

CLARIS LPB Concept and Project Objectives

(<http://www.claris-eu.org/>)

Increasing the prediction capacity of climate change impacts for stakeholders has become a major challenge in La Plata Basin, region which gathers parts of five countries (Argentina, Bolivia, Brazil, Paraguay and Uruguay), and which economic wealth strongly depends on agriculture and hydropower production. While the past decades have been characterized by an increase in precipitation respect to the 1950's-1970's decades, it is likely that this feature resulted from a natural decadal variability superimposed on a still weak climate change trend. Studies done in the framework of the FP6 EC CLARIS Project (<http://www.claris-eu.org/>) all concluded that the climate change signal in precipitation in La Plata Basin is similar to the one recently observed although of minor amplitude. A major issue is that this future increase may actually not compensate the evapotranspiration induced by a 2 to 4°C temperature regional increase during the 21st century. If a decadal variability still not well simulated by climate models revert in the coming decades, climate may act against the expansion of crop areas and the expectations in hydroelectricity supply.

Predicting climate change impacts requires predicting the evolution of complex systems, which results from feedbacks between the regional climate, the land-use (including societal issues such as rural development), the water resources and society (therefore individuals). Designing adaptation strategies requires integrating all these interactions and uncertainties through socio-economic indicators quantifiable for decision-making. Predicting the climate change impacts and designing adaptation strategies for land-use, agriculture, rural development, hydropower production, river transportation, water resources and wetlands ecological systems is a challenge for the region future and is the final objective of the CLARIS LPB Project.

To address the complex issue, it is hypothesized that the global climate (variability and change) is considered as an external driver for La Plata Basin region and the possible feedbacks of the region onto the global climate is beyond the stake of the project. Regional evolutions of the atmospheric, hydrological and land-use systems are not independent and must be addressed through multi-disciplinary approaches and teams integrating and interfacing these different systems. The general objectives of the project are:

- To provide an ensemble of regional hydroclimate scenarios and their uncertainties for climate impact studies.
- To project possible scenarios in land-use evolution for 2010-2040 and design adaptation strategies in terms of rural development for the most vulnerable areas.
- To design strategies to adapt to the possible hydrological scenarios and their consequences (hydropower, floods, river transportation and ecological systems in wetlands) over 2010-2040.
- To ensure wide dissemination of the project results to stakeholders, to the scientific community and to the public through the project web site, the production of reports, brochures, information sheets and scientific papers, and the organization of training activities for stakeholders.
- To foster long-term collaborations between European and South American Partners (sustained beyond the project lifetime).

MPG is involved in **Work Package 5: Regional Climate Change Assessments for La Plata Basin**. The objective of this work package is to better understand the regional effects of climate change and variability on various components of the hydrologic cycle of the La Plata Basin, with emphasis in land-surface-atmosphere feedbacks and their impact on extreme events.