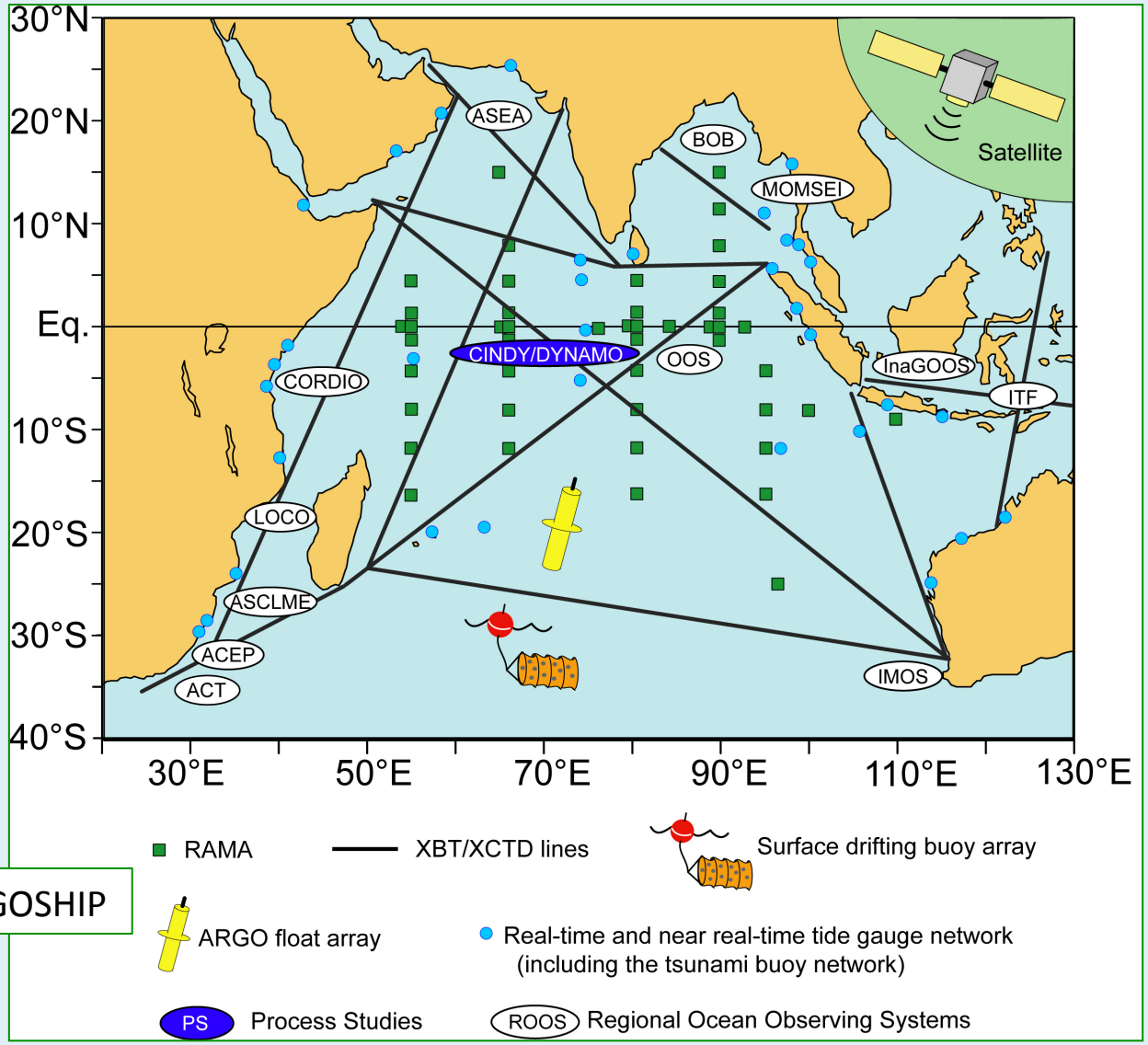
Indian Ocean Observing System (IndOOS)

