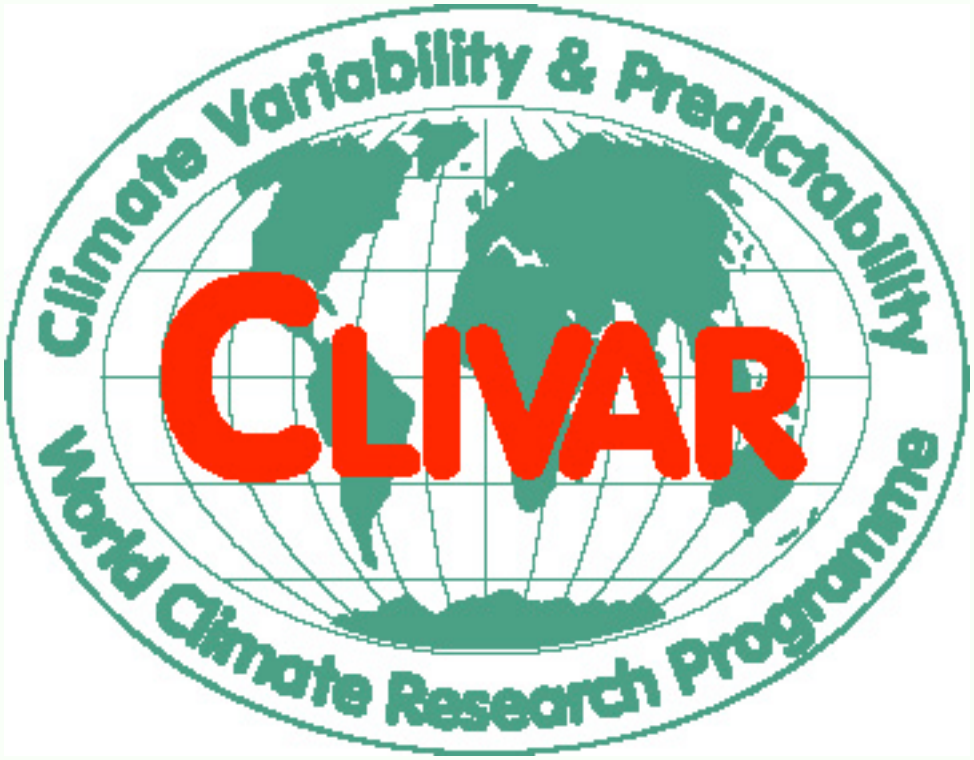


http://www.clivar.org

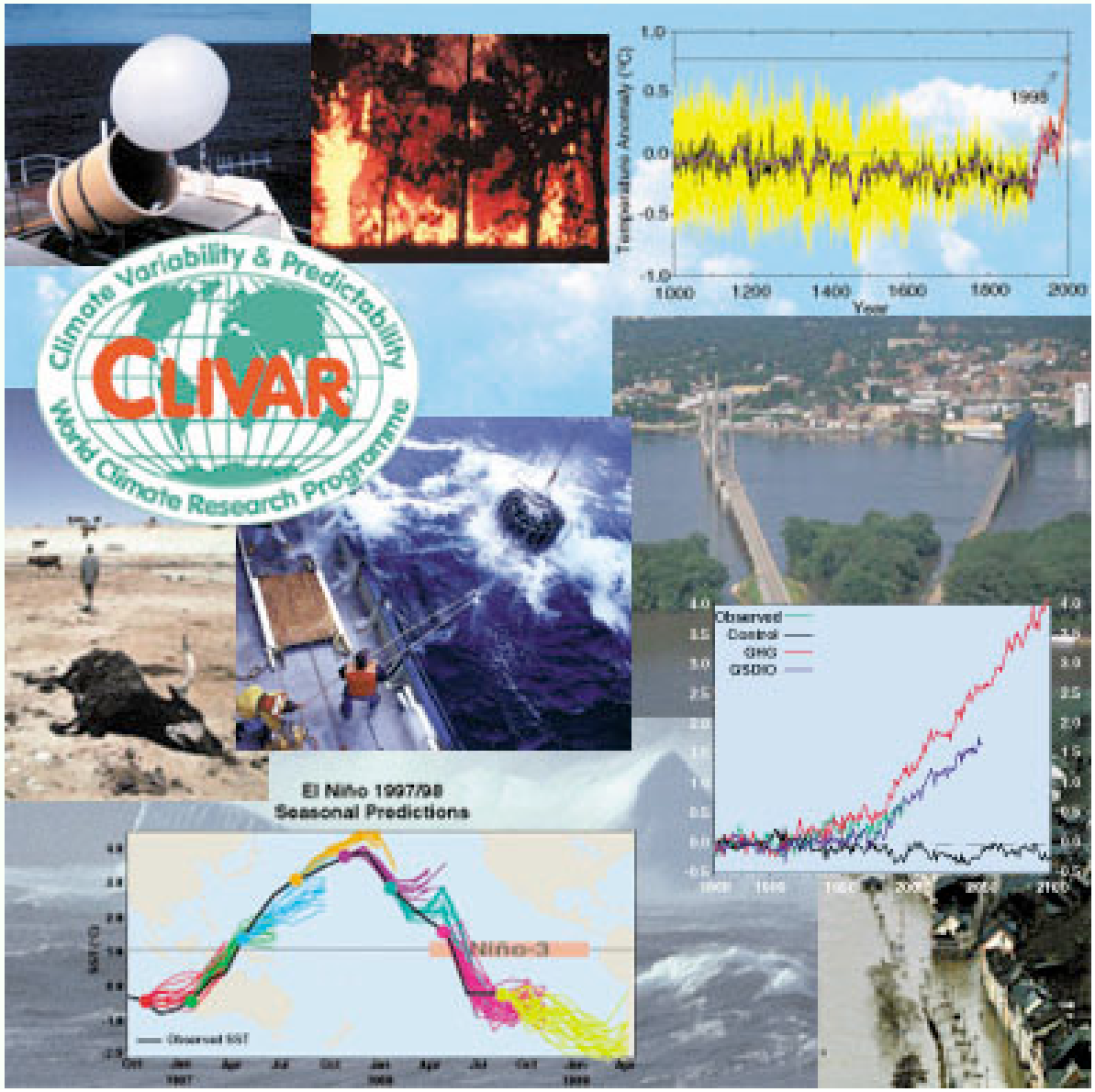
Tony Busalacchi, Co-Chair, CLIVAR SSG

CLIVAR (Climate Variability and Predictability)

CLIVAR is an interdisciplinary research effort within the World Climate Research Programme (WCRP) focusing on the variability and predictability of the slowly varying components of the climate system.

CLIVAR investigates the physical and dynamical processes in the climate system that occur on seasonal, interannual, decadal and centennial time-scales.

http://www.clivar.org



CLIVAR objectives (1)

- **To describe and understand the physical processes responsible for climate variability and predictability on seasonal, interannual, decadal, and centennial time-scales, through the collection and analysis of observations and the development and application of models of the coupled climate system, in cooperation with other relevant climate-research and observing programmes.**

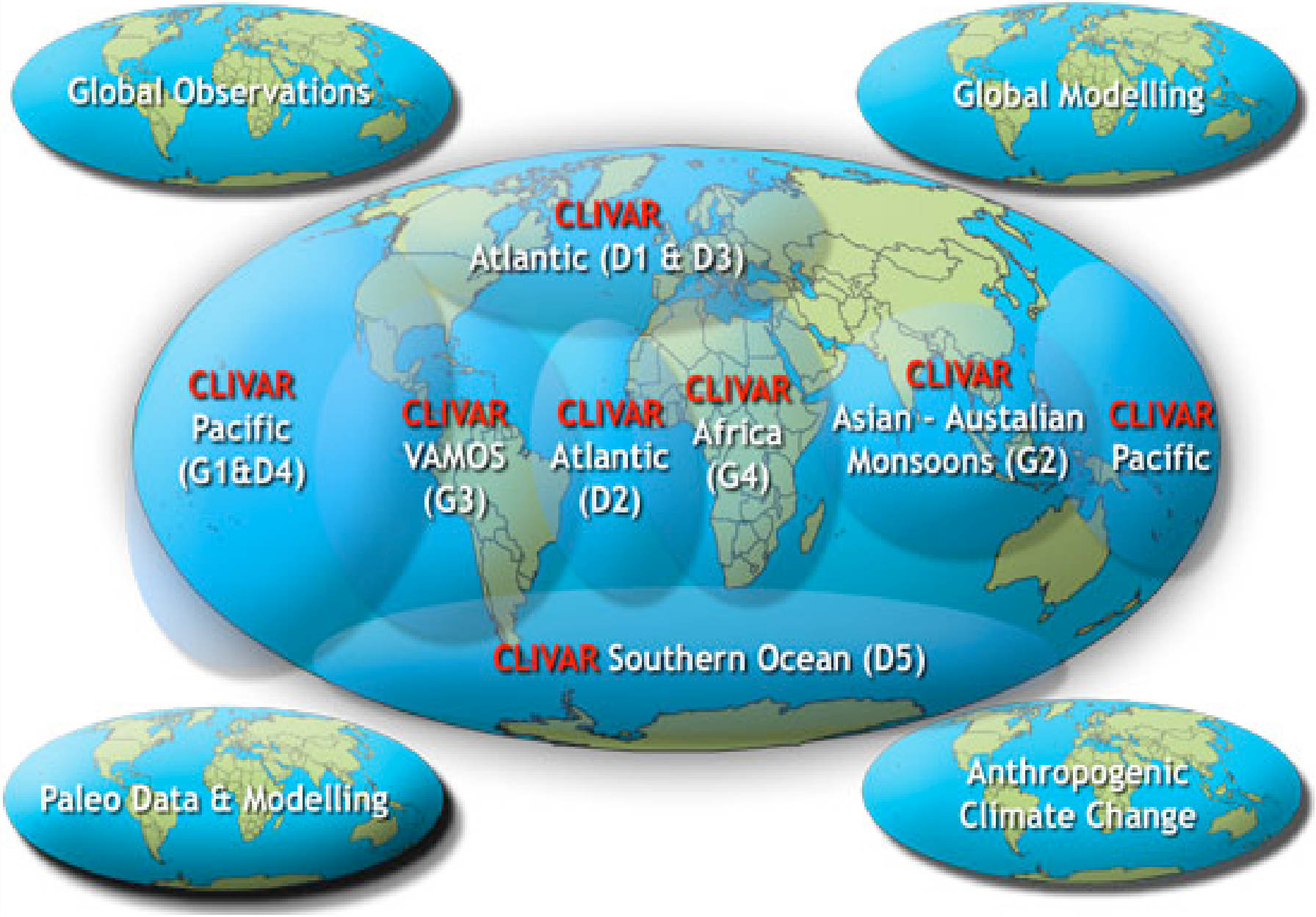
- **To extend the record of climate variability over the time-scales of interest through the assembly of quality-controlled paleoclimatic and instrumental data.**

