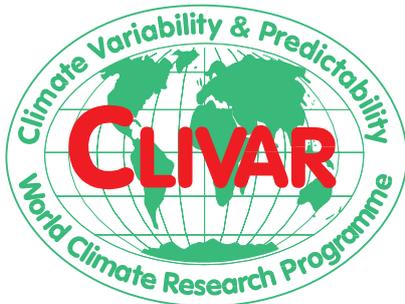


WCRP REPORT

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Project Report

Report of the 9th Session of the CLIVAR VAMOS Panel

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Executive Summary

The ninth session of the WCRP/CLIVAR VAMOS Panel (VPM9) was hosted by the Instituto Nacional de Pesquisas Espaciais (INPE) and the Centro de Previsão de Tempo e Estudos Climáticos (CPTEC/INPE), in Foz do Iguaçu, Brazil, on 22-23 April 2006. VPM9 was held back-to-back with the 8th AMS International Conference on SH Meteorology and Oceanography. The meeting consisted of VOCALS, MESA, NAME, and IAS sessions, which were followed by the Panel Executive Session. VPM9 was preceded by the 2nd MESA SWG Meeting (SWG-2 meeting report in Annex C). The chairs of the science working groups (SWGs) of the VAMOS projects reported on recent progress of their programmes. The panel was impressed with the progress of the Modeling Group for VAMOS (MGV), and concluded that the MGV Modeling Plan contained the proper set of science themes and associated cross-cutting themes. The Panel recommended circulating the MGV plan to the VAMOS community for further review, and forwarding the plan to the CLIVAR SSG for review. The VAMOS panel received the newly revised IASCLIP Science and Implementation Plan, and requested a review of the plan, including strong linkages to the other VAMOS science components, to ongoing field activities (such as AMMA) and to the MGV integrated modelling plan. Subsequently, the IASCLIP Program would be submitted to the CLIVAR SSG for consideration as a 4th VAMOS Science component. During the Panel Executive Session the panel received a report of CLIVAR activities, considered recommendations for VAMOS Science Components, and for New Directions of VAMOS.

Further information about the meeting and VAMOS activities can be found at: http://www.clivar.org/organization/vamos/Meetings/vpm9_main.htm

List of actions and statements

North American Monsoon Experiment (NAME)

The panel approved the NAME SWG 2005 membership rotation. Rotating members are Mike Douglas, Siegfried Schubert and Chidong Zhang and new members are Tereza Cavazos, Brian Mapes, Enrique Vivoni, and Steve Williams (ex-officio). The NAME SWG 2006 membership rotation will start in early summer 2006 prior to NAME SWG 8.

VAMOS panel accepted that Dave Gochis become NAME SWG chair following NAME SWG 8 (August 2006) and Wayne Higgins to become a member of the SWG for one additional 3-year term. During the transition period, Wayne and Dave will serve as co-chairs.

Monsoon Experiment South America (MESA)

VAMOS panel approved that José Marengo become MESA SWG chair following VPM9 and Carolina Vera will become a member of the SWG until 2007.

VAMOS Ocean-Cloud-Atmosphere-Land Study (VOCALS)

The panel agrees with the proposed rotation of the VOCALS SWG. This involves approximately halving, from 21 to 11, the number of SWG members. Roberto Mechoso will remain chair. Those rotating out are Bruce Albrecht, P. Cornejo, David Enfield, Ena Jaime Espinosa, Laura Gallardo, Rene Garreaud, Pablo Lagos, Art Miller, Jose Meitín, Rodrigo Nuñez, Rafael Terra, Jose L. Santos, Bjorn Stevens, and Carlos Ereño. Proposed new members are Barry Huebert, Hemantha Wijesekera, Robert Wood and Shang-Ping Xie.

Modeling Group for VAMOS (MGV)

The panel concluded that the MGV Modeling Plan contained the proper set of science themes (SST variability in the Pan-American seas, monsoon life cycle, improving the prediction of droughts and floods, and diurnal cycle of precipitation and clouds) and associated cross-cutting themes (improving prediction, data assimilation, analysis and model improvements).

Specific next steps for MGV are to (i) circulate the MGV plan to the VAMOS community for an additional review; (ii) forward the plan to the CLIVAR SSG for review and (iii) organize a VAMOS session for the FY07 WGSIP-TFSP workshop. SSG and JSC reviews of the modeling plan are welcomed. (Ben Kirtman)

Intra-America Study of Climate Processes (IASCLIP)

Complete drafting the IASCLIP Science Plan and Implementation Strategy (originally requested at VPM8) and present it to the VAMOS panel. This can be done via e-mail over the next year prior to VPM10. The plan should have strong linkages to the other VAMOS science components, to ongoing field activities (such as AMMA) and to the MGV integrated modelling plan. (Dave Enfield)

Once completed, the IASCLIP Program will be submitted to CLIVAR SSG for consideration as a 4th VAMOS Science component. (panel co-chairs and C. Ereno)

VAMOS Newsletter

The second issue of the *VAMOS NEWSLETTER* was very successful with many superlative comments on the theme (VAMOS contributions to improved understanding, monitoring and prediction of heavy rainfall events). The VAMOS Panel recommends that the contents remain relatively light.

The panel recommended that *VAMOS NEWSLETTER* continue to be published on an annual basis with a specific theme. The proposed theme for the 3rd issue is "Beyond Daily Weather Forecasts: Assessment and Applications of Seasonal Forecasting". Relevant topics include: (1) The future of seasonal prediction in the Americas; (2) The role of the land surface and oceans in seasonal prediction; (3) User needs for seasonal forecasts and the ability to meet them; (4) Applications of seasonal forecasts (e.g. energy, agriculture, fire weather, health, human dimensions). (VAMOS co-chairs and C. Ereno)

Next VAMOS Panel Meeting

Santiago, Chile was proposed as a possible venue for the 10th VAMOS panel meeting (the 10th Anniversary of VAMOS)

Panel members agreed that it makes sense to showcase VOCALS, given that VOCALS-Rex preparations will likely be in full swing.

1. VAMOS Chairs Report (*Carolina Vera, University of Buenos Aires, AR; Wayne Higgins, NOAA/NWS/Climate Prediction Center, USA*)

Drs. Wayne Higgins and Carolina Vera, VAMOS Panel co-chairs, split the presentation of the VAMOS Chair's report. Dr. Higgins summarized the VAMOS implementation, which includes 3 science components (North American Monsoon Experiment (NAME), Monsoon Experiment South America (MESA) and VAMOS Oceans-Clouds-Atmosphere-Land Study (VOCALS)), the VAMOS Data Information Server and the VAMOS Support Center. Dr. Higgins also discussed the 2nd issue of the VAMOS Newsletter, which was a tremendous success. He noted that the VAMOS Panel recommends that the Newsletter continue to be published on an annual basis, with a specific theme and relatively light content. Dr. Higgins discussed implementation highlights during the past year, which included the NAME 2004 data base and value added products, organization of the MESA SWG and Science and Implementation plan, and planning for the VOCALS-REX field campaign in the eastern Pacific. Details of MESA, NAME and VOCALS implementation, including 2005 activities, recent publications, and milestones are found in the complete presentation, which is posted on the VAMOS webpage (www.joss.ucar.edu/vamos/VPM9/VPM9_Agenda.html).

