La Plata Basin Climate and Hydrology Project(LPB)

www.joss.ucar.edu/platin/

GEWEX SSG-16

Marrakesh, Morocco, January 2004

C. Roberto Mechoso, UCLA

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.

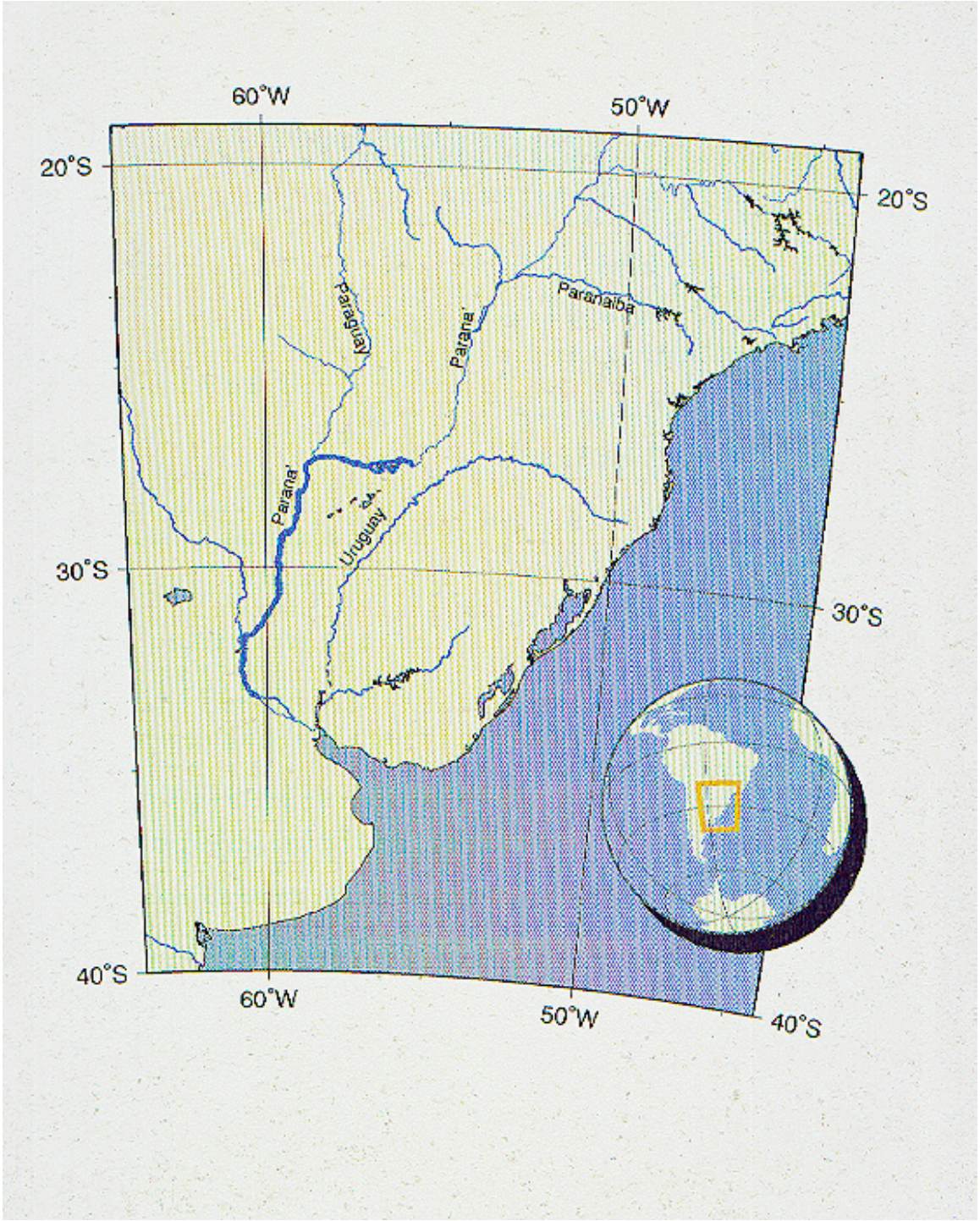
CLIVAR and GEWEX formed the PLATIN Science Study Group to advance the understanding of those components.

