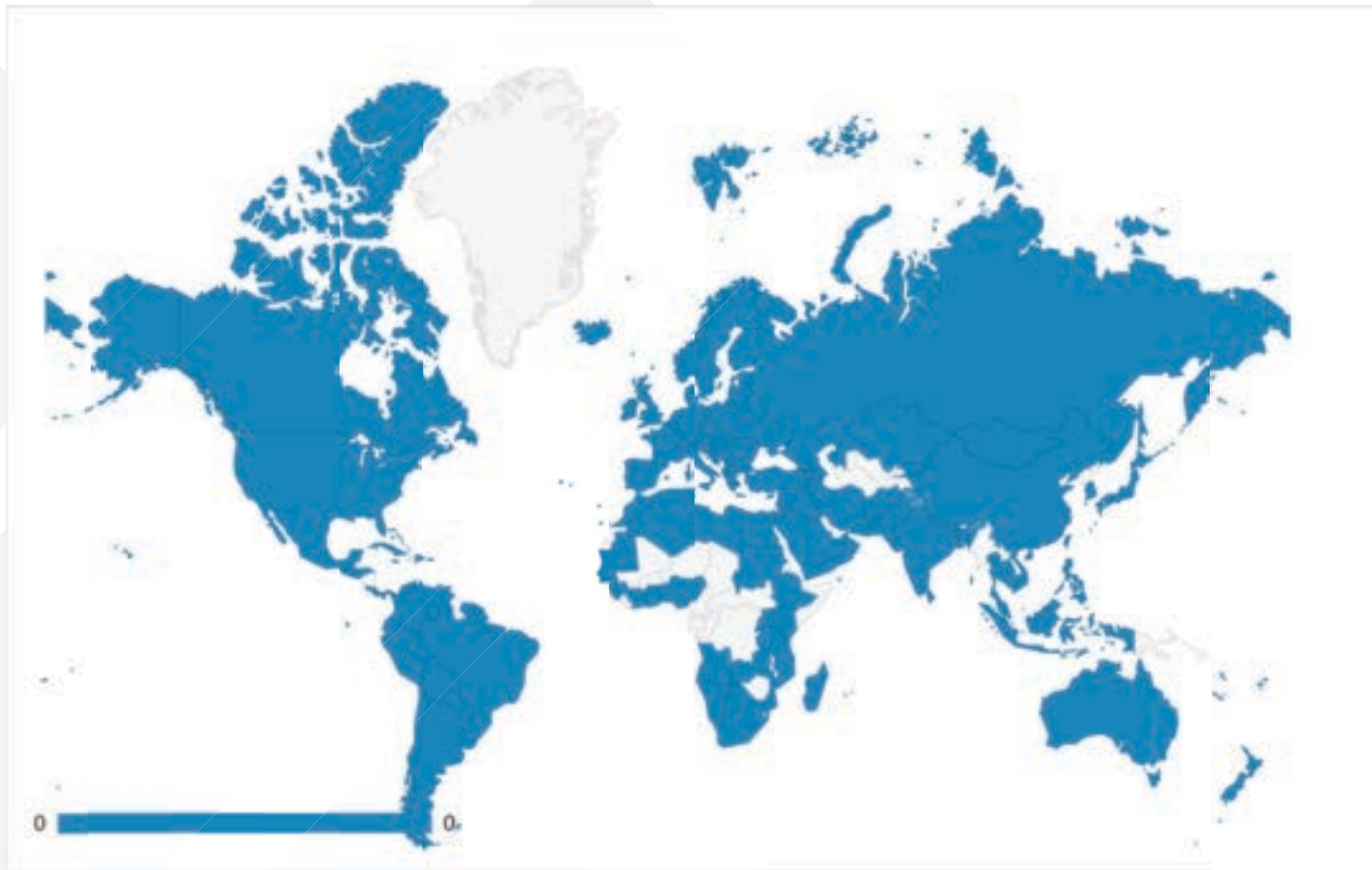
ipcc
INTERGOVERNMENTAL PANEL ON climate change