CLIVAR objectives (2)

- To extend the range and accuracy of seasonal to interannual climate prediction through the improvement of global and regional climate models.

- To understand and predict the response of the climate system to changes in atmospheric composition and detect any anthropogenic modification of the climate system.

CLIVAR - global view



CLIVAR 2004

1st International CLIVAR Science Conference
June 21-25, 2004, Baltimore, USA

Understanding and Predicting Our Climate System

www.clivar2004.org

The international research program on CLImate VARiability and predictability (CLIVAR; www.clivar.org) under the auspices of the World Climate Research Programme (WCRP), focuses on describing and understanding variability and change of the physical climate system on time scales from months to centuries and beyond. CLIVAR's goal is to assess predictability, and develop information systems and practical prediction capabilities.

The 1st International CLIVAR Science Conference will feature:

- **Invited overviews prepared by expert teams**
- **Stimulating invited presentations and discussion forums**
- **Contributed poster presentations (with special emphasis on young scientists' participation)**

Contributions are solicited on research topics that include, but are not limited to:

- **Advances in understanding elements of the climate system**
  Seasonal-to-interannual variability, especially ENSO, monsoon systems, decadal (and longer) variability, and anthropogenic climate change
- **Looking into the past**
  Analysis of paleoclimate records; reanalyses
- **New approaches to climate prediction**
  Modeling, data assimilation, and validation
- **Improvements to the observing system**
- **Climate applications**
  Who are our clients? What products and information do they need?

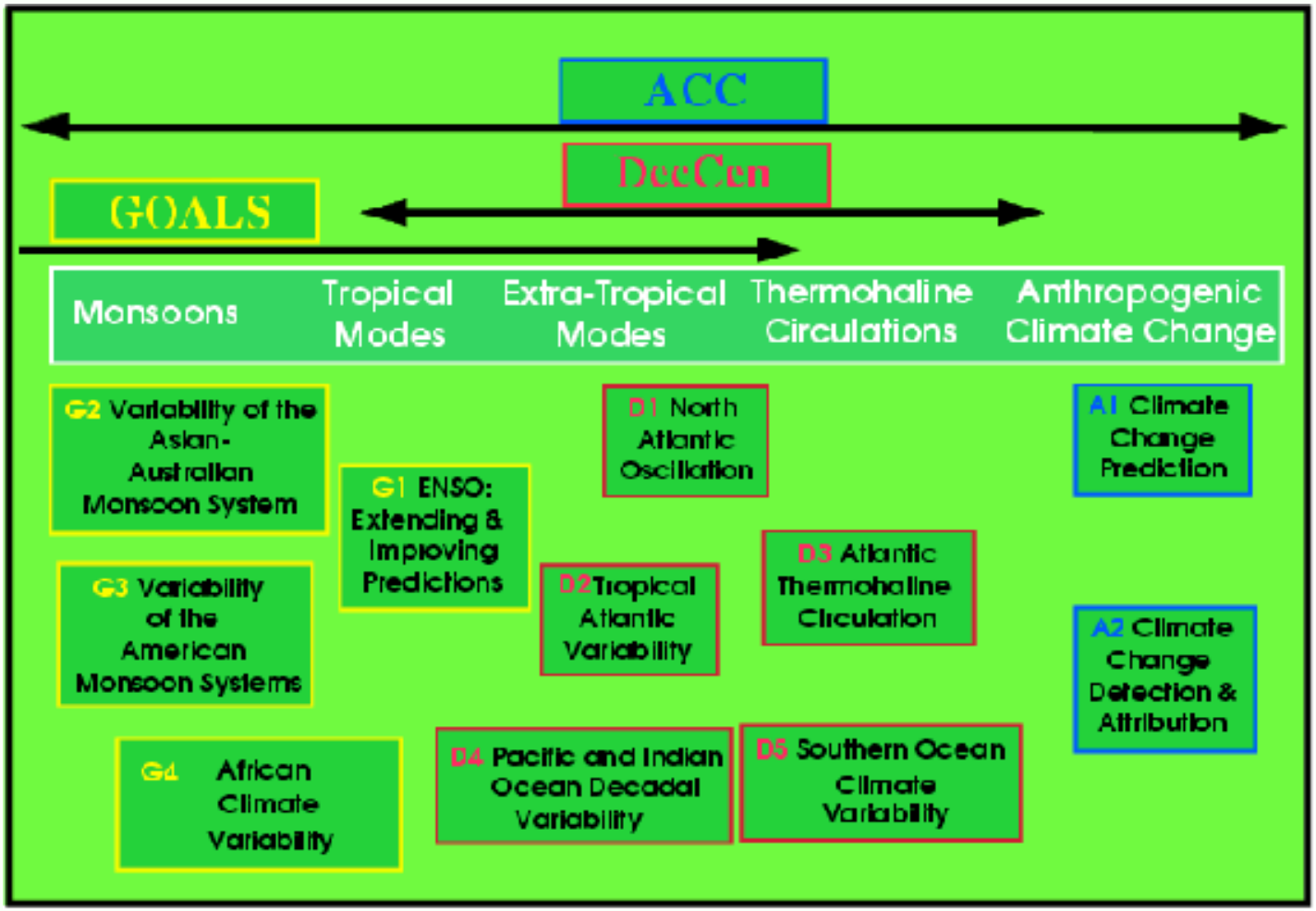
Organizing Committee

A committee of international scientists is organizing the conference. Leaders of this committee include:

- Lennart Bengtsson (Max-Planck-Institut, Hamburg) – Organizing Committee Chair
- Antonio Busalacchi (Univ Maryland) – CLIVAR Scientific Steering Group Co-Chair
- Jurgen Willebrand (IFM, Kiel) – CLIVAR Scientific Steering Group Co-Chair
- David Legler (US CLIVAR Office) – Local Organizing Committee Chair

Conference contact: info@clivar2004.org

CLIVAR - Principal Research Areas



CLIVAR Summary
Highlights 2003-4

- ARGO deployments, 1000+, on target for 3000 by 2006
- GSOP as a CLIVAR synthesis activity
- Ensemble forecasts and application links
- VAMOS ➔PLATIN transition (i.e., “poster child” for WMO research to ops)
- EPIC impact on parameterizations (CPT concept)
- Southern Ocean space-time observations and Good Hope Project
- Formation of Indian Ocean Panel
- CLIVAR Data Management

WCRP is establishing two Major Panels:

WCRP Modelling Panel

WCRP Working Group on Observation and Assimilation (WGOA) of the Climate System

Variability of the American Monsoon Systems

A WCRP/CLIVAR program focused on the climate of the Americas

Chair's Report

VPM7

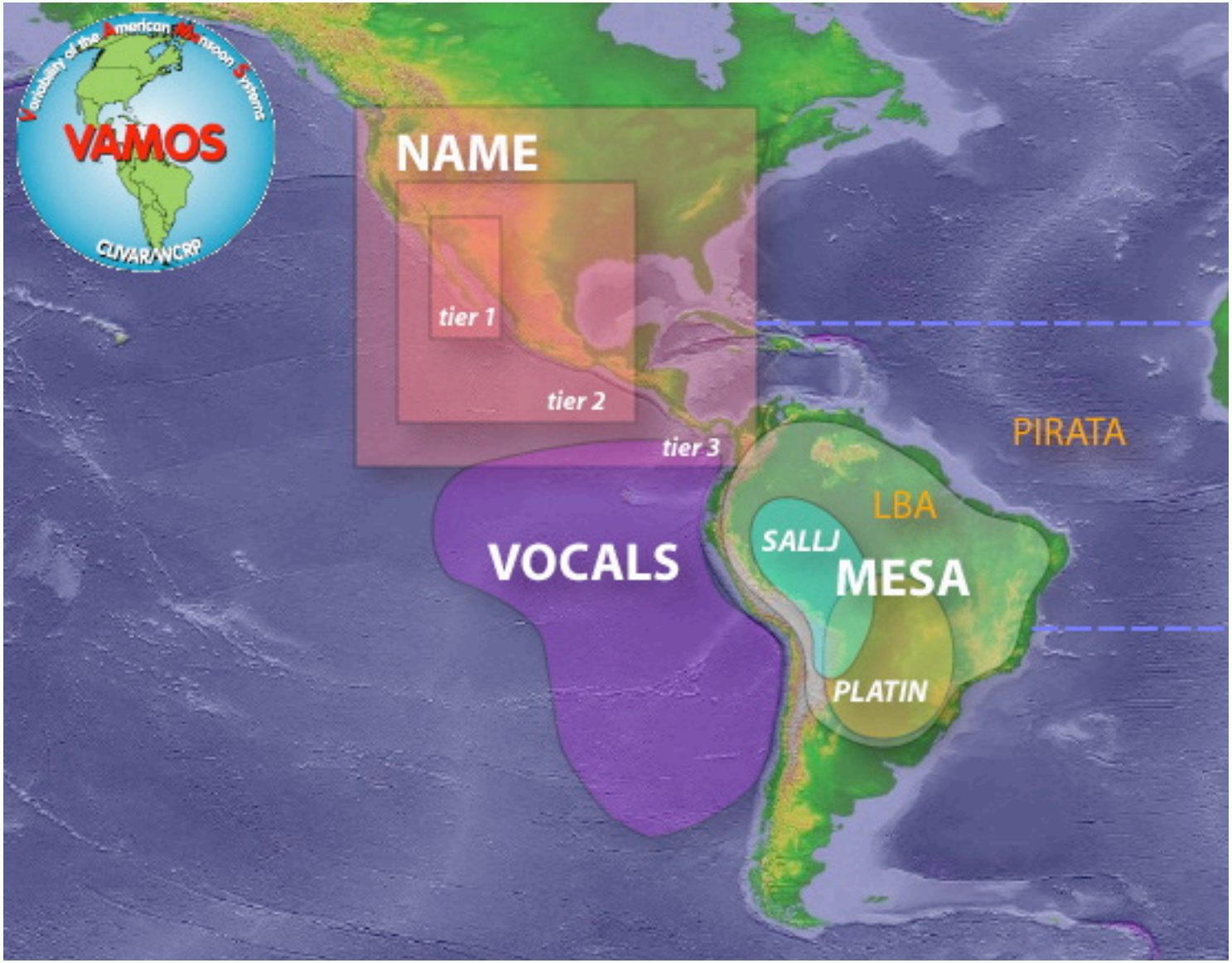
Guayaquil, Ecuador, March 2004

C. R. Mechoso

Implementation

- **Science components**
  - **North American Monsoon Experiment (NAME), currently coordinating NAME04**
  - **Monsoon Experiment South American (MESA), coordinated SALLJEX and sponsors the PLATIN SSG**
  - **VAMOS Oceans-Clouds-Atmosphere Land Studies (VOCALS)**
- **Dataset Development**
  - **VAMOS database**
- **Projects Support**
  - **VAMOS Project Office**

VAMOS Programs 2004



Implementation highlights

- **NAME**

  Plans for NAME 2004 Field campaign well underway and partially funded.

- **MESA**

  SALLJEX data analysis in progress. The PLATIN SSG participates in a GEF-funded project.

- **VOCALS**

  Instrumentation installed in Chilean Island. Plans for a Research Program in the Eastern Pacific are underway.

NAME ACTIVITIES (2003-04)

- **Ocean Processes:**
  - Ocean Component of NAME Workshop (Ensenada, Apr 03)
- **Land Surface Processes:**
  - Soil Moisture Field Experiment (SMEX 04) funded (NASA THP) (Apr 03)
  - NAME Hydrometeorology Working Group formed (Jan 03)
- **Modeling:**
  - Modeling and Data Assimilation Workshop (College Park, Jun 03)
  - Modeling and Data Assimilation Strategy Document (Jun 03, revision in progress)
- **NAME 2004:**
  - NAME 2004 Solicitation (NOAA PACS/GAPP, May 03)
  - NAME International Project Support Team meeting (May 03)
  - NAME Forecast Operations Centers Exchange Visits and Forecasting (Summer 03)
  - NSF Briefing on Tier 1 Observations (Washington DC, Mar 03)
  - OAR HQ Briefing on Ships and Aircraft (Washington DC, May 03)
  - NWS HQ Briefing on NAME Soundings (Washington DC, Dec 03)
  - NAME Special Session and SWG-5 Meeting (Puerto Vallarta, Nov 03)
  - NAME 2004 Operations Review / Forecaster Orientation & SWG-6 (Tucson AZ, Apr. 21-23, 2004)

"White Paper" on DATA ASSIMILATION

NAME Modeling and Data Assimilation

A Strategic Overview

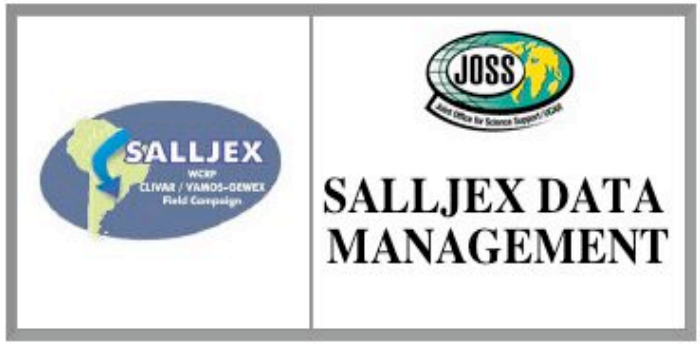
NAME Science Working Group*

2003

- Provides a strategy for accelerating progress on the fundamental modeling issues pertaining to the NAME science objectives
- Reviewed by the US CLIVAR Pan American Panel.
- Emphasizes activities that bring observationalists, modelers and physical parameterization experts together to focus on key physical processes that are deficient in coupled models.

Post-field Campaign Activities (2003-2004)

- Data collection and quality control
- Data analysis & diagnostic studies
- Modeling experiments
- SALLJEX Data Workshop (Buenos Aires, Argentina, 10-12 Dec 2003)
- SALLJEX participates in the development of GCOS action plan for South America



www.joss.ucar.edu/salljex/dm/

DISTRIBUTED SALLJEX LONG-TERM DATA ARCHIVE

- *SALLJEX Preliminary Master Dataset List*
- *U.S. Data Center - CODIAC Interactive Data Management System located at the University Corporation for Atmospheric Research (UCAR) Joint Office for Science Support (JOSS), Boulder, Colorado, USA.*
- *SALLJEX On-line Field Catalog (including preliminary products)*

DATA SUBMISSION

- *SALLJEX Data Submission Instructions*
- *SALLJEX Data Submission Guidelines*

DOCUMENTS

- *SALLJEX Data Policy*
- *SALLJEX Data Management Plan*

The PLATIN Science Study Group

La Plata Basin is a climate-hydrology system with components that are potentially predictable with useful skill from seasons in advance, and whose variability has important impacts on human activities.

CLIVAR and GEWEX formed the PLATIN Science Study Group to advance the understanding of those components.

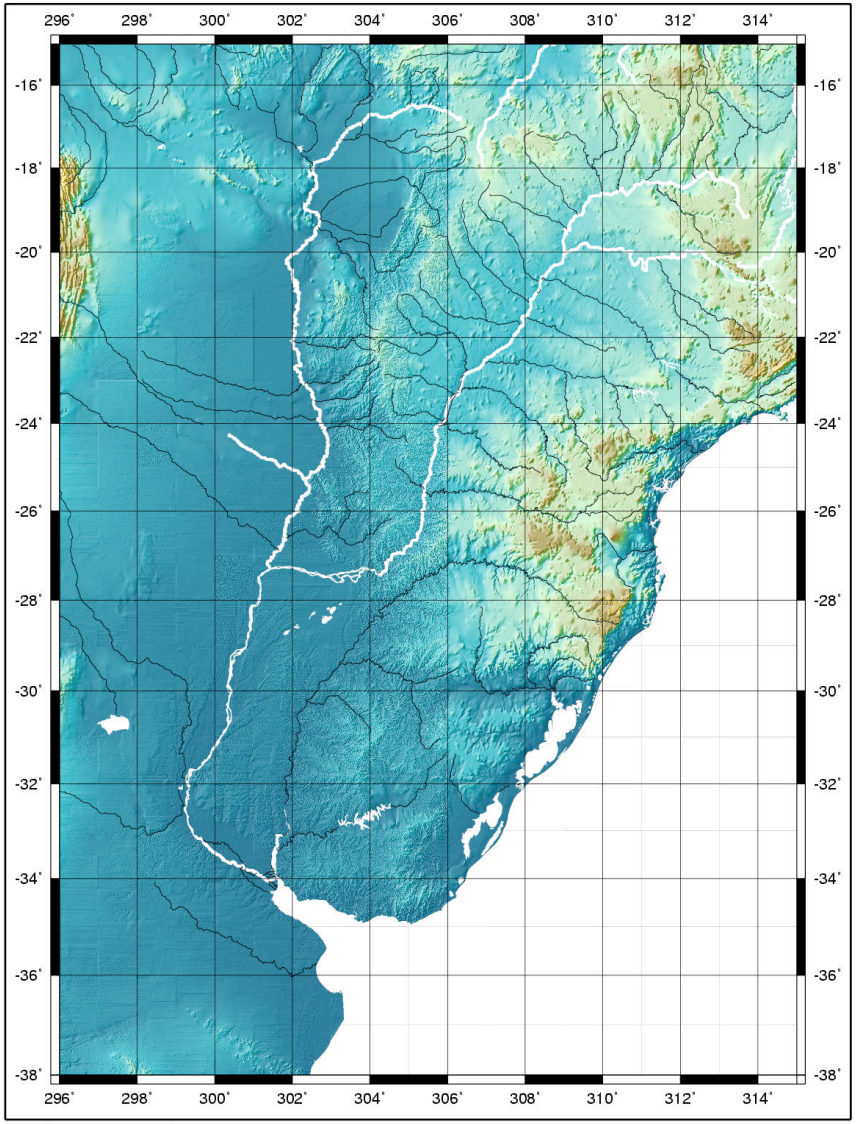
Membership (as in January 2004)