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

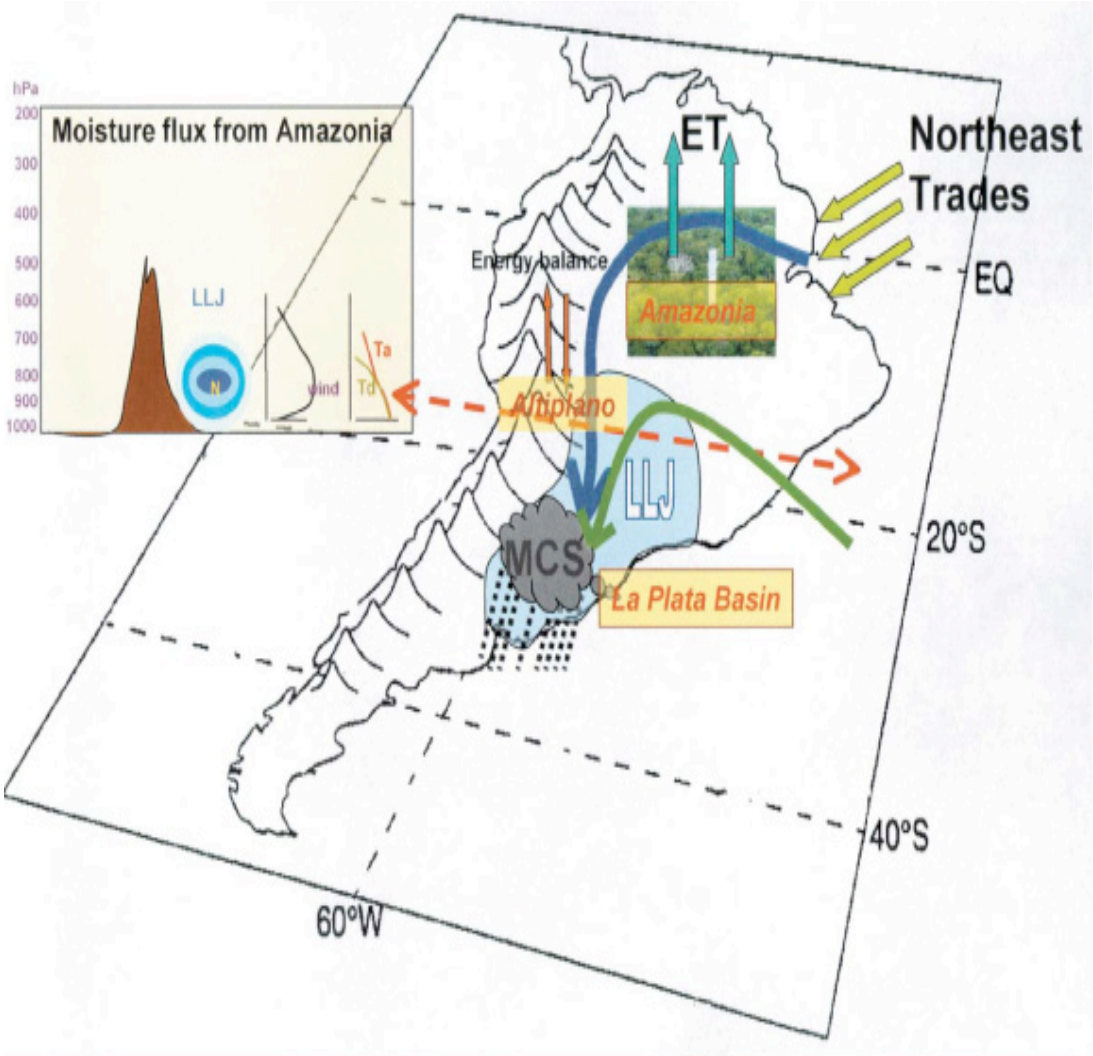
Feature	Mean Value **1980-1999**
Drainage area (10^6 km^2)	3.2
Annual mean discharge (km^3/year)	819.9
Mean precipitation (mm/year)	2633.3
discharge/ precipitation	0.31
Current population (millions)	100



The SALLJ connects LPB and Amazonia

The South American low-level jet (SALLJ) flows southward along the lee of the Andes.

SALLJ plays key roles in moisture and energy exchange between LPB and LBA



Uniqueness of LPB Climate and Hydrology

- **Large area with important influences of the South American monsoon and extratropical weather systems.**
- Large bodies of water, both on the surface and underground.
- **Very strong convective storms and floods.**
- Hydroclimatology strongly affected by ocean conditions in both adjacent oceans
- **River streamflow time series show quasi-periodicities in several timescales (interannual-ENSO, interdecadal).**
- There was a major shift in precipitation and the discharge of many rivers in the late 1970s.
- **A considerable land cover change in the last 50 years confounds interpretation and explanation of climate and hydrology signals.**

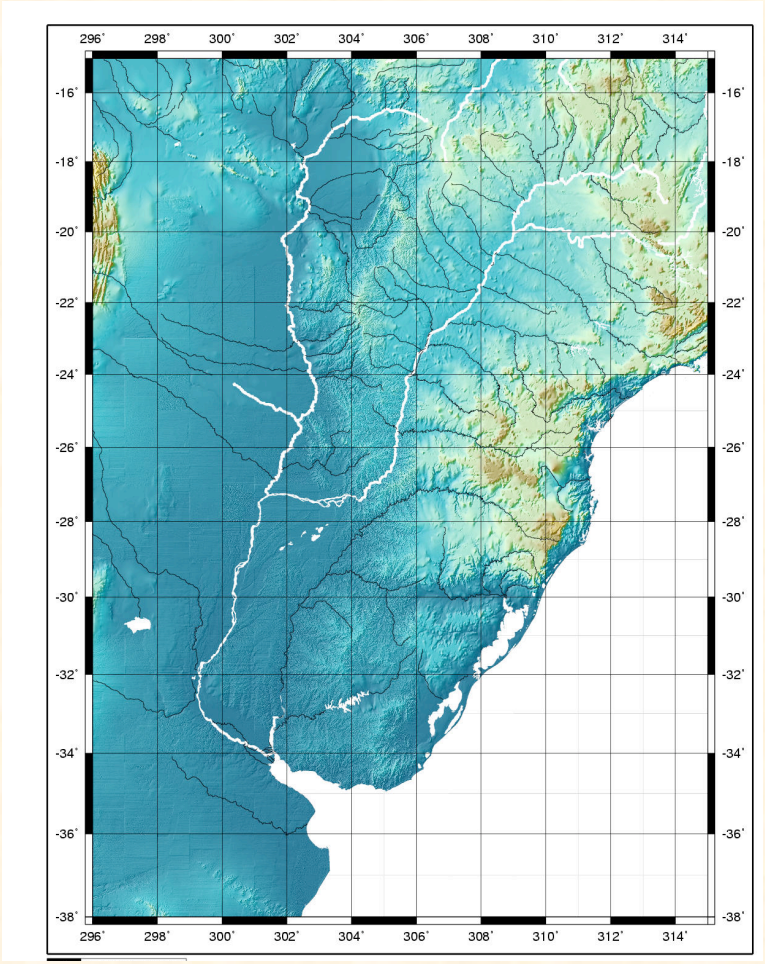
La Plata Basin Climate and Hydrology Project

- How **predictable** is LPB's hydroclimate?

