

Partnerships for New GEOSS Applications (*PANGEA*)

NOAA's PANGEA Activities to Help Implement the Global Ocean-Climate Observing System



www.jcomm.info/pangea-concept

**DBCP XXVII 2011 Scientific and Technical Workshop
World Meteorological Organization
Geneva, Switzerland
26 September 2011**

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**NOAA Office of Climate Observation (OCO)
Lead, DBCP Capacity Building Task Team**



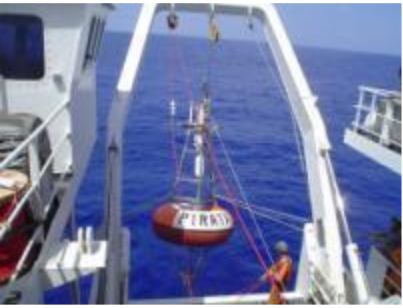
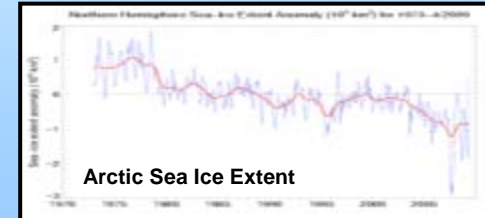
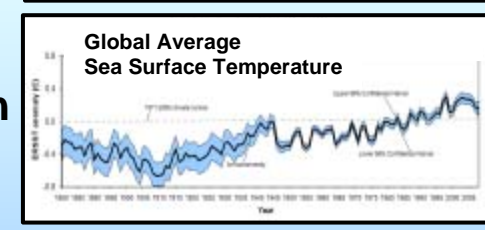
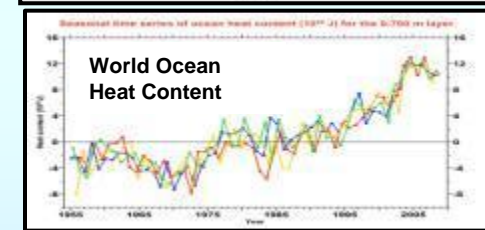
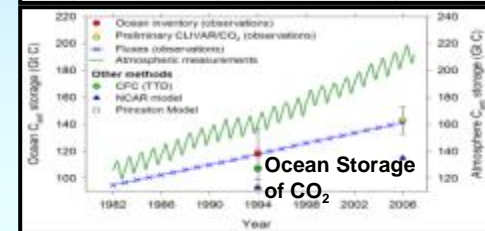
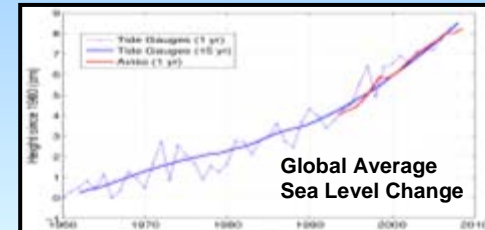
Earth's Changing Climate

Information from the Ocean Observing System

Mission: Build and sustain a global climate observing system that will respond to the long-term observational requirements of the operational forecast centers, international research programs, and major scientific assessments.

