

# Partnerships for New GEOSS Applications (*PANGEA*)

## Resource Sharing to Implement the Global Ocean Observing System for Climate



**DBCP XXVI 2010 Scientific and Technical Workshop**  
**Scottish Association for Marine Science**  
**Oban, Scotland**  
**27 September 2010**

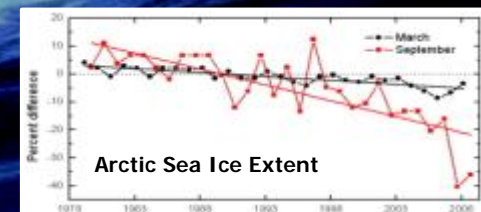
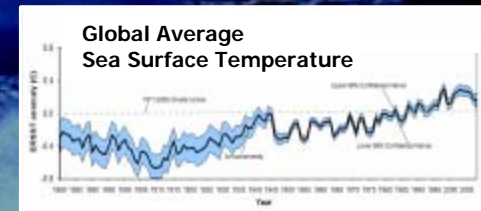
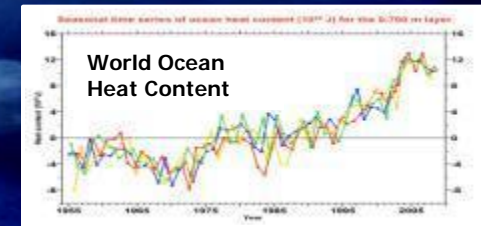
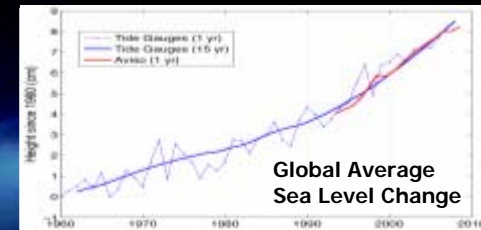
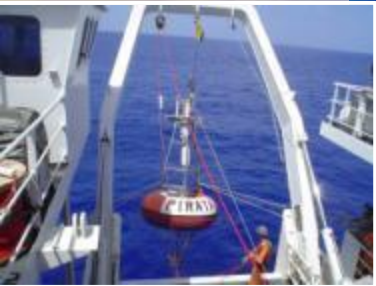
**Sidney Thurston, Ph.D.**  
**NOAA Climate Program Office**  
**Lead, DBCP Capacity Building Task Team**

# Earth's Changing Climate

## Information from the Ocean Observing System

### Indicators of Change

- Sea level rise
- Ocean carbon sources and sinks
- The ocean's storage and global transport of heat and fresh water
- The air-sea exchange of heat and fresh water
- Sea ice extent