***PLATIN SSG**: Walter Baetghen (IFDC, Uruguay), Julian Baez (DINAC, Paraguay), (Vicente Barros (UBA, Argentina), E. Hugo Berbery (U. Maryland, USA), Alexandre Guetter (SIMEPAR, Brazil), Dennis Lettenmaier (U. Washington, USA), C. Roberto Mechoso (**Co-Chair**, UCLA, USA), Edgard Montenegro (U. Cochabamba, Bolivia), Andrew W. Robertson (IRI, USA), Pedro Silva-Dias (**Co-Chair**, USP, Brazil), Rafael Terra (U. Republic, Uruguay), Carlos Tucci (USP, Brazil). ICPO Contact: Carlos Ereño (ICPO, Argentina)*

La Plata Basin Climate and Hydrology Project

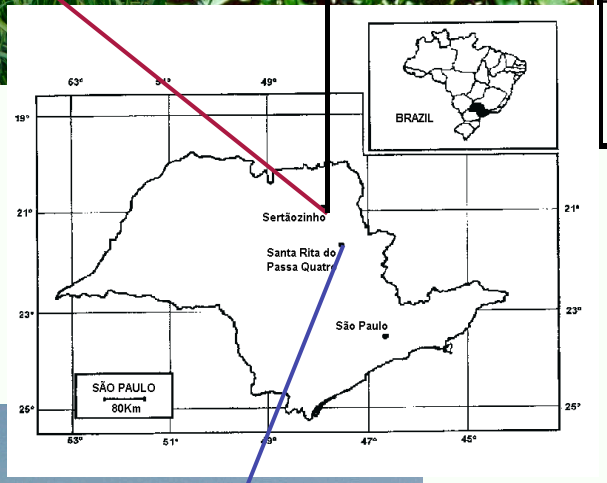
LPBP aims to improve understanding and prediction of La Plata Basin's climate and hydrology based on their unique sensitivity to the variability of remote climates, regional geographic features and connections with the large Amazon basin.

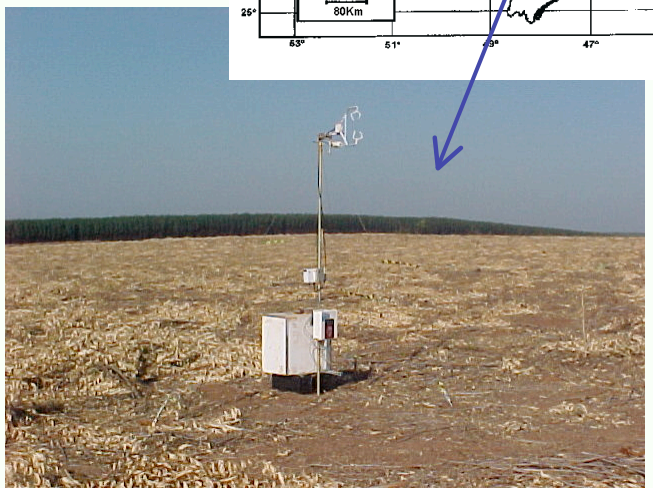
LPBP is the most recent Continental Scale Experiment (CSE) approved by the GEWEX SSG as a collaborative effort with CLIVAR.



LPBP Compliance with GEWEX CSE Technical Requirements

- CPTEC and IRI, both NWP and climate prediction centers, have committed cooperation with LPBP. Several national and international sources provide funds for LBP research. PLATIN participates in a GEF-funded project, which focuses on improving prediction of Climate Variability and Change Impacts on LPB Hydrology.
- LPBP includes several monitoring and experimental networks (e.g. PACS SONET, SALLJEX), as well as flux towers. The VAMOS Database at UCAR JOSS coordinates data management support.
- LPBP's data policy is inspired by CEOP and been used in SALLJEX. It commits researchers to participate in the international exchange of scientific information and data in conformity with the general practice of WCRP.
- The GEF-funded initiative for the basin in which PLATIN participates also involves water resource agencies and other groups that examine impacts on regional water resources.
- LPBP activities are contributing to the evaluation of GEWEX global data products by generating in-situ data. The contribution will expand by using the products in numerical modeling studies.
- Models and data bases used in GAPP are been transferred to LPB. Strong collaborations with LBA are anticipated.





U. Sao Paulo – FAPESP Flux Towers

U. Sao Paulo – Sao Paulo State Research Foundation

Dr. Humberto Rocha -PI

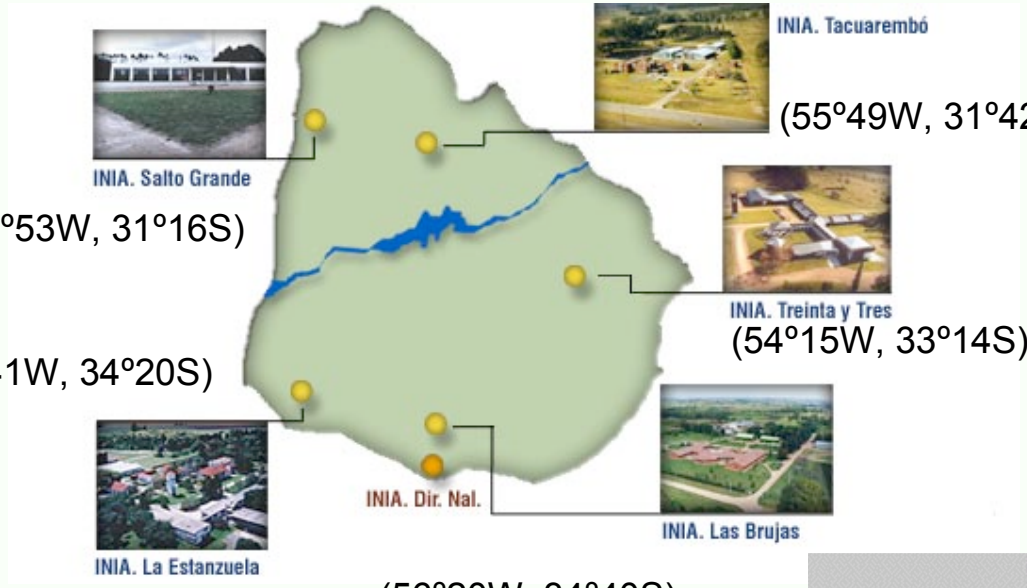
Site	Vegetation cover	Beginning of operations	Tower height
Sertãozinho 21º06'S, 48º04'W	**Sugar cane**	**1996**	**7 m**
Santa Rita P. Quatro, 21º37'S, 47º38'W	**Natural savannah (cerrado)**	**2001**	**25 m**
Luiz Antônio 21º35'S, 47º36'W	**Eucalyptus Plantation**	**2003**	**4-45 m**

Instrumentation:

Aspirated Psychrometers (CSI 107)
Wind speed and Direction (RM Young)
Soil heat flux plates (REBS) and temperature probes (CSI 108B)
Precipitation (Texas 525)
Global (Licor) and Net Radiation (REBS) Flux Densities
Three-dimensional asymmetric sonic anemometer (Gill Solent)
H2O/CO2 Infra-red Gas Analyser (Licor 6262)
Leaf area counter Licor 3000
Optical canopy images digitizer CI-100 (CID)
Soil respiration chamber SRC-1 (PPSystems)
Soil moisture neutron probe CP Boart Longyear

