

Report to CLIVAR SSG-19

Panel or Working Group: Variability of the American Monsoon Systems (VAMOS)

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

The VAMOS Panel is carrying out activities to adjourn its agenda and make it more consistent with CLIVAR imperatives and new plans of the World Climate Research Programme (WCRP). Until recently, VAMOS was constituted by three science components, the North American Monsoon Experiment (NAME), the Monsoon Experiment for South America (MESA) and the VAMOS Ocean-Cloud-Atmosphere-Land Study (VOCALS). After completing successfully NAME, MESA, and VOCALS field campaign, during the last year VOCALS has continued synthesizing their research and modeling activities at the 3rd VOCALS Science Meeting, and the WCRP Open Science Conference.

The Intra-Americas Study of Climate Process program (IASCLiP) is the most recently endorsed VAMOS initiative within WCRP/CLIVAR. IASCLiP research is focused on climate variability and predictability within the warm water pool of the Americas. With cooperation of various federal and foreign funding agencies, IASCLiP seeks to improve and expand the observational network across the region as a means to improve the accuracy of operational models.

The La Plata Basin (LPB) Regional Hydroclimate Project, directly endorsed by CLIVAR and GEWEX, continues developing its science through international research networks. Since Oct 2011, LPB is being represented by CLARIS-LPB. With funding of the European Union, CLARIS-LPB is developing and examining future scenarios of climate change for the basin, and work with stakeholders in the agriculture and hydropower sectors to propose adaptation approaches.

In order to facilitate the interactions with other panels and with WCRP priorities, VAMOS has formed cross-cutting activities to develop collaborations among scientists of the Americas. The first cross-cut has been articulated in the VAMOS Modeling Plan; the second cross-cut focuses on extreme events that may have a relation to monsoonal circulations or that have common properties for different parts of the Americas.

The main contributions of these groups to CLIVAR Imperatives are listed below:

- VAMOS Extremes cross-cut has the overall goal of improving our understanding of the mechanisms and predictability of warm season extremes over the Americas. (CLIVAR Imperatives 2 and 3)
- CLARIS-LPB has as one of its objectives to develop and assess climate change scenarios for South America. (CLIVAR Imperative 1)

- VOCALS Special Issue in Atmospheric Chemistry and Physics journal: Special issue of VAMOS Ocean-Cloud-Atmosphere-Land Study (VOCALS), jointly organized between Atmospheric Chemistry and Physics and Ocean Science. Thirteen articles during 2011; seven so far in 2012. (CLIVAR Imperatives 4, 5, 6).
- Special issue of CLIVAR Exchanges on La Plata Basin Science (CLIVAR Imperatives 1,2, 7)
- VAMOS Newsletter (outreach); contributions to CLIVAR Exchanges (CLIVAR Imperative 7)
- New evolution of the Caribbean Modeling Initiative (CMI) aimed at (i) expanding and 'entrenching' modelling capacity developed under phase 1 of CMI, (ii) expand the analysis of existing data from phase 1 (e.g. to examine changes in climate extremes), (iii) introduce new models and new modelling experiments (for example enabling the region's participation in CORDEX and delivering projections based on the new RCPs), (iv) further utilize science results as a basis for building climate resilience, and (v) train a cadre of young Caribbean modellers (CLIVAR Imperatives 1, 2 and 7)
- Continued advocacy and participation in proposals to develop the Caribbean (COCONET) and Mexican (TLALOCNET) Global Positioning System Precipitable Water (GPS-PW) observing networks (CLIVAR Imperatives 5 and 6)
- The IASCLiP Forecast Forum (FF) was formed in early 2011 with voluntary cooperation from several climate modeling institutions and the modeling working group of IASCLiP, to conduct experimental summer climate forecasts based on our existing understanding of the influence of the variability of the Atlantic Warm Pool (AWP) on the summer climate of North America including tropical cyclone activity in the Atlantic, MSD and the strength of the Caribbean LLJ. The various products developed for the 2011 FF can be accessed at:
http://www.eol.ucar.edu/projects/iasclip/documentation/IASCLIP_MAM_2012.pdf

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 meeting¹

WCRP Grand Challenges in parenthesis:

- VAMOS Extremes cross-cut (5, 6)
- VAMOS Modeling Working Group (1, 6)
- VOCALS (4)

¹

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
5. Past and future changes in water availability (with connections to water security and hydrological cycle)
6. Science underpinning the prediction and attribution of extreme events

- CLARIS-LPB (1, 5, 6)

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

- Ocean-atmosphere interaction in the region of the SACZ and its impact on the continental monsoon.
- Role of the tropical oceans in past climate over South America. How did they modulate the orbital forcing and translated the signal into the continent?