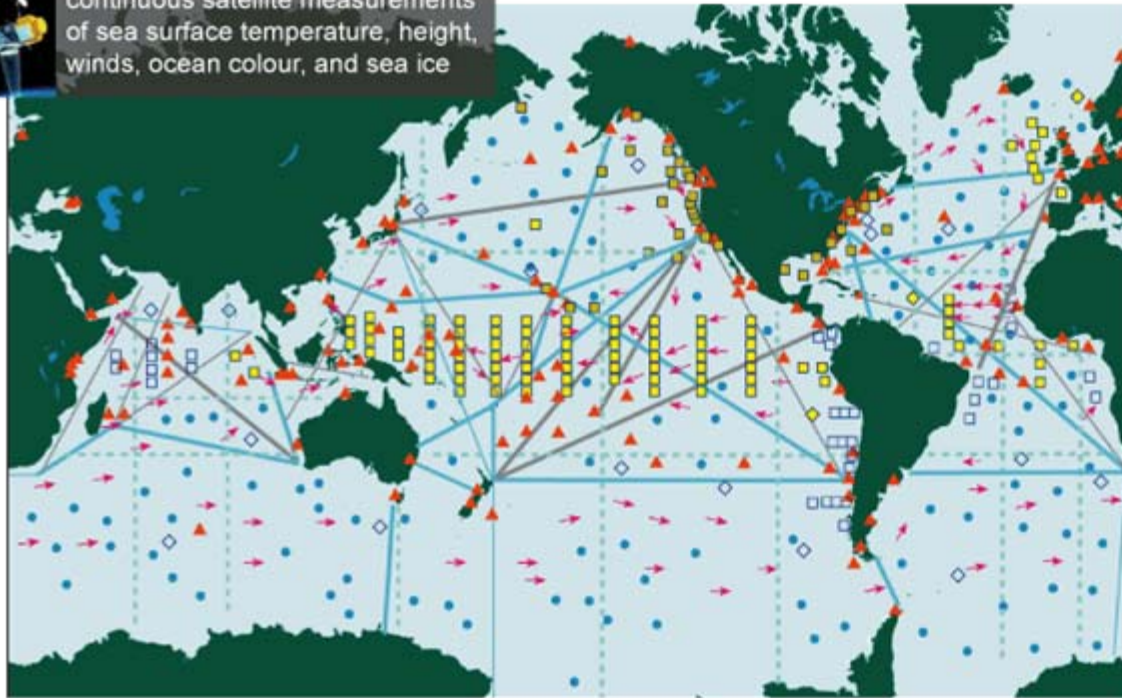


# Initial Global Ocean Observing System for Climate

Status against the GCOS Implementation Plan and JCOMM targets

Total *in situ* networks **61%** May 2010

continuous satellite measurements of sea surface temperature, height, winds, ocean colour, and sea ice



87% **Surface measurements** from volunteer ships (VOSclim)

200 ships in pilot project



100% **Global drifting surface buoy array**

5° resolution array: 1250 floats



62% **Tide gauge network** (GCOS subset of GLOSS core network)

170 real-time reporting gauges



81% **XBT sub-surface temperature section network**

51 lines occupied



100% **Argo profiling float network**

3° resolution array: 3000 floats



43% **Repeat hydrography and carbon inventory**

Full ocean survey in 10 years

Reference time series 24%

58 sites



48% **Global reference mooring network**



29 moorings planned



79% **Global tropical moored buoy network**



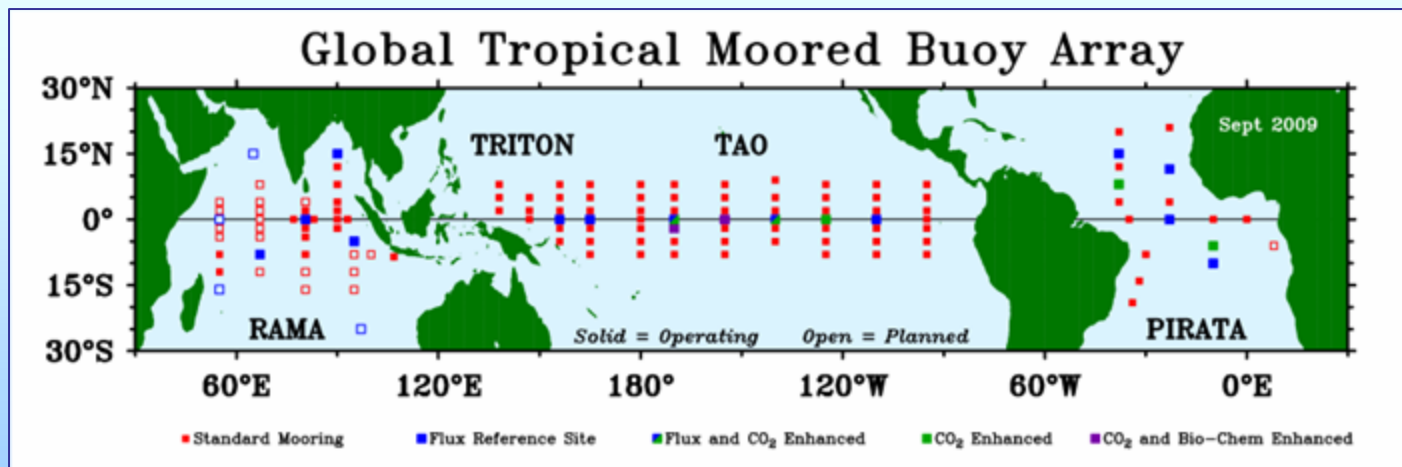
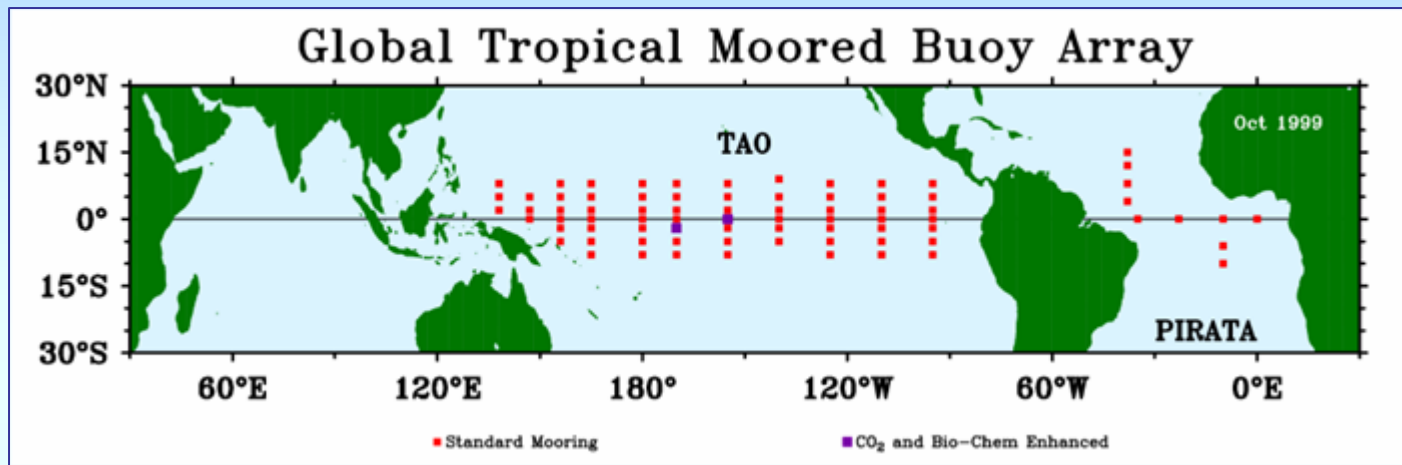
119 moorings planned

