Tropical Pacific Observing System-2020 Project

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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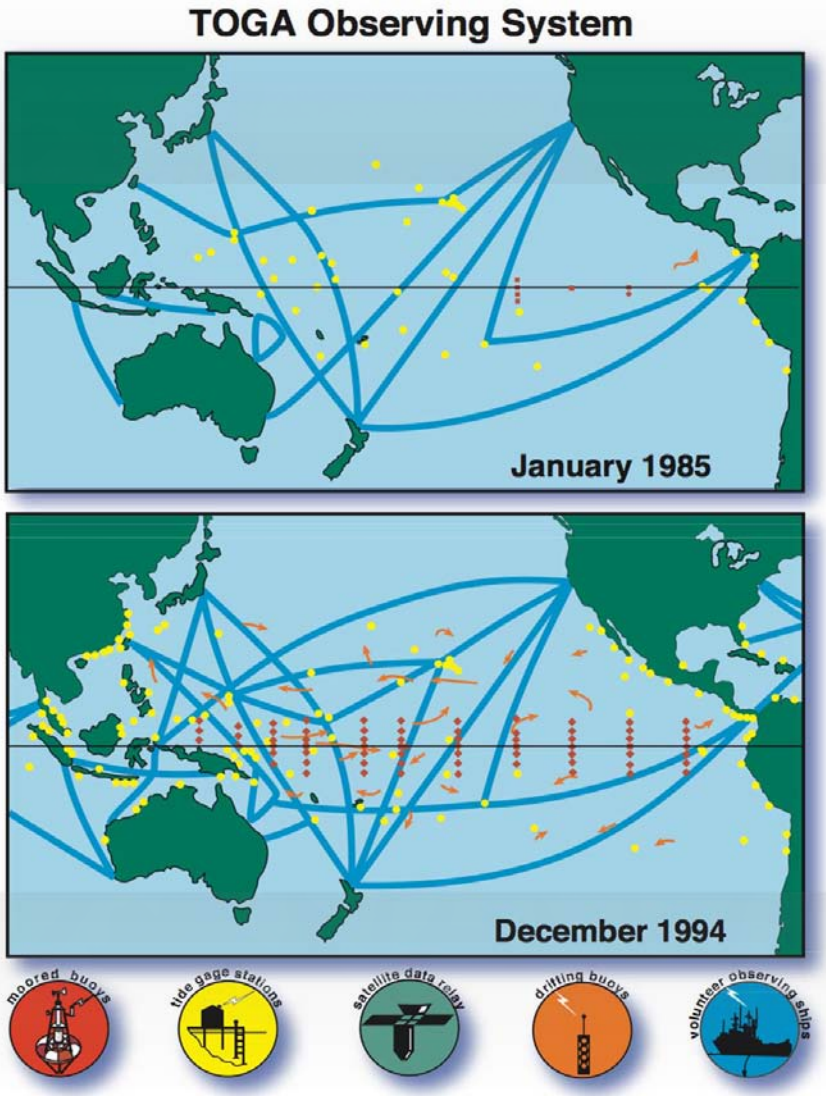
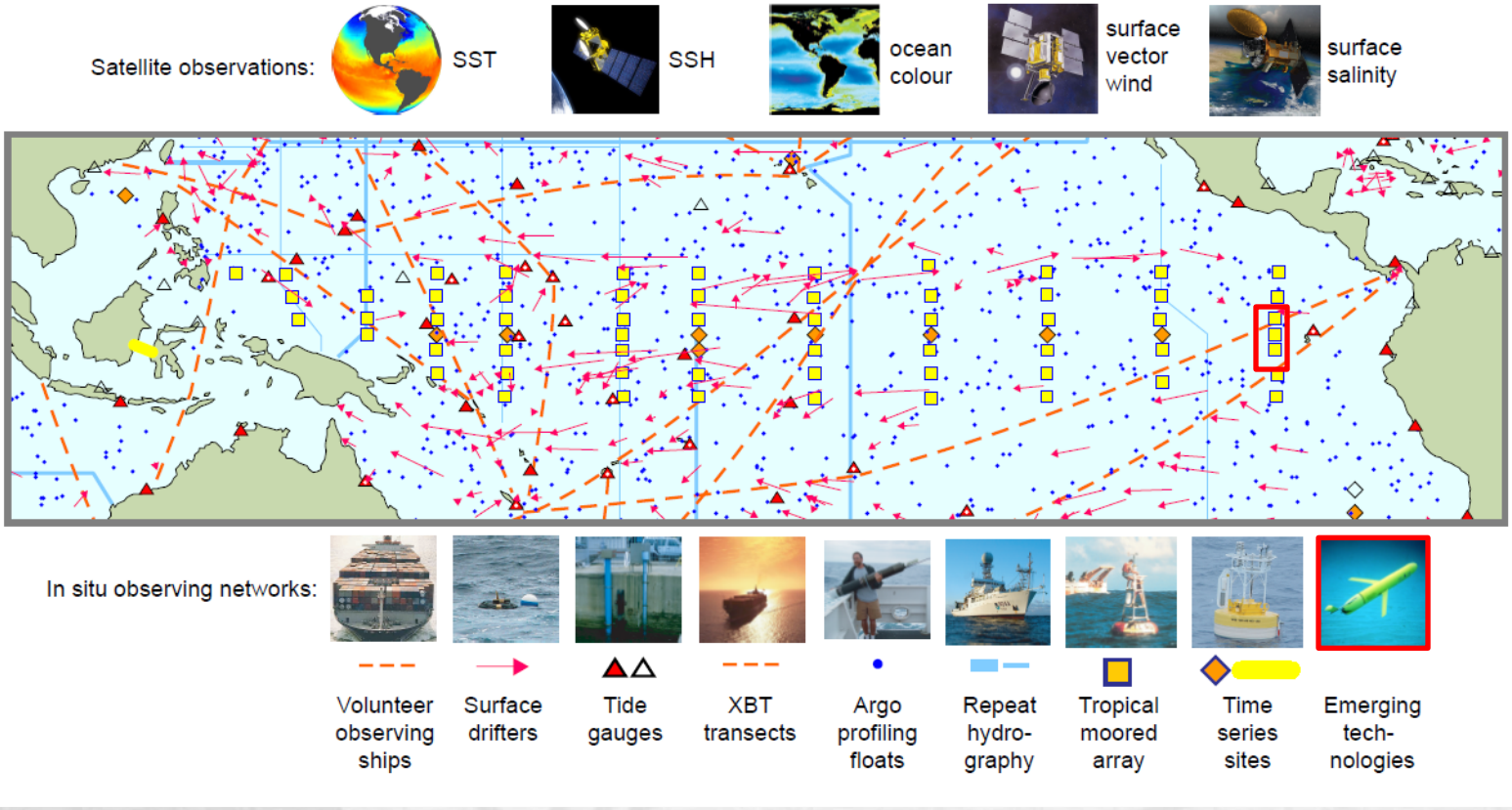