Climate monitoring at INIA — Uruguay

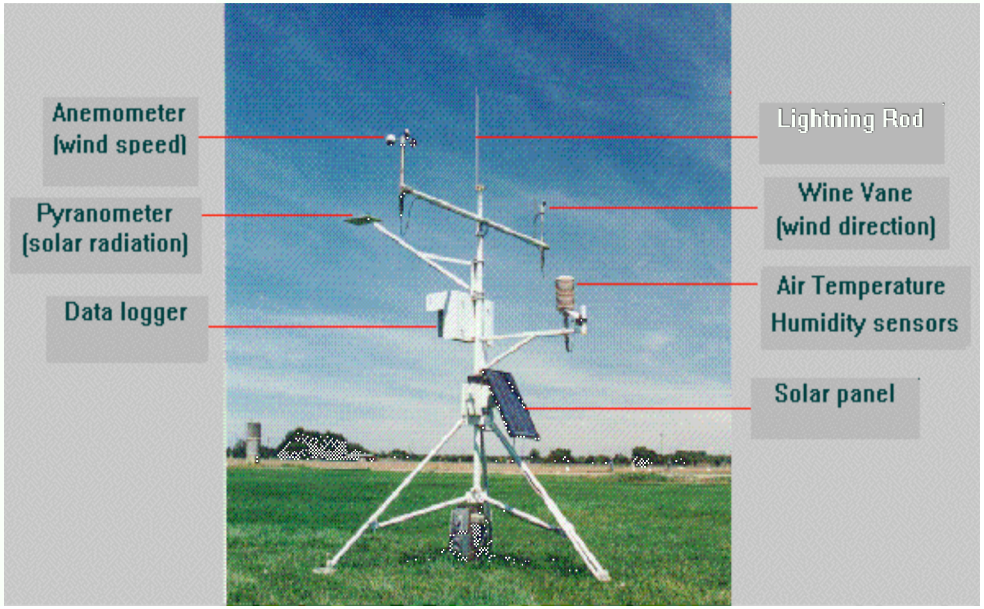
Instituto Nacional de Investigaciones Agropecuarias



INIA's five surface monitoring stations have gathered data since 1965.

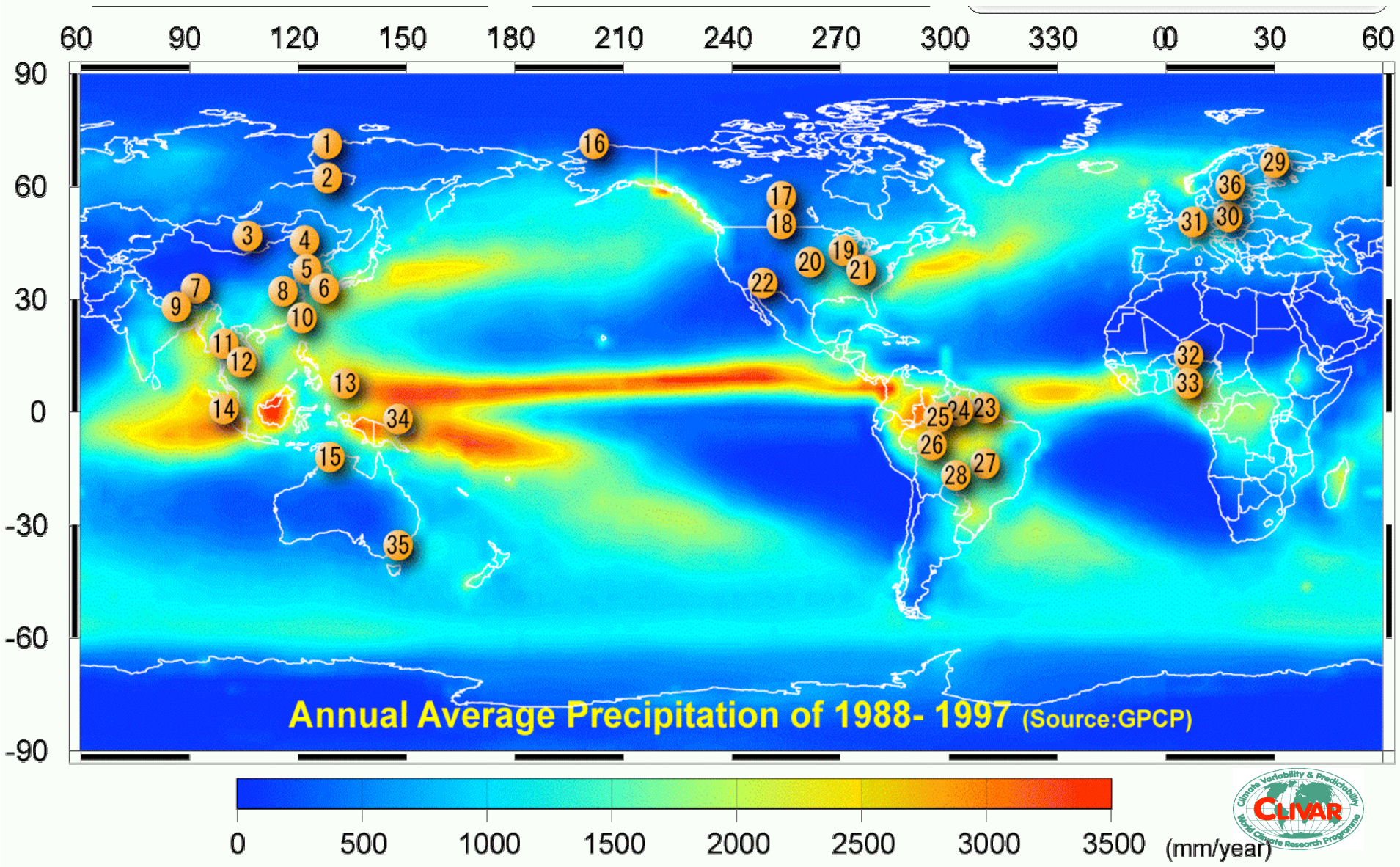
Data: Daily and monthly-mean air temp., rel. humidity, precip., evap., wind, hours of insolation and potential evap.

www.inia.org.uy




La Plata Basin Home Page - Netscape
File Edit View Go Bookmarks Tools Window Help
http://www.joss.ucar.edu/platin/
Search
Mail AIM Home Radio Netscape Search Bookmarks
La Plata Basin Home Page
Joint Office for Science Support
Science
Data Access
Data Policy
Links
Email
Documents
Maps
Calendar
Science Study Group
PLATIN
WCRP
CLIVAR/VAMOS/GEWEX
Programme
JOSS
La Plata River Basin Project (PLATIN)
Overview
* CLIVAR/VAMOS identified the Río La Plata Basin as a climate-hydrology system with components that are potentially predictable with useful skill from seasons in advace, and whose variability has important impacts on human activities.
* PLATIN provides a framework for integration of regional projects leading to improved predictions of the climate and hydrology system, and the coordination of those projects at the highest international level (WMO/WCRP)
* PLATIN can act as an advocacy group to agencies that provide funding for science projects and the strengthening of the scientific infrastructure.
* PLATIN aims to enhance the scientific infrastructure in the Plata Basin in agreement with producers and users of climate information.
WCRP Climate
VAMOS
CLIVAR
GEWEX
WCRP
www.joss.ucar.edu/platin

CEOP REFERENCE SITES



A GEF-Supported Project Will Fund Initiatives on LPB Climate and Hydrology

Requesting Agency:	United Nations Environment Programme (UNEP)
Local Exec Agency:	Intergovernmental Coordinating Committee for La Plata Basin (CIC), in co-operation with water agencies of Argentina, Bolivia, Brazil, Paraguay, and Uruguay
Executing Agency:	Organization of American States (OAS)
Funding Agency:	Global Environment Facility (GEF)
Current Status:	Preparation phase 11/1/03-4/30/05
Preparation Cost:	US $1,376,100 (US $700K GEF Block B; $676K Other Sources, including WMO)
Project Total Cost:	GEF has placed $15M on Reserve; Countries and Other Sources may contribute 2:1 for a potential total of US $45M.

PLATIN has been allocated US $150K in 2004

Sub-Activity 2a - Preparatory Surveys

Coordination Group

General Coordinator *(**Sub-activity 2a.1**)*:
Dr. C. Roberto Mechoso

Experts by countries:
Dr. Vicente Barros (Argentina)
Dr. Edgard Montenegro (Bolivia)
Dr. Pedro Silva Dias (Brasil)
Ing Julián Báez (Paraguay)
Dr. Rafael Terra (Uruguay)

Theme 1
Characterization of LPB Climate and Hydrology

Sub-Activity 2a.2

Responsible: Vicente Barros (Argentina)

Collaboration Group: Javier Tomasella (Brasil), Alice Grimm (Brasil), Gabriel Pisciottano (Uruguay).

