

## Report to CLIVAR SSG-20

**Panel or Working Group:** Atlantic Implementation Panel

### **1. Contributions to developing CLIVAR science and fit, where appropriate, to the CLIVAR imperatives**

- With the end of the CLIVAR TACE program and in cooperation with VOCALS, AIP assists to develop a new direction of tropical Atlantic research directed toward a better understanding of the role of the eastern tropical upwelling systems in tropical Atlantic variability (TAV). This includes the improvement of the long-term observing system (southeast extension of PIRATA), new process studies (heat and freshwater budget studies in eastern boundary upwelling), as well as the bias reduction of coupled model. Goals are: i) improving the prediction of TAV, ii) identifying possible oceanic contribution to the eastern Atlantic SST bias in coupled models, iii) better understanding and future projection of the impact of TAV on marine ecosystem and fisheries in eastern boundary upwelling systems (in cooperation with SOLAS/IMBER).

### **2. Briefly list any specific areas of your panel's activities that you think would contribute to the WCRP Grand Challenges as identified by the JSC at its most recent meeting<sup>1</sup>**

- Oversee the AMOC observing system in the subpolar, subtropical North Atlantic, as well as tropical and South Atlantic
- Continuation of TACE, enhance predictability and understanding of tropical Atlantic variability and climate change
- Continuation of modelling development and improvement, with coupled models having an eddy-resolving ocean component and new questions with regard to small-scale air-sea interaction in frontal regions like the Gulf Stream.
- Other contributions to the grand challenges are targeted/regional process studies using observations and models - these studies are essential to improve our knowledge of processes and their representation in regional climate scenarios.

### **3. Key new science findings in the context of the new ocean-atmosphere CLIVAR (1-3 suggestions)**

- Influence of the tropical Atlantic on El Nino prediction (Ding et al. 2012;

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1. Provision of skillful future climate information on regional scales (includes decadal and polar predictability)
2. Regional sea-level rise
3. Cryosphere response to climate change (including ice sheets, water resources, permafrost and carbon)
4. Improved understanding of the interactions of clouds, aerosols, precipitation, and radiation and their contributions to climate sensitivity

Keenlyside et al. 2013); trigger of El Nino events by northern tropical Atlantic (Ham et al. 2013)

- Better understanding of the attribution of 20th century surface temperature changes over the North Atlantic using CMIP5 models (Terry 2012)
- A recent finding from the OVIDE Group is the key role of the AMOC in the recent changes in Carbon uptake in the North Atlantic (Perez et al., Nature Geosciences, 2013).

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**4. Key science questions that you anticipate your community would want to tackle in the next 5-10 years within the context of the new ocean-atmosphere CLIVAR (1-3 suggestions)**

- Regional impact of climate change including circulation changes and impact on sea level
- Climate-biogeochemistry interactions and impacts on ecosystems and fisheries
- Improvement of climate predictions in the tropics (bias reduction)

**5. Cooperation with other WCRP projects, other global change bodies (e.g. IGBP) and links to applications**

- Cooperation with other WCRP projects: with WGOMD, analysis of the Atlantic variability from the CORE2 model experiments.
- Cooperations with IGBP: note the collaboration with the GEOTRACES program (GEOVIDE cruise planned for 2014).
- CLIVAR/IMBER/SOLAS cooperation in the tropical Atlantic: SFB754 “Climate-Biogeochemistry Interaction in the tropical Oceans”; EU-PREFACE, AWA, SPACES focusing on eastern boundary upwelling systems including ecosystem management, fisheries, and socio-economic impacts

**6. Activities in the context of scientific capacity building and career support?**

- TACE continuation: EU-PREFACE proposed international project with many African partners and strong capacity building aspects; German – South African cooperation (SPACES, SACUS) with summer schools in southern African countries and AIP involvement
- Reports of endorsed projects about scientific capacity building and career support

**7. Activities in the context of knowledge exchange with societal actors?**

**8. New activities being planned, including timeline, request for endorsements, potential for new funding opportunities**

- OSNAP subpolar North Atlantic MOC observing system with several projects already funded
- TACE follow-on programme: EU-PREFACE, German-French-African AWA, German SPACES, NSF proposal
- New activities being planned: continuation of repeat hydrography (GO-SHIP) like OVIDE.

**9. Workshops / meetings planned**

- International Workshop on Seasonal to Decadal Prediction, May 13-16, Toulouse, France
- Tropical Atlantic Variability Meeting, October 22-25, 2013, Venice, Italy
- AIP meeting February 2014, Hawaii, US

**10. Issues for the SSG**

- Revisit and broaden the scope of the intraseasonal, seasonal, and interannual research challenge (not too much focus on monsoon)

## Annex A

### **Proforma for CLIVAR Panel and Working Group requests for SSG approval for meetings**

- 1. Panel or Working Group:** Atlantic Panel
- 2. Title of meeting or workshop:** 13th Atlantic Panel meeting
- 3. Proposed venue:** Hawaii, USA
- 4. Proposed dates:** February 2014
- 5. Proposed attendees, including likely number:** Panel members + 5 invitees
- 6. Rationale, motivation and justification, including: relevance to CLIVAR themes & JSC cross cutting topics and any cross-panel/working group links and interactions involved:**
  - Oversee and coordinate programs to measure and monitor ocean-atmosphere variability in the Atlantic sector
- 7. Specific objectives and key agenda items**
  - Coordination of AMOC components
  - Coordination of linkage between observational process studies in the Atlantic sector and modelling activities
  - Coordination of tropical Atlantic observation network addressing southeastern Atlantic model bias issue (common meeting with members of the US CLIVAR ETOS WG)
  - Review of capacity building actions in the Atlantic sector
- 8. Anticipated outcomes (deliverables):** Panel report
- 9. Format:** 2.5 days
- 10. Science Organising Committee (if relevant):** Peter Brandt and Ping Chang (panel co-chairs)
- 11. Local Organising Committee (if relevant):** Nico Caltabiano (ICPO)
- 12. Proposed funding sources and anticipated funding requested from WCRP:** US\$ 10K