In addition to some details on MESA and VOCALS implementation, Dr. Vera discussed the progress of the Modeling Group for VAMOS (MGV), which is developing a VAMOS modeling implementation plan that integrates across the VAMOS science components. In particular, she discussed the science themes (SST variability in the Pan-American seas, monsoon life cycle, improving the prediction of droughts and floods, and diurnal cycle of precipitation and clouds) and the associated cross-cutting themes (improving prediction, data assimilation, analysis, and model improvements) recommended by the MGV. Dr. Vera also outlined the challenges facing VAMOS modeling. One mechanism for this is the emerging NOAA Climate Test Bed facility, which has been organized to accelerate the transition of scientific advances from the climate research community into improved NOAA climate forecast products and services. Dr. Vera also described the VAMOS relationships to other programs. Though VAMOS interactions with these groups are generally quite strong, there are needs for improvement with several of the groups (notably the Atlantic Panel). Dr. Vera ended the presentation by discussing the objectives of the 9th VAMOS Panel meeting: (i) to advance the Science and Implementation plans for VOCALS; (ii) to discuss MESA restructuring; (iii) to review NAME 2004 preliminary results; (iv) and to discuss new directions for VAMOS (MGV progress on the VAMOS integrated modeling plan; IASCLIP Program; NOAA Climate Test Bed).

2. NAME Status Report (*Wayne Higgins, NOAA/NWS/Climate Prediction Center, USA*)

Dr. Wayne Higgins summarized the various activities of NAME, with emphasis on NAME 2004 results. Dr. Higgins stressed accomplishments since the NAME 2004 field campaign; including completion of the NAME 2004 data base (266 datasets) and NAME value added products (enhanced SST and soil moisture analyses). Dr. Higgins discussed preliminary results from the NAME 2004 field campaign, with emphasis on the diurnal cycle of convection (both results that are confirmatory of previous studies and new results). He also discussed NAME modeling and application studies, including impact of NAME 2004 data on NCEP operational analyses, assessments of global and regional model simulations of the 2004 monsoon (NAMAP2), and the impact of changes in model parameterizations on seasonal prediction (CPT). NAME produced a number of publications during the preceding year, including BAMS articles on the North American Monsoon Assessment Project (Gutzler et al, 2005), and the NAME 2004 field campaign and modeling strategy (Higgins et al. 2006). In addition, a special issue of Journal of Climate on NAME, with some 25 papers on NAME 2004 and NAME diagnostic and modeling studies will appear in late 2006. Dr. Higgins also mentioned upcoming meetings, including the 8th NAME Science Working Group meeting (SWG-8), which will occur Aug 17-18, 2006 in Tucson, AZ. It will occur immediately following the Climate Prediction Program for the Americas (CPPA) PI meeting, Aug 14-16, 2006 in Tucson, AZ at the same venue.

Higgins finished by summarizing progress on NAME milestones. To date, the NAME program has successfully carried out the NAME 2004 Field Experiment, evaluated the impact of data from NAME 2004 on operational analyses, and assessed global and regional model simulations of the 2004 North American monsoon (NAMAP2). Future milestones, include

1. Evaluate impact of changes in model parameterization schemes (2007);
2. Measure improvements in model simulations of monsoon onset and variability (2008);
3. Quantify the relative influence of oceanic and land surface boundary conditions on simulations of the NAME 2004 monsoon (2008); and
4. Implement recommended changes to operational climate prediction systems to improve the skill of warm season precipitation forecasts (2009).

Gutzler, D. S, H.-K. Kim, R. W. Higgins, et al., 2005: The North American Monsoon Model Assessment Project (NAMAP): Integrating numerical modeling into a field-based process study. *Bull. Amer. Met. Soc.*, 86, 1423-1430.

Higgins, R. W. and co-authors, 2006: The North American Monsoon Experiment (NAME) 2004 Field Campaign and Modeling Strategy. *Bull. Amer. Meteor. Soc.*, 87, 79-94

3. NOAA Climate Test Bed (*Wayne Higgins, NOAA/NWS/Climate Prediction Center, USA*)

Dr. Higgins discussed progress of the NOAA Climate Test Bed (CTB), whose mission is to accelerate the transition of scientific advances from the climate research community to improved NOAA climate forecast products and services. The CTB was established in 2004 and has grown to include 19 staff that have been redirected from CPC, EMC, and the NOAA Climate Program Office (NCPO). The CTB currently has 6 Transition Project Teams, several internal projects (e.g. Climate Forecast System improvements, multi-model ensemble system development; climate forecast product improvements for decision support) and 6 external grants.

In early 2008, the CTB will move with NCEP to the M-Square Campus at the University of Maryland. It is likely that CTB will be housed with personnel from the Earth System Science Interdisciplinary Center (ESSIC), the Cooperative Institute for Climate Studies (CICS), the DOE Joint Global Change Research Institute, personnel from NASA/GMAO, and possibly others. Thus, the M-Square campus will be a "National Center of Excellence for Environmental Research, Education, Applications and Operations". This presents the CTB with tremendous opportunities and challenges.

The CTB strategy is most closely aligned with NOAA's Climate Goal [Understand climate variability and change to enhance society's ability to plan and respond] but is consistent with NOAA's other mission goals. Within the NOAA Climate Goal, the CTB strategy is most closely aligned with the Climate Predictions and Projections Program, whose desired end-state is a predictive understanding of the global climate system on time scales of weeks to decades with quantified uncertainties sufficient for making informed and reasoned decisions.

Dr. Higgins focused on some of the key issues for CTB: (i) How to meet enthusiastic community demand for increased access to CTB (including computer resources; access to models & data; research support)? (ii) How to increase CTB resources to meet demands? (iii) How to accelerate implementation of CFS upgrades and improve the skill of official outlooks? (iv) How to expand the CTB consistent with NOAA Mission Goals and in particular the NOAA Climate Program?

Dr. Higgins emphasized that transition costs have been, and still are, under- resourced. Within an era of constant or diminishing dollars, R&D and transition needs will likely be competing with each other.

In the past year the CTB worked with NCEP senior management to identify programmatic priorities for improved climate prediction [NOAA/NCEP Climate Forecast System Improvements; Multi-Model Ensemble Prediction System; Climate Reanalysis – An Ongoing Analysis of the Climate System; Climate Forecast Products for Decision Support]. These priorities serve as a basis for the CTB Science Plan and Implementation Strategy, which has been drafted and will be discussed in detail at the 2nd CTB Science Advisory Board meeting (28-29 June 2006 in Silver Spring, MD).