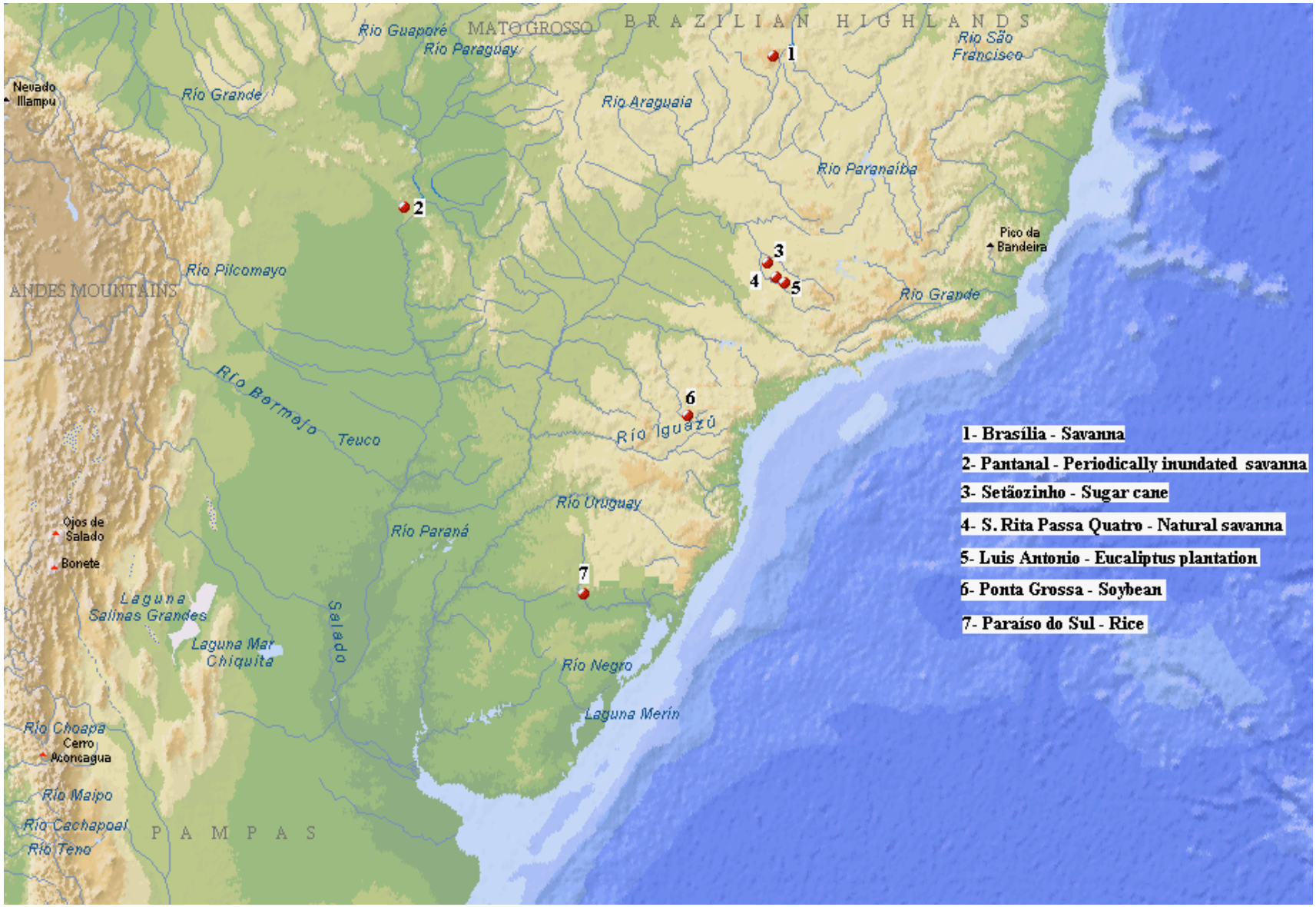
- To what extent are regional long-term trends in runoff **attributable** to remote conditions versus local features?

- How **sensitive** are the strong convective storms in LPB to climate variations and land use change?

- What **enhancements** are required for better predictions ?

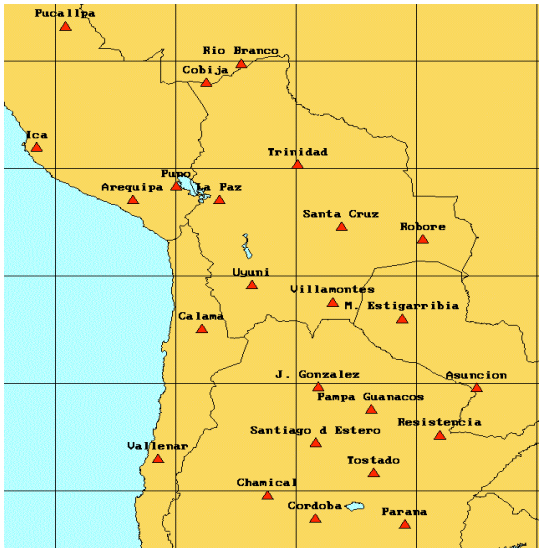


Surface Flux Towers collect micrometeorological data in the Brazilian Portion of La Plata Basin