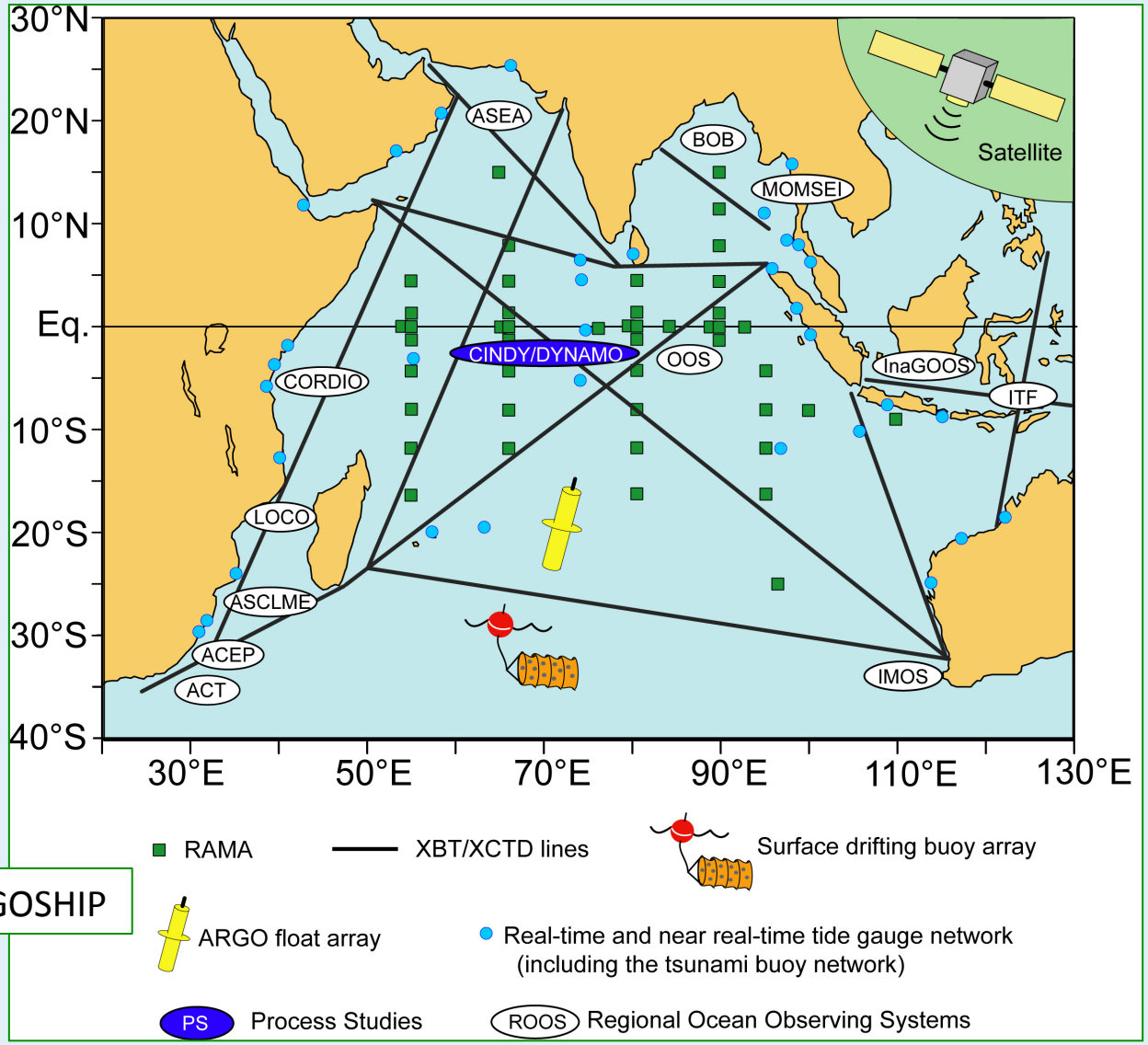
The Indian Ocean Component of GOOS



A network of *in situ* & satellite components designed to provide sustained high-quality oceanographic and marine meteorological measurements to support knowledge based decision-making through improved scientific understanding, weather and climate forecasts, and environmental assessments for the benefit of society.