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

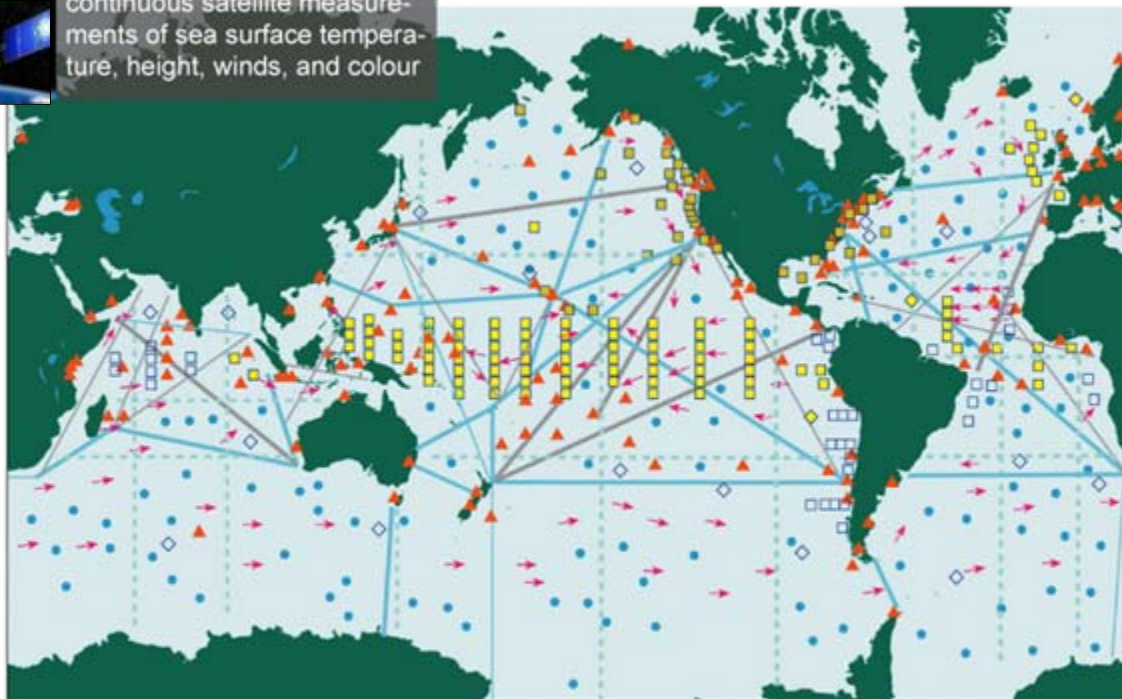


Initial Global Ocean Observing System for Climate

Status against the GCOS Implementation Plan and JCOMM targets



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



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% **Profiling float network** (Argo)