Dr. Higgins concluded by emphasizing that CTB is ready to work with the NOAA Climate Program to address resource issues (computers, people, data) in order to maximize contributions to NOAA's mission.

4. Aerosol-cloud interactions: the Chilean contribution

(Laura Gallardo, Centro de Modelamiento Matematico Universidad de Chile)

A short review of planned research activities dealing with aerosol-cloud interactions to be developed within the framework of VOCALS by Chilean groups was presented. These activities refer to the deployment of instruments on a coastal zone to characterize the aerosols that become activated and act as cloud condensation nuclei, and concurrent model studies. Results from an exploratory study of the impact of oxidized sulfur emitted from copper smelters in Chile on the stratocumulus deck off shore Northern Chile were also shown. This study reveals a potential perturbation of the subtropical stratocumulus deck due to anthropogenic sulfur aerosols (Ref. Huneeus et al, 2006, GRL in press).

Huneeus, N., Gallardo, L., and Rutllant, J., 2006. Off shore transport episodes of anthropogenic sulfur in Northern Chile: Potential Impact on the stratocumulus deck. Accepted for publication by Geophysical Research Letters (August 2006)

5. CLARIS Project Summary

The CLARIS project aims at strengthening collaborations between research groups in Europe and South America to develop common research strategies on climate change and impact issues in the subtropical region of South America through a multi-scale integrated approach (continental-regional-local).

First, CLARIS will favour the transfer of knowledge and expertise on Earth System Models, their different components and coupling procedures. Moreover, CLARIS will provide to European and South American scientists involved in climate modelling in South America the framework to compare and exchange their methodologies. This framework will also be completed by an easy-access database compiling the observed and simulated climate data required for models to be both validated and properly forced.

Second, complementary to that modelling aspect, CLARIS will facilitate access to large scale climate data sets and climate simulations, and it is a major goal for CLARIS to initiate the setting-up of a high-quality daily climate database for temperature and precipitation. The European expertise acquired through the European Climate Assessment Project will be essential to meet this objective. The resulting database will be of great value to validate and evaluate the model skills in simulating climate trends and extreme event frequency changes.

Finally, at a local scale, CLARIS aims at creating a bridge between the climate research community and stakeholders in the framework of three pilot actions designed to integrate multi-disciplinary components and to demonstrate the potential and feasibility of using climate information in the decision-making process. Three major areas are addressed: agriculture, health and pollution.

The CLARIS framework will facilitate the participation of European researchers to IAI (Inter American Institute) projects and the submission of new common research proposals. Moreover, its opening towards stakeholders (e.g. agriculture, reinsurance, hydroelectricity), associated to the project through an expert group, will promote future initiatives on climate impact analysis, thus, contributing to related sustainable development strategies.

The project spans from July 2004 to June 2007. A more descriptive presentation of the project is available at <http://www.claris-eu.org>. The project is coordinated by CNRS (France, <http://www.cnrs.fr>). The project participants are indicated in the following table.

| Participant name | Participant short name | Country | Participant name | Participant short name | Country |
|---|------------------------|-----------|---|------------------------|---------|
| Centre National de la Recherche Scientifique | CNRS | France | Universidad de Castilla-La Mancha | UCLM | Spain |
| Centre de coopération Internationale en Recherche Agronomique pour le Développement | CIRAD | France | Consiglio per la Ricerca e Sperimentazione in Agricoltura | CRA | Italy |
| Consejo Nacional de Investigaciones Científicas y Técnicas | CONICET | Argentine | Istituto Nazionale di Geofisica e Vulcanologia | INGV | Italy |
| Universidad de Buenos Aires | UBA | Argentine | Universidad de la Republica | UR | Uruguay |
| Instituto Nacional de Pesquisas Espaciais | INPE | Brazil | Institut de Recherche pour le Développement | IRD | France |
| Plant Research International | PRI | Holland | Max-Planck Gesellschaft Institut | MPI | Germany |
| Universidad de Chile | UCH | Chile | | | |

6. VAMOS Panel Executive Session

Drs. Wayne Higgins and Carolina Vera led off the VPM8 Panel Executive Session with a 6 point agenda that included (1) CLIVAR Report (Busalacchi), (2) Panel Recommendations for VAMOS Science Components, (3) Panel Recommendations for New Directions; (4) VAMOS NEWSLETTER, (5) VAMOS Panel Membership Rotation; and (6) 10th VAMOS Panel Meeting.

(1) CLIVAR Report

Dr. Tony Busalacchi gave a summary of the CLIVAR SSG-14 meeting which occurred during the week preceding VPM9. The summary included progress since SSG-13, with emphasis on basin panel activities, various meetings, and the new CLIVAR web site. Dr Busalacchi also provided a summary of JSC27, including the role of task forces, the ENSO definition exercise, various meetings such as a CLIVAR VACS East African Workshop, a request to review GEWEX MAHASRI and CEOP II, and the need for all projects to generate appropriate metrics.

(2) Panel recommendations for VAMOS Science Components

NAME: Dr. Higgins gave a brief overview of progress on NAME milestones, with emphasis on modelling and data assimilation activities designed to achieve the NAME guiding goal (improved warm season precipitation forecasts) over the next several years (see the NAME Status report for a list of NAME milestones).

Dr. Higgins indicated that the NAME SWG 2005 membership rotation had been completed and approved by the VAMOS Panel. Rotating members were Mike Douglas, Siegfried Schubert and Chidong Zhang and new members were Tereza Cavazos, Brian Mapes, Enrique Vivoni, and Steve Williams (ex-officio). Dave Gochis

will become NAME SWG chair following NAME SWG 8 (August 2006) and Wayne Higgins will become a member of the SWG for one additional 3-year term. During the transition period, Wayne and Dave will serve as co-chairs. The NAME SWG 2006 membership rotation will be initiated in early summer 2006 prior to NAME SWG 8. The NAME SWG 8 meeting will occur Aug 17-18, 2006 in Tucson, AZ. It will occur immediately following the CPPA PI meeting, Aug 14-16, 2006 in Tucson, AZ at the same venue.

MESA: Dr. Vera gave a brief overview of MESA milestones with emphasis on the reorganization of the MESA Priority Research Areas, and the corresponding modeling and field campaign activities planned to achieve the MESA goal (Integrated view of the American Monsoon Systems, improved monsoon predictability and prediction)

Dr. Vera indicated that Dr. Jose Marengo will become MESA SWG chair following VPM9 and Carolina Vera will become a member of the SWG until 2007.