Reviewer: Mario Nuñez (Argentina)

Theme 2
Numerical Models for Prediction of Climate and Hydrology

Sub-Activity 2a.3

Responsible: Pedro Silva Días (Brasil)

Collaboration Group: E. Hugo Berbery (EEUU-Argentina), Carlos Tucci (Brasil), Rafael Terra (Uruguay)

Reviewer: Eugenia Kalnay (EEUU)

Theme 3
Extreme Climate and Hydrology Events

Sub-Activity 2a.4

Responsible: José Marengo (Brasil)

Collaboration Group: Angel Menendez (Argentina), Alexander Guetter (Brasil), Edgard Montenegro (Bolivia)

Reviewer: Terri Hogue (EEUU)

Sub-Activity 2a.5

Responsible: Edgard Montenegro (Bolivia)

Theme 4
Technical Bases and Instrumentation

Sub-Activity 2a.6

Responsible: Walter Baetghen (Uruguay)

Collaboration Group: Julián Baez (Paraguay), Carolina Vera (Argentina), Carlos Morales (Brasil), Roger Domecq (Paraguay)

Reviewer: Vernon Kousky (EEUU)

Sub-Activity 2a.7

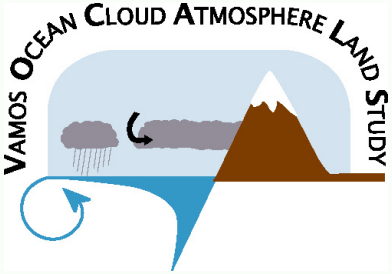
Responsible: Julian Baez (Paraguay) Collaborator: Roger Domecq (Paraguay)

Sub-Activity 2b - Development of Implementation Plans

Sub-Activity 2b will be organized in 3 teams:

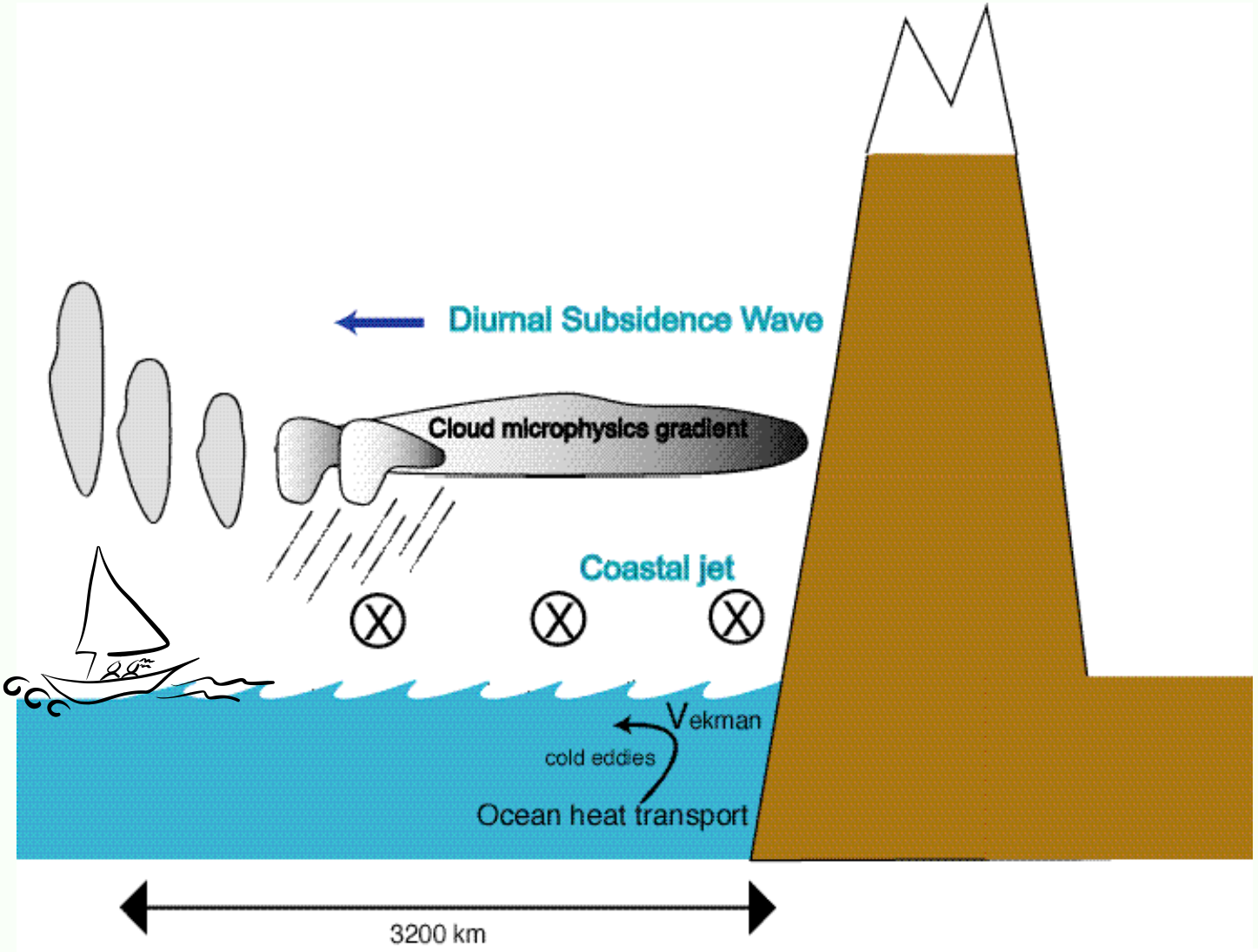
1. ***Plan for Implementation of a System for LPB Climate/Hydrology Prediction***
2. ***Plan for Implementation of Methodologies to Include Climate Information in LPB Water Management Strategies***
3. ***Plan for Development of a Model to Predict Land Use/Land Cover Change Impacts on LPB Ecosystems***

Components 2.2 and 2.3 will have input from RIGA and AAAS, respectively.



VOCALS
Scientific Issues

- **Time and space scales of Cloud-Topped Boundary Layer (CTBL) - continent interaction.**
- **Regional seasonal/interannual feedbacks between stratocumulus clouds, surface winds, upwelling, coastal currents and SST in the Eastern Pacific.**
- **Feedbacks of Eastern Pacific cloud topped boundary layer properties on overall tropical circulation and ENSO.**
- **Climatic importance of aerosol-cloud interactions.**

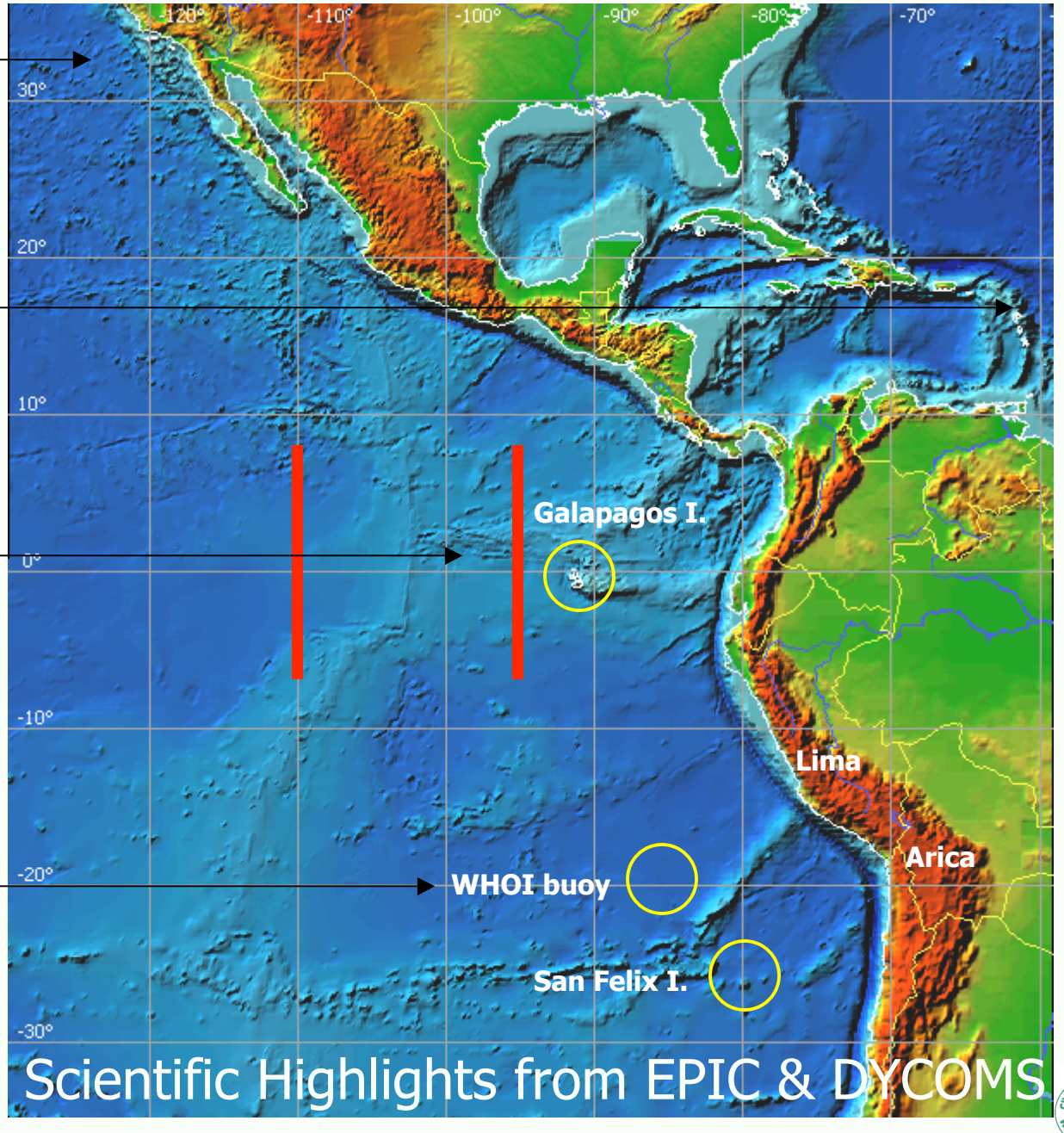

Diurnal Subsidence Wave
Cloud microphysics gradient
Coastal jet
Vekman
cold eddies
Ocean heat transport
3200 km