GCOS



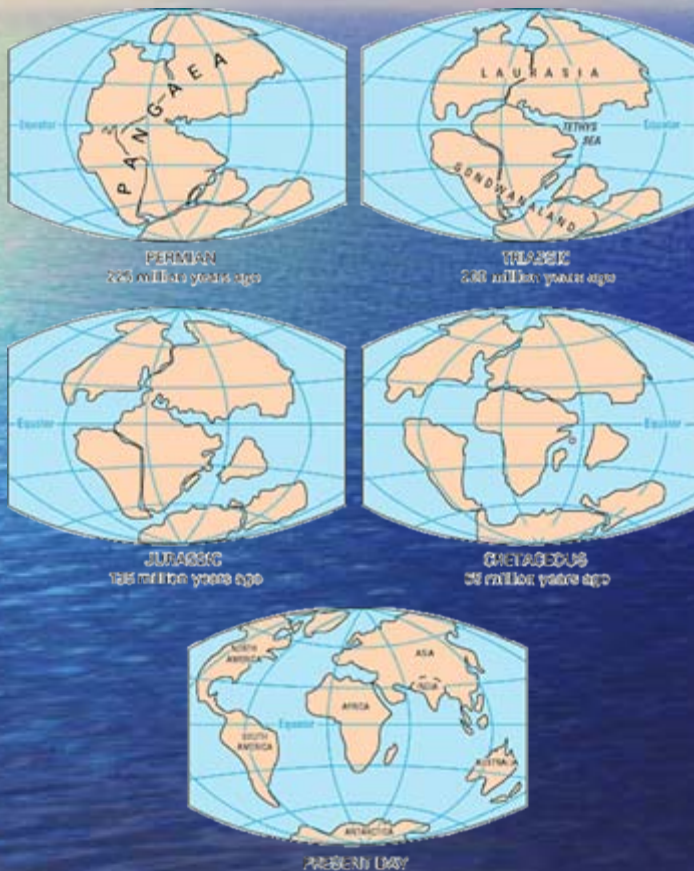
- A total of 8483 in situ platforms are maintained globally.
- Of these, 4207 are supported by NOAA.

