

Report of the

Tropical Moored Buoy Implementation Panel

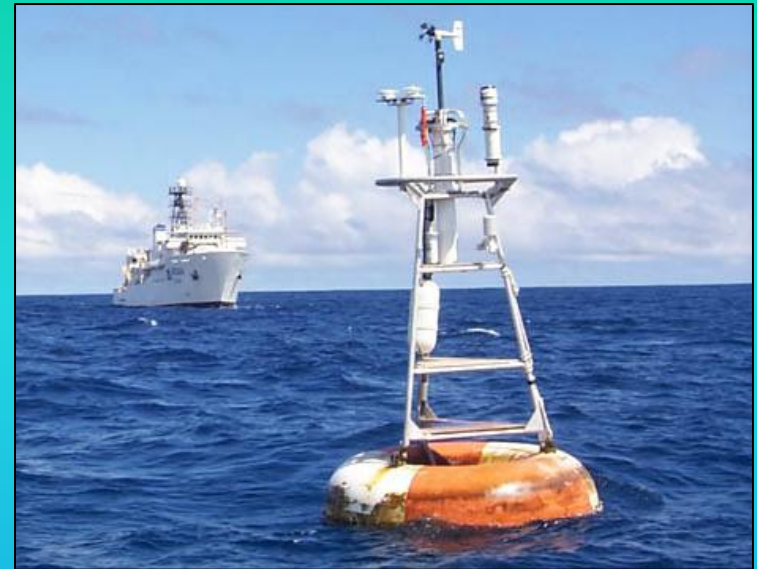
to the

28th Session of the Data Buoy Cooperation Panel

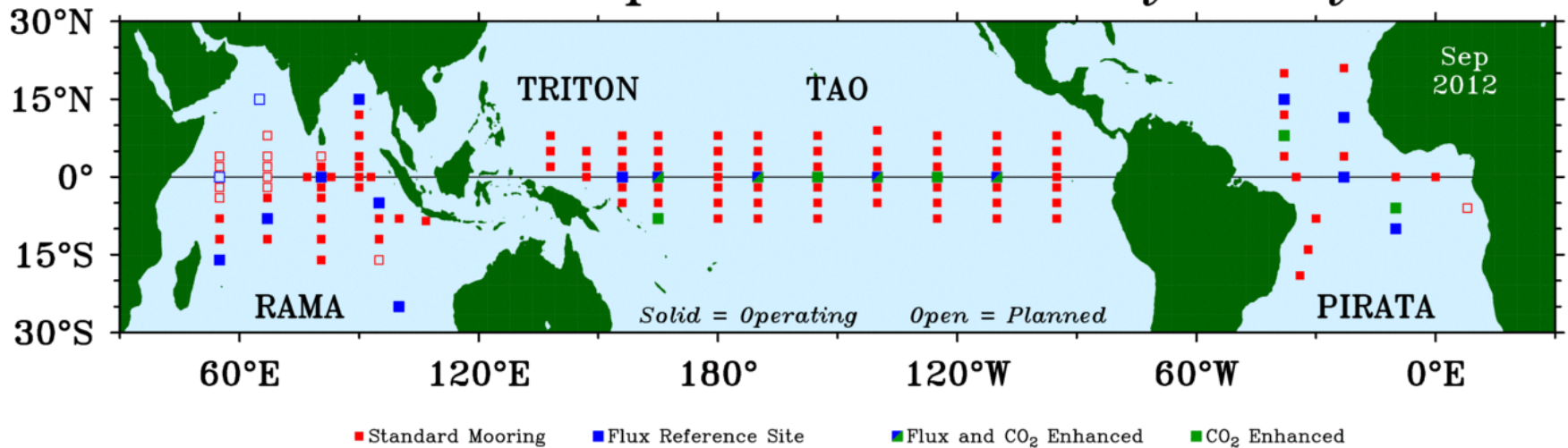


October 2-6, 2012
Fremantle Australia

Global Tropical Moored Buoy Array:
A coordinated, sustained, multi-national effort to develop and implement moored buoy observing systems for climate research and forecasting throughout the global tropics



Global Tropical Moored Buoy Array



TAO Project Office, NOAA/PMEL

A contribution to GOOS, GCOS, and GEOSS

GTMBA Resources

October 2011 – September 2012

RAMA:

Regional partners provide ship time

153 sea days in 7 cruises

India - 55 days

Indonesia - 42 days

Japan - 23 days

ASCLME – 15 days

Australia – 18 days

NOAA provides most equipment

31 moorings implemented of 46 planned

US – 22 (21*) moorings

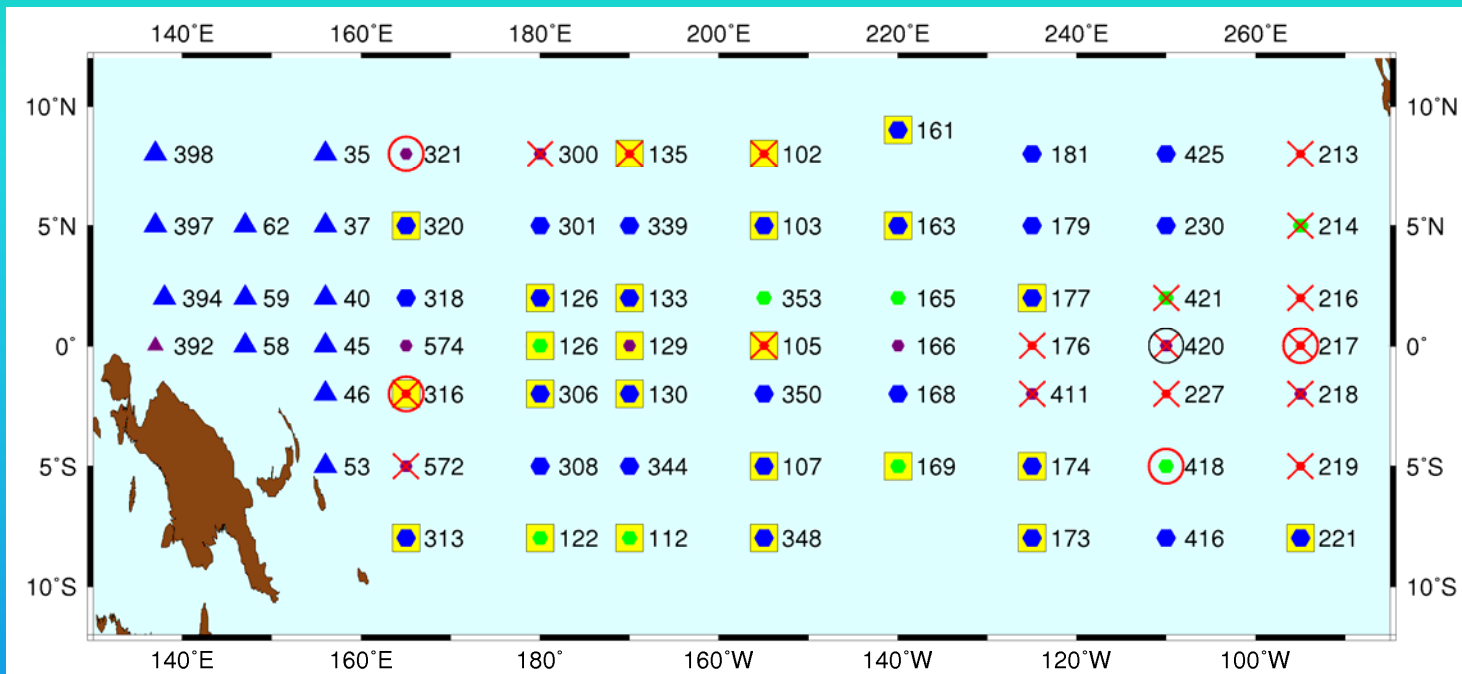
Japan – 4 (4*) moorings

India – 3 (0*) moorings

China – 2 (2*) moorings

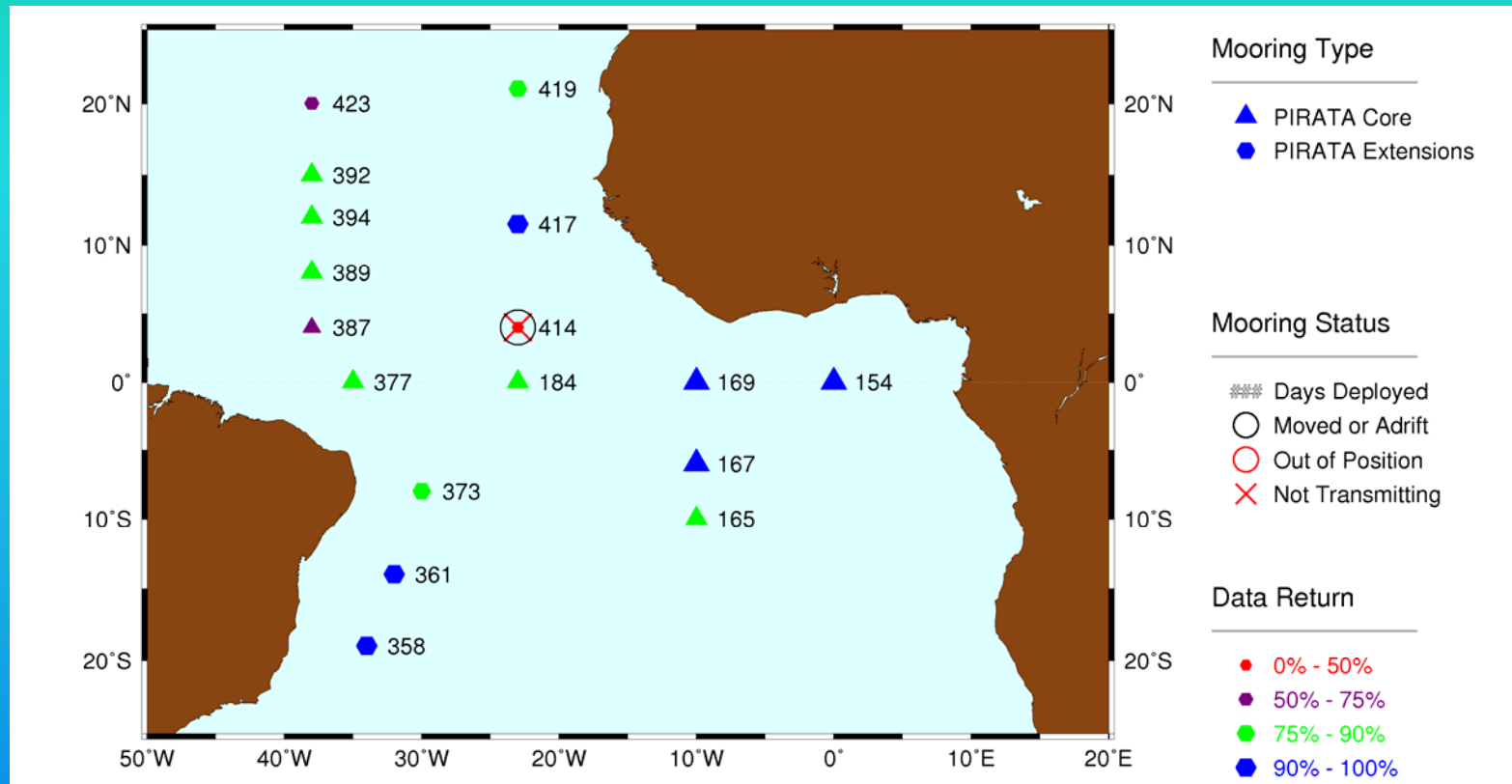
