



Annual Update Report of the

Tropical Moored Buoy Implementation Panel

to the

30th Session of the Data Buoy Cooperation Panel

October 27-30, 2014
Weihai, China

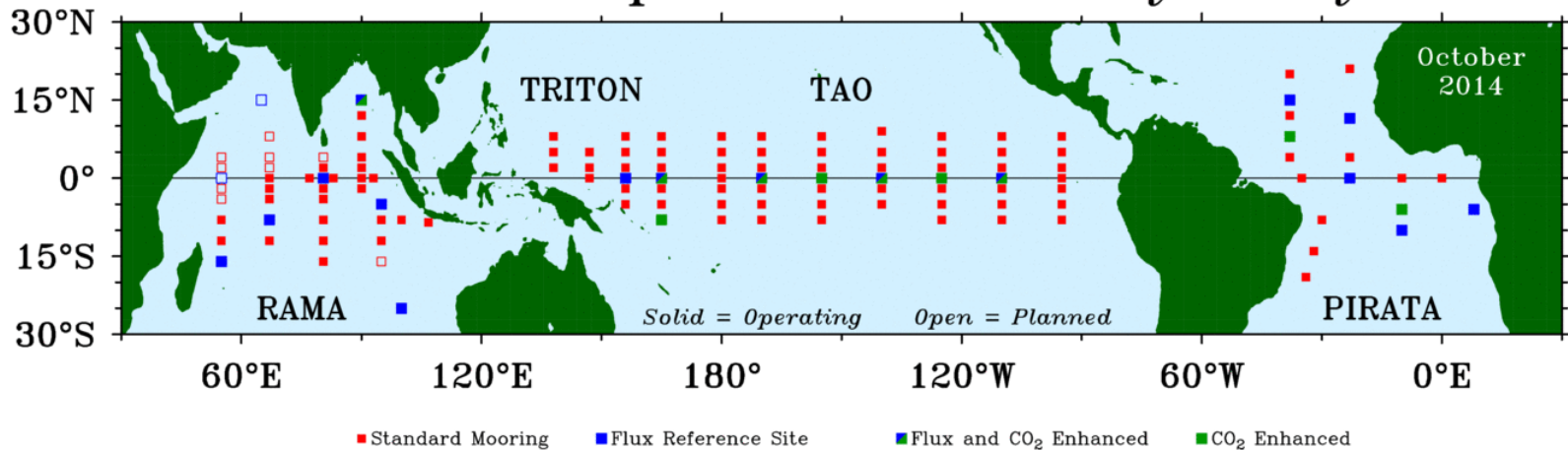
Iwao Ueki, JAMSTEC
Paul Freitag, NOAA/PMEL