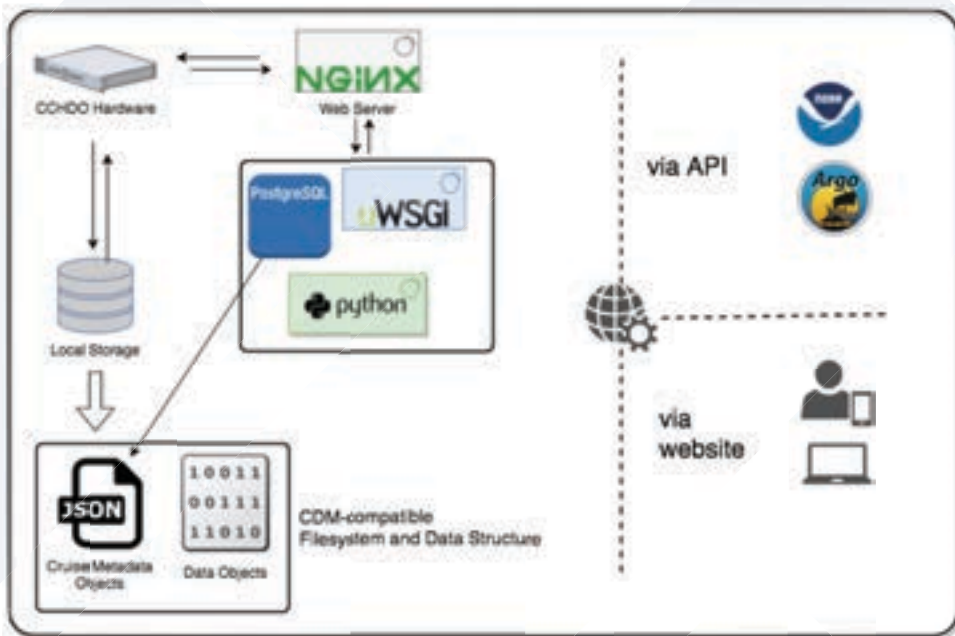


Global Warming of 1.5°C

An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.


Serving Our Users: **24/7/365**





Next Phase

A hybrid approach:

- PID (DOI) minting 
- State lives in the cloud (S3, RDS),
- Stateless application run time (i.e. Docker) lives in Scripps CoLocation Facility
- Everything reverse proxy through UCSD



(Change)




THIS IS US





SCRIPPS @ UCSD



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Capricorn Expedition, 1952. First Scripps expedition to use scuba.



1903 Founded at Hotel del Coronado boathouse

1912 Scripps joins the University of California

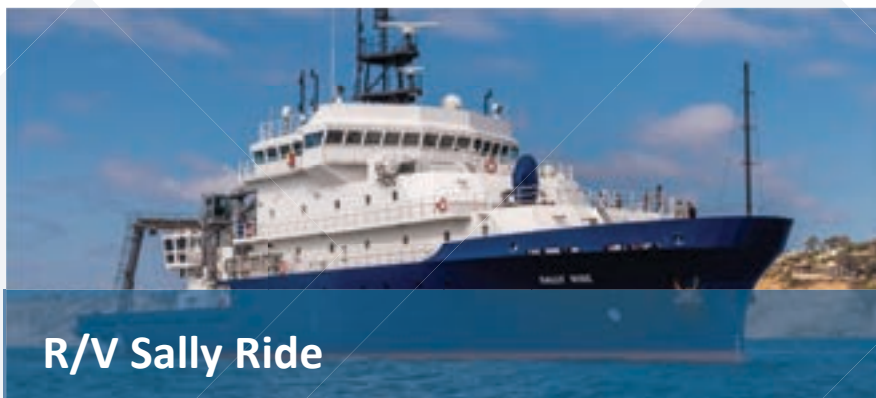
1925 Renamed Scripps Institution of Oceanography