# Global and Indian Ocean Buoys 1999 → 2009





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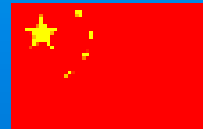
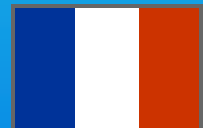
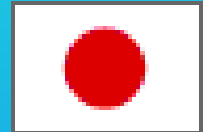
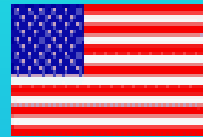


- 230M Years ago the Super-continent PANGAEA Existed
- Reunite Met/Ocean Institutes to Increase in-situ Ocean Observations
- Mutually Beneficial Resource Sharing Partnerships
- Demonstrate Socio-economic Applications of Ocean Data
- Annual In-Region Capacity Building

# International Cooperation For IndOOS and RAMA



*RV Baruna Jaya III  
Sept 2007*

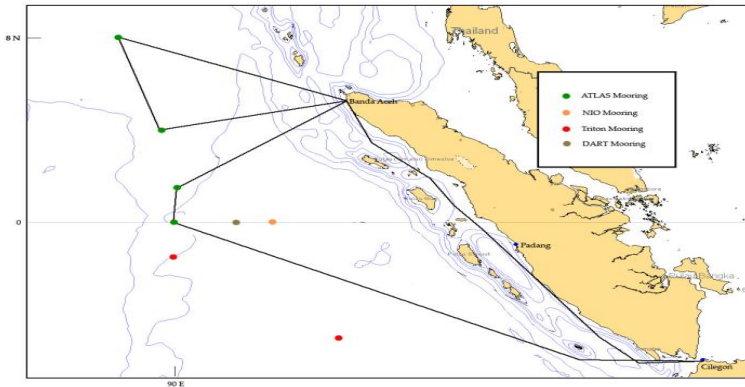


## Formal Bilateral Agreements Between NOAA and Agencies in:

- India - signed in 2008
- Japan - signed in 2008
- Indonesia - signed in 2009
- ASCLME (9 East African countries) -  
Planned in Spring 2011



# Indonesia Ministry of Marine Affairs and Fisheries (KKP) & Agency for Assessment and Application of Technology (BPPT)



- **June: 30 Day Baruna Jaya Cruise to Service 3 NOAA RAMA Moorings Off NW Sumatra**
- **September: 6<sup>th</sup> Capacity Building Workshop Remote and In-situ Tools for Evaluating Climate Change Impacts, 7<sup>th</sup> Workshop Broader ASEAN**
- **September: BPPT Leadership Visit NOAA AOML/NDBC to Discuss Indonesian GOOS (InaGOOS), RAMA, Drifters, Argo and Data Management**
- **March: PMEL Provides Two T-FLEX Packages for InaGOOS to BPPT 8S100E and 12S 95E**
- **May: BPPT Baruna Jaya Cruise Services Four (4) PMEL RAMA Moorings**







# India Ministry of Earth Sciences



- **Science Colloquium New Delhi September 2008, 2009**
  - *Research moored Array for African-Asian-Australian Monsoon Analysis and prediction (RAMA)*
  - *Climate Model and Ocean Assimilation Analyses for the Indian Ocean Region*
  - *Climate Monitoring and Prediction System for the South Asian Region*
  - *South Asian Regional Reanalysis (SARR)*
  
- ***Pending Agreements***
  - *INSAT-3D Satellite Data*
  - *Carbon Cycle Greenhouse Gas Measurements and Research*
  - *Frame work for India–US Collaboration On Tropical Cyclone Research*
  - *Establish “Monsoon Desk” at NOAA’s Climate Prediction Center, Washington, DC*
  
- **August: NOAA Hosts Government of India Technical Team Visit to Advance Climate, Agriculture, Weather and Water Forecasting, Washington, DC**
  