Indian Ocean Observing System (IndOOS)

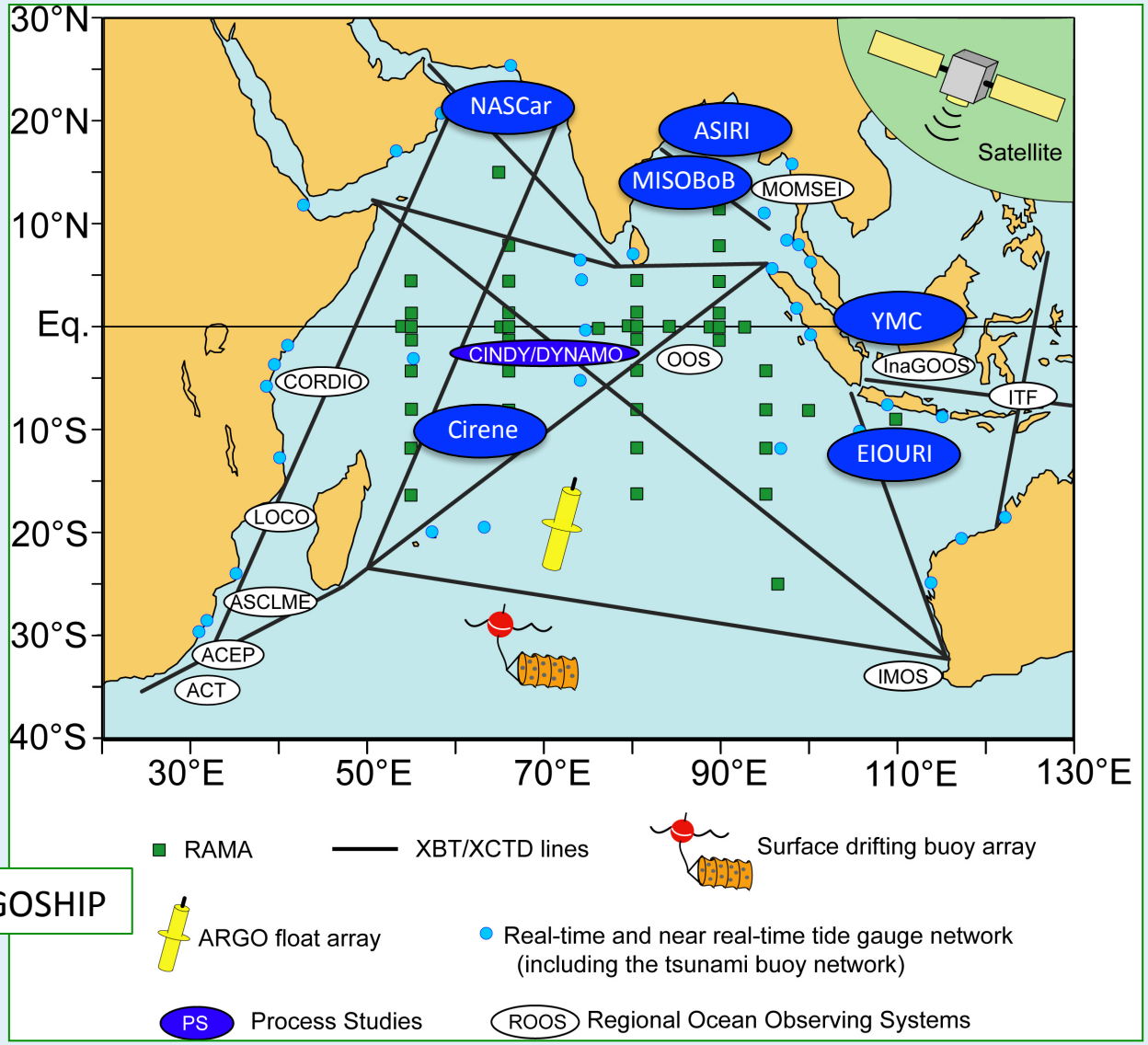
The Indian Ocean Component of GOOS



- *In situ* & satellite obs of essential ocean variables (EOVs)
- Designed in 2004 by CLIVAR/GOOS Indian Ocean Panel
- Primary focus on physical oceanogr., ocean-atmosphere interaction and climate variability
- Basin scale with regional elements
- Supports and benefits from short term process studies