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**

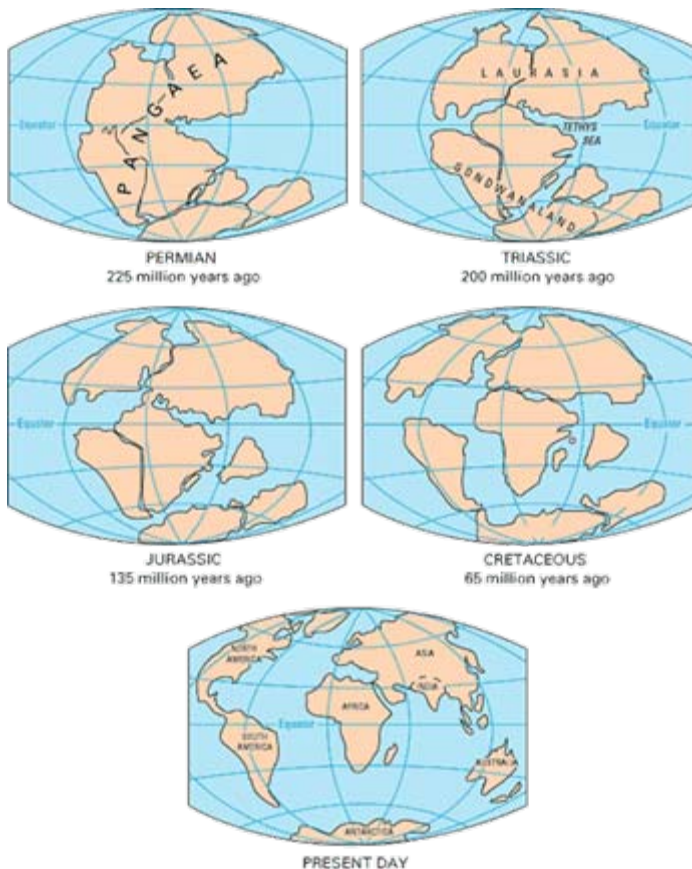


119 moorings planned



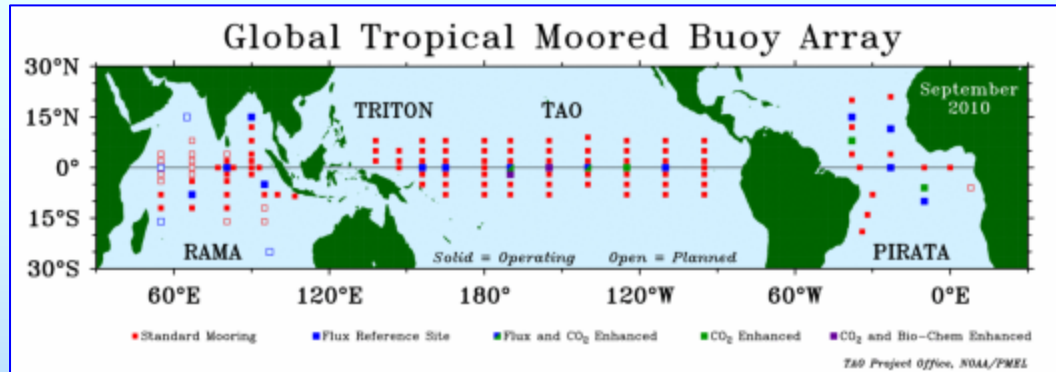
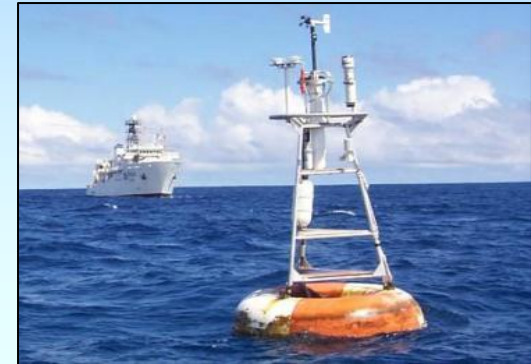
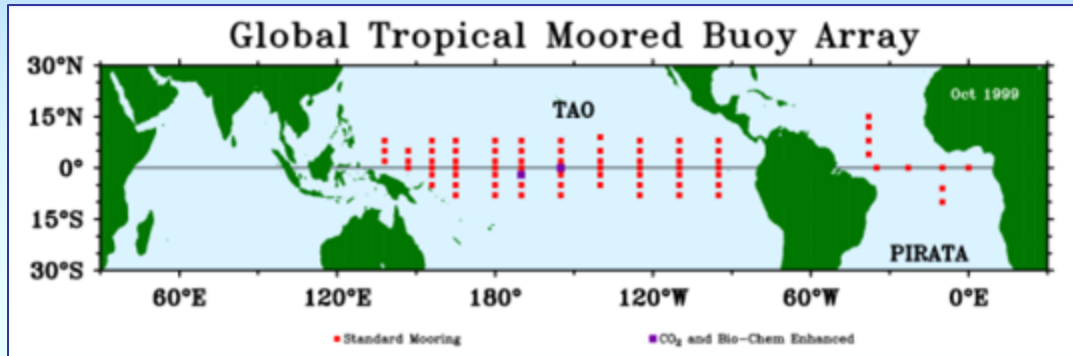


Partnerships for New GEOSS Applications (*PANGEA*)



- 230M Years ago the Super-continent PANGEA 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