- **6 October: Third MoES-NOAA Science Meeting, Washington DC**



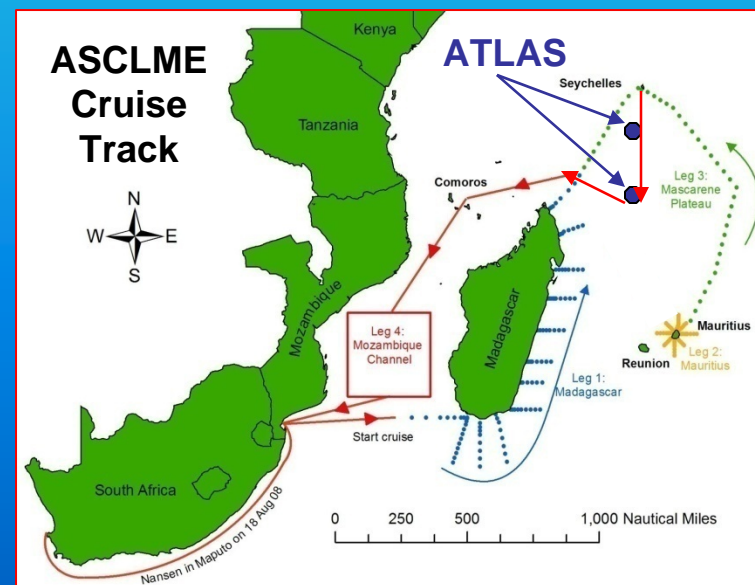
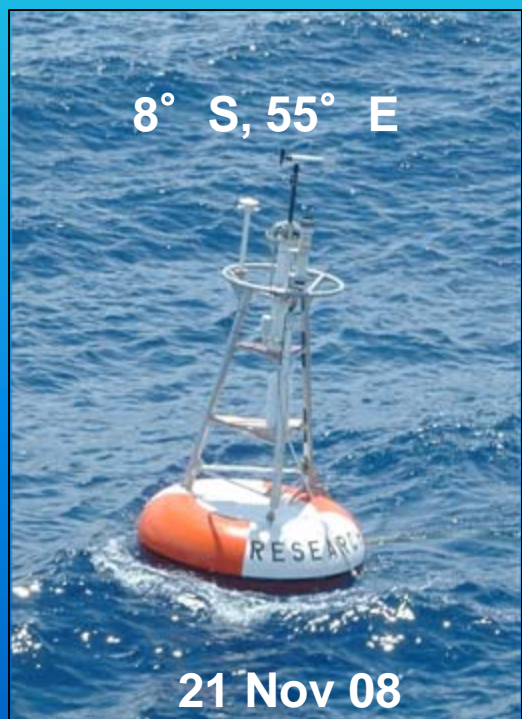


# Agulhas Somali Current Large Marine Ecosystems (ASCLME)



•2 NOAA ATLAS and 4 Argo floats deployed during ASCLME cruise on *R/V Fridtjof Nansen* - Seychelles to Mozambique 18-27 Nov 2008