Indian Ocean Observing System (IndOOS)

The Indian Ocean Component of GOOS



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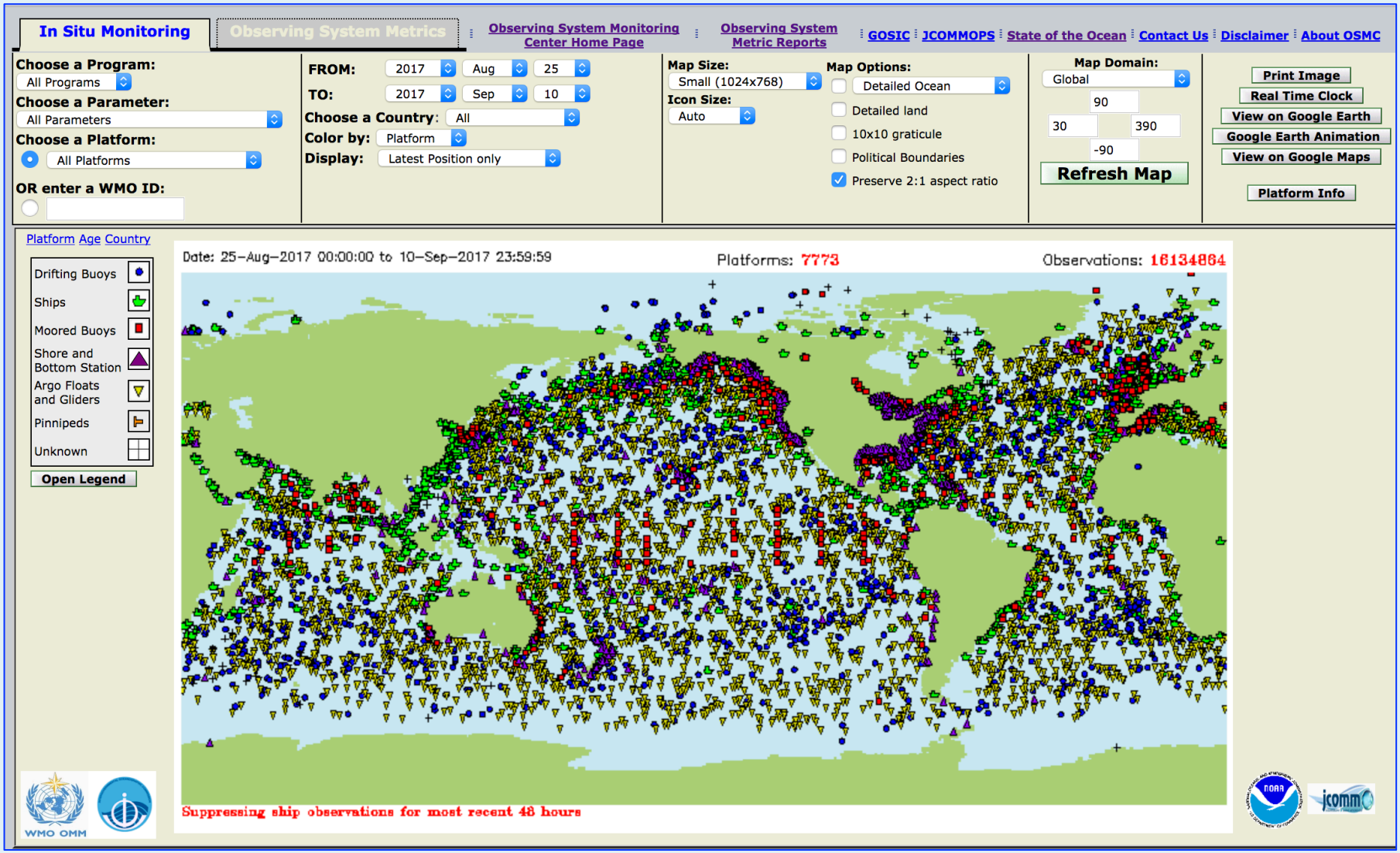
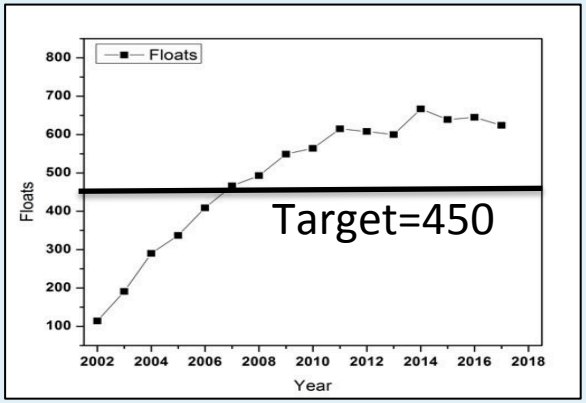
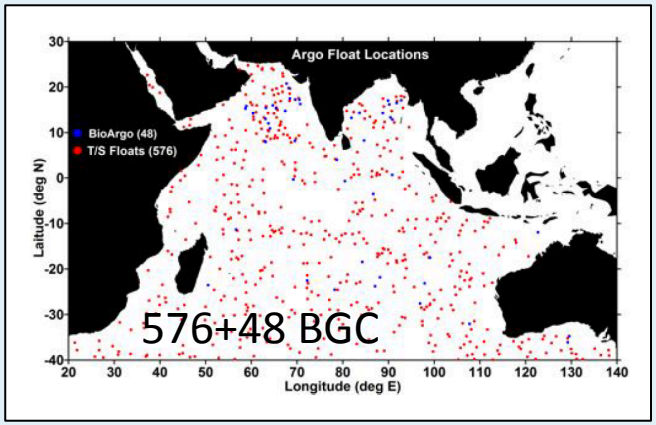
Status: 25 Aug-10 Sept 2017