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

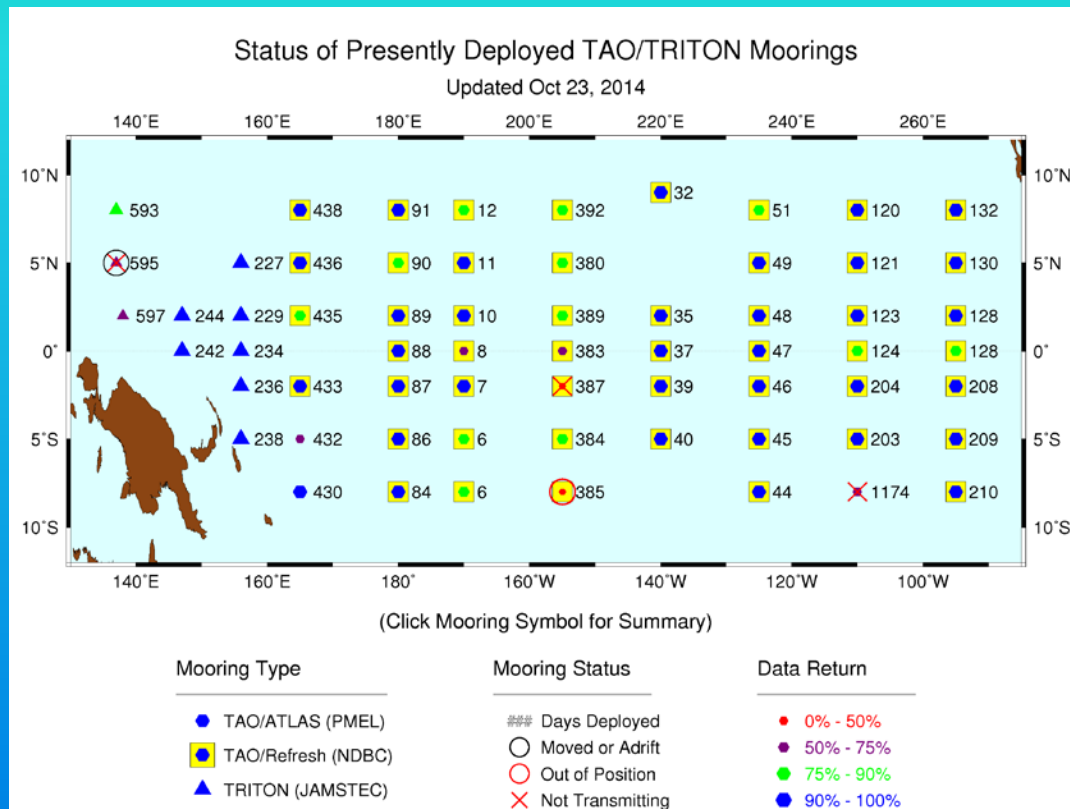


TAO Project Office, NOAA/PMEL

A contribution to GOOS, GCOS, and GEOSS

TAO/TRITON

Status and Data Return

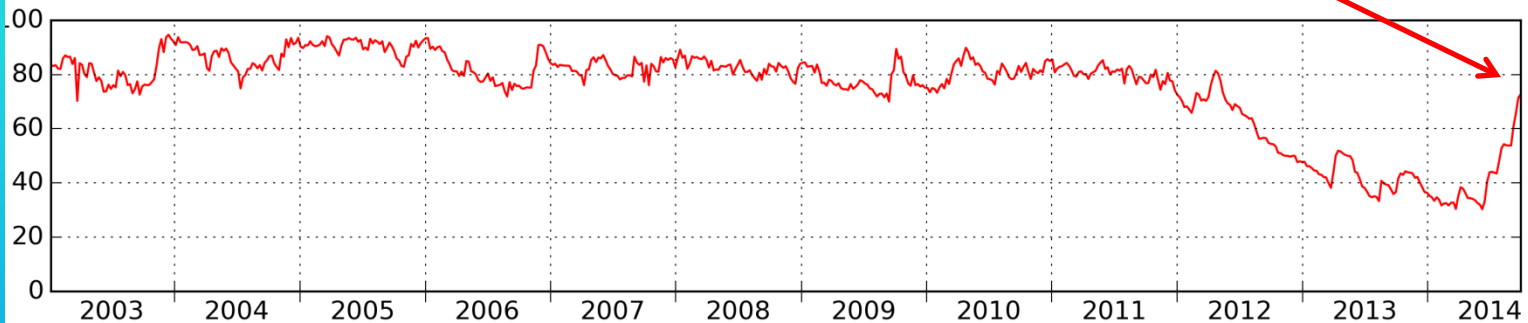


- Cruises in 2014 have replaced 39/55 TAO sites
- 50/55 sites returning data
- October/November cruises to replace additional 14 along 165°E and 155°W
- NDBC ATLAS Refresh systems to occupy all but 2 TAO sites by end of year
- 2 TRITON sites retired in 2014

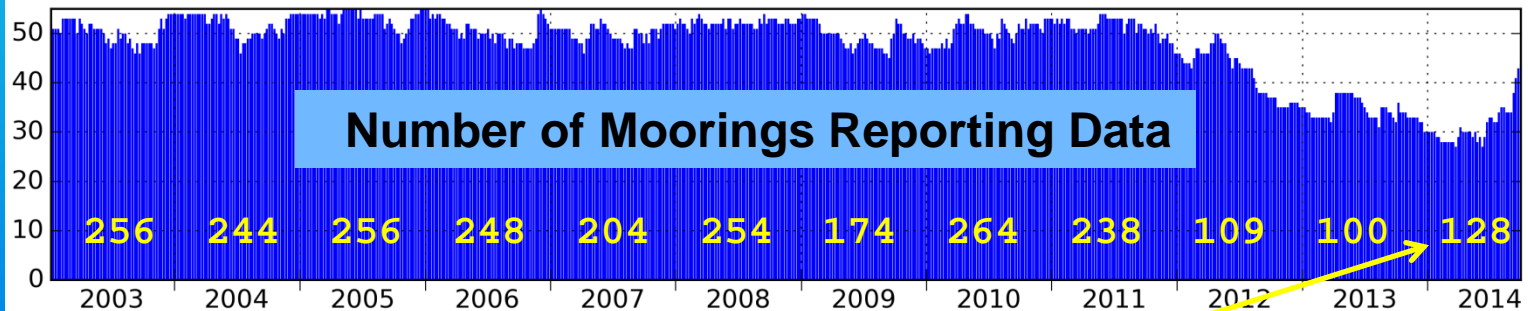
TAO Status and Data Return

Daily % Data Return Approaching Historical Levels

Data Source: NOAA/PMEL



Number of Moorings Reporting Data



Sites visited once per year vs twice as in past, using fewer sea days

Future plan of JAMSTEC

Background:

- Lack of ship-time and funding is serious issue
- Surface buoy is robust tool for air-sea time series

Basic thought for future:

- Conduct new scientific project
- Combination use of various other tools than TRITON (or surface buoy) are needed
- Sustain climate record with best effort

Cruises:

- Stop two sites at 5N156E and 5S156E in January 2015
- Maintain 8 sites (at least) in Summer-Autumn 2016
- Maintain 8 sites in Spring to Summer 2018

TAO/TRITON Future

Tropical Pacific Observing System (TPOS) Workshop January 2014

TPOS governance through Steering Committee, Resource Forum and Task Teams

- Reinforce key priorities
- Identify new requirements
- Strengthen connection to modelling
- Integration between satellites and in situ obs