*** Maintained in past 12 months**

TAO/TRITON Status and Data Return



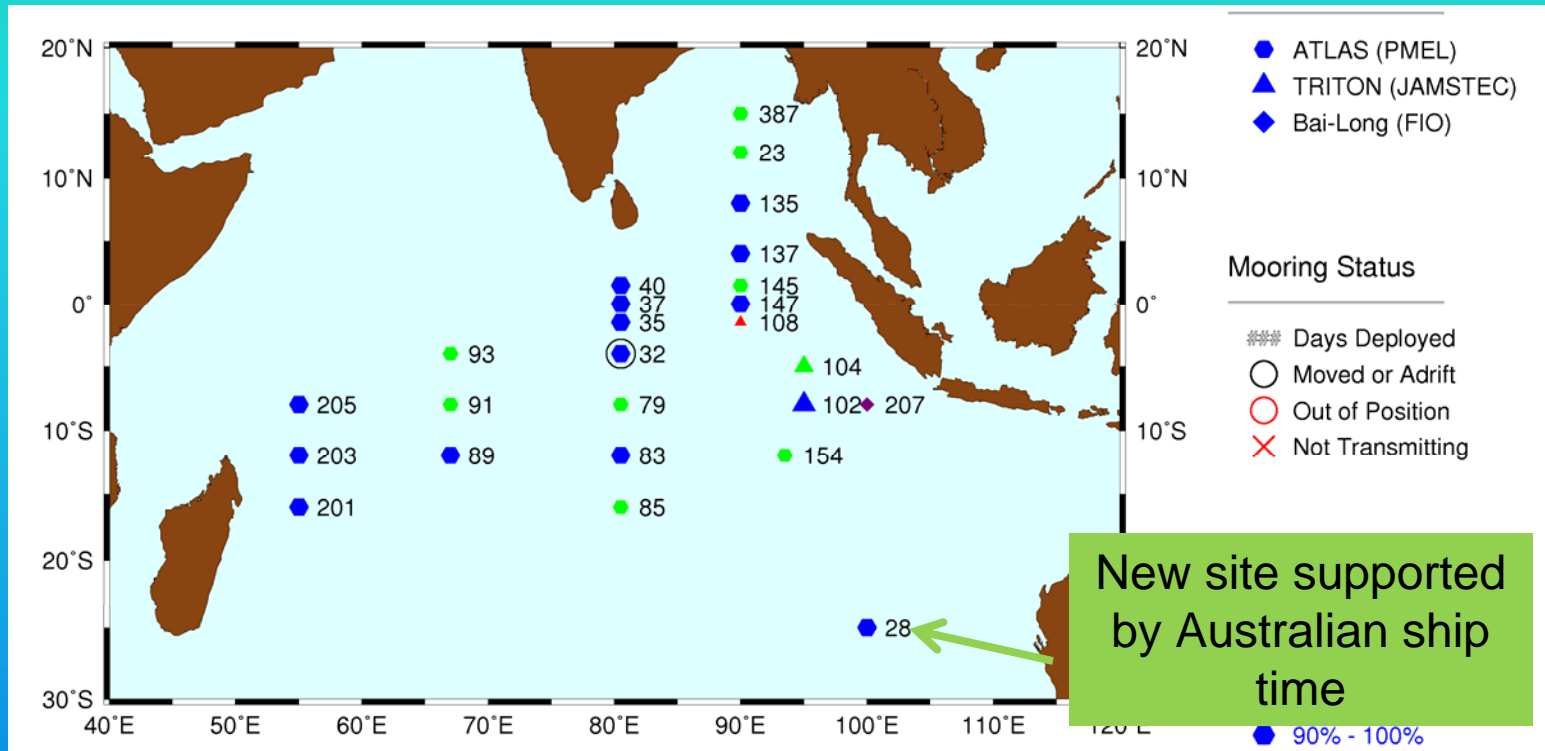
- 24 of 55 TAO Surface Sites are ATLAS Refresh
- 22 TAO moorings will be deployed for more than 1-year design lifetime by the next scheduled cruise (January 2013). Some TRITON moorings also deployed >1 year.
- 17 moorings not transmitting at this time
- 78% TAO/TRITON Data Return (September 2011 – August 2012)
- Lower data return due to vandalism and reduced sea days

PIRATA Status and Data Return



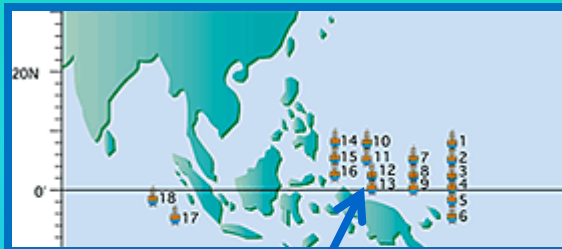
- 89% Data Return (September 2011 – August 2012)
- 12 of 17 PIRATA moorings have not been revisited for more than 1 year. One mooring not transmitting at this time.
- Antares cruise scheduled for October/November to service 8 sites (14-15 mo deployments). Ron Brown cruise scheduled for November/December to service 4 sites (17/18 mo deployments).