VOCALS: Dr. Wood (standing in for Dr. Mechoso) gave an overview of the VOCALS activities and milestones. Particular focus was upon the recent news of a delay to the VOCALS-Regional Experiment (REx) field program to October 2008 (FY2009), largely due to the unavailability of the Ronald H Brown for the additional days requested. Dr. Wood also reported plans to develop the VOCALS modeling activities through the organization of a modeling workshop to which appropriate scientists from the key global modeling centers have been invited. The workshop will be held during summer 2006.

Dr. Wood presented the proposed rotation for the NAME SWG 2006 membership rotation. This involves approximately halving, from 21 to 11, the number of SWG members. Roberto Mechoso will remain chair. Those rotating out are Bruce Albrecht

P. Cornejo, David Enfield, Ena Jaime Espinosa, Laura Gallardo, Rene Garreaud, Pablo Lagos, Art Miller, Jose Meitin, Rodrigo Nuñez, Rafael Terra, Jose L. Santos, Bjorn Stevens, and Carlos Ereño. Proposed new members are Barry Huebert, Hemantha Wijesekera, Robert Wood and Shang-Ping Xie.

(3) Panel recommendations for New Directions

MGV

The panel was impressed with the progress of the Modeling Group for VAMOS (MGV). After considerable discussion, the panel concluded that the MGV Modeling Plan contained the proper set of science themes (SST variability in the Pan-American seas, monsoon life cycle, improving the prediction of droughts and floods, and diurnal cycle of precipitation and clouds) and associated cross-cutting themes (improving prediction, data assimilation, analysis and model improvements). Specific next steps are to (i) circulate the MGV plan to the VAMOS community for an additional review; (ii) forward the plan to the CLIVAR SSG for review and (iii) organize a VAMOS session for the FY07 WGSIP-TFSP workshop. SSG and JSC reviews of the modeling plan are welcomed.

IASCLIP

During the early part of VPM9, Jorge Amador presented an update on the IASCLIP Program for Victor Magana who could not attend. The presentation was excellent, and the VAMOS Panel was impressed with the need for IASCLIP. The VAMOS Panel will be asked to endorse the program via e-mail once a Science Plan and Implementation Strategy has been drafted (originally requested at VPM8) and presented to the VAMOS panel. This can be done via e-mail over the next year prior to VPM10. The plan should have strong linkages to the other VAMOS science components, to ongoing field activities (such as AMMA) and to the MGV integrated modelling plan. Subsequently, the IASCLIP Program would be submitted to the CLIVAR SSG for consideration as a 4th VAMOS Science component.

(4) VAMOS Newsletter

The second issue of the *VAMOS NEWSLETTER* was very successful with many superlative comments on the theme (VAMOS contributions to improved understanding, monitoring and prediction of heavy rainfall events). Volunteers in VAMOS Field Programs (e.g. SALLJEX, NAME) appreciate this forum for updates on VAMOS, affirming their participation, etc. The VAMOS Panel recommends that the contents remain relatively light. The VAMOS Panel would like to continue publishing the *VAMOS NEWSLETTER* on an annual basis with a specific theme.

The proposed theme for the 3rd issue is “Beyond Daily Weather Forecasts: Assessment and Applications of Seasonal Forecasting”. Relevant topics include

- (1) The future of seasonal prediction in the Americas;
- (2) The role of the land surface and oceans in seasonal prediction;
- (3) User needs for seasonal forecasts and the ability to meet them;
- (4) Applications of seasonal forecasts (e.g. energy, agriculture, fire weather, health, human dimensions)

(5) VAMOS Panel Membership Rotation

The panel members held a closed meeting to discuss the 2006 VAMOS Panel rotation. The VAMOS Panel had already asked the SSG for endorsement of these aspects of the 2006 Proposed VAMOS Panel membership rotation:

- 1) Carolina Vera will rotate off as VAMOS co-chair, VAMOS Panel member and MESA SWG chair by 30 April 2006.
- 2) Jose Marengo was nominated to become the next MESA SWG starting on 1 May 2006 for a 3-year term according to the TOR of the MESA SWG.
- 3) Dave Gochis was nominated to become the next NAME SWG chair starting on 1 October 2006.
- 4) Dave Gochis was nominated to become a VAMOS Panel member replacing Kingtse Mo.
- 5) Celeste Saulo was nominated to become a VAMOS Panel member replacing Carlos Nobre.
- 6) Hugo Berbery was nominated to become a VAMOS Panel member replacing Dennis Lettenmaier.

These nominations have been approved by the SSG.

In addition, the nomination of Jose Marengo to become the next VAMOS co-chair starting on 1 May 2006 was approved by the VAMOS Panel and forwarded to the CLIVAR SSG for approval.

(6) 10th VAMOS Panel Meeting

The venue and date of the 10th VAMOS panel meeting (the 10th Anniversary of VAMOS) was discussed. VAMOS Panel members agreed that it makes sense to showcase VOCALS, given that VOCALS-Rex preparations will likely be in full swing. Santiago, Chile was proposed as a possible venue, which would be excellent from several points of view. The issue has been raised with the VOCALS SWG to determine a date (Easter is April 8th), venue, and local host. Oscar Pizarro (University of Concepcion) has offered to host the meeting.

Dr Higgins ended the Executive Session by presenting Dr. Vera with a small token of appreciation on behalf of the VAMOS Panel and thanking her for numerous and tremendous contributions to the success of VAMOS over the years.

Annex A: List of Participants

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Annex B: Ninth Annual Meeting of the WCRP/CLIVAR/VAMOS Panel (VPM9)

Saturday, April 22, Morning Session, Plenary

Chair: E. Hugo Berbery (UMD)

8:15am Welcome

– Dr. C. Vera and Dr. Wayne Higgins - VAMOS Co-Chairs

8:30am VAMOS Chair's Report – C. Vera and W. Higgins

9:00am *Break*

9:20am VOCALS Status Report – R. Wood

9:40 am MESA Status Report – C. Vera

10:00 am NAME Status Report – W. Higgins

10:20am VAMOS International Project Office / VAMOS Database – S. Williams

10:40 pm CPPA Program – J. Huang

Special Presentations

Chair:

11:00 pm VAMOS Modeling Plan – B. Kirtman

11:20 pm IASCLIP Program – J. Amador

11:40 pm The NOAA Climate Test Bed – W. Higgins

12:00 pm *Lunch*

Saturday, April 22, Afternoon Session – VOCALS

Chair:

1:30 pm VOCALS Science: Offshore and Coastal – R. Garreaud

1:50 pm VOCALS Logistics – R. Wood

2:10 pm Aerosol-cloud interactions: the Chilean contribution – L. Gallardo

Saturday, April 22, Afternoon Session – MESA

Chair:

2:30 pm MESA Modeling activities - C. Saulo

2:50 pm MESA/LPB CSE Status Report - H. Berbery and M. A. Silva Dias

3:10 pm MESA Climate Change Studies - J. Marengo

3:30 pm *Break*

Saturday, April 22, Afternoon Session – NAME

Chair: Luis Farfan

3:50 pm NAMAP2 / NAME Climate Process Team – D. Gutzler
4:10 pm Modeling Studies from NAME 2004 - H. Berbery
4:30 pm The impact of eastern Pacific tropical cyclones over Baja California
- L. Farfan