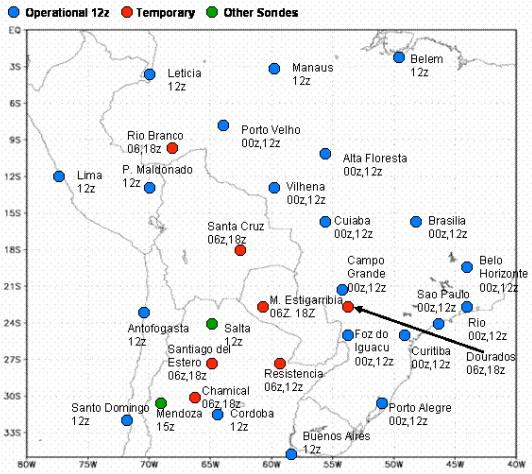


SALLJEX COMPONENTS

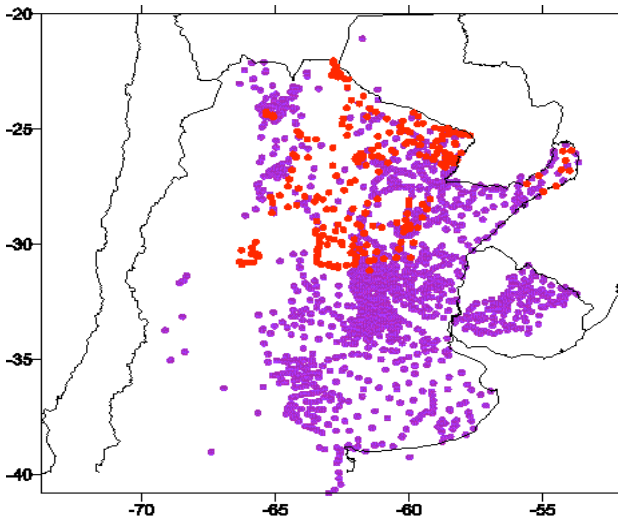
PIBALS



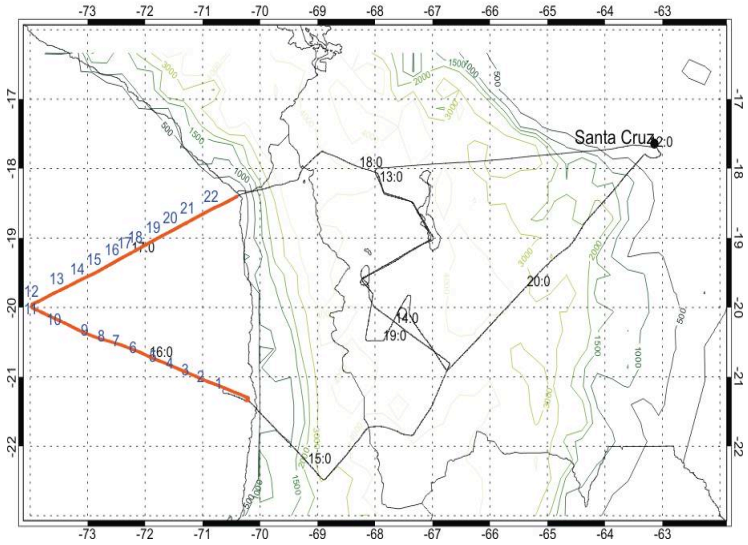
Radiosondes



Enhanced precipitation gauge network



SALLJEX Flight 2003/01/28

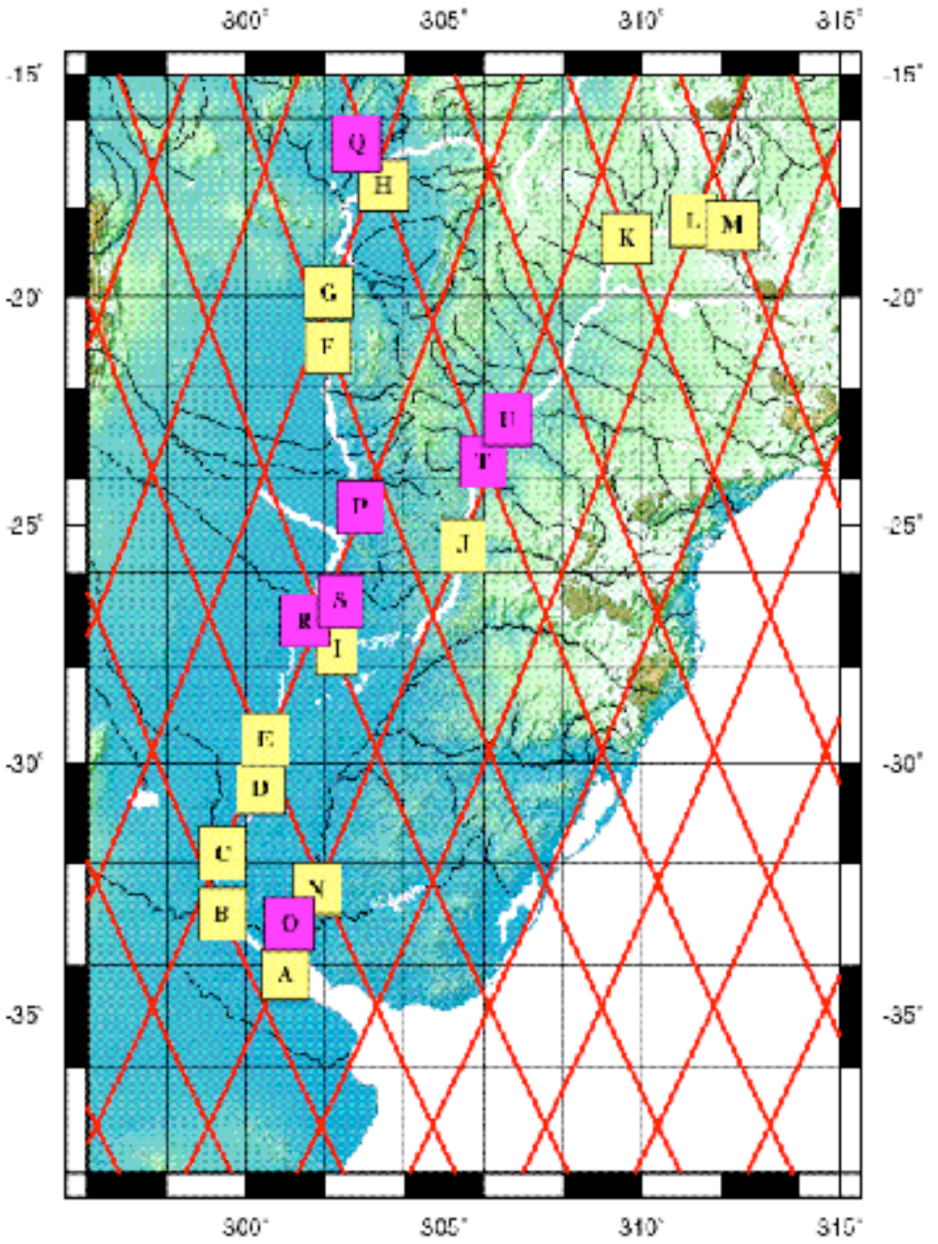


NOAA/P-3 Missions

Satellite Altimetry can be used for monitoring the water levels of the large rivers in LPB.

The figure shows Topex-Poseidon tracks and locations where time series of water level were compiled for the period 1993-2001