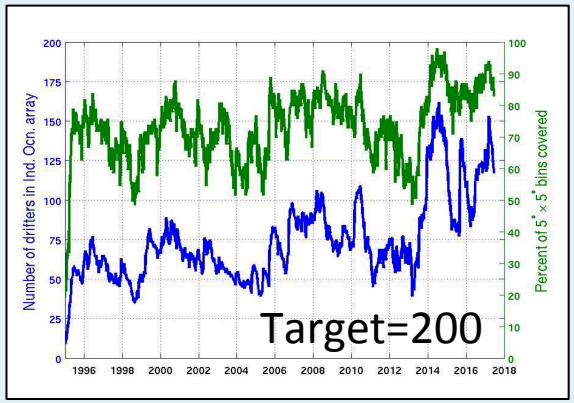
http://www.osmc.noaa.gov/

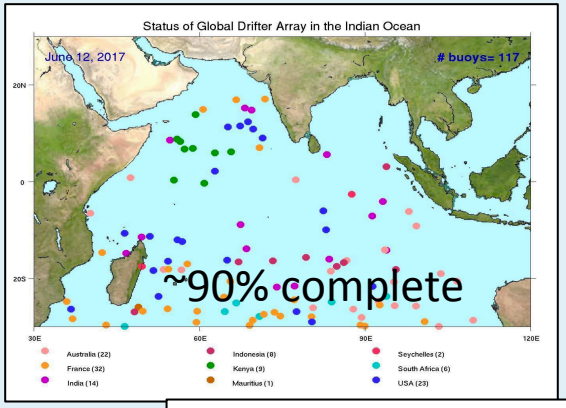
Argo, Drifter, RAMA History and Status (mid-2017)