Saturday, April 22, Afternoon Session – Special presentation

Chair:

4:50 pm CLARIS – J.P, Boulanger
5:10 pm CLIVAR Report – T. Busalacchi
5:35 pm WCRP: Implementing our New Strategic Framework- A. Henderson-Sellers
6:00 pm End

Sunday, April 23, Morning Session, VAMOS Panel Executive Session

Chairs: C. Vera and W. Higgins

8:00 am VAMOS Panel Executive Session
12:00 pm VPM9 ends

Sunday, April 23, Afternoon Session, MESA SWG Meeting

Chair: C. Vera

1:00 pm MESA SWG Meeting
6:00 pm Adjourn

Annex C:

**MESA Science Working Group
Panel Report from the 2st MESA SWG Meeting (SWG-2)
Foz do Iguacu, Brazil, 23 April, 2006
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2.4 The MESA hydroclimatic component over La Plata Basin

3. MESA SWG executive session

Appendix 1: List of Participants

Executive Summary

The 2nd MESA Scientific Working Group Meeting (SWG-2) was held on 23 April 2006, in Foz do Iguacu, Brazil. The meeting brought together the members of the MESA SWG and a group of invited participants with expertise and interests relevant to the MESA objectives. The objectives of the meeting were: to discuss the status of the preparation of the MESA implementation plan, to review progress on MESA modeling and diagnostic studies, to discuss MESA applications on La Plata Basin, and future field campaigns. The MESA SWG was also asked to review and update MESA milestones. SWG-2 meeting then consisted in a plenary discussion highlighting the key scientific basis for MESA, observational needs, modeling strategy, phases of implementation as well as Program organization.

The MESA SWG is very grateful to Carlos Nobre and personnel of INPE who were in charge of the local organization of the meeting. Special thanks are extended to Carlos Ereño (ICPO), and to our sponsors [OGP / CPPA (Jin Huang), US CLIVAR (David Legler), WCRP (Valery Detemmerman, Howard Cattle)]. Finally, we wish to thank all the colleagues who contributed to this report.

1. MESA status and issues

Dr. Carolina Vera summarized the progress made in reorganizing MESA in three main priority research areas (PRAs), PRA1: Diurnal and mesoscale variability, PRA2: Intraseasonal variability and PRA3: Interannual and longer timescale variability (including climate change), with the issue about the South American Monsoon System (SAMS) evolution and variability as a cross-cutting theme. Dr. Vera presented the progress made on SALLJEX data quality control and the generation of new datasets. Data assimilation experiments including SALLJEX data in NCEP/NCAR reanalysis and CPTEC analysis have been recently made available at the SALLJEX database. Further progresses have been made in the synthesis of SALLJEX scientific results that are contributing to a better understanding and modeling improvement of the tropical-extratropical interactions over South America during summer, that have been published in: Vera, C.; and 14 co-authors, 2006: The South American Low-Level Jet Experiment (SALLJEX), BAMS, Jan 06).

During 2005, significant progresses have been made in the assessment of the IPCC-AR4 simulations of present climate in South America. Some of them have been made in the context of CLARIS, an EU-funded project affiliated to VAMOS that gather scientists from South America, USA, and Europe.

In addition, she also discussed that the LPB (La Plata Basin) implementation steering group has been appointed to design and accelerate progress on the GEWEX-CLIVAR LPB CSE. The preparation of the GEF Project for the La Plata Basin management has ended and the project has been presented to GEF for approval. In particular, a field experiment and enhanced monitoring activities in La Plata Basin are being planned. Further information about LPB CSE is included in other sections of the report.

Dr. Vera finished by summarizing progress on MESA milestones that include: SALLJEX Data Assimilation experiments, planning of LPB CSE monitoring activities, assessment of the IPCC-AR4 simulations in the SAM region. Future milestones include: assessment of Seasonal prediction simulations in the SAMS region, development of MESA climate indices, seasonal simulation of SALLJEX season, LPB CSE monitoring implementation, regional downscaling of IPCC-AR4 simulations.

2. Summary of the sessions

2.1 Status of the MESA Implementation Plan

The session chaired by Jose Marengo and Carolina Vera, reviewed the status of the preparation of the MESA implementation Plan. During 2005, a first draft of the different sections of the plan was written by lead authors determined in MESA-SWG1. Then the plenary discussion followed in MESA-SWG2 was mainly focused on the sections of the Plan regarding the determination of the scientific objectives for the MESA priority research areas and the definition of the corresponding diagnostic, observational, and modeling activities. The main conclusions of the plenary discussion are summarized here:

The Life Cycle of the South American Monsoon System (Vern Kousky)

There was an agreement in focusing the scientific questions of this theme on the general question:

What are the leading processes controlling the seasonal evolution of SAMS and SACZ?

- 1) What is the role of transients (e.g., extratropical frontal systems) in the evolution (development and decay phases) of SAMS and in the development, position and intensity of the SACZ?
- 2) What is the relative role of the local versus remote forcing in driving the seasonal evolution of SAMS?

Diurnal and mesoscale variability (C. Saulo, E. Zipser, R. Terra)

In order to make progress in some key issues related to the diurnal cycle and mesoscale variability over SAMS, it is suggested to address the following specific questions:

Identify and quantify the diurnal cycle of precipitation associated with the main precipitation regimes documented over SAMS

- Which are the main processes underlying the identified diurnal cycles?
- Which is the physics of rainfall processes in different portions of the SAMS?
- To what extent/Through which mechanisms does soil hydrology affect the diurnal cycle?
- How does the diurnal cycle relate to the lower-frequency variability and the mean of the SAMS?

In order to accomplish the specific questions raised, the following are the recommended activities:

High resolution (both spatial and temporal) precipitation and convection data sets are needed. While the latter are available, the variety of techniques and algorithms used, make comparisons difficult. On the other hand, although there are sparse precipitation observations, there are increasing amounts of derived-precipitation data (proxies for precipitation) that need to be validated. An important issue is to critically compare rainfall estimates from different algorithms if research is to focus on actual precipitation, so that biases in the proxies are identified.

Models are a needed tool to analyze the main processes driving the observed diurnal cycle. Resolution is crucial for the ability to simulate MCSs. Very high resolution (i.e., 3 km grid size or smaller) experiments are needed to get a better picture of the organizational characteristics of MCS.