Maheu, Cazenave and Mechoso, GRL, 2003

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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
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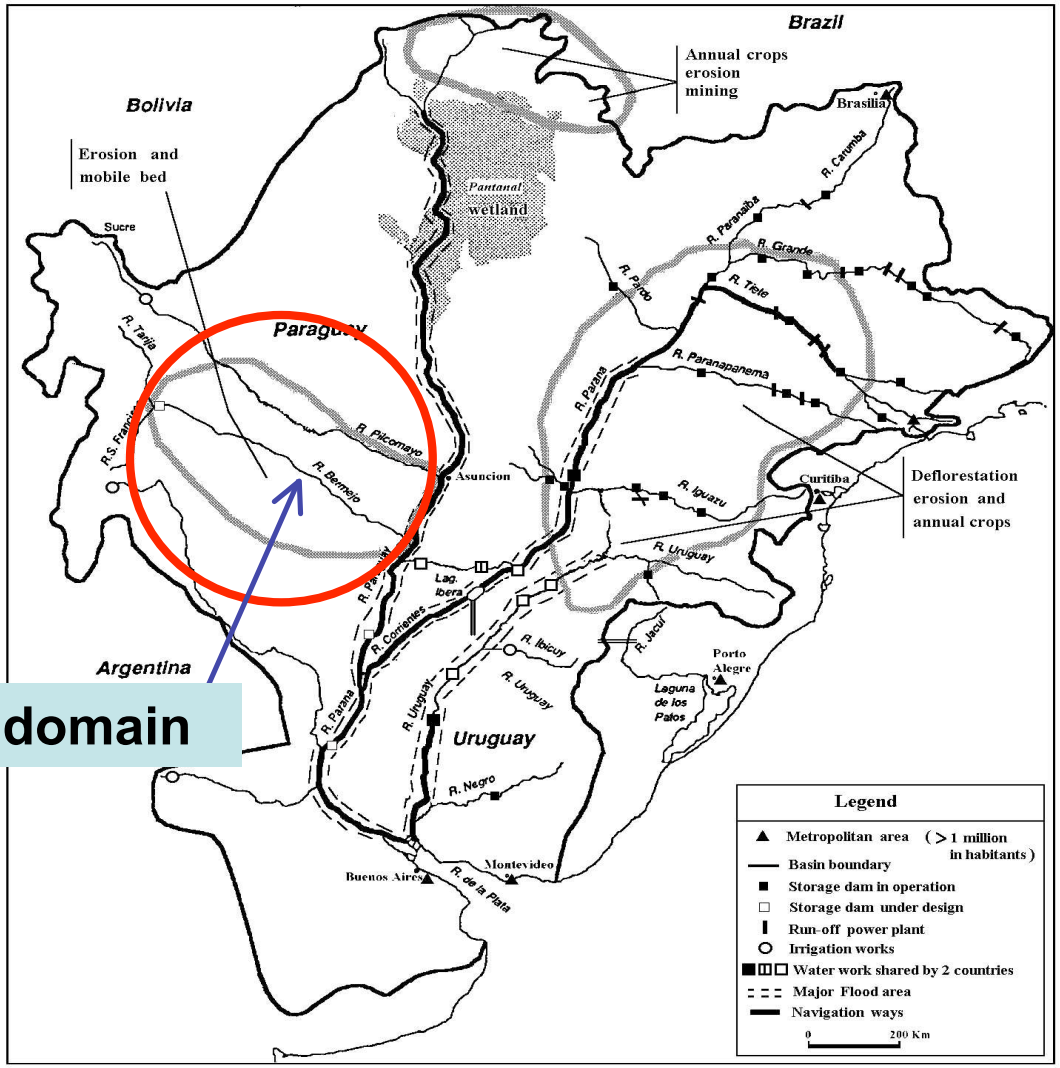
Field Experiment: PLATEX

The Mid-Parana basin is a strong candidate for PLATEX-Tier 2. It is a major source of runoff in the largest floods, and there are strong contrasts in land use change (e.g. from forest to agriculture).