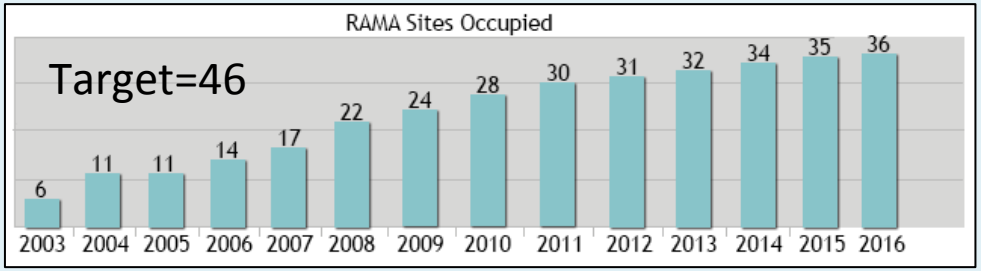


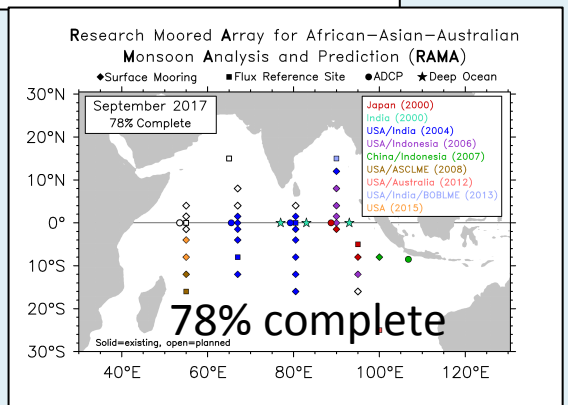
Argo





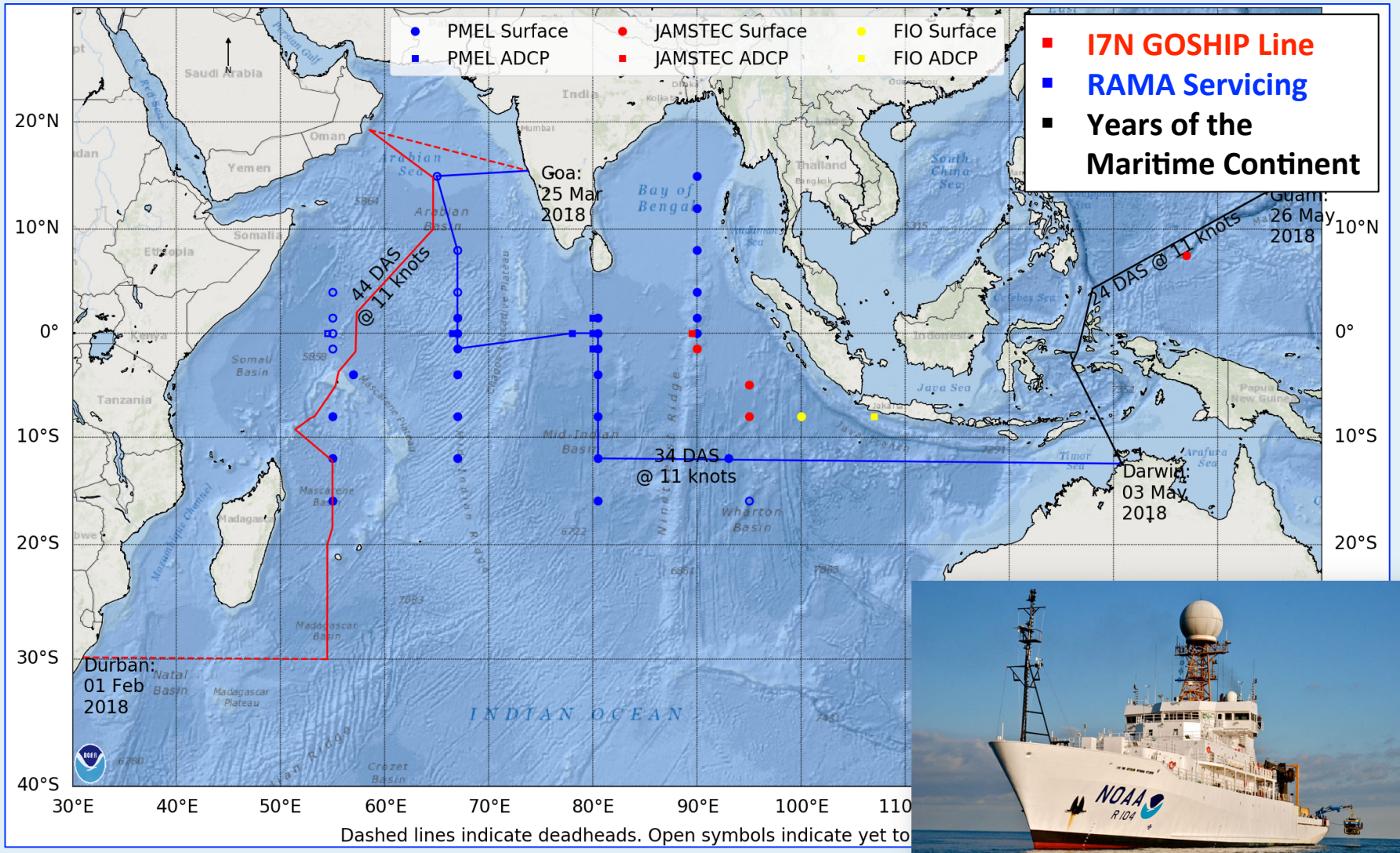
Drifters





RAMA

NOAA Ship Ronald H. Brown
February-April 2018



IndOOS Review (2017-18)

A CLIVAR/GOOS Indian Ocean Panel Initiative

Since original IndOOS design:

- New knowledge gained
- New scientific imperatives
- New technologies available
- New opportunities (IIOE-2)

IndOOS Review (2017-18)

A CLIVAR/GOOS Indian Ocean Panel Initiative

Terms of Reference:

(1) Make actionable recommendations for priority observing system components going forward, including pilot studies with new technologies

(2) Provide justification for these recommendations by:

- Reviewing the current status of IndOOS and its past successes and failures.
- Articulating the scientific and operational drivers of IndOOS and their societal impacts.
- Identifying the essential ocean variables (EOVs) that address these drivers, their spatial coverage and temporal/spatial resolution.

Science Drivers for IndOOS*

1. Effect of Indian Ocean on monsoon and monsoon onset
2. Oxygen variability and change, oxygen minimum zones
3. Upwelling, coastal/open ocean interactions, and ecosystems
4. Extreme events (cyclones, marine heat waves)
5. Intra-seasonal air-sea coupling (MJO, monsoon ISO, eddies)
6. Interannual variability and its predictability (IOD, IOBM, Ningaloo Nino)
7. Basin-scale heat and freshwater flux variability
8. Carbon cycle, acidification, and ecological/biological impacts
9. Boundary currents and Indonesian Throughflow
