

Progress in American monsoon research: An Overview of the CLIVAR Variability of the American Monsoon Systems (VAMOS) Panel and emerging priorities in American monsoon research

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The Variability of the American Monsoons System (VAMOS) Panel has been active for more than 14 years, and its achievements through its science components and field campaigns are numerous. Coordinated research efforts initiated with the South American Low-level Jet EXperiment (SALJEX), and were followed by the North American Monsoon Experiment (NAME) and the Monsoon Experiment of South America (MESA) programs. Continuing with the same structure, two other more recent science components were approved and are currently underway The VAMOS Ocean- Cloud- Atmosphere-Land Study (VOCALS) with its Regional EXperiment (VOCALS-REX) in the Southeast Pacific, and the Intra-Americas Study of Climate Processes (IASCLIP). These integrated research programs have addressed fundamental climate process and predictability issues that have led to much improved understanding of the mechanisms controlling monsoon climate variability on a range of spatial and temporal scales. Building on these past achievements, a new set of monsoon science priorities is now being developed which will guide the next decade of CLIVAR/VAMOS activities. While the model of "science components" has proved to be highly successful to promote individual VAMOS priorities, a need to cover themes across the Americas has emerged, and cross-cut groups are actively leading this effort. The objective of these efforts is to improve regional integration of observational and modeling efforts. This new approach facilitates the interaction with other CLIVAR and WCRP Panels, and makes significant contributions to the CLIVAR Imperatives and to the WCRP strategic framework. In one cross-cut effort the VAMOS Modeling Group prepared a plan that not only served to define future priorities for VAMOS, but also facilitated the development of collaborations with the Working Group on Seasonal to Interannual Prediction (WGSIP). A modeling workshop is being planned to take place together with the next VAMOS meeting during late April 2012. A second cross-cut, the VAMOS Extremes Working Group has developed an "Extremes Atlas for the Americas" and has close collaborations with WCRP's Drought Interest Group (DIG). Finally, a cross-cut group on Anthropogenic Climate Change has prepared a preliminary document and now they are working on identifying common priorities for research that emphasizes climate change impacts on American monsoon systems in the Americas. More recently, VAMOS is reaching out beyond the Americas to further collaborations with the CLIVAR Atlantic Implementation Panel (AIP). The motivation for this effort is that model errors in the Atlantic basin do not only have local effects, but they may propagate and affect convection over the Amazon, Caribbean and American monsoon regions. A joint AIP-VAMOS Southeastern Atlantic workshop was held to refine the scope of the scientific questions to be addressed, to tighten scientific hypotheses and to attempt to structure a research framework based on the spatial and temporal scales of the issues to be addressed.