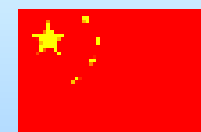
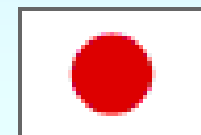
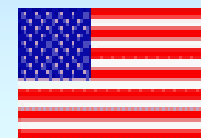
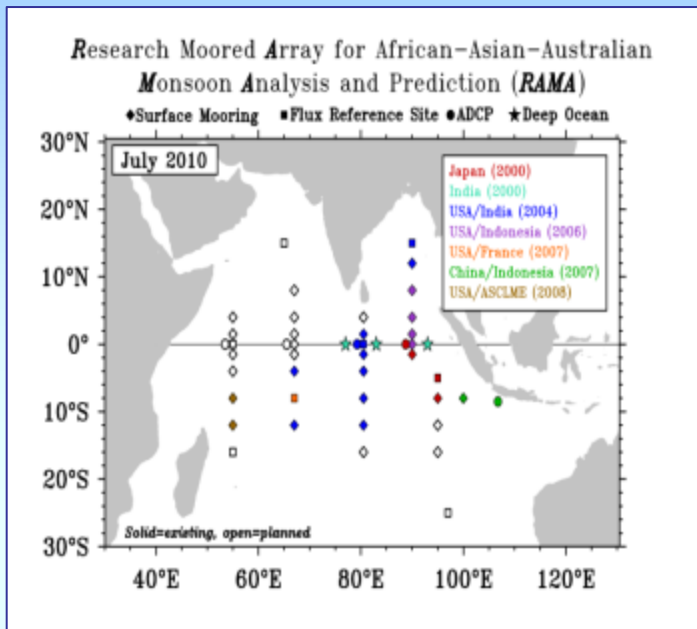
Advances Made in Implementing the Global Tropical Moored Buoy Array



Tropical Moored Buoy Array Program:

A coordinated, multi-national effort to implement a sustained moored buoy observing system in the global tropics for climate research and forecasting

NOAA's PANGEA Bilateral Agreements



- India - signed in 2008
- Japan - signed in 2008
- Indonesia - signed in 2009
- ASCLME (9 East African countries) – signed in 2011
- France and Brazil (PIRATA) – signed in 2006
- Korea, Australia, China – Exploring Mutually Beneficial Resource Sharing Partnerships for Indian and Pacific Ocean

Resource Formula:

- ✓ NOAA provides most equipment (+JAMSTEC, NIO, FIO)
- ✓ Regional partners provide ship time



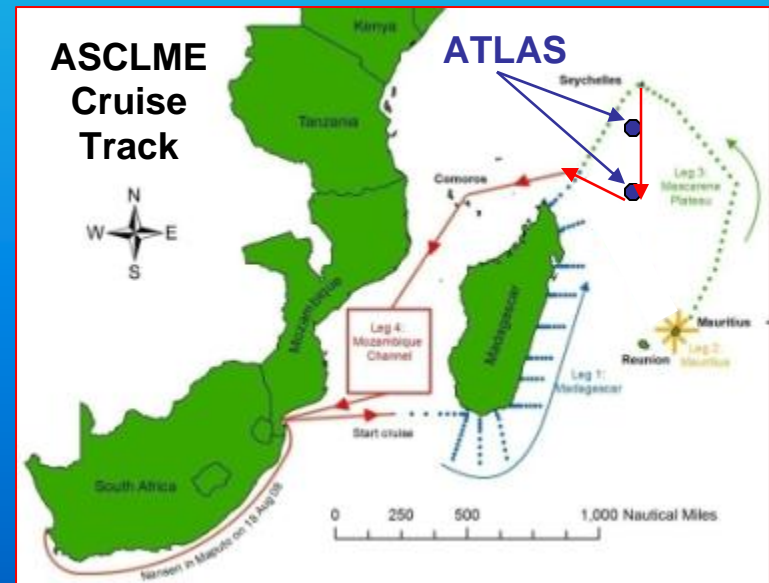
Agulhas Somali Current Large Marine Ecosystems (ASCLME)



- November 2010, 3 NOAA RAMA Moorings deployed during ASCLME Cruise on *R/V Algoa*-
- Seychelles Coast Guard Escort Into Pirate Zone



R/V Algoa



Second DBCP In-Region Capacity Building Workshop for the Western Indian Ocean (WIO-2)