•Second Cruise Scheduled This October

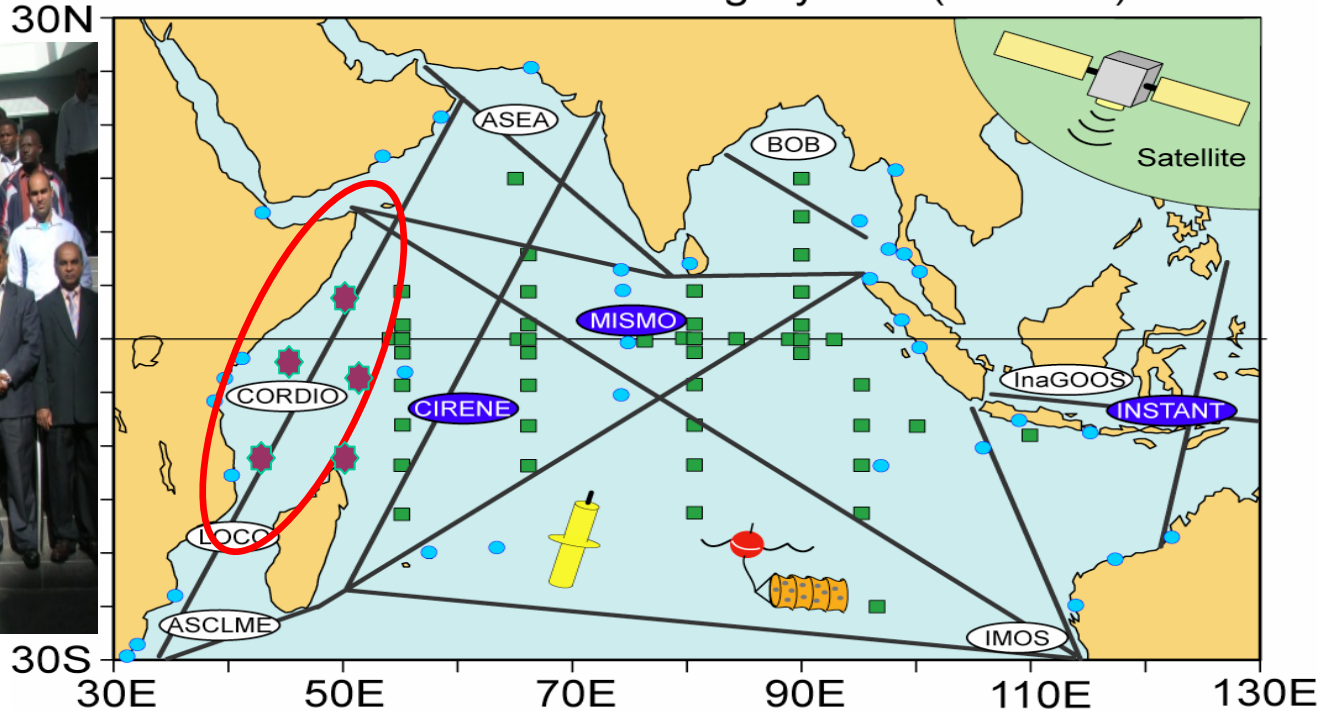




# DBCP Capacity Building Workshop


## for the Western Indian Ocean, Cape town, 19-23 April 2010

### Indian Ocean Observing System (IndOOS)



■ RAMA

— XBT/XCTD lines

 Surface drifting buoy array

 ARGO float array

● Real-time and near real-time tide gauge network (including the tsunami buoy network)