Transferability studies are under way.



Tier 2 domain

LPB Data Management

(from CEOP and SALLJEX templates)

- **Data are divided into two categories by the providers:**

  (1) Standard, with common or low exploitation value

  (2) Enhanced or Experimental, with high exploitation value

- **Data exchange guidelines:**

  (1) To principally comply with WMO Resolutions 40 (CG-XII) and 25 (CG-XIII).

  (2) Data to be used for research purposes only.

  (3) No transfer to third parties is allowed.

  (4) Turn-around periods are 6 and 15 months for Category 1 and 2, respectively.

  (5) Appropriate acknowledgment and citations are required.

Collaborations

•Climate Forecasts at CPTEC and IRI support studies in LPB

•PROSUR, an IAI funded Collaborative Research Network, focuses on Climate Variability and Changes in the MERCOSUR Area, which includes LPB

(Mario N. Nuñez (U. Buenos Aires), PI http://cima.at.fcen.uba.ar/prosur)

•CLARIS will enhance collaborations between European and South-American scientists on regional modeling and climate impacts. ***EU funding starts in 2004 at about ($500K EU/year) Jean-Philippe Boulanger (LODYC-IPSL), PI***

The Grupo Montevideo de Universidades provides an international academic framework

Argentina

Universidad de Buenos Aires (UBA)
Universidad Nacional de Entre Ríos (UNER)
Universidad Nacional del Litoral (UNL)
Universidad Nacional de La Plata (UNLP)
Universidad Nacional de Rosario (UNR)
Universidad Nacional de Córdoba

Chile

Universidad de Santiago de Chile (USACH)

Uruguay

Universidad de la República

Brasil

Universidade Federal do Río Grande do Sul (UFRGS)
Universidade Federal do Santa María (UFSM)
Universidade Federal do Santa Catarina (UFSC)
Universidade Federal do São Carlos (UFSCAR)
Universidade Federal do Paraná (UFPR)
Universidade Estadual do Campinas (UNICAMP)

Paraguay

Universidad Nacional de Asunción (UNA)

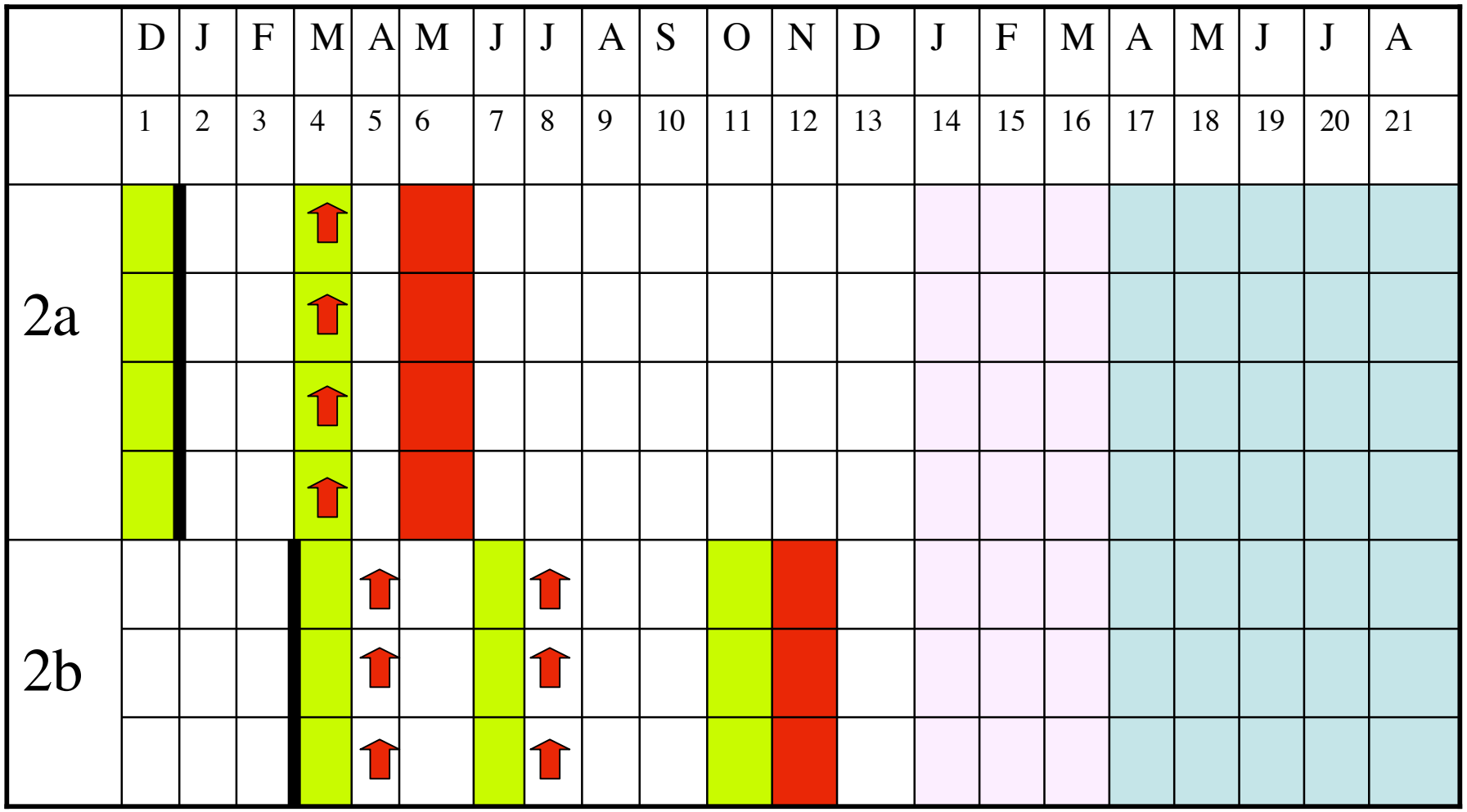
A GEF-Supported Project Will Fund Initiatives on LPB Climate and Hydrology