RAMA Status and Data Return

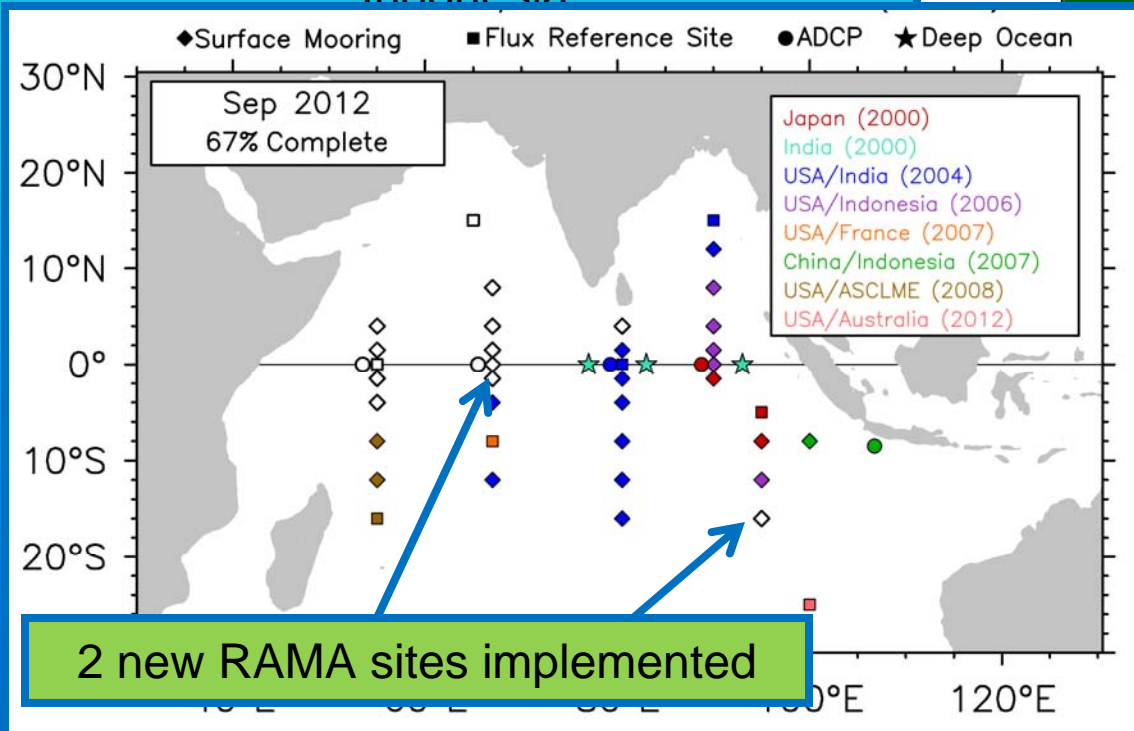
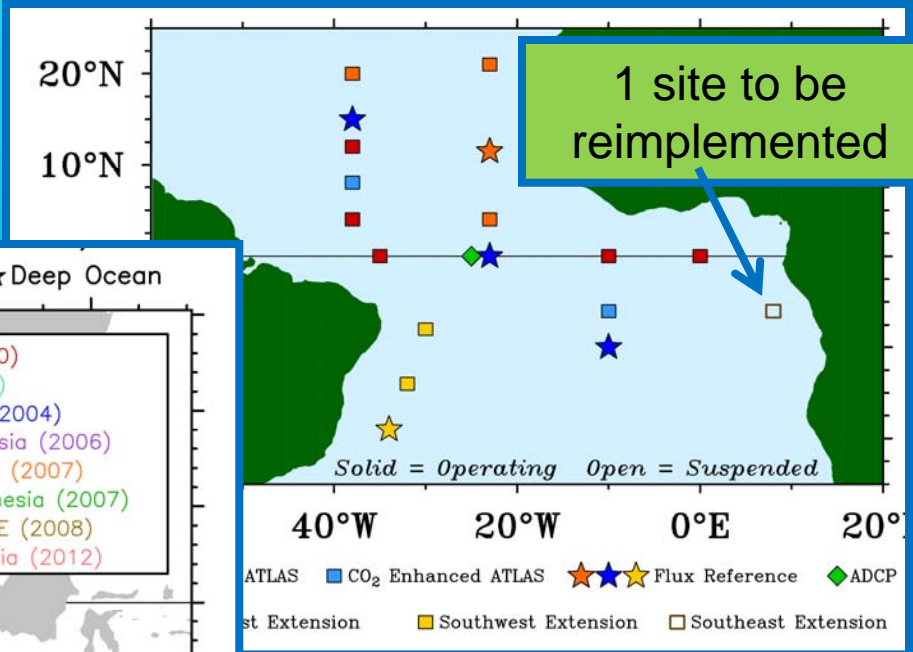


- Array implementation is 67% complete (31/46)
- 68% Data Return (September 2011 – August 2012)
- 18/25 surface moorings had annual Data Return > 70%

GTMBA 2013 Plans



One TRITON site to be maintained by Indonesia



2 new RAMA sites implemented

Formal Agreements, Capacity Building, Information Exchange

New Formal Agreements:

- CSIRO/NOAA Implementing Arrangement signed July 2012
- JAMSTEC/FIO Collaborative Research Arrangement (CRA) May 2012.