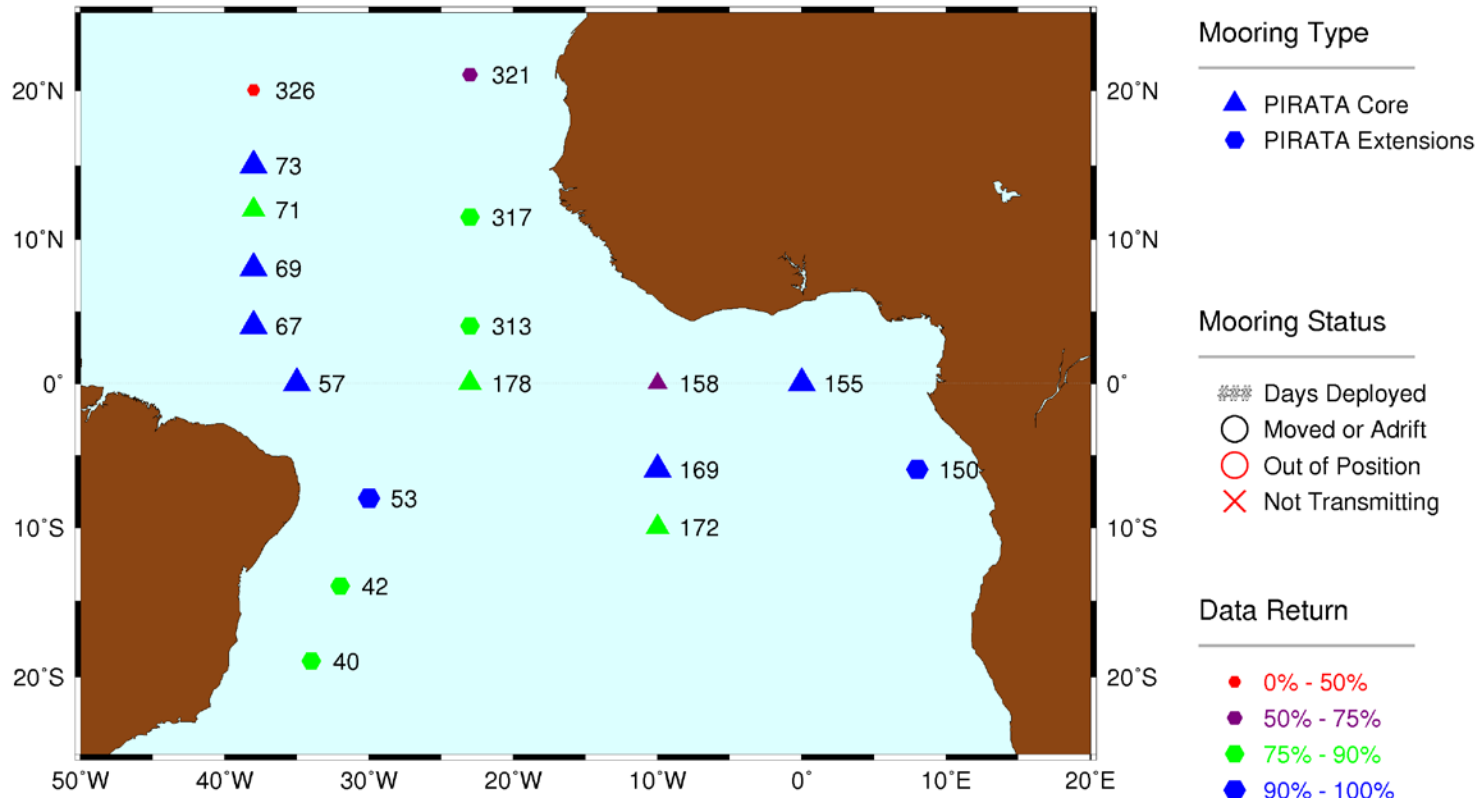


NOAA committed to 80% TAO data return

1st Steering Committee meeting October 6-9, 2014 in Korea.

