



*“Towards usable climate science - Informing sustainable decisions and provision of climate services to the agriculture and water sectors of southeastern South America”*

This document summarizes the objectives and lines of work of a project focused on the design, implementation and dissemination of climate services— described as “the provision of climate information in a way that assists decision making by individuals and organizations”— for the agriculture and water sectors of southeastern South America (SESA). The 2013-2018 project is mainly funded by the Collaborative Research Networks (CRN) Program from the Inter-American Research Institute for Global Change Research (IAI). Additional funding is being provided by the Inter-American Development Bank (IDB).

The production of relevant and usable knowledge concerning climate constitutes a challenge for scientists, bridging in a renewed way the gap between those concerned with society and those concerned with nature. Although impediments to link and articulate social and natural sciences in global change programs have been many, the recognition of the urgency to surmount them has risen accordingly. Nowadays it is common sense to recognize that significant advances of contemporary climate science should expand further if a robust social appropriation of science is to inform public and private decision-making. As a hallmark of changes in progress, we are witnesses of the intense discussion at international and national levels about the need to incorporate the "human dimensions" and the (social) needs of adaptation/mitigation to the characterization of global change.

*A highlight of this research project is the close collaboration with the Regional Climate Center for southern South America (RCC-SSA) that is jointly led by Brazil and Argentina and includes Paraguay, Uruguay, Bolivia and Chile.* RCCs are important components of the Global Framework for Climate Services (GFCS) established by the U.N. World Meteorological Organization to promote use of science-based climate information. The strategic partnership between the RCC-SSA and the IAI project is an excellent example of the kind of novel institutional arrangements necessary to foster effective implementation of regional climate services. The synergistic partnership provides the multi-disciplinary expertise necessary to conduct the research and development necessary for effective provision of climate services while, at the same time, it offers a real-world, operational structure that facilitates the transition from scientific knowledge to practice.

The project pursues four main specific objectives:

- Production, interpretation, assessment, and synthesis of diagnostic and forecast climate information on multiple time scales;
- “Tailoring”, communication, and dissemination of that information;
- “Translation” of climate information into plausible impacts and outcomes of viable adaptive actions in agricultural production and water management; and
- Exploration of the institutional structures needed to support the provision of climate services.

A brief description of the major ongoing research activities is provided in the following items:

1. Compilation of quality-controlled regional climate records: This activity involves:  
(a) compilation of a regional database of daily climate data for the period 1961-present for about 322 meteorological stations throughout the region, (b) implementation of quality



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- control protocols, (c) manual verification of flagged “suspicious” records, (d) imputation (filling) of missing data values through modern statistical approaches, and (d) calculation of monthly aggregate statistics and “climatic normals”.
2. Implementation of a regional drought monitoring and assessment system: This activity involves the calculation of various drought indicators to monitor conditions over SESA. The ultimate goal is to implement a system for monitoring, planning, and responding to drought. We are working on development of a consensus “implementation plan” for a regionally-coordinated approach to drought monitoring, warning, and mitigation.
  3. Joint Assessment of Soil Moisture Indicators (JASMIN): This effort is aimed at identifying the strengths and weaknesses of different approaches to assess soil moisture – a central component of the hydrological balance – including in-situ measurements, satellite observations, water balance estimates with different levels of complexity, and land surface model computations.
  4. Crop yields and index insurance: Management of climate risks and opportunities requires an enhanced capacity to “translate” climate information and predictions into sector-specific information. For instance, we are complementing a “rainy summer” forecast with likely distributions of crop yields and profits. We are implementing within-season forecasts of yields of important crops (e.g., soybeans) issued for various locations and times from planting to harvest. We are also helping to develop various climate-related indices that can be used as part of “parametric” crop insurance products.
  5. Monitoring and analysis of the evolution of the research network and the enforcement of the provision of climate services in SESA by the recently launched RCC-SSA with an eye on the interaction between social and natural scientists and between scientists and stakeholders. The creation and maintenance of interaction spaces where dialogue and common work can be sustained over the time has been identified as a crucial aspect for success in the provision of climate services.

For more information about the IAI project, the RCC-SSA, or ongoing research activities, see <http://www.serviciosclimaticos.blogspot.com.ar/> or contact Dr. Cecilia Hidalgo (UBA) [proyectoiai.serv.climaticos@gmail.com](mailto:proyectoiai.serv.climaticos@gmail.com)