Long Term Visitations:

- Mike McPhaden from PMEL at CSIRO/U Tasmania January to April 2012
- Iwao Ueki from JAMSTEC at PMEL April 2012 to March 2013
- Huiwu Wang from FIO at PMEL October to December 2012

Other Visitations:

- BPPT and KKP scientists visit NDBC and NCDDC September 2012
- USP engineer visits PMEL August 2012

Meetings and Workshops:

- PIRATA-17/TACE/TAV. September 2012, Kiel, Germany
- CLIVAR/GOOS Indian Ocean Panel 9th Session October 2012, Capetown, SA
- TIP Workshop, October 2012, Jakarta, Indonesia.
- 8th Annual "Indonesia-U.S. Ocean Climate Observations Partnership" Workshop, October 2012, Bogor, Indonesia

Research within or near the GTMBA

BIOGEOCHEMICAL ENHANCEMENTS TO MOORINGS:

- Many moorings within the tropical arrays are enhanced to measure CO₂, O₂, etc.

PMEL ADCP ARRAY:

- 9 additional ADCP moorings to provide upper ocean velocity and volume transport data in the center of the basin for understanding east-west mass fluxes linked to IOD variability

CINDY/DYNAMO:

- Multinational field and modeling study of oceanic/atmosphere processes in the equatorial Indian Ocean responsible for the initiation of the Madden-Julian Oscillation.
- Sounding-radar array from research vessels and island sites, enhanced moorings maintained by the Univ. of Washington, and enhanced RAMA moorings

SPURS:

- Addressing essential role of the ocean in the global water cycle.
- Multifaceted exploration of the salinity maximum in the Atlantic Ocean.

MOMSEI:

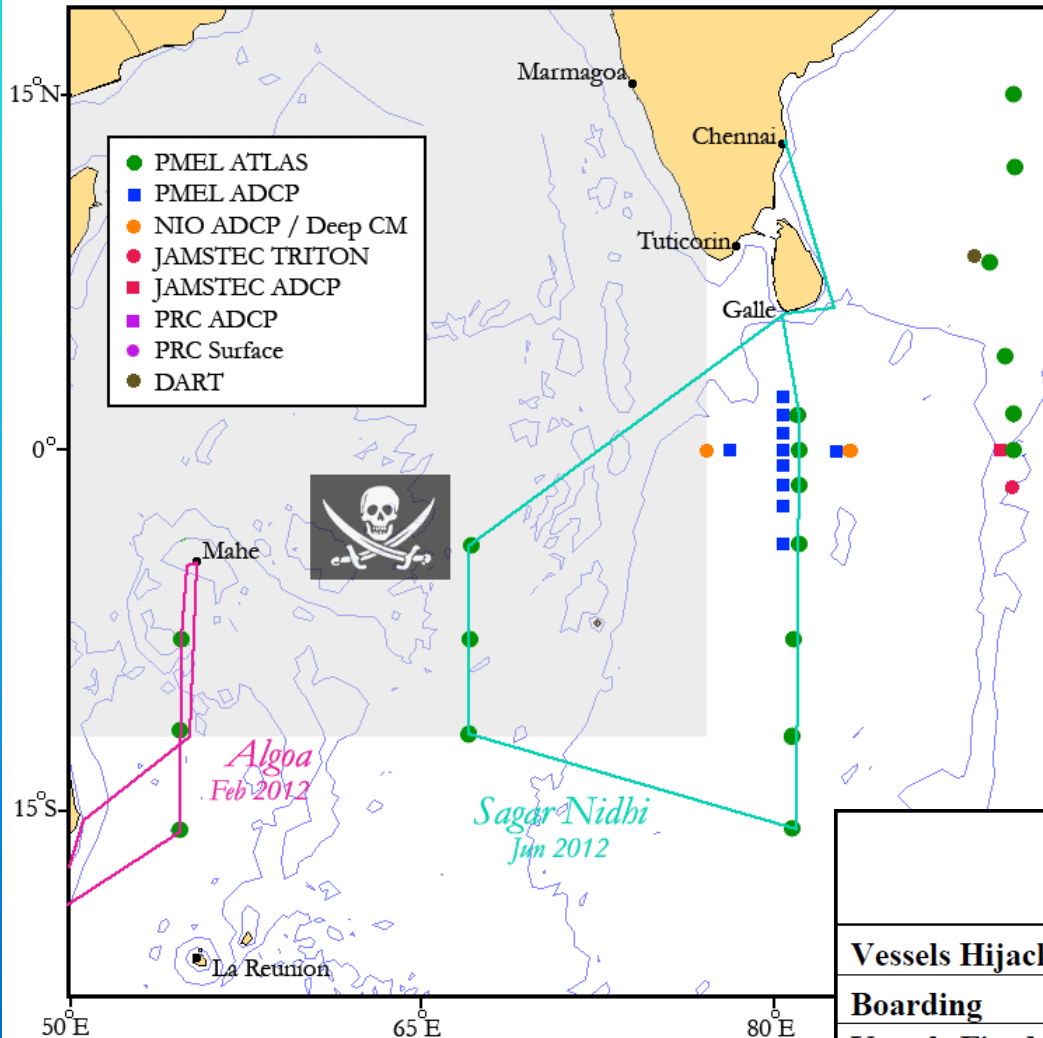
- Southeast Asia GOOS (SEAGOOS) pilot project.
- Observing boreal summer monsoon onset and understanding the ocean's role.