4. Cooperation with other WCRP projects, outside bodies (e.g. IGBP) and links to applications

- VAMOS Extremes cross-cut supporting activities like the WCRP Drought Interest Group (DIG) and more recently the Global Drought Information System (GDIS)
- VAMOS Modeling activities supporting the WCRP Modeling Theme, particularly with the CLIVAR Working Group on Seasonal to Interannual Prediction (WGSIP)
- La Plata Basin (LPB) is also a GEWEX Hydroclimatology Panel (GHP) Regional Hydroclimate Project
- CLARIS-LPB (a Europe-South America network for climate change assessment and impact studies in La Plata Basin) with CORDEX (COordinated Regional climate Downscaling EXperiment) on regional climate change simulations for South America.

5. Workshops/meetings held

- a. Informal VAMOS Panel Meeting during the WCRP OSC to discuss progress on VAMOS activities, October 2011
- b. VOCALS poster cluster in WCRP Open Science Conf, October 2011
- c. CLARIS-LPB Poster cluster in WCRP Open Science Conf, October 2011
- d. CLARIS-LPB Science Meeting, Toledo, Spain, November 2011
- e. VOCALS Special session at AGU Fall Mtg, December 2011
- f. CLARIS-LPB WP-5 and WP-6 (modeling and extremes) joint meeting, Hamburg, May 2012

- g. CLARIS-LPB WP-9 (Hydrology) Meeting, Curitiba, Brazil, May 2012
- h. VAMOS Workshop on Modeling and Predicting Climate in the Americas, held at the Laboratorio Nacional de Computação Científica (LNCC), Petropolis, Brazil on 4-6 June 2012
- c. 15th Session of the VAMOS panel (VPM15), held at the Laboratorio Nacional de Computação Científica (LNCC), Petropolis, Brazil on 6-7 June 2012

6. New activities being planned, including timeline

Execution of VAMOS Modeling Workshop
VAMOS Modeling Workshop summary report/publication
Coordination of Atlantic Biases effort
Coordination with GOAMAZON
Coordination of a Cross-Hemisphere Monsoon Project
Regional downscaling/climate impacts

7. Workshops / meetings planned

16th Session of the VAMOS panel (VPM16)

8. Issues for the SSG

Annex A

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

Requests should be made through D/ICPO (Catherine.beswick@noc.ac.uk), against the following headings:

1. **Panel or Working Group:** CLIVAR Variability of the American Monsoon Systems (VAMOS) panel
2. **Title of meeting or workshop:** 16th Session of the VAMOS panel (VPM16)
3. **Proposed venue:** TBD
4. **Proposed dates:** ~ May/June 2013
5. **Proposed attendees, including likely number:** VAMOS panel members and invited experts from VAMOS science and groups. Panel members: ~11-13 people, and special guests: 4-6
6. **Rationale, motivation and justification, including: relevance to CLIVAR themes & JSC cross cutting topics and any cross-panel/working group links and interactions involved:** VPM-15 was held in June 2012. Periodical meetings of the panel make it possible to review the progress of the different programs of VAMOS, the status of actions and recommendations approved at the previous sessions, update issues of importance to the panel, assess the interaction of VAMOS with other CLIVAR panels, its contribution to CLIVAR imperatives, the cross-cutting themes and other WCRP programs, such as GEWEX as well as IGBP programs.
7. **Specific objectives and key agenda items:**
 - (1) Review the status of the actions and recommendations approved at VPM15
 - (2) Review the progress on IASCLIP project and other cross-cut components, as Extremes, ACC, and assess the research in decadal prediction being carried within VAMOS activities.
 - (3) Assess the interaction of VAMOS with other CLIVAR/WCRP panels and WGs,
8. **Anticipated outcomes (deliverables):**

The panel expects to assess the progress of the ongoing VAMOS projects and to improve the activities being carried out by the cross-cutting working groups

9. Format:

During the 2 days of the meeting the panel will meet with experts from the different scientific programs of VAMOS. The last half day will be devoted to a Executive Panel Session with special invitees from funding agencies and scientists.

10. Science Organising Committee (if relevant)

VAMOS co-chairs and the ICPO representative Carlos Ereño

11. Local Organising Committee (if relevant)

TBD depending on host/location of the Meeting

12. Proposed funding sources and anticipated funding requested from WCRP:

US CLIVAR, and an estimated amount of USD10K from WCRP