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 receives US $150K in 2004

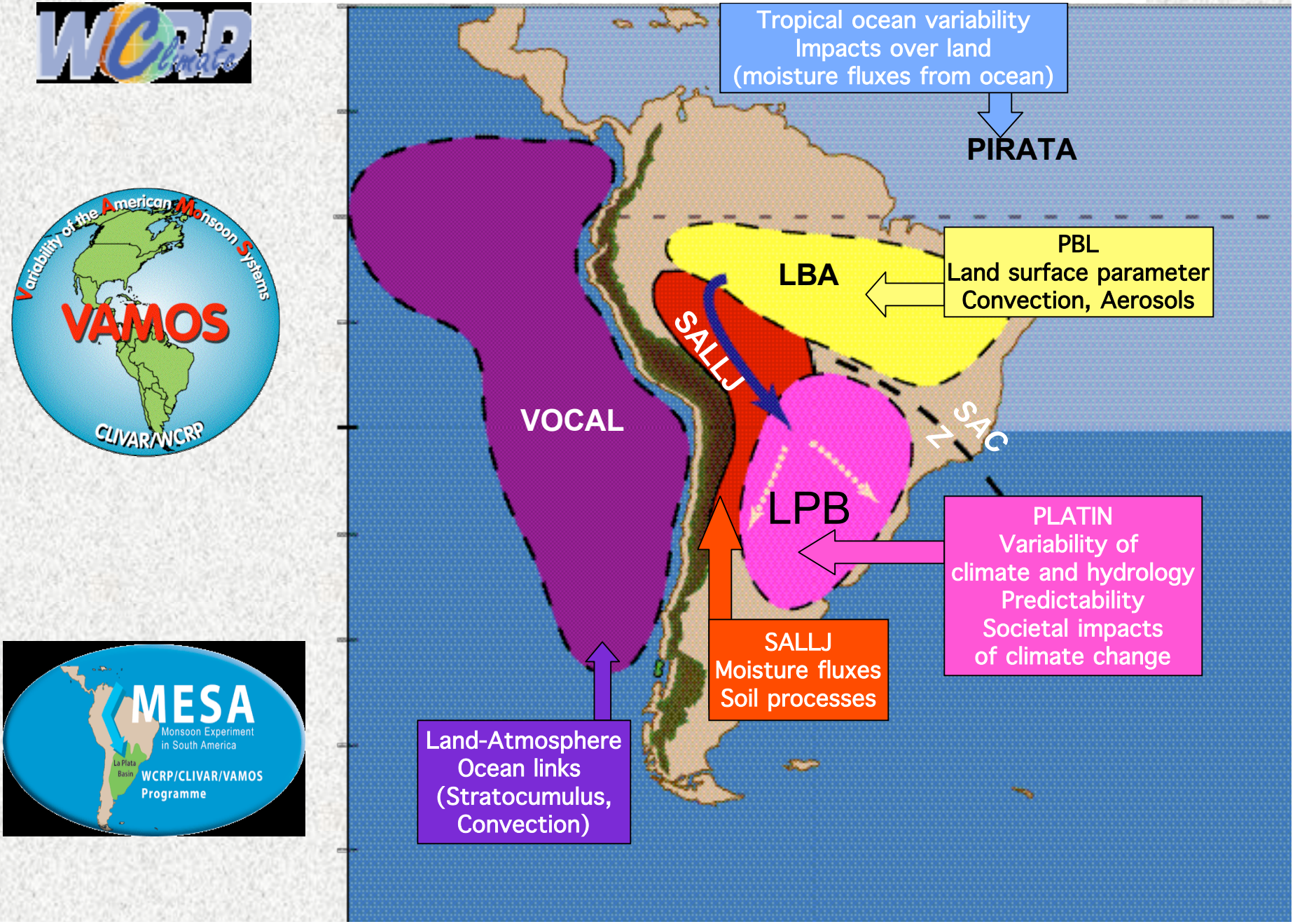
Timetable for Activity 2 of GEF-funded Project

From December 2003



Green: Meetings ⬆ Progress Reports Red: Deadlines for Final Reports

CLIVAR-GEWEX programmes in South America target LPB



LPB Project Compliance with GEWEX CSE Technical Requirements

- **CPTEC and IRI, both NWP and climate prediction centers, have committed cooperation with LPB. Several national and international sources provides funding for LBP research. PLATIN will coordinate Activity 2 of a GEF-funded project, which focuses on improving prediction of Climate Variability and Change Impacts on LPB Hydrology.**