With regard to regional/weather/climate models and their ability to capture the diurnal cycle, the following recommendations arise:

- *The diurnal cycle is a basic climatic feature* in the consideration of all other scales (i.e. resonance with intraseasonal). A correct value for the annual mean may sometimes be obtained for the wrong reasons. The current status of the diurnal cycle in existing models should be documented. A pilot project will be to undertake a small diagnostic project, with runs already available, and then perform new runs. (WGCIP can help on that.)
- The simulation of MCS necessarily require a firm understanding of the close interaction between parameterized convective fluxes, including momentum ones, and mesoscale circulations that are explicitly resolved by the model's dynamics. Basic research is needed to address this issue and determine the resolution required to successfully simulate the relevant dynamics. This effort has to be accompanied by observational studies that could improve our understanding of MCSs and provide the observational and reanalyses datasets required to guide the modeling work.

Intraseasonal variability (Leila Carvalho, Julia Nogue Paegle, C. Jones, V. Misra)

The following scientific questions were identified as relevant to make significant progresses on the understanding and prediction of the intraseasonal oscillations (ISO) in South America:

- What are the underlying processes (local and remotely forced) associated with different time scales of ISO?
- How does ISO modify regional circulation patterns in South America? How does the ISO over South America affect regions outside South America?
- What is the evidence for inter-annual and longer modulations of the ISO over South-America?
- What are the relationships between ISO and extreme weather events (e.g. precipitation and temperature) in South America?
- How well are local and remote forcings known and specified in model simulations?
- Do GCM models have ISV? Which models do? Is the skill of seasonal forecasts dependent on the strength of the ISV?
- How do ISO affect predictability in SAMS? Is the predictability and signal of the ISO dependent on initial conditions? What ensemble methodologies succeed in measuring signal/noise ratio for simulation of IS time scales?
- How important is to reproduce the diurnal cycle in SA for simulations of the ISO?

In order to accomplish the specific questions raised, the following actions were recommended:

- Evaluate existing gridded and field data (e.g. SALLJEX) to obtain measures of analysis fit to observations, intercomparison of existing and future reanalysis with and without field data to obtain best analyses to study IS variability
- Describe remote and local forcings as well as the internal dynamics of ISO. Easy access to vegetation cover data, as well as other measured quantities of fluxes (including carbon) from towers, best cloud climatologies, precipitation estimates from space (CMORPH) Radar, gages and other data from remote platforms (including the extent of the Antarctic ice) would help accelerate progress in this topic. This can be accomplished by establishing electronic pointers to such data sets.
- Perform diagnostic analyses related to:
 - complex scale interactions that modulate intraseasonal variations from diurnal through inter-annual and decadal, and from mesoscale systems through planetary scale and inter-hemispheric interactions.
 - local versus remote forcing through observational studies that include special surface data and simplified numerical (and theoretical) models.
 - remote contributions to the SA ISO from the tropics and extra-tropics
 - evaluation of dependence of model skill on the ISV
 - evaluation of climate and extended numerical forecasts.
 - develop a “conceptual model” of the ISO and its manifestation over SA to test the ability of different models in this regard.
- Regarding numerical simulations of the ISO in South America:
 - There is a recognition that ISO evolve on a time varying basic state and this offers opportunities and challenges in developing weather and climate numerical models. Dependence of SAMS onset on initial conditions that contain IS signals needs to be captured in numerical simulations.
 - There was general agreement that simulation of the ISO over SA requires a coupled model to properly simulate the ocean-air interaction in the SACZ, sophisticated regional models with adequate land-air interactions to downscale the signal over the highly complex surface conditions of SA, and a modeling approach that allows for local processes to feedback in the large scale circulation.
 - Extended numerical integrations (from CPTEC and four different model runs) are available and could be diagnosed to examine the veracity of ISO simulations.
 - Extended simulations with coupled and uncoupled general circulation models participating in the IPCC Fourth Assessment Report are available for the present climate and future climate scenarios. These model runs can be used to assess which GCM’s best simulate the mean climate and intraseasonal variability in South America.

Interannual and Interdecadal Variability (A. Grimm, B. Liebmann, and T. Ambrizzi)

The basic objectives are to understand and improve prediction of the monsoon system. In order to achieve these objectives, the following questions must be addressed:

- How does the interannual to decadal variability influence the SAMS evolution?
- How do land surface processes and biomass burning affect variability?
- Are there prognostic relationships between the western subtropical South Atlantic SST variability and the precipitation variability in central-east Brazil or SACZ, or is there an active role of SST in subtropical Atlantic in setting up the precipitation variability over or near the SACZ?-rephrase?
- How do the leading patterns of large scale circulation (atmospheric/oceanic) influence the South America monsoon variability?
- How does the interannual and decadal variability affect the frequency of daily extreme events?

In order to accomplish these objectives, it is at a minimum necessary to accomplish the following:

- Define climate indices to monitor SAMS variability.
- Improve access to historical precipitation and temperature records. At present, there is reasonable coverage over many parts of South America for about 30 years. While this is marginally adequate to address issues of large-scale interannual variability, this coverage is inadequate to address issues of regional scale variability and long term trends. There is still very little cooperation between agencies

and countries to achieve the optimal product by which to valid numerical simulations and conduct observational studies.

- Develop soil moisture data sets. Recent studies have indicated an important influence by variations of soil moisture in the determination of precipitation and temperature variability. While specialized data sets (e.g., ABRACOS) exist, they only cover one small and specific region. There is presently no large-scale spatial information available for any time scale approaching interannual, decadal. Prospects for obtaining direct historical records are weak, so the hope is some combination of satellite and hydrological modeling an eventually yield a research tool that would be immensely valuable. Improve land-surface models.
- Develop aerosol-loading indices. Potentially, this could be developed from satellite data sets and air quality indices, but it remains and unfulfilled priority.
- Enhance modeling and diagnostic studies to refine the relationships between SST and precipitation/temperature variability, in order to improve prognostic relationships, especially in central-east Brazil. Enhance observations in western subtropical South Atlantic.
- Investigate the relationship between NAO and SAM. Although there are some previous works that show how tropical north Atlantic anomalous SST can influence the rainy season over Northeast Brazil through the modification of the ITCZ position, particularly during the austral autumn season, it is still not clear how the impact is during summer. Statistical data analysis using observational data and global – regional numerical modeling are important to test some hypotheses.
- Investigate inter-ENSO variability and its impact on regional precipitation. There is some concern about the metrics for classification of the ENSO events (CDC) and the potential impact of the metrics on the analysis on long term series in order to explore the longer time variability.

Long-term variability and Climate Change (J. Marengo, R. Terra, C. Nobre)

The main goal of this component is to assess the expected impact of anthropogenic climate change on the functioning of the SAMS.