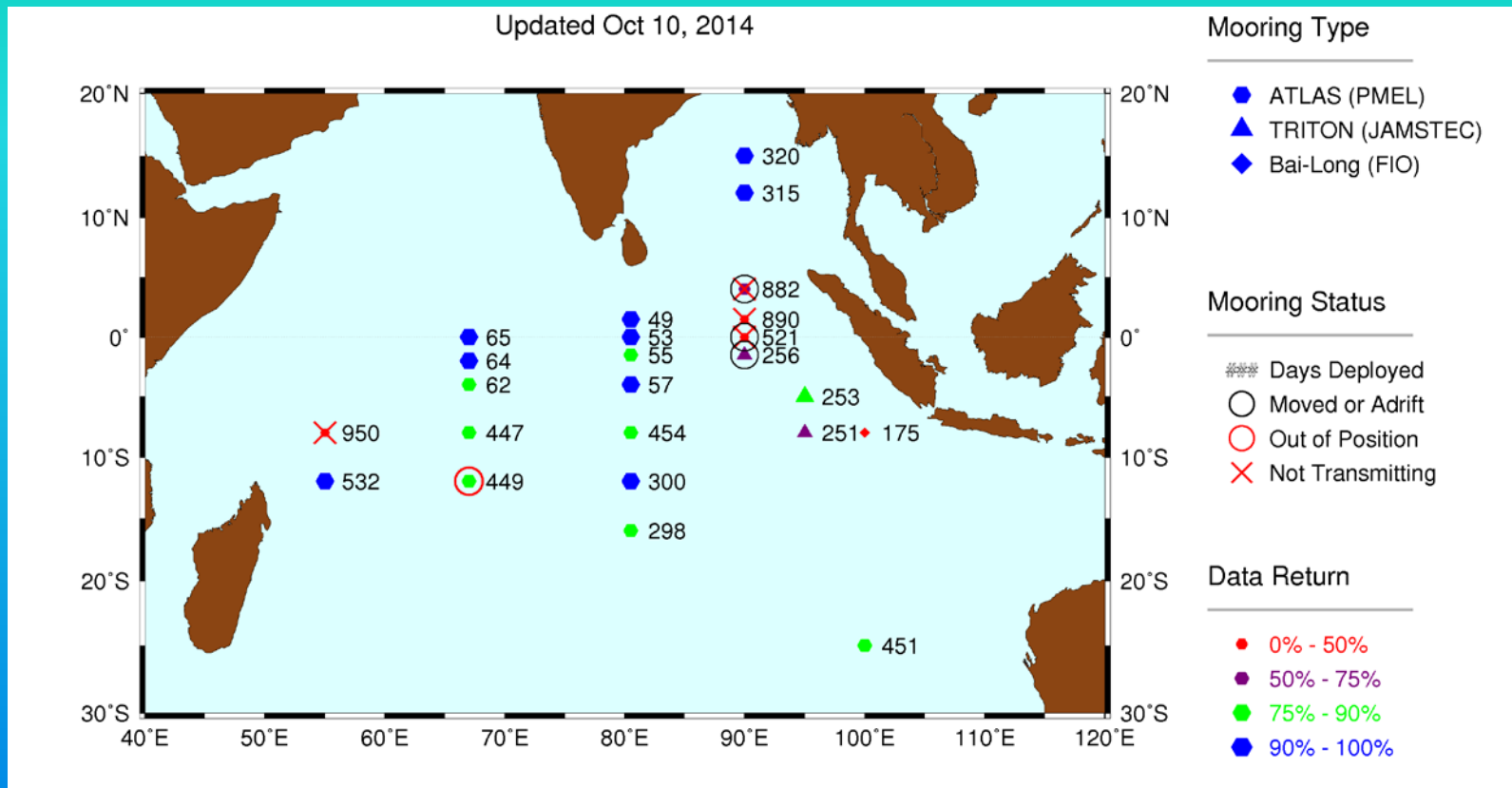
PIRATA Status and Data Return

Updated Oct 09, 2014



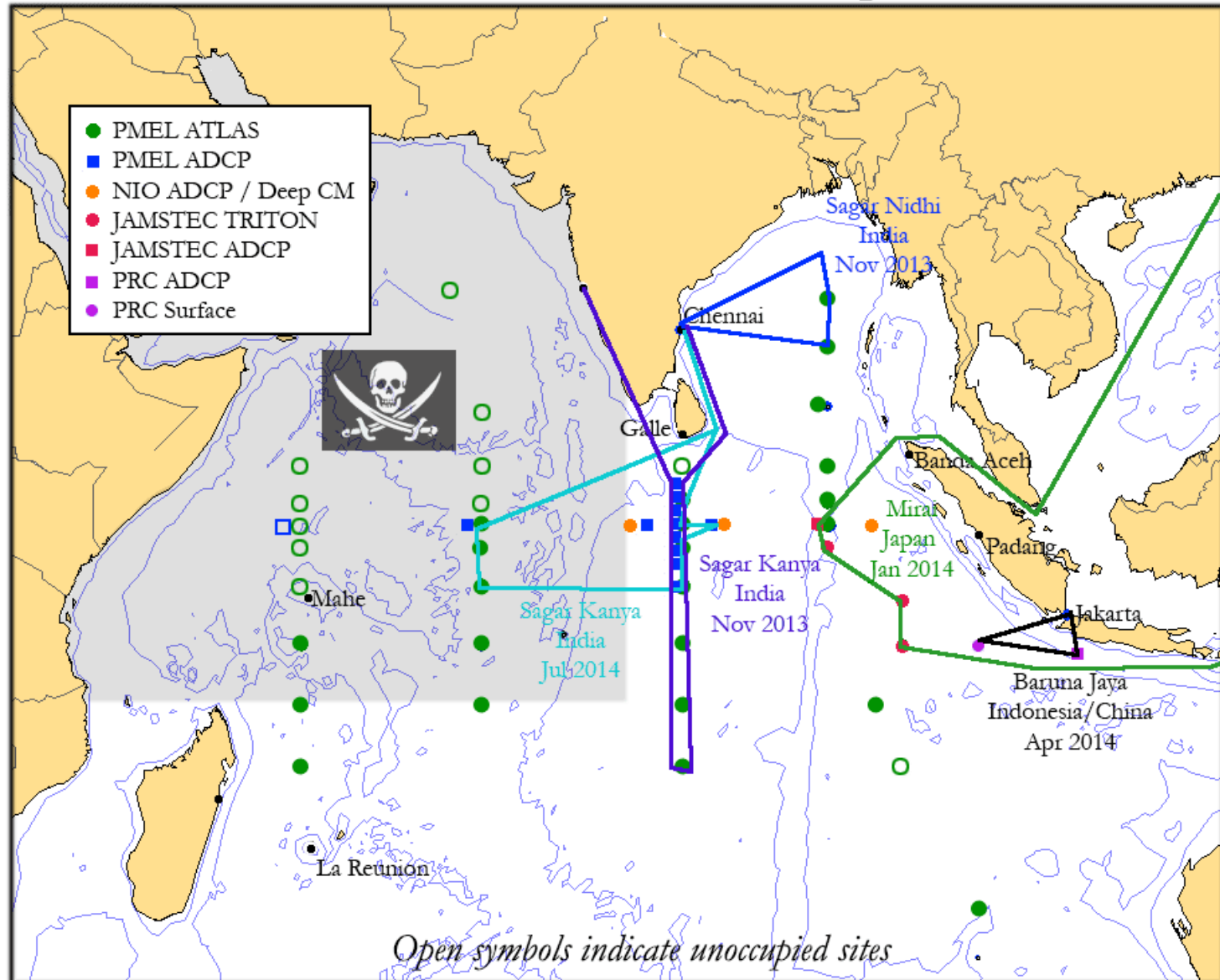
- 86% Annual Real Time Data Return (July 2013 – June 2014)
- All sites serviced in past year and presently transmitting
- 106 sea days in past 12 months