1960 Scripps becomes a department within UC San Diego

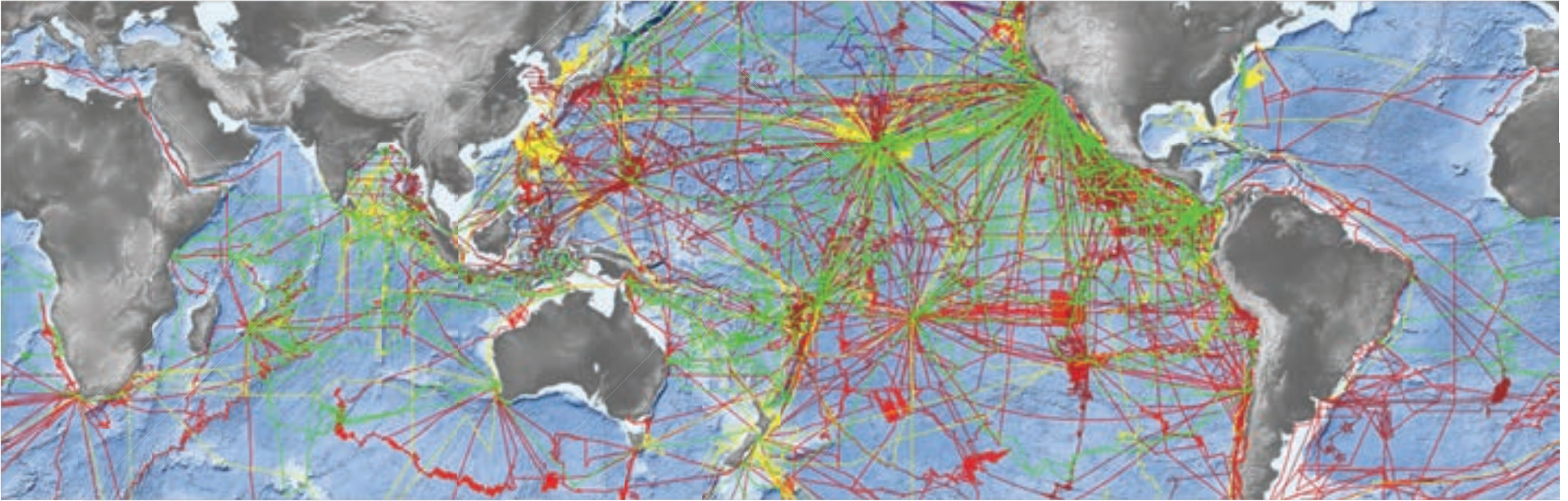


Scripps Institution of Oceanography, circa 1910

OUR RESEARCH FLEET CONSISTS OF FOUR SHIPS



GLOBAL REACH




Scripps research vessel tracklines, 1952-2016.

Investigations and impact on every continent and in every ocean.

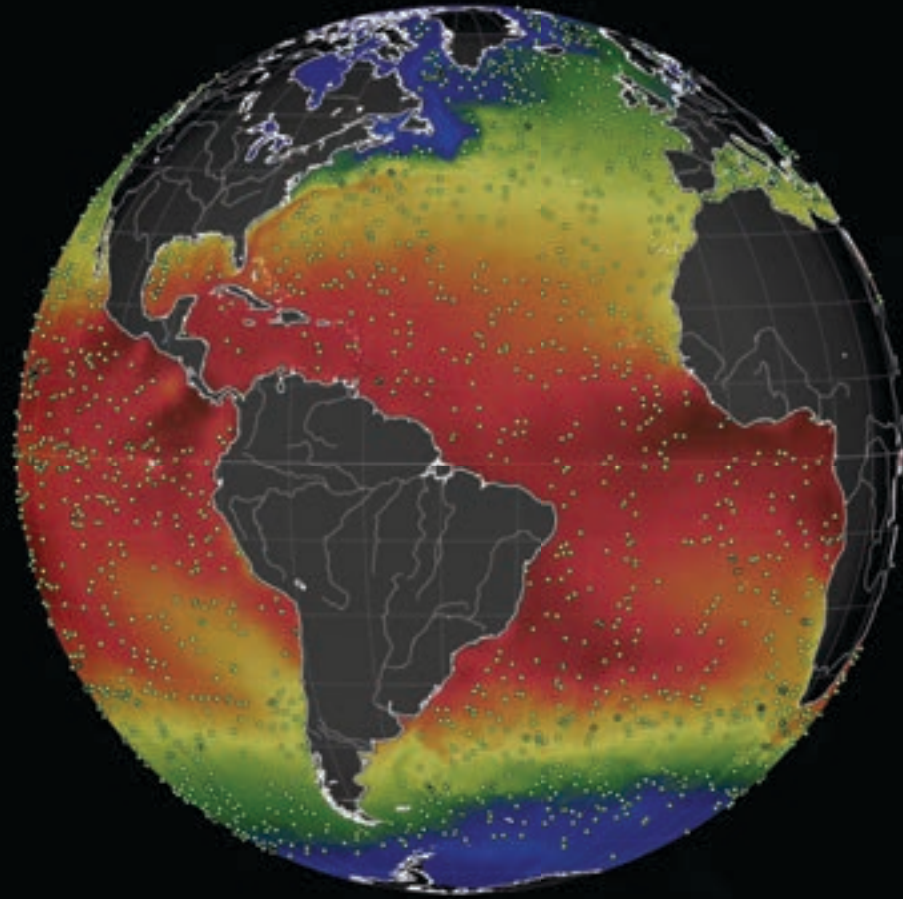
ESTABLISHED LONG TERM EARTH MONITORING PROGRAMS

Keeling
Curve



The background image shows a wooden pier extending into the ocean at sunset. The sky is a deep blue with some clouds, and the sun is low on the horizon, creating a bright reflection on the water and sand. The pier's structure is visible in the foreground, with its wooden planks and support beams. The overall mood is serene and contemplative.

Scripps Institution of Oceanography works to understand and protect the planet, and investigate the oceans, earth, and atmosphere to find solutions to our greatest environmental challenges.



earth ≡

An aerial photograph of the Scripps Institution of Oceanography coastline. The image shows the Pacific Ocean on the left, with waves breaking onto a sandy beach. A long pier extends from the shore into the water. To the right of the beach, there are several large, modern buildings, likely university or research facilities, surrounded by greenery and a road. The text "THANK YOU" is overlaid in white, bold, sans-serif font in the center of the image.

THANK YOU

The UC San Diego logo, featuring a stylized blue geometric design to the left of the text.

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THERE IS HELP

siodata@ucsd.edu

