



La Plata Basin (LPB) Regional Hydroclimate Project

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Scientific and Implementation Steering Group
(SISG)



LPB is not Platin!

Platin was a study group that led to the LPB RHP.

Platin: 2000-2004

LPB: 2005-2015



Main research areas

- * Improvement of hydrologic and climate models' representation of land surface-atmosphere interactions
- * Contributions to hydroclimate predictive skill
- * Development of coupled models at adequate resolutions for hydrologic purposes
- * Better estimates of precipitation and streamflow
- * Climate change scenarios (Vulnerability and adaptation)
- * Impacts on the system's hydrology

La Plata Basin (LPB) main science 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? To what extent can their impacts be predicted?

<http://www.eol.ucar.edu/projects/lpb>



Program Overview

- CLIVAR/VAMOS and GEWEX/GHP identified the *Rio La Plata Basin* as 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.
- LPB 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).
- LPB can act as an advocacy group to agencies that provide funding for science projects and the strengthening of the scientific infrastructure.
- LPB aims to enhance the scientific infrastructure in the Plata Basin in agreement with producers and users of climate information.

Latest News

- Presentations from the 1st Meeting of the LPB Implementation Team 18-19 Sept 2006, Brazil
- Calendar
- LPB Implementation Plan
- LPB Status Update to the 9th VAMOS Panel

LPB Workshops and Meetings

- 1st Meeting of the LPB Implementation Team 18-19 Sept 2006, Brazil
- Presentations

Science Planning

- Documents
- GIS Demonstration Map Server

Data Management

- LPB Data Management page at NCAR/EOL
- Master List of All LPB International Data Sets
- LPB (DRAFT) Data Policy
- LPB web site at CPTec, Brazil

Other Links

- Related Projects
- Institutions, Offices and Organizations

Program Structure

- LPB Implementation Team
- VAMOS Support Center
- Monsoon Experiment South America (MESA)

Program Focus

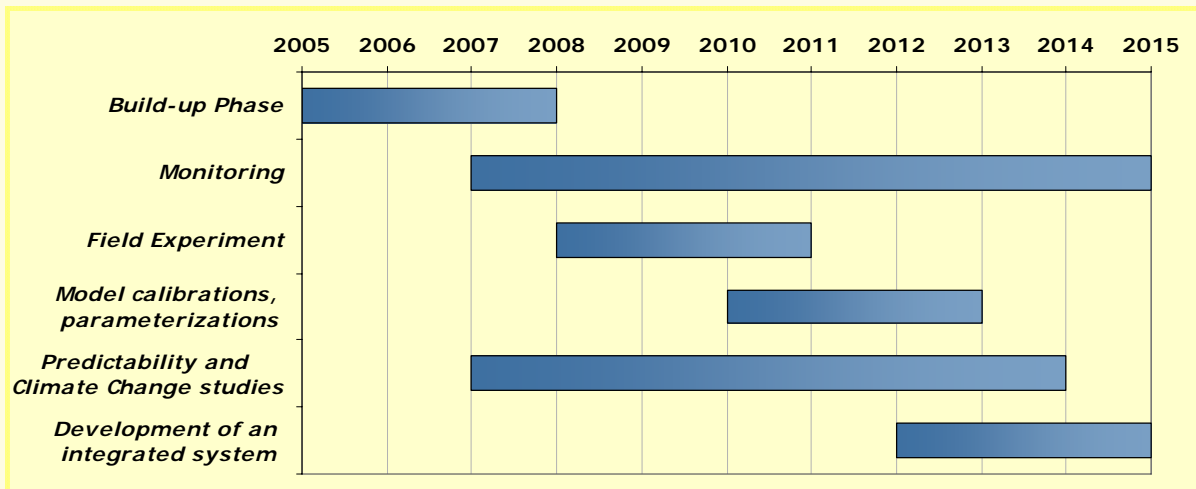
Program efforts during this first year will be divided largely into three main foci:

- Focus 1
- Focus 2
- Focus 3



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LPB Timeline (2005-2015)



NWP Center

CPTEC

MODELING AND
DEVELOPMENT
DIVISION

OPERATIONS
DIVISION

ENVIRONMENTAL
SATELLITES
APPLICATION
DIVISION

CLIMATE AND
ENVIRONMENT
DIVISION

MODELS

Global model (CPTEC/GCM)
Regional ETA model
Coupled atmosphere-ocean model (MOM 3)
Global wave model (WAM)
Environmental model BRAMS
Ensemble weather forecast (15 days – 15 members)
Ensemble forecast for seasonal forecasts (3 – 6 months -25 members)
Downscaling from Hadley Center climate change projections over So. America