- **LPB includes several monitoring and experimental networks (e.g. PACS SONET, SALLJEX, respectively), as well as flux towers. The VAMOS Database is available for data collection at UCAR JOSS, which also coordinates data management support.**

- **LPB'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.**

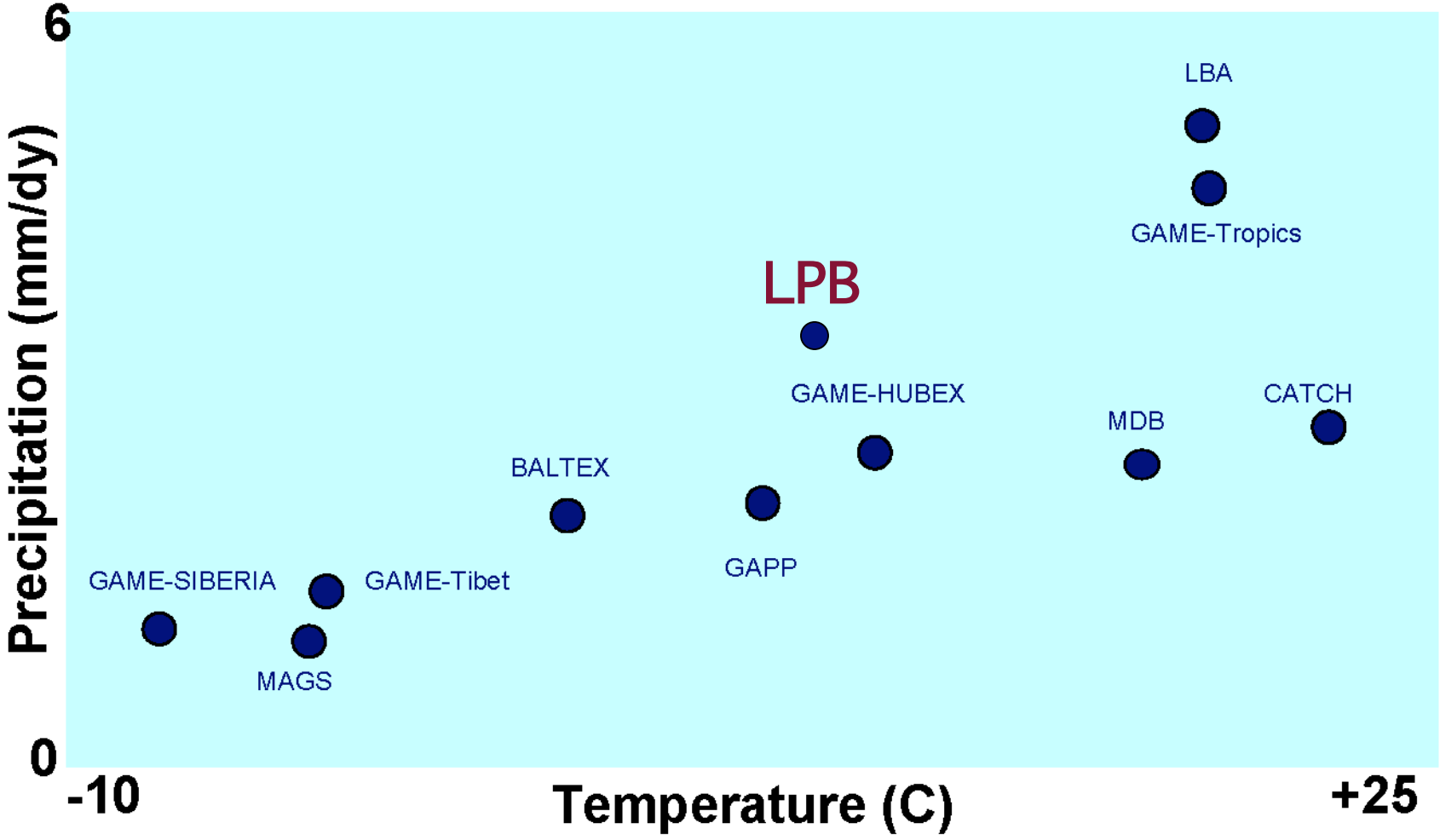
- **The GEF-funded initiative for the basin in which PLATIN participates also involves water resource agencies and other groups that examine impacts on regional water resources.**

- **LPB is contributing to the evaluation of GEWEX global data products by generating in-situ data. The contribution will be expanded 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.**

CSE Annual Mean Climates

(Roads et al. 2002, J. Hydrometeor; Roads 2002, GEWEX News; Lawford et al. 2003)



Timetable for LPB

Milestone	2003-2004	2005-2006	2007-2009	2010-2012
Enhancement of climate-hydrology predictions	Planning	Pilot Phase	Pilot Phase	Operational Phase
Development of a Database	First Version (July)	Further Develop-ment	Second Version (July)	Further Develop-ment
SALLJEX-2		IOP		IOP
Field program (PLATEX)	Planning	Enhanced monitoring Tier I	IOPs Tier II	IOPs Tier III

Summary

- A CSE in La Plata Basin can greatly contribute to progress on the predictability of the climate-hydrology system, and on the impacts of the system variations on human activities.
- A LPB CSE will provide a CLIVAR/GEWEX contribution to WCRP's future plans (COPE?).
- Funding promises to increase dramatically in the next decade.
- The PLATIN SSG data gathering and management systems appear consistent with those required for a CSE.
- The existing CSE in South America, LBA, will be complemented and extended by LPB. PROSUR, an IAI program, has organized regional participation in LPB issues.
- It is therefore, requested that CSE status be considered for the LPB Climate and Hydrology Project.