Mauritius 2-6 May 2011



- NOAA Deputy Administrator Dr. Larry Robinson Signs Agreement with UNDP/ASCLME
- NOAA Now Has Formal Agreements in Place Across the Entire Indian Ocean Basin for RAMA Implementation

Dr. Larry Robinson, NOAA Deputy Administrator and Mrs. Leyla Tegmo-Reddy, the UN Resident Coordinator for Mauritius and Seychelles, sign an agreement for cooperative scientific and technical efforts between NOAA and nine African/Indian Ocean States





India Ministry of Earth Sciences

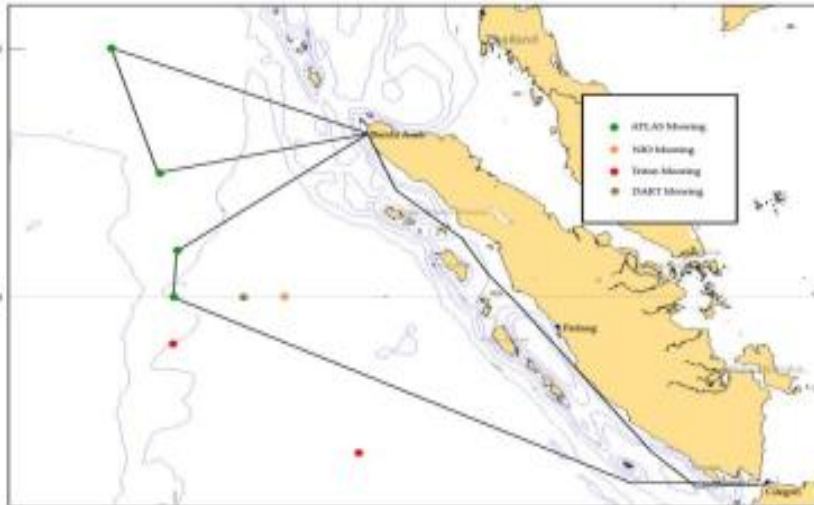


- **Science Colloquium New Delhi 2008, 2009, 2012**
 - *Research moored Array for African-Asian-Australian Monsoon Analysis and prediction (RAMA)*
 - *Climate Model and Ocean Assimilation Analyses for the Indian Ocean Region*
 - *Climate Monitoring and Prediction System for the South Asian Region*
 - *South Asian Regional Reanalysis (SARR)*
- **Latest Agreements, Washington October 2010**
 - *INSAT-3D Satellite Data*
 - *Carbon Cycle Greenhouse Gas Measurements and Rese*
 - *Frame work for India–US Collaboration On Tropical Cyclone Research*
 - *Establish “Monsoon Desk” at NOAA’s Climate Prediction Center, Washington, DC*
- **November POTUS Visit to New Delhi – Water, Agriculture Agreement**