PS Process Studies

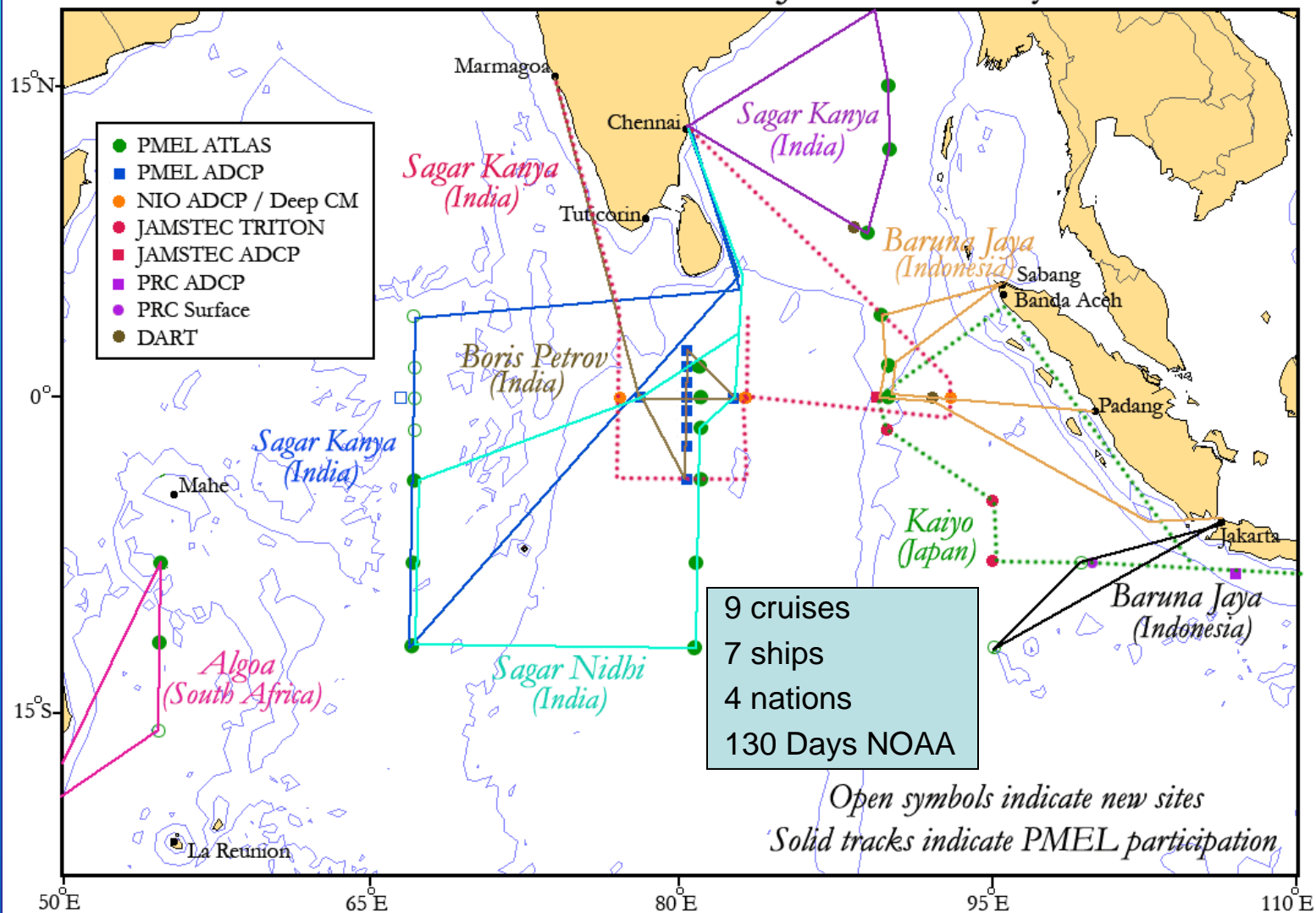
ROOS Regional Ocean Observing Systems



# RAMA Cruises

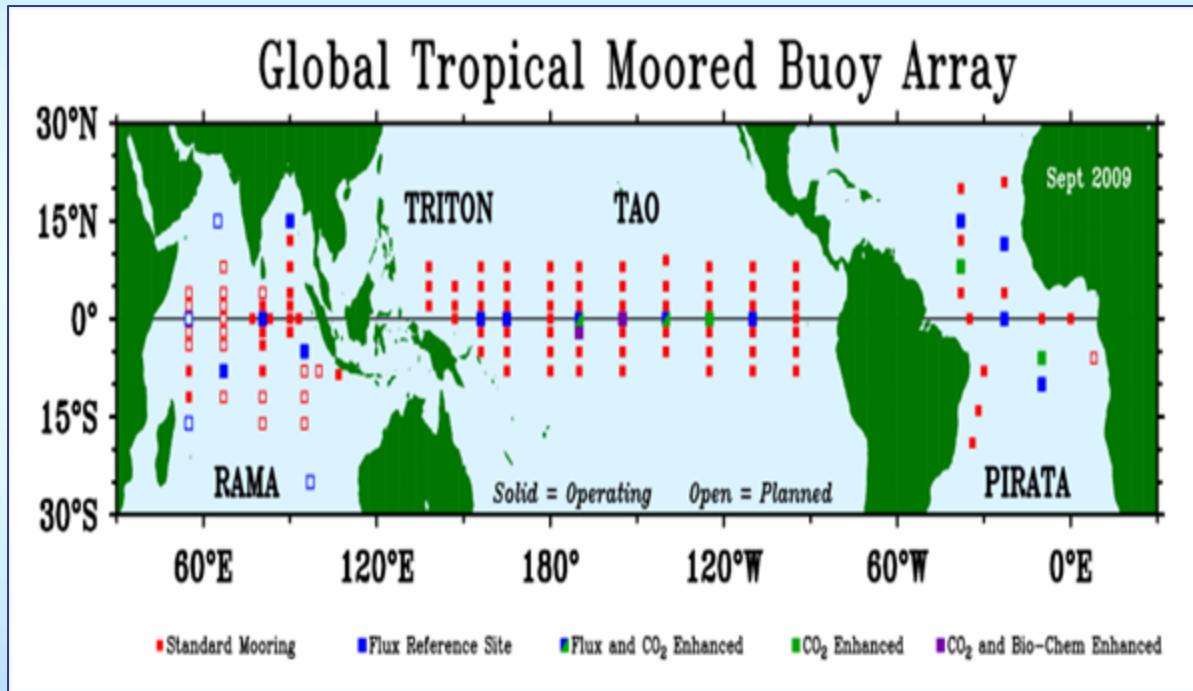
## June 2010-May 2011

Planned Indian Ocean Cruises Jun 2010 - May 2011





# Future Global Partnerships Being Advanced



- Korea: KORDI Ship Team Visits NOAA Next Week
- China: SOA/SIO
- Others?

**Thank You**

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**NOAA Climate Program Office**