The ENSO observing system

Designed during the Tropical Oceans Global Atmosphere Experiment (TOGA*), 1985-1994.

- TAO developed with support from US, Japan, France, Korea, Taiwan
- TAO ➔TAO/TRITON in 2000: a NOAA/JAMSTEC partnership
- TAO transferred to operational environment beginning in 2005

Tropical Pacific Ocean Observing



TPOS 2020

TPOS Issues and Risks

- Challenges sustaining the TAO/TRITON Mooring Array.
- Risks are not being actively monitored and assessed
  - Need to spread risk
- Requirements and applications have evolved since TOGA
  - Increased focus on biogeochemical and biological systems
  - Multi-disciplinary approaches
- Modeling and observing technology have evolved
  - Argo, ALT, ensembles, reanalysis, …

- Timely for a systems-based evaluation of the requirements, implementation and delivery of observations
  - Across all elements of the OS

Impetus for Change

Tropical Pacific Observing System (TPOS) Workshop January 2014

KEY RECOMMENDATION

The creation of a focussed

TPOS 2020 Project

to achieve the transition from a loosely coordinated set of ocean observing activities in the tropical Pacific to a systematic and sustained TPOS by 2020.

Inevitably, research and new technology will be a central part of the change

Tropical Pacific Observing System 2020 Goals

TPOS Workshop January 2014

- To monitor, observe, define the state of ENSO, and improve scientific understanding;
- To support observation and prediction systems for ocean and weather and climate services, including underpinning research;
- Advance/refine knowledge of tropical Pacific predictability (physical and biogeochemical) and its climate impacts; and
- To relate ocean/climate variability and change to marine biogeochemistry and biology and carbon budgets, food security and biodiversity

Increased international support

Evolving the observing system

More effective and strategic coordination/planning

GCOS • GOOS • WCRP OOPC

TSOS 2020 Guidance

Reinforcing key priorities:

- Identify and sustain critical long climate records as a priority.
- Unique contribution of TAO/TRITON long time series recognized
- Maintain and improve broad scale sampling, taking into account all observing networks.
- Encourage integration of Biogeochemistry and Biology

Identifying new requirements

- Observing Eastern, Western, Equatorial Boundary Regions.
- Observing Diurnal Variability, Air Sea Fluxes.

TSOS 2020 Guidance

Strengthening connection to modelling.

- Multisystem analysis activities, observing system design, targeted process studies.