JAMSTEC MOORINGS:

- Mooring at 5°S, 97°E to study upwelling variability associated with Indian Ocean Dipole.
- ADCP moorings near 2°S, 153°E to capture variability of New Ireland Coastal Undercurrent.

PIRACY

2012 RAMA Cruises Within Exclusion Zone



Exclusion Zone entered during 2 cruises in 2012

- Unplanned transit of Alga while avoiding tropical cyclone
- Planned transit on Sagar Nidhi. Security forces were stationed on board ship.

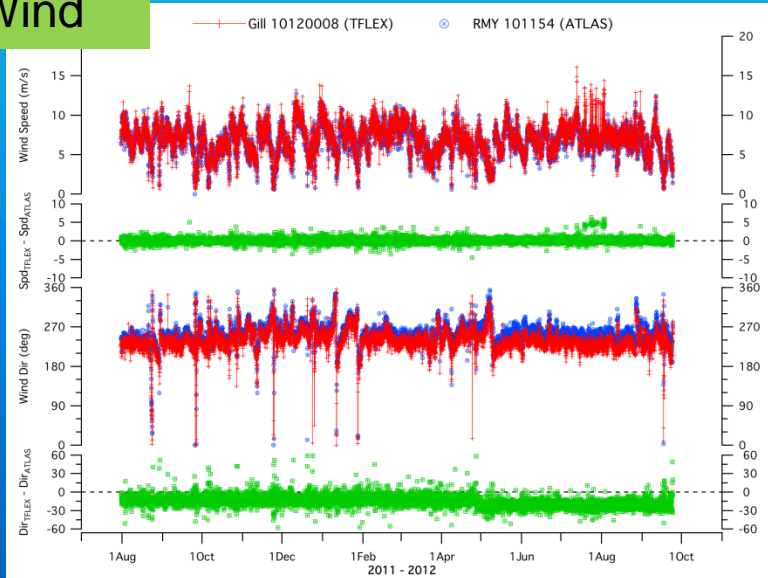
2012 pirate activity has been relatively low so far.

	2012	2011	2010	2009
Vessels Hijacked	7	27	51	52
Boarding	0	17	16	0
Vessels Fired Upon/ Attempted Boarding	23	122	119	129

Mooring Technology Updates

- 44% of TAO sites are now NDBC TAO Refresh systems. Conversion will be complete by 2015.
- PMEL conducting side-by-side testing of T-Flex system with ATLAS. May begin replacement of some ATLAS sites in 2014.
- CO₂ measurements have been added to FIO's Bai-Long mooring.
- JAMSTEC and BPPT have developed a version of the m-TRITON system named Ina-TRITON which has been deployed within the Pacific TRITON array by Indonesia
- USP has developed an ATLAS-B system to be deployed in November 2012

Wind



T(z)