DYCOMS-II

RICO

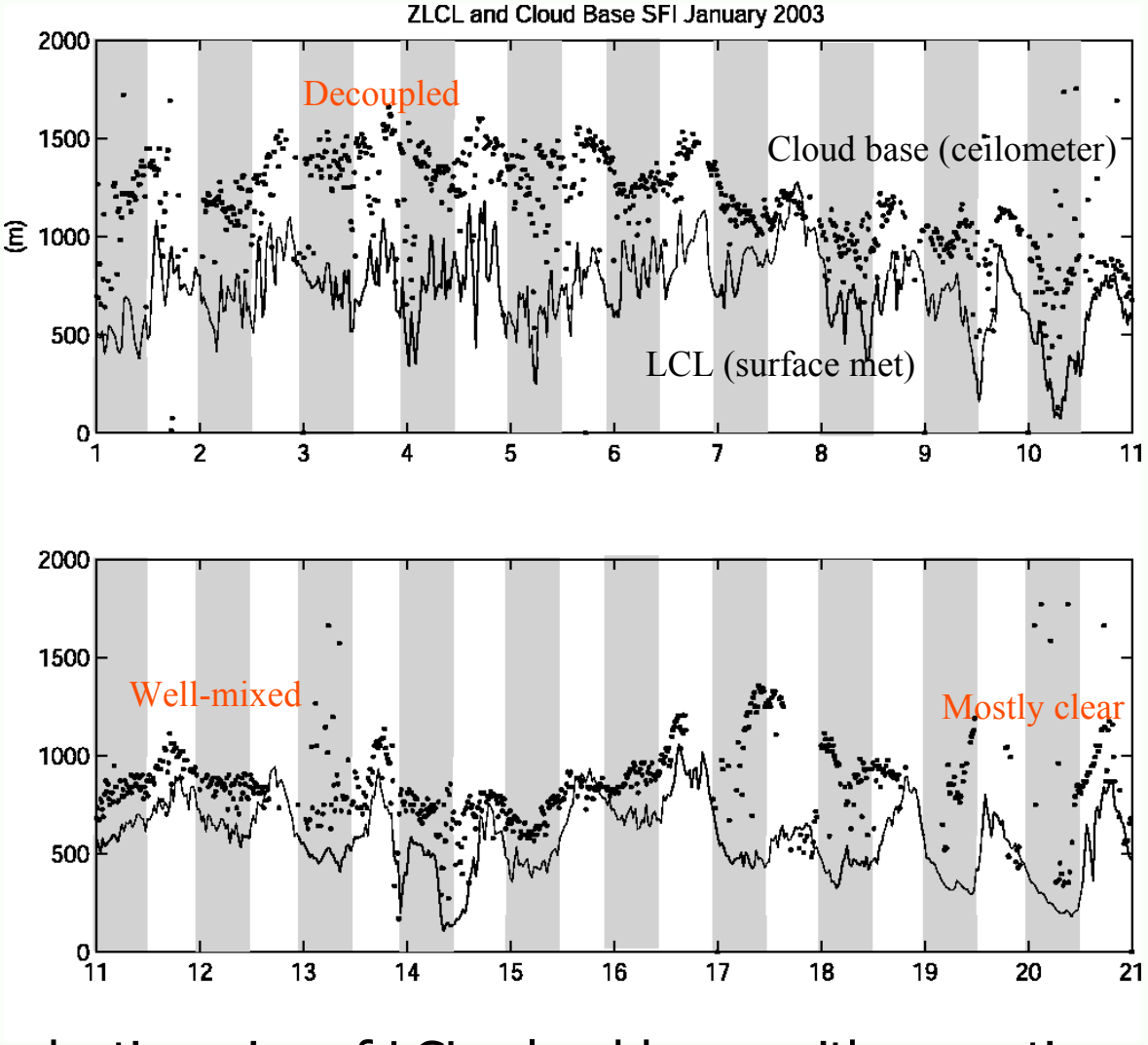
TAO-EPIC

EPIC2001-Sc



Scientific Highlights from EPIC & DYCOMS

U. Chile has installed ceilometer and surface met at San Felix Is.



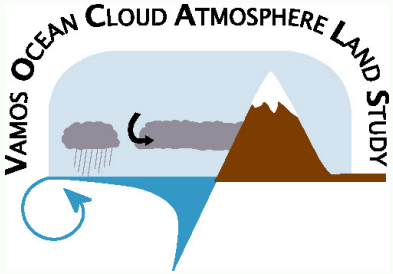
R. Garreaud
U. Chile

Shows daytime rise of LCL, cloud base, with synoptic variations

VOCALS Timeline

2003-2010
diagnostic/modeling work
2003 ETL-enhanced cruises
SFI profiler
VEPIC data archive
2004/11 Cloudsat
2005/01 RICO
2006 VEPIC Field Exp.
in the Eastern Pacific.

Modeling, empirical, and satellite studies



VAMOS participates in WCRP's Coordinated Enhanced Observing Period (CEOP)

CEOP HP : http://www.ceop.net

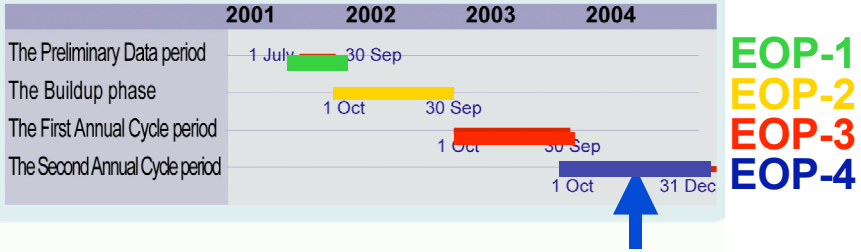
CEOP Objectives:

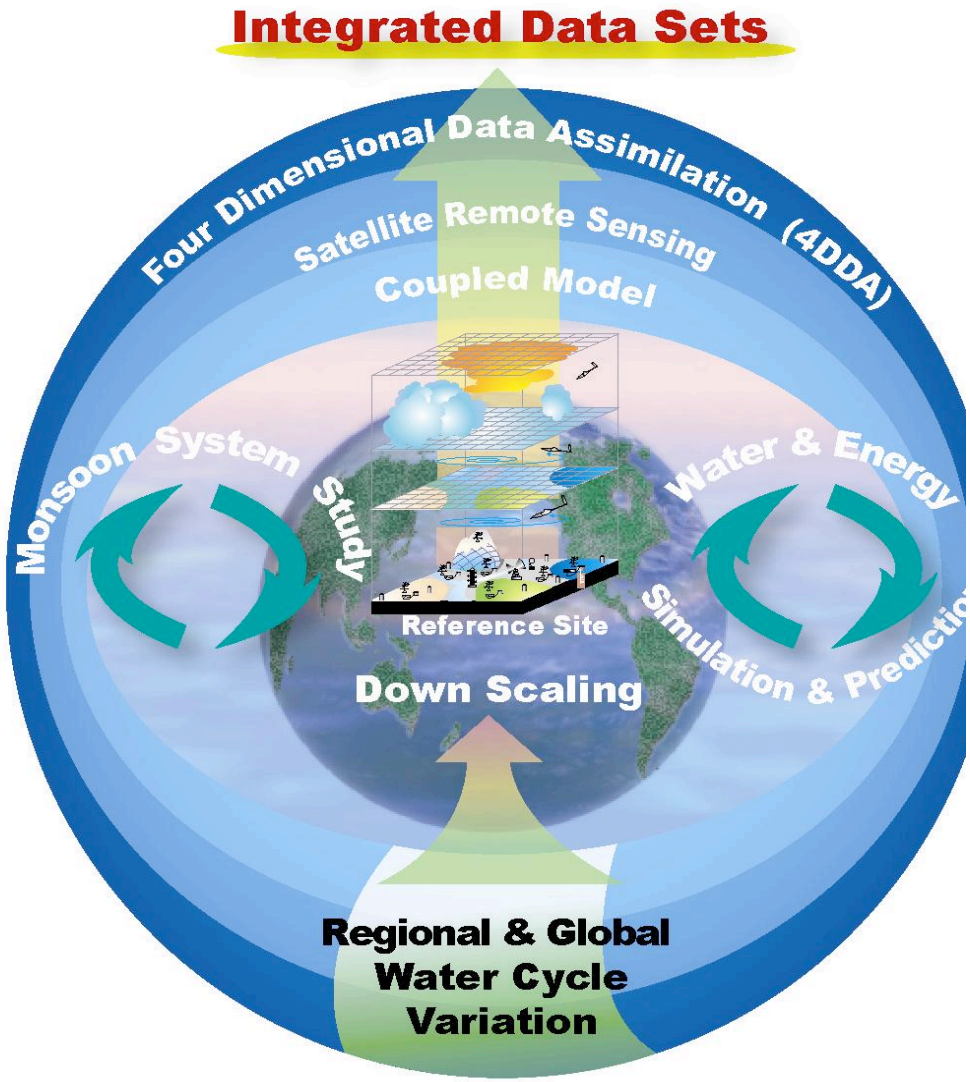
1. Water and Energy-Cycle Simulation and Prediction
2. Monsoon System Studies