RAMA Status and Data Return

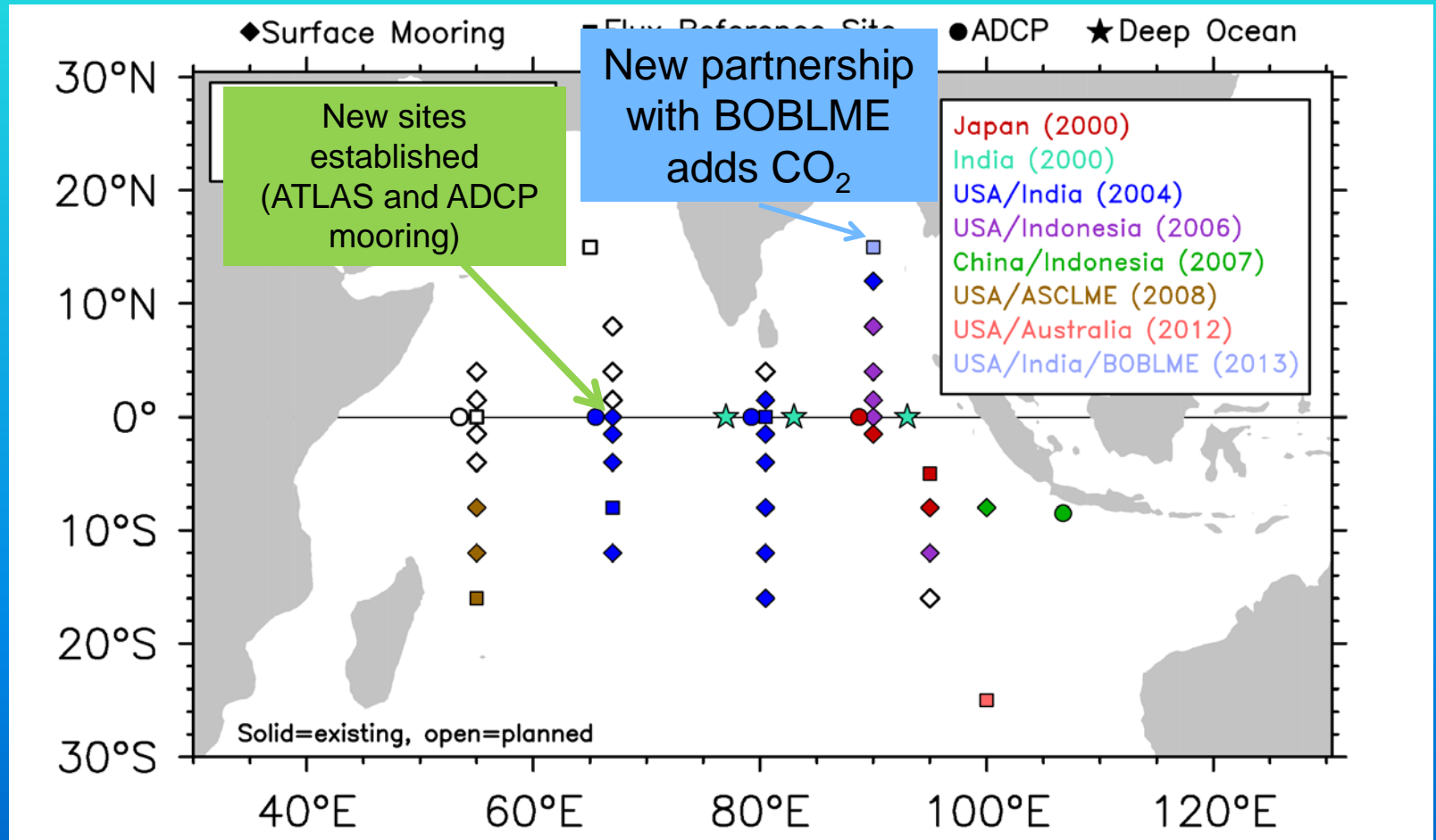


- 5 cruises conducted in past year
- 11 surface mooring sites not serviced for more than 1 year, causing reduction in data
- Some 90°E sites not maintained due to NOAA/KKP Implementing Agreement not being renewed
- 55°E sites not maintained due to completion of ASCMLE program.