In order to achieve this goal, the following scientific questions must be addressed:

- What are the patterns and magnitude of SST increase in the oceans surrounding the South American continent under climate change scenarios?
- How will large-scale skin temperature differences in the tropics, which largely determine the convective regions, evolve in a warming climate?
- How will Hadley and Walker cell circulations change due to the modified boundary conditions?
- To what extent does the seasonal cycle of SAMS will change under climate change scenarios? How do the monsoon onset and the wet and dry seasons will change? Will the intensity of the rainy season change? Will the extension of the dry season change?
- How will energy and water balances in the SAMS region behave?
- How will the low-level moisture transport in the SAMS change on time and space? How will SALLJ and related rainfall behave in future climate? Will the observed positive trends in SALLJ events and rainfall over the Amazon and LPB persist on future climate change?
- Will the observed rainfall dipole between SACZ and SESA regions change under future climate changes?
- How will SAMS seasonal climate predictability change in future climate scenarios? To what extent will the ENSO signature in SAMS and LPB change? How will the projected intensification of the AAO in future climates affect the SAMS region?
- Will the observed soil moisture forcing on SAMS persist or change?
- How will rainfall and temperature extremes (frequency and intensity) in the SAMS-LPB region behave under future climate change scenarios? How will hydrological extremes in the SAMS-LPB region change?

To accomplish the goals and to address the scientific questions, the following actions are proposed in the context of the SAMS-MESA Science Plan:

- Analyses of simulation of long term climate simulations for the XX Century (C20C-AGCMs forced by observed global SSTs and IPCC AR4 20C3M –AOGCMs run for the same period).
- Implementation of modeling activities including experiments on land-use change and GHG forcing individually and combined in order to assess regional feedbacks on SAMS intensity and variability.

- Regional downscaling of present time and future climate change scenarios for the SAMS
- Modeling simulation of extremes under climate change scenarios.

2.2 MESA Modeling and Data Assimilation (I. Cavalcanti, A. Seth, C. Saulo, B. Kirtman, V. Misra)

The MESA modeling objectives are organized by modeling strategy (assessment and hypothesis testing), and by specific modeling activities (methodological improvements, data assimilation, and parameterization development) and are designed to achieve MESA Scientific objectives which span spatial and temporal scales associated with the South American Monsoon System. As such, MESA modeling objectives include:

- *Model Assessment*
 - Verify the ability of models to simulate and predict features of the SAMS
 - Identify model deficiencies
- *Model Development*
 - Improve the seasonal prediction and weather forecasting over South America
 - Stimulate the development of physical parameterizations
 - Implement data assimilation
- *Hypothesis Testing*
 - Evaluate scientific hypotheses to meet MESA science objectives.

While several modeling activities have been determined in the previous sections, the following modeling issues were also identified as key to make progress on the modeling of SAMS:

- Land data assimilation,
- Hydrological modeling
- Regional reanalyses
- What are the features of SAMS that are and are not well simulated/predicted on diurnal, intra-seasonal, annual, and inter-annual timescales
- Are there consistent errors among models that can be attributed to specific formulations of physical parameterization?
- Can soil moisture memory help for seasonal predictions for South America?
- How to improve the treatment of orography?
- What is the role of Atlantic SST forcing? What is the difference between tropical versus extratropical influences?
- What are the roles of local versus remote forcings?
- Are the models able to simulate/predict the lifecycle of the SAMS?
- How is the diurnal cycle represented in the models?
- How to improve predictability considering simulation/prediction of teleconnection patterns that affect SAMS?
- Will a combination of models (super ensemble) provide greater predictability? What combination techniques should be used?

2.3 MESA and the South Atlantic (R. Matano, P. Nobre)

In spite of the strong evidence on the linkages between the South Atlantic SST's and climate variations over South America our understanding of the coupling between the oceanic circulation and climate variability has

been hindered by the scarcity of dedicated observational and modeling studies. To stimulate further research in these matters MESA recommends prioritizing the following questions:

- What are the relative contributions of remote and local influences on the determination of the South Atlantic SSTs anomalies? What is the ocean's role in creating SST anomalies? What is the relative importance of the thermocline variability and the mixed layer variability?
- What are the physical mechanisms that cause the SST variability on interdecadal, interannual, and intraseasonal timescales in the South Atlantic? What are the feedbacks among surface heat fluxes, winds, heat content and SSTs that contribute to the low-frequency SST variability?
- What are the mechanisms driving ENSO signals in the South Atlantic and how do they impact on South America and Africa? How do the subseasonal variations of circulation and SST in the southwestern subtropical Atlantic, associated with ENSO, interact with each other?
- Are the decadal-multidecadal signals seen in the South Atlantic a regional mode or part of a near-global signal and how do they relate with the interdecadal variability observed in the South American climate?
- Does the South Atlantic influence global modes of climate variability? (e.g. ENSO, NAO, etc).
- Do SST changes in the Brazil/Malvinas Confluence influence the regional climate?
- What are the mechanisms by which the South Atlantic's variability influences the ITCZ variability?

To address the above questions it is necessary to advance our understanding of the role of the South Atlantic SSTs on the regional climate as well as the role of the oceanic circulation on the generation of the SST's anomalies. To understand the role of the oceanic circulation on the generation of SST anomalies we need to improve our understanding of the South Atlantic circulation and its connection to the neighboring basin.

The lack of continuous observations of both ocean and atmospheric conditions over the southwestern Atlantic has limited the understanding of the air-sea interaction in the SACZ region on observational basis. It is therefore expected that a system for observation of the air and surface and subsurface ocean conditions over the southwestern Atlantic will help validate and improve climate models, provide data required for prediction purposes, and for climate variability and climate change monitoring. Currently only the tropical Atlantic is being monitored as part of the Pilot Research Moored Array in the Tropical Atlantic (PIRATA). However, the PIRATA backbone and its southwest extension, proposed by Brazil, are located north of the region of high precipitation associated to the SACZ. Thus, it is proposed to deploy an additional ATLAS type buoy in the western subtropical South Atlantic in the region of maximum rainfall associated to the SACZ. The new site will complement the PIRATA southwestern extension and provide the much needed information necessary to better understand the role of sea-air interactions and vertical mixing at the base of the ocean mixed layer. Given that there are no time series observations in the subtropical South Atlantic, to some degree the proposed observations should be viewed as exploratory. The site is located approximately at 28°S – 43°W, east of the core of the Brazil Current. Historical hydrographic data reveals that the sea surface temperature at this location varies between 19 and 26°C, and the mixed layer depth increases from ~20 m in January to ~150 m in August.

Though the region is recognized as important for the regional continental climate, there is no knowledge on the interannual variability and on how these changes are related to the ocean circulation. In that sense, during MESA SWG-2 meeting a presentation about a proposal for a new CLIVAR initiative for the southwestern Atlantic Basin was presented by Paulo Nobre (INPE/CPTEC). The purpose of WAVES (southWestern tropical Atlantic climate Variability Experiment) is to develop a field experiment and coupled modeling research program to study ocean-atmosphere-land phenomena leading to South Western tropical Atlantic-South American climate variability and change. In the near future, the full proposal will be submitted to CLIVAR's Atlantic Implementation Panel and VAMOS for consideration. WAVES scientific questions will be related to better understand the coupled ocean-atmosphere variability associated to SACZ, including: SST-Solar radiation-rainfall feedback processes, barrier layers due to SACZ rainfall over the ocean and river discharges, Amazon soil moisture-rainfall memory: ITCZ-SACZ-LLJ interactions, teleconnections from the SPCZ, among others.