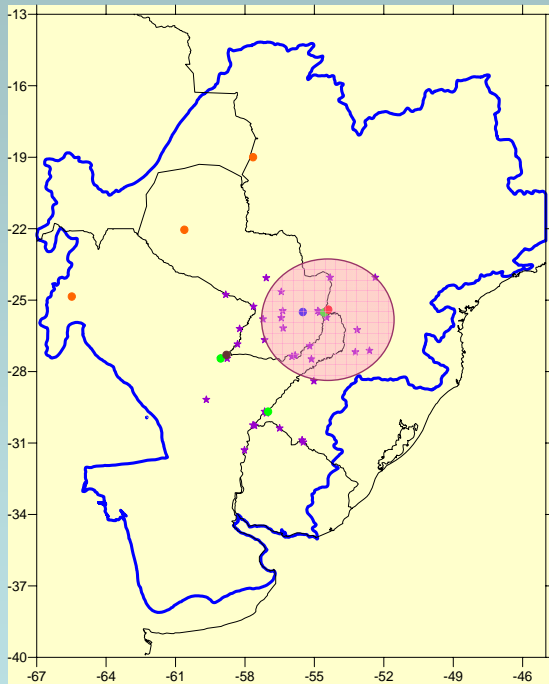
Satellite Ingestion and Product Generation

Vis, IR, WV images (sectors, full images)
TOVS and ATOVS soundings
Vegetation INDEX
SST
UV index
Vegetation Fires
Solar and terrestrial radiation
Cloud Classification
Cloud Winds,
MCS detection
GPS Tropospheric Time Delay

Monitoring/Field experiment issues discussed during the First SISG Meeting

1. A plan for soil moisture measurements
2. Choice of 1-3 flux towers that can represent LPB in international initiatives (e.g., CEOP).
3. Identification and development of a supersite
4. Dates for the field experiment
5. A plan for data management

Working on establishing a supersite



Raingauge Meso-network
Soil moisture measurements
Radar
Flux Tower
Aerosols
Rawinsonde
Wind profiler

LPB Planned Activities

LPB's modeling component

- *Hydroclimate modeling activities*
- *Predictability and climate change assessments*
 - a *Land cover/Land use*
 - b *Climate change scenarios and regional downscaling*

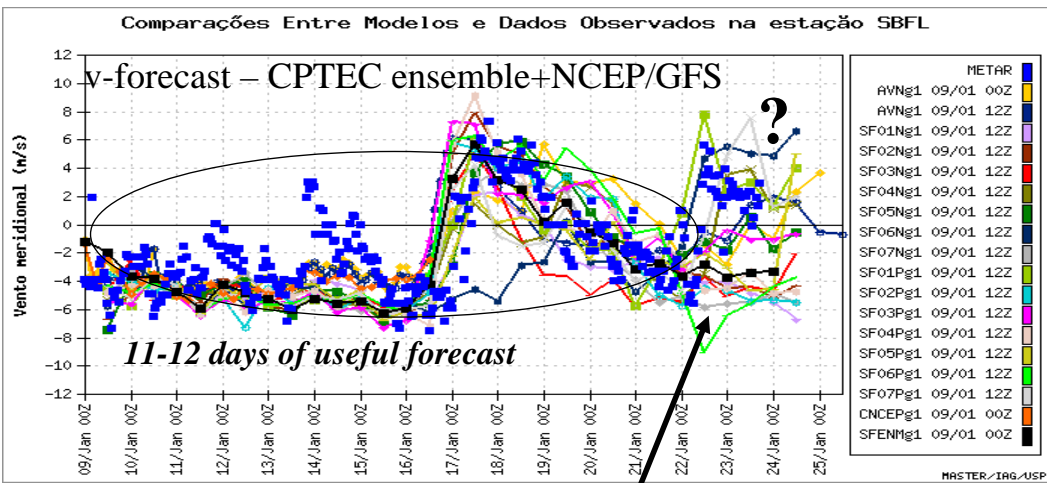
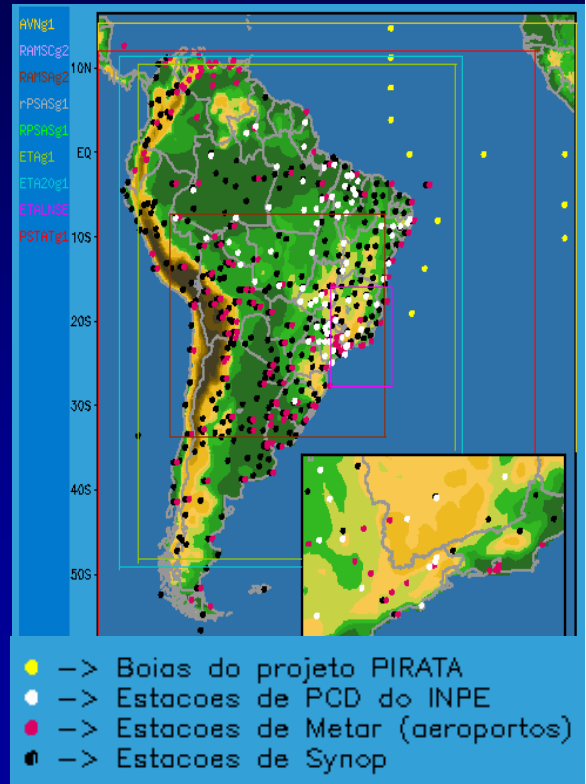
Model Intercomparison Super Model Ensemble