Integration: Complementarity between satellites and in-situ observing systems (altimetry, SST, winds)

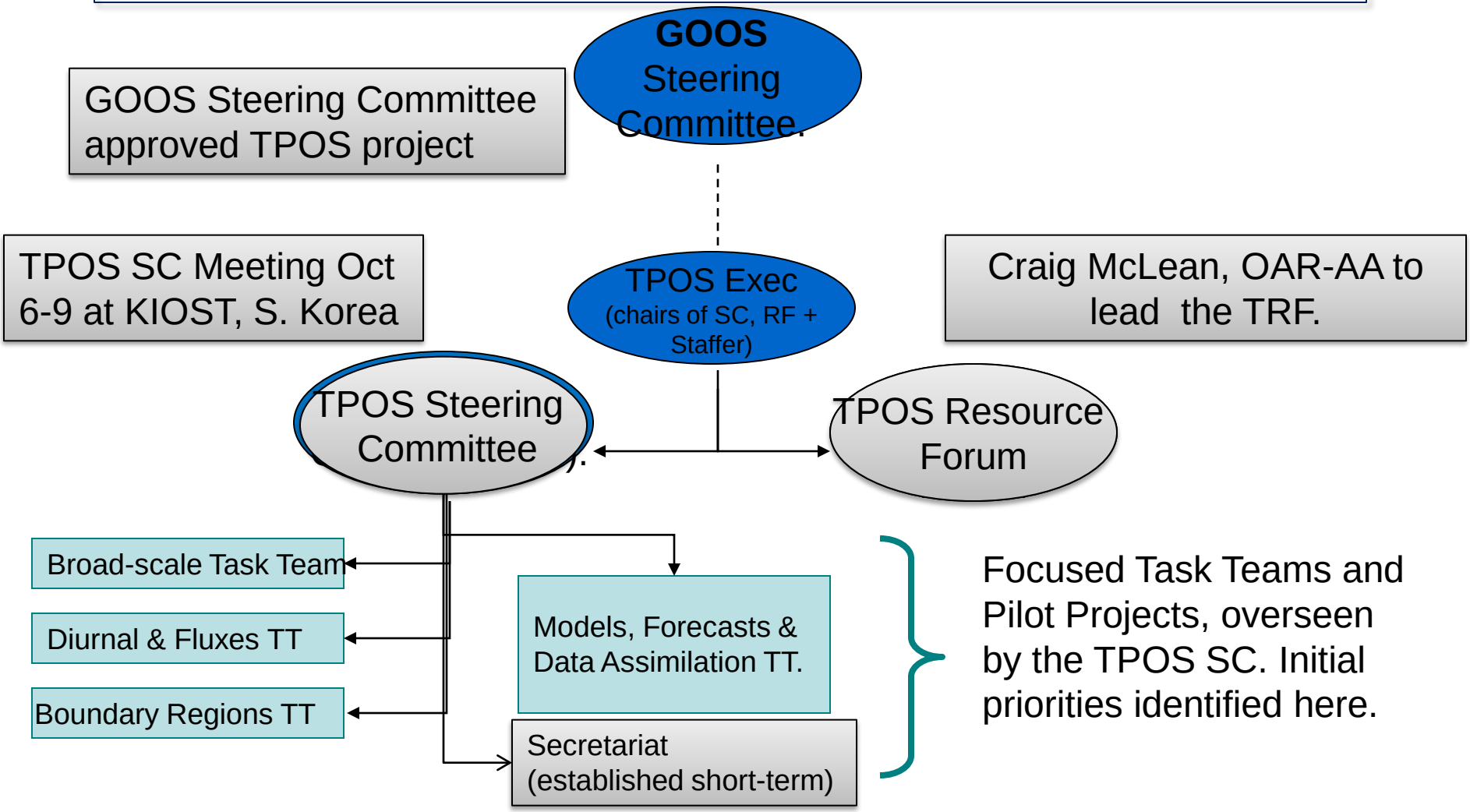
- Satellites provide spatial coverage and detail
- High-freq mooring data help de-alias diurnal signal in satellite data
- In-situ data used in satellite cal/val
- Blended products deliver higher-level value-added products

Urgent Actions for TPOS

- **Strongly endorsed** NOAA's offer to return TAO to 80% data return.
- **Urgent need** to explore strategies to mitigate the impact of the reduction in the TRITON component of the Array.
- **Communication and coordination** among existing partners need urgent attention.
- **Initiate discussions** to broaden engagement in supporting the TPOS, enabling new partners.
- **Ensure sufficient redundancy** to enable cross platform quality checks, and mitigate the risk of platform bias.

Proposed TPOS 2020 Governance and Project Structure

Completed since Jan 2014



Interests in engaging supporting TPOS

Developing TPOS: Broad interest from many organisations

- Substantial engagement from the US, Japan, Republic of Korea, China, Peru, Chile, …

Step change will require innovation

- Systematic errors must be understood and addressed

Enthusiasm to support change

- Co-Chairs identified and committed
  - Urgency provided motivation
  - Steering Committee identified from pre-eminent scientists in the field
- Project goals and scope agreed by sponsors
  - 2014-2020
  - Daunting but doable
  - Sponsors agreed urgency for change

Key Messages

- Ocean observations from the tropical Pacific are fundamental to understanding, monitoring, ocean and climate forecasts; climate change detection..
- The sustainability of the observing system is at significant risk
- The community was not well prepared for monitoring or mitigating these risks. Needs a broader base.
- Significant change is required
- 20 years on from TOGA it is timely review and reset the observing system, to improve efficiency and respond to new priorities.
- 20 years on, the research-operations partnership need to be examined anew.

Many challenges and opportunities ahead…

Thank You

Further Information:

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