CEOP Strategy:

1. The first global integrated data sets of the water cycle with spatial consistency and climate variability, through
   - (i) the ground-based observations from the 36 CEOP reference sites
   - (ii) the satellite observations of the entire water cycle
   - (iii) the simulations of numerical models with physical consistency
2. Challenges to inter-connection of regional water cycles and Down-scaling applications to water resources

CEOP Schedule:





CEOP ORGANIZATION STRUCTURE

Science Steering Committee

•guide/oversee the science implementation
•maximize the scientific and technical benefits

WCRP	H.Grassl
GEWEX:	S.Sorooshian
CLIVAR:	C.R. Mechoso
CLiC:	B. Goodison
WGNE:	K. Puri
GHP Chair	J. Roads
GAME	T. Yasunari
IGOS-P:	R. Lawford (Water Theme Rep)

Leading Scientist: T.Koike

Scientific idea →

← *Advise & opportunity*

Advisory/Oversight Committee

•receivers of scientific ideas for funding and support
•providers of reality checks on funding, infrastructure
•membership criteria (provides data or funds efforts)

Co-chair: J.Kaye (NASA) & A.Sumi (JAXA)
Delegates from WCRP, Space Agencies, and other Sponsoring Organizations.

Implementation report ↑

Scientific guidance ↓

Coordination Body

keep communication flowing: newsletter, web, teleconference, meeting, etc.
International Coordinator: S.Benedict
Implementation Coordination Group: CSE Representatives and S.Williams
News Letter Editorial Board: P.Try, C.R.Mechoso, R.Schiffer
International Coordination Office(Japan):
J.Matsumoto/T.Oki/D.Yang/K.Tamagawa/A.Goda (UT) , T.Matsumura (JMA),
C.Ishida /N.Matsuura/S.Ochiai (NASDA), B.Burford/K.Misawa(RESTEC)

Working Groups

responsible for carrying out the individual components and reporting to Scientific Steering Committee

Water and Energy Simulation & Prediction

Co-chair: **J. Roads & J. Marengo**
R.Stewart, Carl Fortelius, T.Lebel, T.Oki

Monsoon Systems

Co-chair: **W.Lau & J.Matsumoto**
, H.Berbery, W.Higgins, T.Lebel, R.Mechoso, J. Marengo, M.Bollasina

Satellite Data Integration

Chair:T.Koike & P.Houser
G.Stephens(GEWEX), A.Walker(CliC), J.Fischer, M. Chahine(Aqua/AIRS)
CEOS WGISS: S.Sobue
EOS WGCV:V.Desnos
Validation scientists of TRMM, Terra, Aqua, ADEOS-II, ENVISAT
,

Data Management

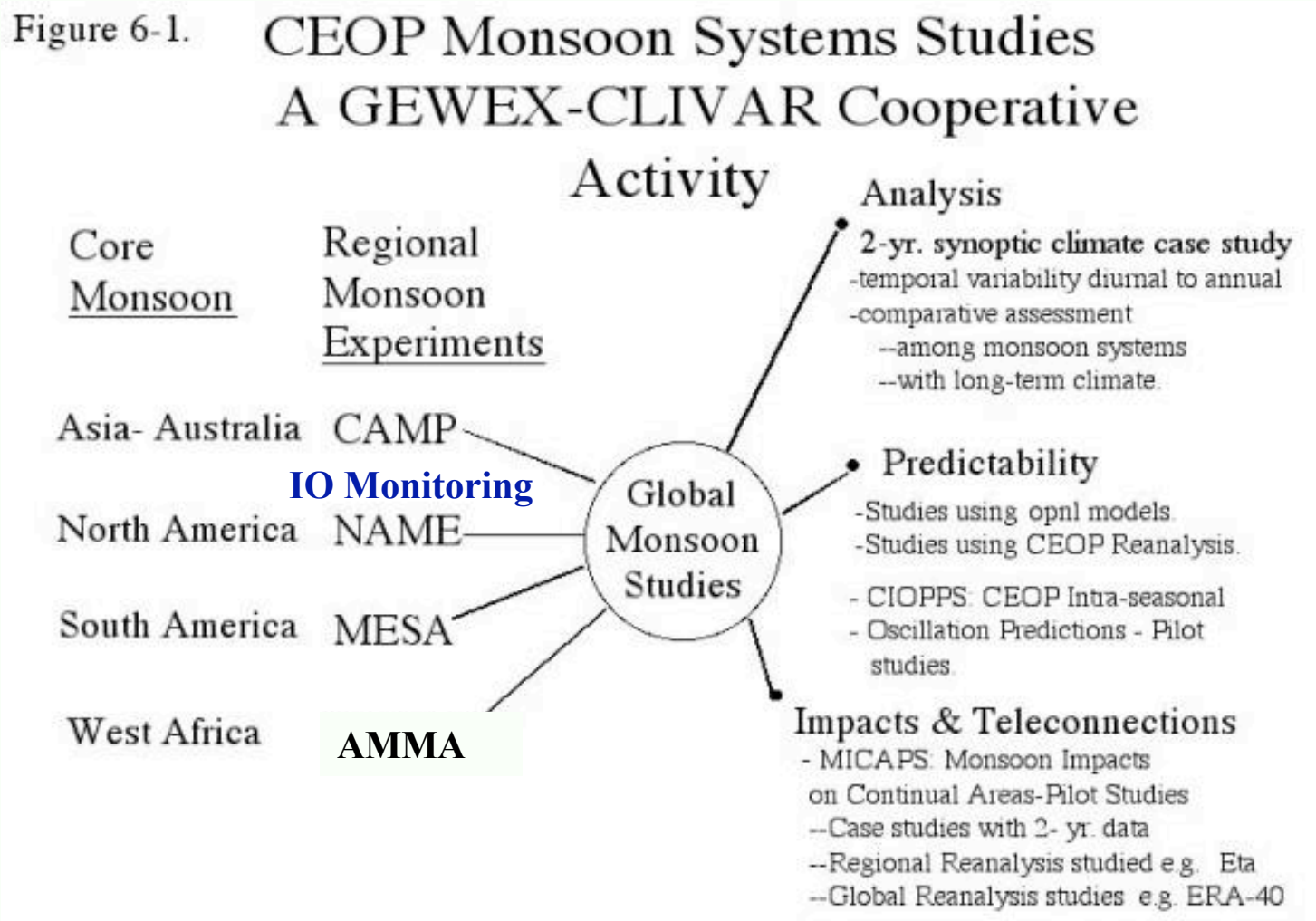
Co-chair: S.Williams & H.Isemer
B.Crawford, T.Lebel, K.Takahashi, L.Horta, U.Schneider, T.Maurer, EColtoun

Model Data Management

Co-Chairs Bosilovich and Lautenschlager and Reps from ECMWF,JMA,CPTEC,CMA, MPI, ECPC, UK Met, NCMRWF GMAO, and NCEP

CEOP Monsoon System Study Framework

The A^4 monsoon: Asian, Australian, American (North and South) and west African



Relevance to Applications

- NAME projects have involved the applications community from the beginning. NAME04 will select and instruct cooperative observers (ranches, schools, health clinics, public facilities, etc.) and install raingauges for monitoring. The "Teacher in the Field" opportunity of NOAA OGP will sponsor the participation of 2 teachers (K-16).

- The UNEP/OAS/CIC multi-national project, in which the PLATIN SSG participates, will plan and implement strategic actions to be taken by the governments of countries in La Plata Basin for the environmentally and socially sustainable economic development of the basin.

Issues and Challenges

- **Relations with WMO Centers**

  A closer cooperation between WCRP and WMO would greatly benefit VAMOS. NAME has demonstrated that such a collaboration could be achieved on a one-to-one basis. SALLJEX found that it is difficult to achieve it in a multi-country region. PLATIN is showing that mechanisms to address this problem are not clearly defined.

- **Relations with GEWEX Panels**

  The approaches to GEWEX by NAME (GAPP) and MESA (PLATIN SSG) have been warmly received. VAMOS looks forward to collaborating with the GHP and the GEWEX modeling panels.

Challenges for a mature VAMOS

- **Science Goals**

  What are the overarching science questions to be addressed in reference to the climate of the Americas, particularly during the warm season?

- **Modeling**

  What will be the focus of VAMOS modeling? In which aspects will VAMOS modeling contribute to a better simulation and numerical prediction of the monsoon systems?

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Summary

- VAMOS is one of the WCRP flagships; it is consistently presented as an example of what a WCRP program should be.
- VAMOS has achieved an stable configuration based on NAME, MESA and VOCALS; it has a Project Office and enjoys database support and is well-poised for the future.
- A major international field campaign was completed with great success (SALLJEX); another is in the waiting cue (NAME 04). Participation in a GEF project is opening new grounds for WCRP initiatives.
- VAMOS, a CLIVAR panel, has strong ties with GEWEX. These ties will be tighter in the future.
- The VAMOS domain covers two monsoon systems and CSEs, and one of the most interesting sectors of the world's ocean.
- Challenges are great, but the potential contributions to progress in science through coordination and encouragement are enormous.