- * Available models :
 - Global models:
CPTEC, NCEP, ECMWF, UKMO,...
 - Regional models: ~14

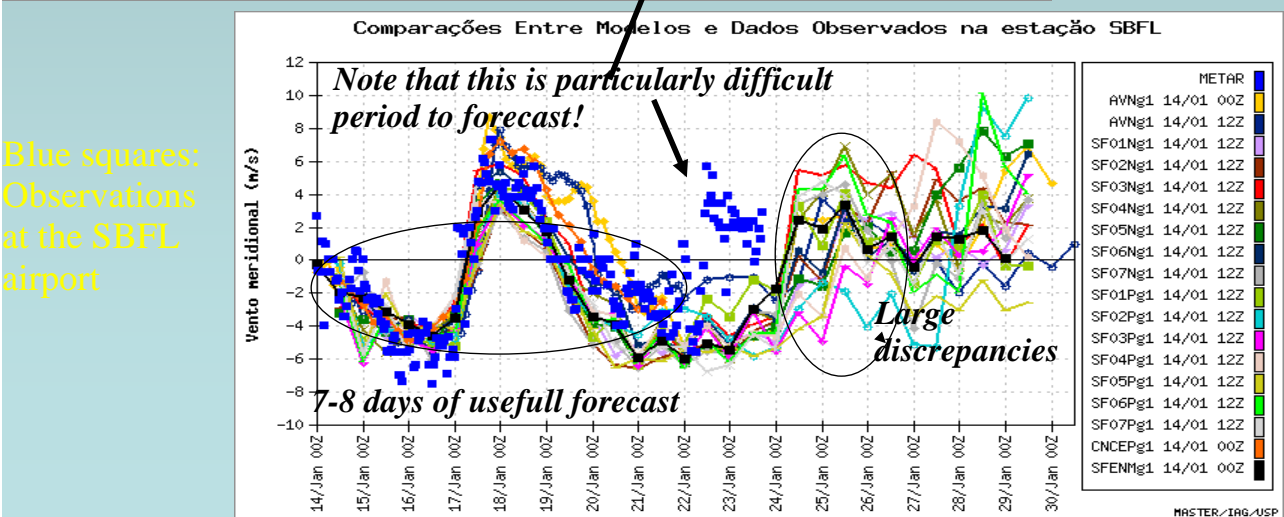
* Collaborative work -> Model improvement

* Evaluation Metric: Fit to surface data.
METAR, SYNOP, Autom. Stations and PIRATA buoys

This work is in support of regional activities of THORPEX/TIGGE - WMO.