10. Decadal variability and predictability
11. Anthropogenic climate change
12. Ocean productivity variability, predictability, & change
13. Hydrological cycle
14. Regional sea-level variability and change

**Each topic is described in a white paper as input to the review*

https://drive.google.com/drive/folders/0B_M8OA1I21BSTzduTW9HR3M1bjQ

Operational Drivers for IndOOS*

1. Improvement of seasonal prediction
2. Improvement of subseasonal to seasonal (S2S) prediction
3. Improvement of surface fluxes
4. Improvement of ocean reanalyses

**Each topic is described in a white paper as input to the review:*

https://drive.google.com/drive/folders/0B_M8OA1I21BSTzduTW9HR3M1bjQ

IndOOS Design Whitepapers

- Past, present & future satellites in support of IndOOS (Tony Lee)
- Argo, including Deep & Bio Argo outlook (M. Ravichandran)
- RAMA (M. McPhaden)
- Surface drifters (R. Lumpkin)
- XBT lines (M. Feng)
- Tide gauges (A. Unnikrishnan)
- New technologies: Gliders and CPIES (M. Andres)
- GoSHIP (B. Sloyan)
- Sustained boundary arrays (L. Beal)

https://drive.google.com/drive/folders/0B_M8OA1I21BSTzduTW9HR3M1bjQ

IndOOS Review Timeline

15 Jun 2017: Deadline for lead authors to submit white papers

1 Sep 2017: First draft of synthesis white paper for IndOOS priorities, justifications, and strategies

1 Oct 2017: Deadline for feedback on first draft of synthesis white paper

1 Dec 2017: Final draft of IndOOS Review white paper. Submittal to expert panel for review.

21-23 Mar 2018: IndOOS Review conference, Ombai, Indonesia