Progress Toward TAOS Review

<u>Timeline</u>:

- September 2017: TAOS Review organized by CLIVAR ARP
- October 2017: TAOS Review Committee formed
- February 2018: 1st TAOS Workshop (Portland, OR)

  Goals: - *discuss science/societal applications*
  - *review present TAOS*
  - *refine list of main science/operational drivers*

➔ http://www.clivar.org/documents/1st-tropical-atlantic-observing- system-review-workshop-report

- October 2018: 2nd TAOS Workshop (Th/Fr this week)

  Goals: - *discuss requirements for each science/operational driver*
  - *review RC survey on recommended enhancements and essential elements of a sustained TAOS*
  - *prioritorize enhancements; discuss any possible reconfiguration of current TAOS*
  - *recommendations for TAOS governance and resourcing*

- April 2019: Target date for final TAOS Review Report

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Key Science and Operational Drivers for the TAOS

1. Dynamics of Tropical Atlantic Variability
2. Climate Impacts of Tropical Atlantic Variability
3. The AMOC in the Tropical Atlantic
4. The Carbon System in the Tropical Atlantic
5. Biogeochemical Processes in the Tropical Atlantic
6. Ecosystem Dynamics and Fisheries
7. Sea Level Rise and Ocean Heat Content
8. Improved predictions on subseasonal to decadal time scales
   - (a) Weather forecasting
   - (b) Tropical Cyclones and Extreme events
   - (c) Longer-time scale predictions
9. Long-term climate change and impacts

TAOS REVIEW 2nd MEETING

(Marseille, IRD headquarter, Room RC 23/24; October 25-26th 2018)

Note: some other eventual discussions/meetings can be organized in parallel in the IRD headquarter, Room R6-38 (Thursday) and R5-27 (Friday)

Thursday

9:00-9:30 Welcome and workshop goals/organization (Bill Johns /Sabrina Speich)

09:30 **Review of "Key Science and Operational Drivers for the TAOS"**

(15 min summary +15 min questions/discussion for each topic. Summarize (a) gaps in observing system and recommendations, (b) EOV's, and (c) what parts of present TAOS are most essentially contributing to each topic, and how)

9:30-10:00 Dynamics of Tropical Atlantic Variability (Moacyr Araujo, Ping Chang)

10:00-10:30 Climate Impacts of Tropical Atlantic Variability (Jeff Knight, Yochanon Kushnir)

10:30-11:00 Coffee break

11:00-11:30 The AMOC in the Tropical Atlantic (Bill Johns, Sabrina Speich)

11:30-12:00 The Carbon System in the Tropical Atlantic (Toste Tanhua, Carol Robinson)

12:00-12:30 Biogeochemical Processes in the Tropical Atlantic (Carol Robinson, Martin Visbeck)

12:30-14:00 lunch break

14:00-14:30 Ecosystem Dynamics and Fisheries (Jörn Schmidt, Brian Mudumbi)

14:30-15:00 Sea Level Rise and Ocean Heat Content (Mike McPhaden, Abderrahim Bentamy)

15:00 **Improved predictions on subseasonal to decadal time scales (10 min +10 min ea.)**

15:00-15:20 (a) Weather forecasts (Magdalena Balmaseda, Adrian Simmons, Philippe Dandin)

15:20-15:50 Coffee break

	15:50-16:10	(b) Tropical Cyclones and Extreme events (Scott Stripling, Ping Chang)
	16:10-16:30	(c) Longer-time scale predictions (Noel Keenlyside, Ingo Richter)
	16:30-17:00	**Long-term climate change and impacts** (Yochanon Kushnir, Noel Keenlyside)
	17:00-18:00	**Summary of proposed enhancements/modifications** (Bill Johns)
		This session will review the results of a preliminary "TAOS Recommendations" survey to be completed by each review committee member prior to workshop, after drafts of each driver topic have been circulated. Each member will provide their (anonymous) answers to two questions: (a) What are the key enhancements that should be recommended for the TAOS, and (b) What elements of the present TAOS are "least critical/least essential", i.e. where could savings potentially be made to allow room for enhancements? *This will be used to help guide the discussions on the morning of day 2.*
	19:30	*Diner (Golden Tulip Hotel)*
Friday	9:00-10:30	Discussion of recommended enhancements and prioritization
	10:30-11:00	*Coffee break*
	11:00-12:30	Discussion of priorities for maintenance of existing observing system elements (proposals for re-configuration of buoy/drifter/Argo networks?)
	12:30-14:00	*lunch break*
	14:00-14:30	Governance/Review/Resourcing ; Summaries of current governance structure for (10 min ea): (a) PIRATA (Bernard Bourlès), (b) Argo (Steve Jayne), (c) SVP/drifters (Rick Lumpkin)
	14:30-15:00	Recommendations for TAOS governance/resourcing (Mike McPhaden, Sabrina Speich)
	15:00-15:30	Recommendations for periodic TAOS Review (Sabrina Speich, Bill Johns)
	15:30-16:00	*Coffee break*
	16:00-18:00	Summary and open discussion of all recommendations; timeline for completion of TAOS Review report; writing assignments
	18:00	Meeting Adjourned

TAOS Review Terms of Reference

1. **Review and articulate the existing and anticipated future drivers for the Tropical Atlantic Observing System, encompassing research, operational, and societal applications.** Key applications to be considered include: research on tropical Atlantic circulation and variability, coupled atmosphere-ocean variability and change, climate monitoring, modelling and forecasting (climate, ocean, seasonal to decadal and weather prediction), biogeochemistry, and fisheries.
2. **Evaluate (review/assess/prioritize) existing and potential requirements for sustained observations of essential ocean variables (EOVs) in the tropical Atlantic** Ocean (extending from 25°N to 25°S) - in connection with TPOS2020 and IndOOS - and update them to reflect new knowledge and identified needs for scientific and societal applications.
3. **Evaluate the adequacy of existing observing strategies to deliver requirements for variables, and characterize their impacts.** Characterize how in situ (e.g., PIRATA, Argo, drifters, and other data) and remote sensing observing systems are contributing to meet these scientific and functional requirements, and identify gaps, inefficiencies, and vulnerabilities.
4. **Provide recommendations on the current suite and configuration of observing systems to enhance their resilience and robustness** in order to produce data in the most cost-efficient and sustainable manner within the anticipated envelope of capability and resources.
5. **Identify potential enhancement or reconfiguration of the sustained observing system suite to address gaps and new requirements.**
6. **Evaluate requirements for delivery of data, and derived products and information, in real time and delayed mode** (e.g., availability, quality, latency, integration/interoperability); evaluate the existing data systems for fitness for purpose.
7. **Assess readiness of new technologies, their potential impact and feasibility in addressing requirements**, and their potential to contribute towards addressing gaps, improving robustness/resilience, and/or lowering costs per observation in the tropical Atlantic Ocean region; recommend new technologies with greatest potential to meet critical requirements and suggest approaches to improve the readiness for inclusion in the sustained observing system.
8. **Highlight the impacts of the tropical Atlantic observing system on the delivery of information/services of societal importance and relevance.** Develop a report of the first TAOS Workshop, with recommendations on the development of a process for the ongoing evaluation of the observing system.