2.4 The MESA hydroclimatic component over La Plata Basin (H. Berbery, A. Silva Dias)

The hydroclimate system of the La Plata basin presents several challenges that have become apparent along the years; from vulnerability to floods and droughts to efficiency of hydropower production. CLIVAR and GEWEX recognized the uniqueness of these components, and first formed a study group, known as Platin, with the desire of identifying the main issues that need to be addressed in the basin. This group identified several main problems that can be summarized in the following questions:

- What climatological and hydrological factors determine the frequency of occurrence and spatial extent of floods and droughts?
- How predictable is the regional weather and climate variability and its impact on hydrological, agricultural and social systems of the basin?
- What are the impacts of global climate change and land use change on regional weather, climate, hydrology and agriculture? Can their impacts be predicted, at least in part?

These questions, along with a large mass of scientific knowledge in the region, determined that the GEWEX Hydrometeorological Panel accepted La Plata basin (LPB) as a Continental Scale Experiment (CSE). Together with VAMOS, they named an Implementation Steering Group that needs to elaborate the activities that need to be performed to address the above questions. This interdisciplinary group will work together with research and operational centers to find the most efficient ways of addressing the activities to be developed. The implementation plan envisions two main activities, monitoring of hydroclimate variables and a field experiment to develop a set of unique data that will (a) help understand the land surface-atmosphere processes that may lead to persistent events, and (b) to calibrate and improve parameterizations in regional and global models employed for forecasting and prediction up to seasons.

The monitoring system of LPB CSE will have three basic elements: (a) a network for monitoring the diurnal cycle of precipitation; (b) a flux tower that includes CO₂ fluxes; and (c) a wind profiler. The feasibility of having radar nearby is currently being explored and a network of digital raingauges with high temporal resolution will be complementing the radar.

In complement to the monitoring activities, a comprehensive field experiment with a focus on land surface atmosphere interactions (PLATEX) is being planned that will lead to improvements of both atmospheric and hydrologic models. The Field Experiment (a) will provide a set of intensive observations for the diagnosis and forecasting of MCSs and other precipitation events; (b) will give a quantitative measure of the impact of additional datasets on weather forecasts for the basin; (c) training of weather services employees in data assimilation and new forecast techniques, including sharing information and developing shared activities among the services. PLATEX will last about four months, during spring/early summer, and will include the enhancement, of surface and atmospheric observations by means of conventional and non-conventional equipment, and particularly taking advantage of S Band Doppler radar. Radar in the pilot region is a critical component for the studies of MCSs and the diurnal cycle of precipitation. Therefore if no operational radar (Asuncion, Paraguay) is available, portable radar will be temporarily installed during the field campaign. Potential sites are either Foz do Iguassu (Brazil) or Puerto Iguazu (Argentina). The radar estimates will be complemented with the network of raingauges already discussed previously. Also, in order to reduce the uncertainties in estimating the diurnal cycle of the moisture and heat fluxes, four times daily ((00Z, 06Z, 12Z, 18Z) radiosonde observations will be performed in Uruguayana (Brazil), Foz do Iguassu (Brazil), and Resistencia (Argentina). Depending on funding, those observations will be complemented with three other sites also measuring four times daily, in Salta (Argentina), Mariscal Estigarribia (Paraguay) and Corumba (Brazil).

It is expected that the GEF Framework Program for the La Plata Basin (<http://www.cicplata.org/marco/>) will partially support the monitoring activities and the field campaign of the LPB CSE.

3. MESA SWG Executive Session

Besides the change of MESA SWG Chair (Carolina Vera was replaced by Jose Marengo), there was no other change in the SWG membership, which its status is as follows:

| | |
|---------------------------|-------------|
| José Marengo (Chair) | (2004-2008) |
| E. Hugo Berbery | (2004-2008) |
| Leila Vespoli de Carvalho | (2004-2009) |
| Alice Grimm | (2004-2007) |
| Vern Kousky | (2004-2008) |
| Brant Liebmann | (2004-2009) |
| Julia Nogues-Paegle | (2004-2007) |
| Tercio Ambrizzi | (2004-2007) |
| Ricardo Matano | (2004-2009) |
| Carlos Nobre | (2004-2007) |
| Celeste Saulo | (2004-2008) |
| Anji Seth | (2004-2009) |
| Rafael Terra | (2004-2007) |
| Carolina Vera | (2004-2007) |
| Ed Zipser | (2004-2009) |

The current MESA milestones presented at VPM9 executive session are:

- FY04:
 - ✓ Quantitative information of the model errors in SALLJEX
 - ✓ Evaluation of impact of SALLJEX data on analysis and forecasts
 - ✓ Confirmation about the ability of the models to reproduce some of the elements of the low-level circulation of the SAMS
 - ✓ Preparation of GEF-PLATIN survey reports
- FY05:
 - ✓ SALLJEX Data Assimilation.
 - ✓ Planning of LPB CSE monitoring activities.
 - ✓ Assessment of the IPCC-AR4 simulations in the SAM region.
- FY06:
 - Assessment of Seasonal prediction simulations in the SAMS region.
 - Development of MESA climate indices
 - Seasonal simulation of SALLJEX season.
 - LPB CSE monitoring implementation.
 - Predictability of the SAM associated with Atlantic SST simulations.
 - Regional downscaling of IPCC-AR4 simulations.
- FY07:
 - LPB CSE experiment implementation, data collection, and integration.
 - Assessment of extreme event frequency changes in the regional climate change scenarios for South America and their impact on agricultural activities.
- FY08:
 - Evaluate the impact of soil moisture in simulations and predictions.
 - Hydrological studies of PLATEX data

- Ultimate goal: Integrated view of the American Monsoon Systems, related interhemispheric connection, monsoon predictability and prediction

The venue for the MESA SWG-3 meeting was not discussed but it will likely be the same than that for the VPM10.

Appendix 1: List of participants

Vera, Carolina
Boullanger, Jean Philippe
Garreau, Rene
Goddard, Lisa
Nobre, Carlos
Ambrizzi, Tercio
Berbery, E. Hugo
Grimm, Alice
Liebmann, Brant
Marengo, Jose
Matano, Ricardo
Saulo, Celeste
Seth, Anji
Terra, Rafael
Vespoli de Carvalho, Leila
Zipser, Ed
Cavalcanti, Iracema
Nobre, Paulo
Silva Dias, M. Assuncao
Silva Dias, Pedro
Vasu Misra

Ereño, Carlos
Huang, Jin
Meitin, Jose
Williams, Steve

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