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

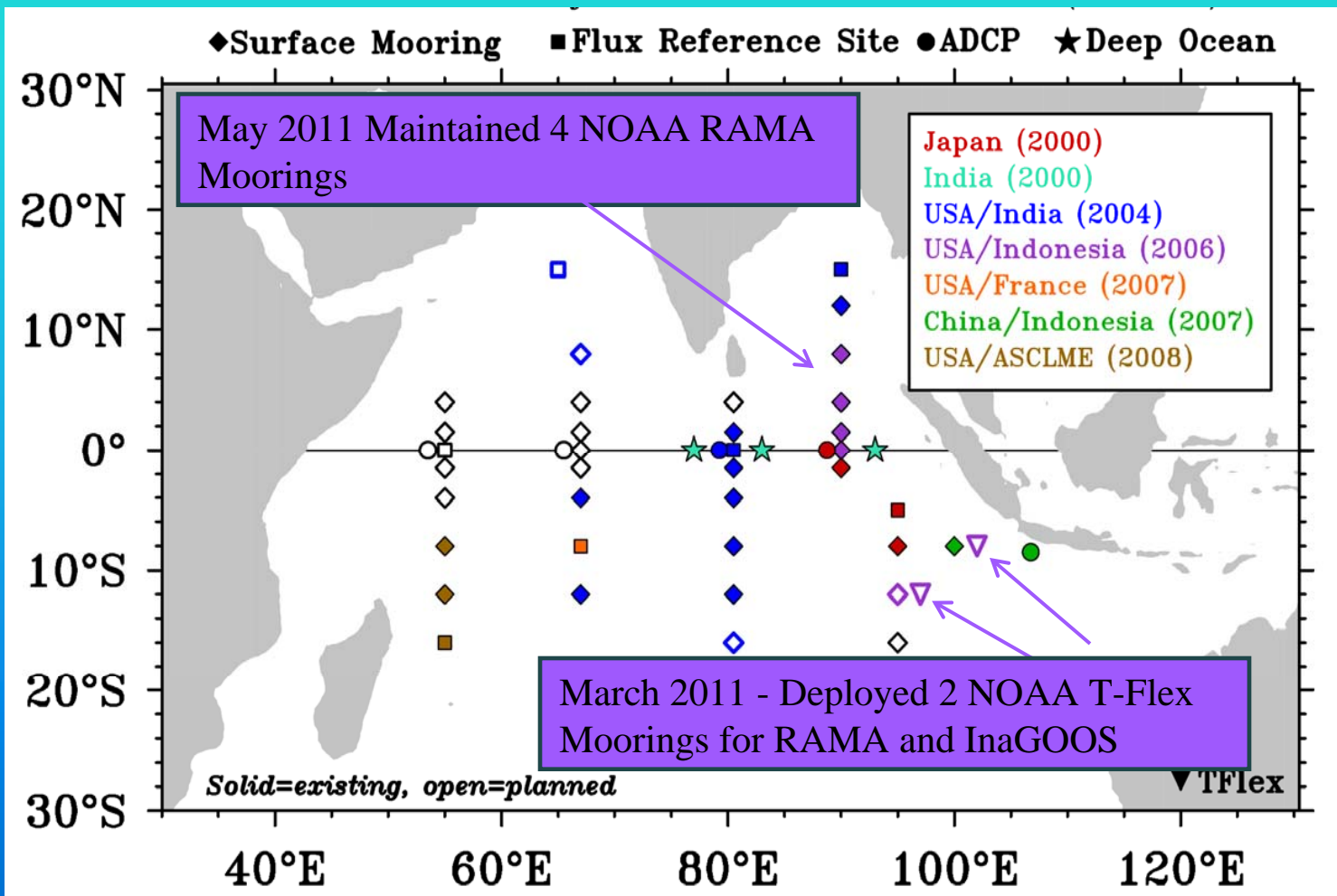


7th Annual Indonesia-U.S. Ocean and Climate Observations, Analysis, and Applications Partnership Meeting
19-20 September 2011
Hotel Sahid Raya, Yogyakarta



Two Spring 2011 Baruna Jaya Cruises:

- Four NOAA RAMA Sites
- T-Flex: NOAA's Contribution to InaGOOS



August 8-12, 2011 Partnership Visits To USA

NOAA National Data Buoy
Center (NDBC)