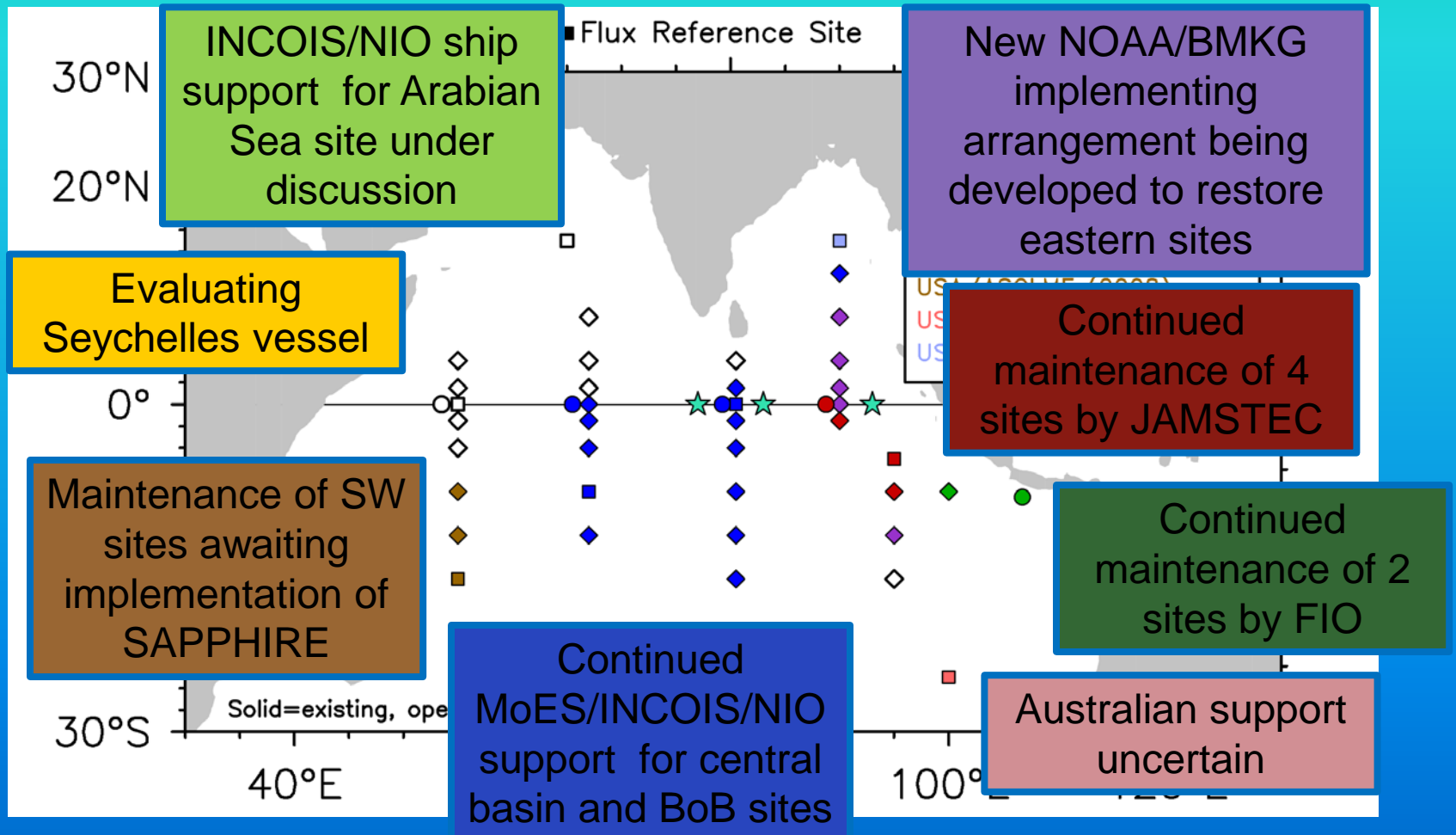
RAMA Cruises Oct 2013 - Sep 2014



RAMA Implementation 2014



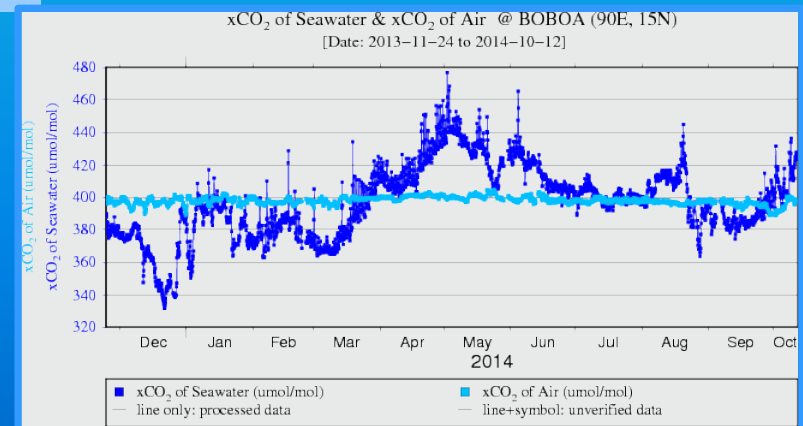
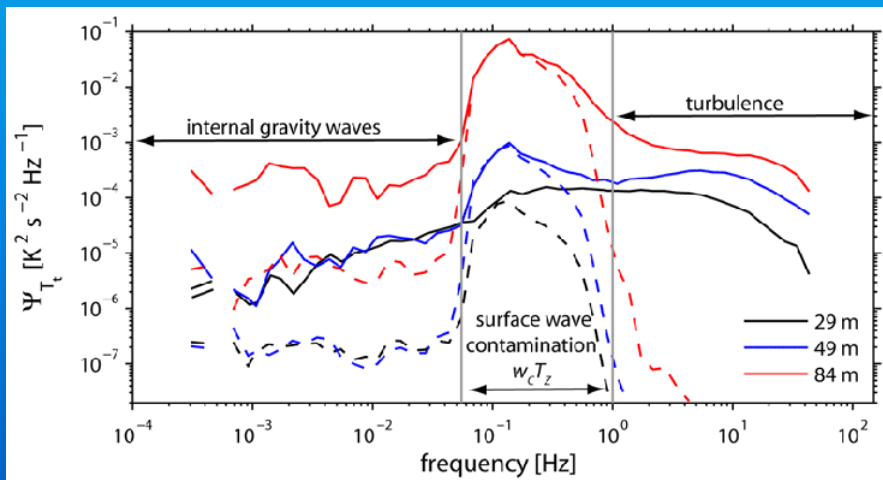
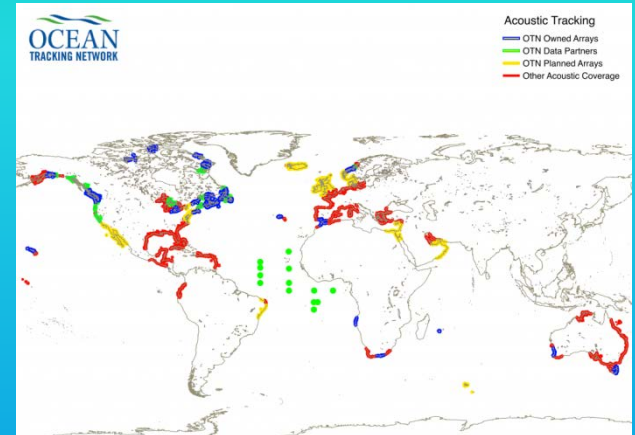
2015 RAMA Plans



TIP Research Partnerships

Recently established:

- Dalhousie University Ocean Tracking Network - 9 PIRATA sites instrumented with acoustic receivers in past year. To be deployed at all PIRATA sites in 2015. Future expansion to TAO and RAMA possible.
- BOBLME/PMEL/NIOT instrument RAMA mooring with CO₂ and biochem sensors.
- 15 Oregon State University microstructure instruments (ChiPods) deployed on 7 TAO/PIRATA/RAMA moorings. More planned for future.



EXPANDING TIP IMPLEMENTATION



Blue Ocean Initiative *KOREA-U.S. Cooperation Project*



KIOST research proposals for Tropical Pacific and Indian Basins present opportunities for collaboration.

New Korean Multidisciplinary Research Vessel being built

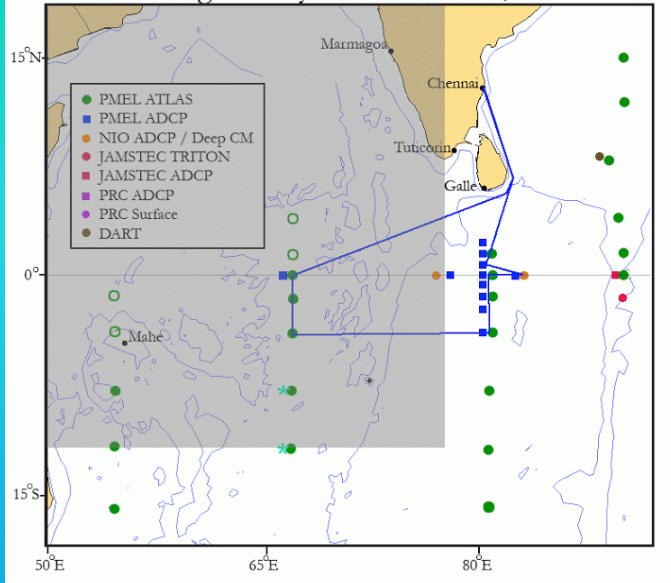
KIOST has deployed 3 subsurface ADCP moorings near 165°E TAO moorings.

KIOST interested in supporting TAO and RAMA moorings.