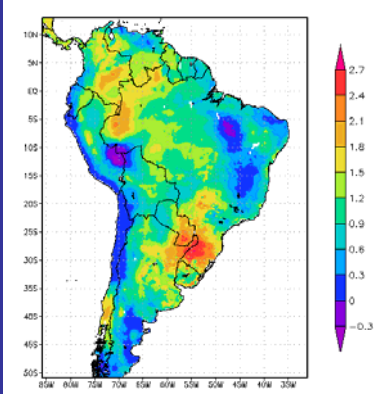


Example of meridional wind forecast comparison of CPTEC ensemble members and NCEP/GFS

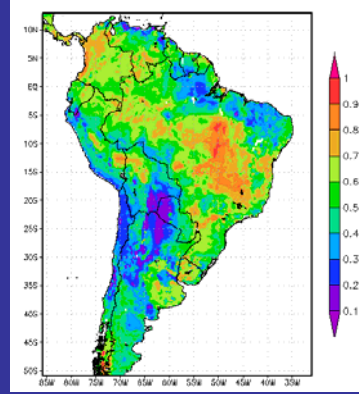


Blue squares: Observations at the SBFL airport

South American Land Data Assimilation System



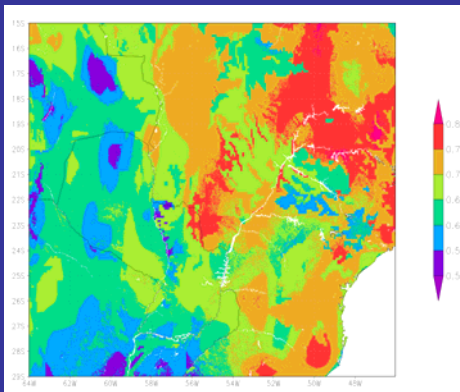
Evaporation in Kg/m2 on December 1989 using ECMWF bias corrected atmospheric forcing (Berg et al., 2005, Int. J. Clim., 25 (13), 1697-1714)



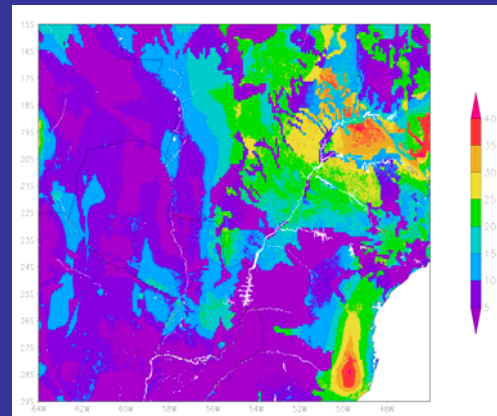
Volumetric soil moisture on December 1989 using ECMWF bias corrected atmospheric forcing (Berg et al., 2005, Int. J. Clim., 25 (13), 1697-1714)

Volumetric soil moisture

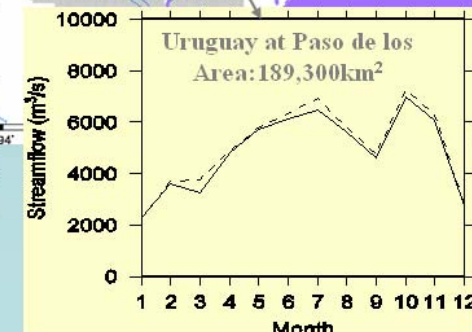
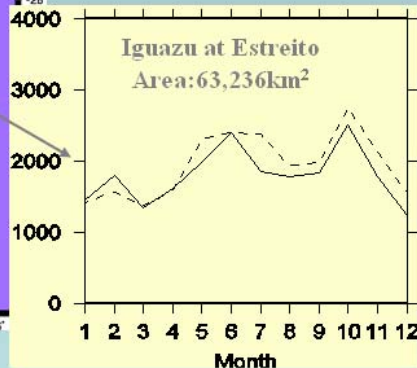
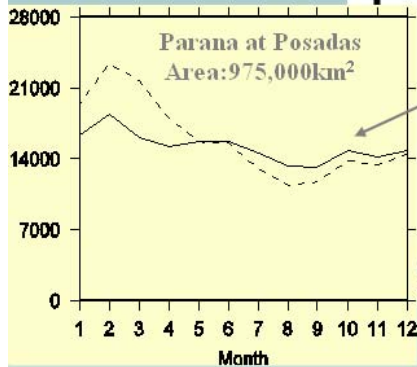
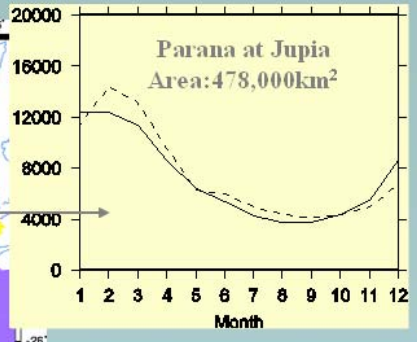
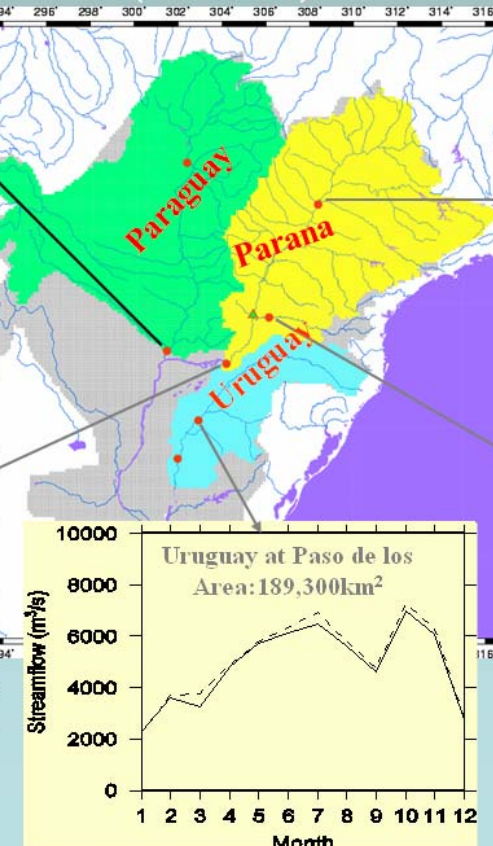
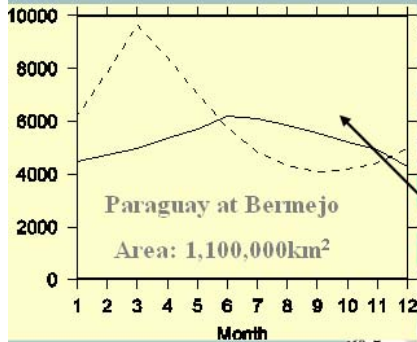
Total runoff (Kg/m²)



