



## From climate knowledge to action

Towards usable climate science: Informing decisions and provision of climate services to the agriculture and water sectors of southeastern South America

Budget: US\$ 765,499

Lead agency: Universidad de Buenos Aires

PI: Cecilia Hidalgo

Countries: Argentina, Brazil, Paraguay, Uruguay, Bolivia, Chile, and United States



Url: <http://serviciosclimaticos.blogspot.com.ar/>

### Summary:

*By means of cutting edge technologies, though mainly with the users of climate information in mind, a research project co-funded by the IAI focuses on the co-production of knowledge to provide climate services involving both scientists and sectorial stakeholders.*

When a project is able to make scientific information accessible for decision making by policy makers and citizens, the society at large benefits and the project becomes successful. Scientific research that not only deliver new knowledge but also involve potential users and strive to make their outcomes available to those who need them, definitely make a difference in terms of their societal relevance.

Climate information is key to decision makers as it helps them analyze and anticipate effects on a wide range of activities, in particular food production, energy and water supply systems that sustain populations. Under climate change and smaller-scale climate variability, the frequency and intensity of extreme events and natural disasters such as floods and drought are also changing, with great human and material losses. Applying scientific evidence to decision making makes it possible to prepare for these events and reduce costs.

This is why, since its inception, the interdisciplinary team of the project *Towards usable climate science: Informing decisions and provision of climate services to the agriculture and*

*water sectors of southeastern South America*, involved researchers from the natural and social sciences: meteorologists, hydrologists, agronomists, engineers, ecologists joined anthropologists, communicators, and economists to respond to the global need for useful climate services and products that are reliable, easy to access and timely.

As a result, a database is available for societal sectors in southern South America that are sensitive to climate –i.e., energy, water, agriculture and livestock, health. To achieve this, countries in the region have joined forces for the first time ever to develop a consolidated set of meteorological data that is subject to rigorous quality control. The database is continuously updated; it provides information on the duration and/or intensity of drought or water excess, and makes it possible to draw conclusions about vulnerability and the impacts of drought on agriculture and human health, among others.

### **An innovative method**

The project funded by the Inter-American Institute for Global Change Research (IAI) is a multinational, interdisciplinary, inclusive network that includes Argentina, Brazil, Paraguay and the United States. The network develops its activities in close relation with the Regional Climate Center Network for Southern South America (CRC -SSA) and is consequently related with Uruguay, Bolivia and Chile, as members of CRC-SSA. It promotes the recent concept of 'climate services', in order for "scientific achievements to articulate with the planning and decision-making related to environmental and economy policies", according to anthropologist and project leader, Cecilia Hidalgo, from the University of Buenos Aires.

The Collaborative Research Network IAI-CRN3035 has adopted the following definition of 'climate services': the production and timely delivery of climate data, information and knowledge that is useful for decision-making by users in climate-sensitive sectors and general population.

The project compiled regional meteorological records from 329 weather stations in south of Brazil, east of Paraguay and central-eastern Argentina, Chile, Bolivia and Uruguay from 1961 to date. Data were checked and information-sharing tools were updated, applying the strictest quality controls. Moreover, a regional drought monitoring system was implemented, with special emphasis on the assessment of soil moisture, as a major component of the water balance. It also implemented yield prediction software for the major crops in the region, which include soybean, maize and wheat, from sowing to harvest.

Scientific outcomes are the result of the interaction between researchers and key users from governments and non-governmental organizations "who managed to maintain dialogue and joint work over time, a central aspect for a successful provision of climate services", Cecilia Hidalgo emphasizes.

By relating the database with yield simulation models for the mentioned crops, accurate yield predictions were achieved for 14 localities in the Argentine Pampas region. "The relationship between moisture accumulated in the soil, the number of consecutive days without rain and the yields in specific areas provides information for estimating insurance indices; it also reveals the need for an improved weather station network", the researcher added.

## **Actionable scientific information**

The social context poses pressing scientific and democratic challenges in moving towards the strategic goal of achieving sustainable development. The Inter-American Development Bank (IDB), the University of Buenos Aires (UBA) and the National Council for Science and Technology (Conicet) of Argentina joined the IAI to sponsor this project for its innovative and practical approach. The project combines the achievements of cutting edge climate science with the social perspective of those who are affected by climate changes. Consequently, it generates evidence-based information for decision-making.

Producing climate information to improve decision-making processes is a major challenge. Facing those challenges requires assuring the quality of knowledge and the legitimacy of decision-making procedures. An important success of this project is having settled collaboration among scientists and practitioners working in government offices and relevant social sectors to share, understand, assess, and co-produce sound knowledge. The academia, government and stakeholders interact in support of collective action.