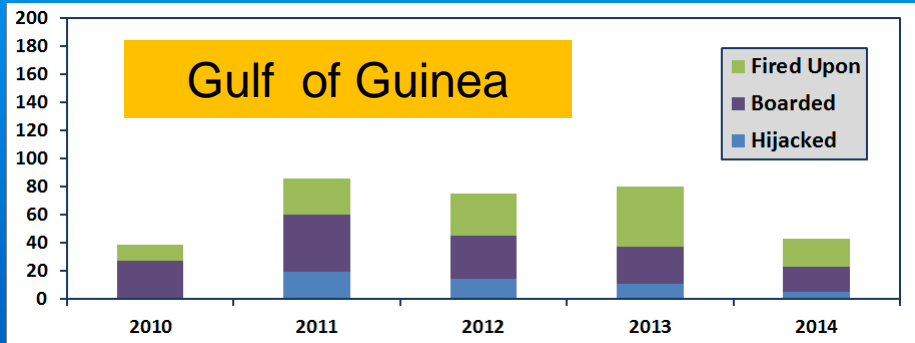
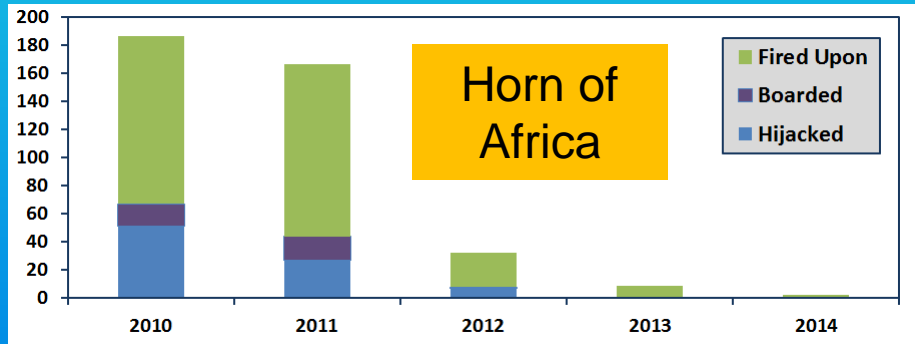
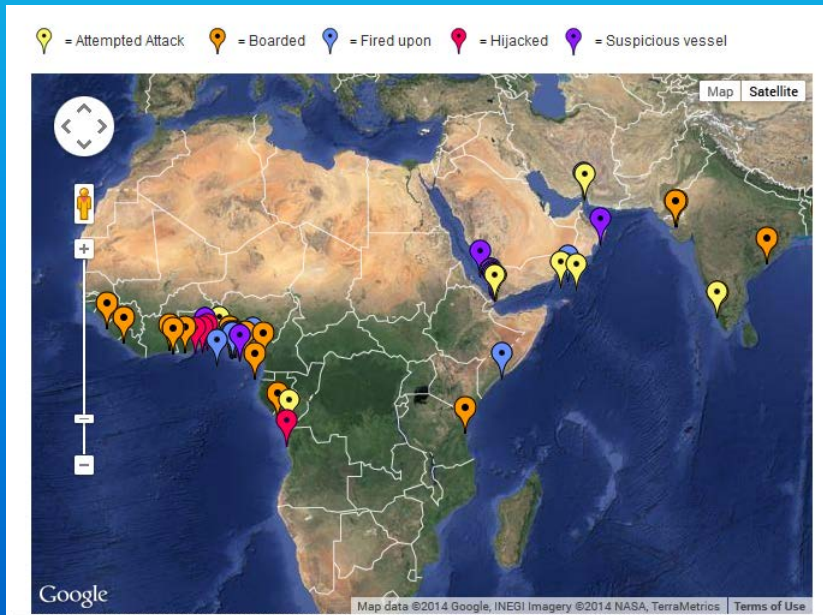


PIRACY

Sagar Kanya RAMA cruise, 2014



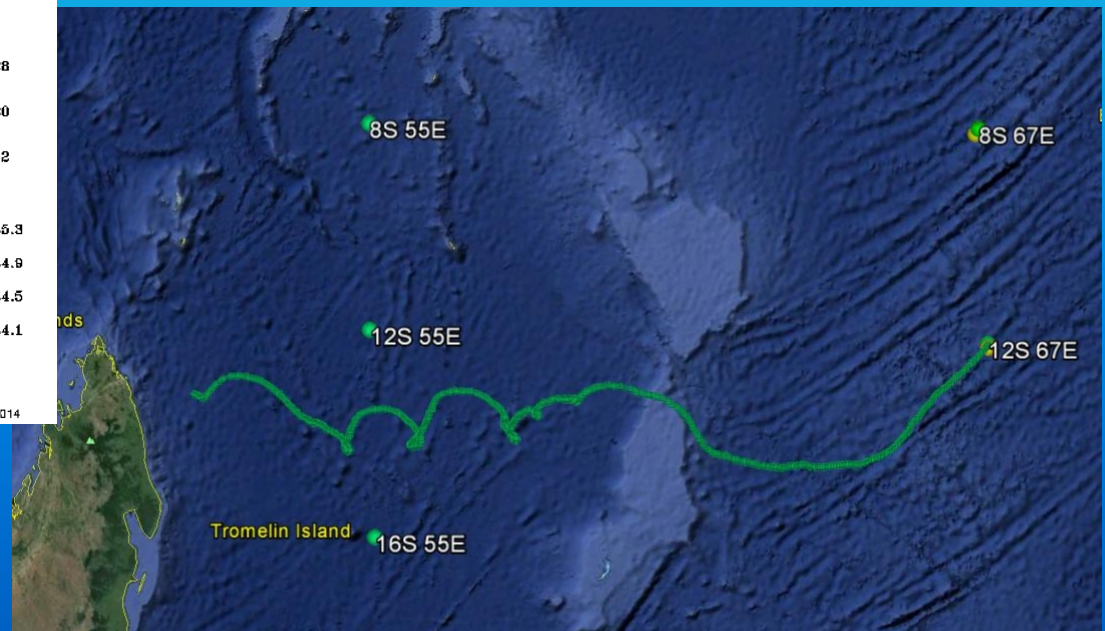
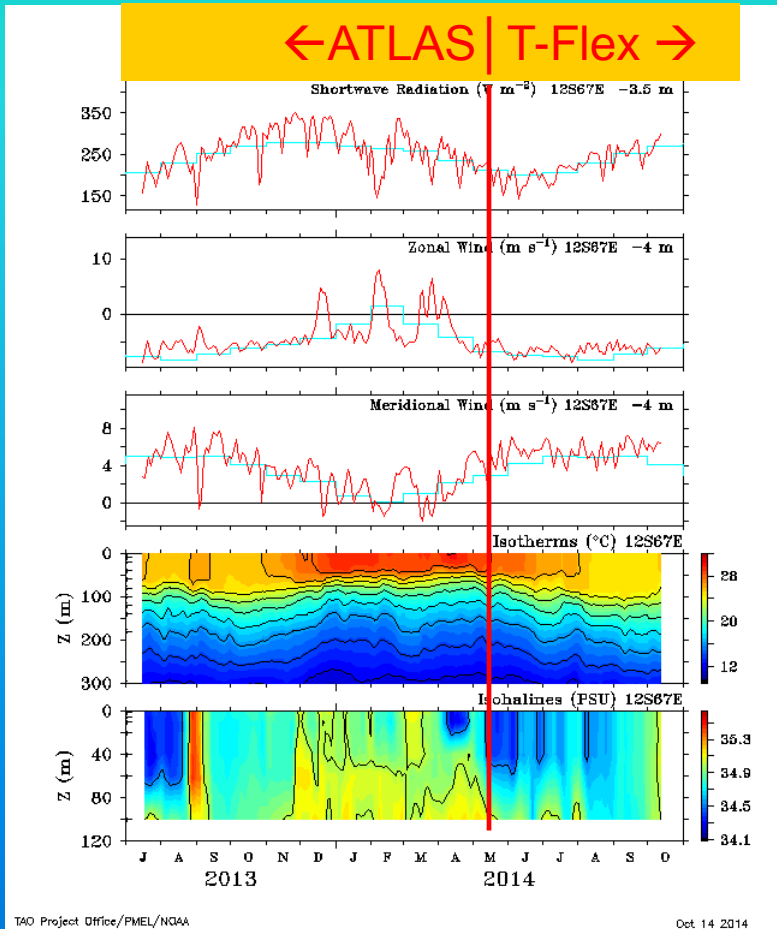
- Sagar Kanya cruise in 2014 entered Lloyds of London Exclusion Zone without armed security team
- IO pirate activity continues to ebb. Confined to coastline
- Lloyds has not revised size of Exclusion Zone to reflect decrease in risk
- Piracy in Gulf of Guinea has not affected PIRATA to date but is a concern.