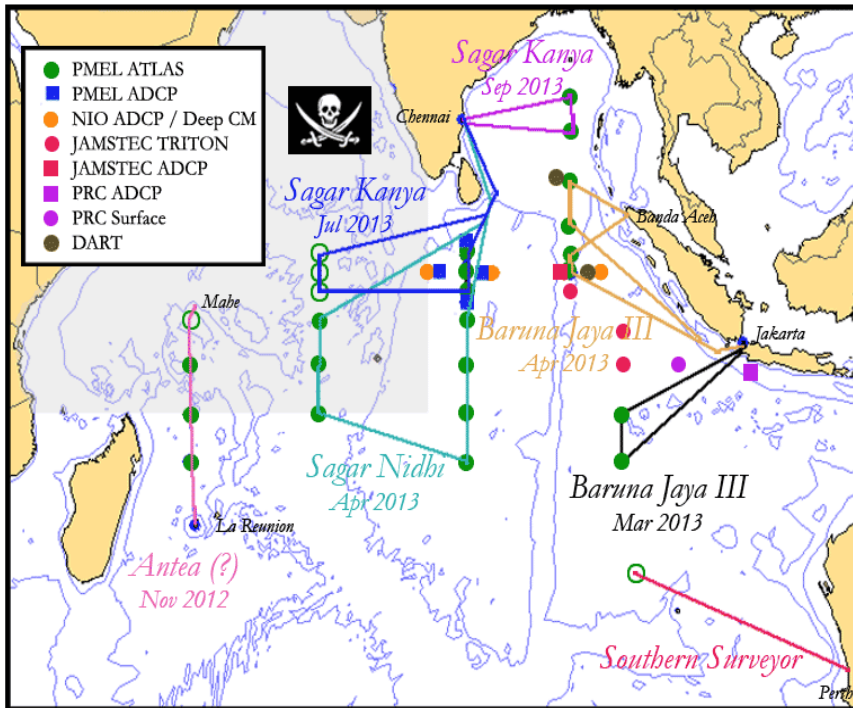


NOAA Atlantic
Oceanography and
Meteorological Laboratory
(AOML)



US RAMA Cruises Oct 2012 – Oct 2013

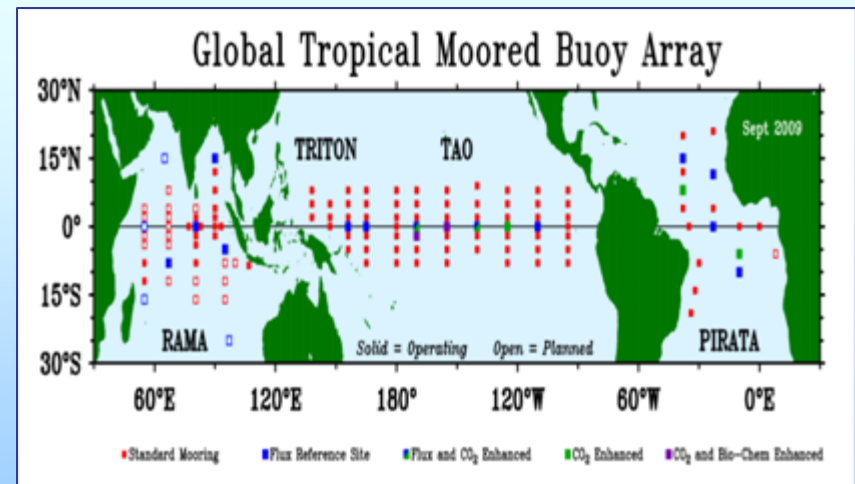
US RAMA Cruises Oct 2012 - Oct 2013



- Previously established sites will be maintained (21 ATLAS, 1 ADCP, plus recovery of PMEL's multi-year ADCP process study).
- Five additional sites will be implemented.
- Security arrangements will be required for sites along 55° E and 67° E within the piracy exclusion zone
- A total of 147 sea days are required on 7 cruises, 3 of which will require security plans.
- By the end of the year NOAA will support a total of 27 RAMA sites.

Future Global Partnerships Being Advanced

- Korea New Research Vessel: Potential New Partner for TAO
- China: SOA/FIO
- Chile
- Others?



All Colleagues Are Most Welcome!

- Meeting of the DBCP Task Team on Capacity Building (TT-CB)
 - Tuesday 27 September 2011
 - 1500 – 1600
 - This Building, Room 7L

WIO-2 Lessons and WIO-3 Preparations

Information and Communications Technology (ICT)

2012 DBCP Asia Capacity Building Workshop



Thank You!

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