1Km resolution - January 2000



Mean Monthly Streamflow (1979-1999)



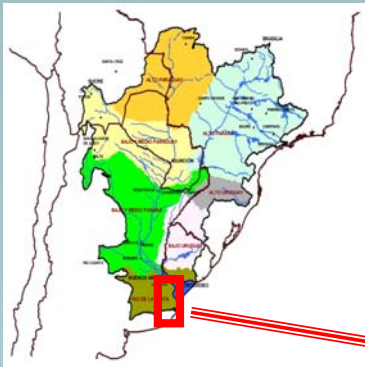
— Observed

- - - Simulated

Source: Fengge and Lettenmaier

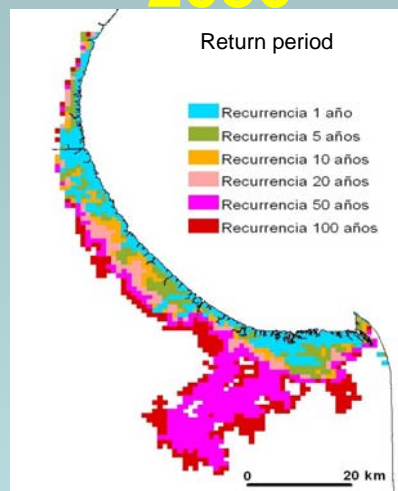
Scientific Motivations

Climate Change Scenarios

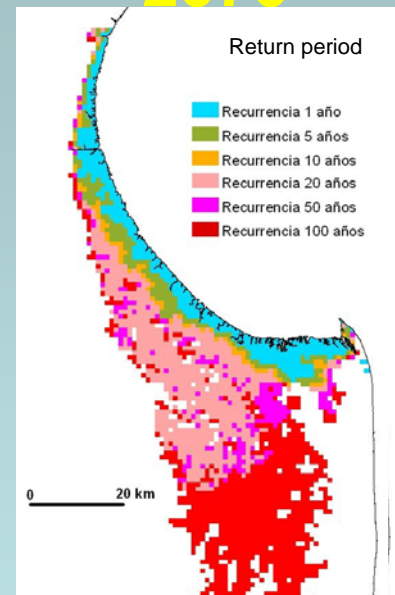


RISK MAPS

2030



2070



"Floods will be more frequent over larger (populated) areas near the mouth of the La Plata River"

CLIMATE CHANGE IN
THE LA PLATA BASIN



■ Editors

Vicente Barros
Robin Clarke
Pedro Silva Dias



Available at

<http://www.atmos.umd.edu/~berbery/lpb>

Thanks....