T-Flex Field Testing

- Systems have generally worked well, providing long time series.
- ATLAS/T-Flex produce comparable data.
- ATLAS mooring at 12°S, 67°E went adrift at a RAMA test site. T-Flex data now being reported as primary source.

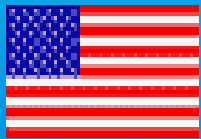
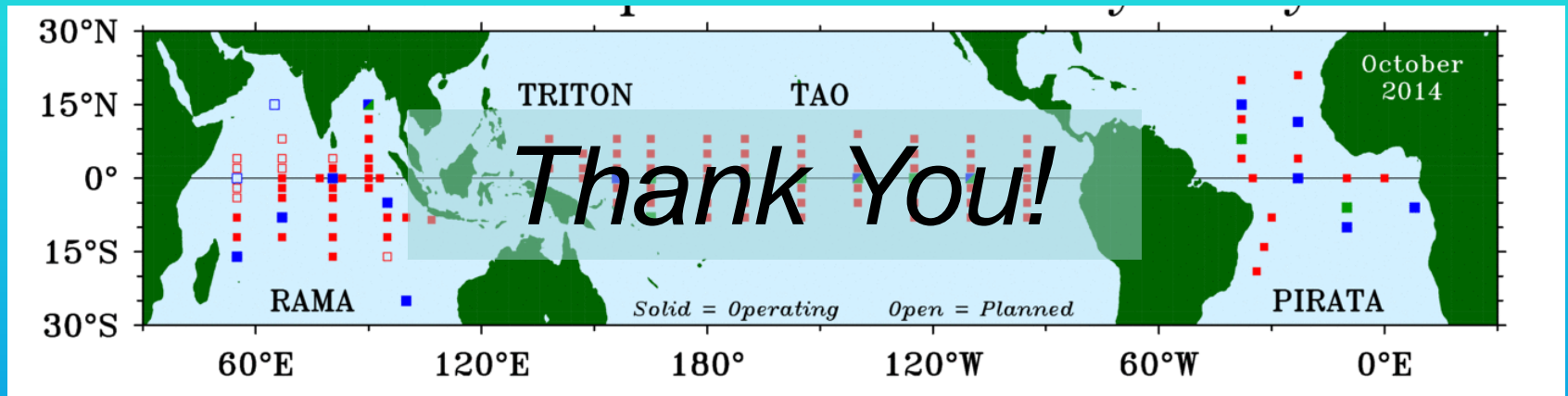
Standalone Implementation to begin in 2015.



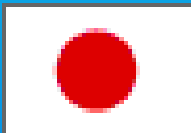
Meetings Relevant to TIP Maintenance, Implementation and Research

- PIRATA-18/TAV 22-25 October 2013, Venice, Italy
- Tropical Pacific Observing System Review, 27-30 January 2014, La Jolla, USA.
- CLIVAR GOOS Indian Ocean Panel 11th session, The Hague, Netherlands, 14-15 July 2014
- CLIVAR Pacific Ocean Panel, The Hague, Netherlands, 14-15 July 2014
- Ninth Annual Indonesia – U.S. Ocean and Climate Observations, Analysis and Applications Partnership Workshop, Jakarta, Indonesia, 20-23 August 2014
- TPOS-2020 Steering Committee 1st meeting, Ansan, Korea, 6-9 October, 2014
- IndOOS Resource Forum, Phuket, Thailand, 31 October 2014
- PIRATA-19/Tropical Atlantic Climate Variability, Recife, Brazil, 3-6 November 2014

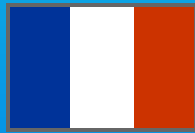
Tropical Moored Buoy Implementation Panel



PMEL
NDBC



JAMSTEC



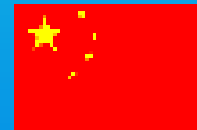
IRD
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INPE
DHN



INCOIS
NIO
NIOT



FIO



BPPT
KKP
BMKG



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UTAS
BOM

