



INTER-AMERICAN INSTITUTE FOR GLOBAL CHANGE RESEARCH

Towards an integrated assessment of water security under global change in the Americas (SGP-CRA 005)

Emerging global consensus prioritizes the concept of water security, defined as the sustainable availability of adequate quantities and qualities of water for resilient societies and ecosystems in the face of uncertain global change. Human and natural drivers including climate change, land use change, agricultural intensification, and population growth put increased stress on water supply systems. Our work strengthens adaptive management capacity through science-policy dialogues in the arid Americas with special emphasis on the United States–Mexico border region, northern Chile and Argentina, central Peru, and northeastern Brazil. Groundwater is a resource of particular concern given its increasing strategic importance in response to hydroclimatic variability including drought.

Goals

- Characterize and document the impacts of interannual variability and decadal variability along with climate change in water use (surface and groundwater use)
- Develop and apply shared methodologies for groundwater diagnostic assessments linked to climate change and variability and human demands
- Improve understanding of agricultural water use and electrical energy supply and pricing
- Identify and assess feedbacks between environmental conditions and adaptation decisions
- Conduct comparative studies across the Arid Americas
- Improve researcher-stakeholder communication through innovative dissemination platforms, integrated workshops, and outreach-inreach activities
- Reciprocal visits of network members to each others' regions

The context

- The arid Americas are critically affected by water scarcity induced by the twin global change drivers of climate change and variability, and expanding human demands for water particularly in agriculture. Aquifers generally exhibit long-term groundwater cycling (over millennia) while shallow groundwater and its interactions with surface flows, especially in ecologically sensitive riparian corridors, are much more rapid (decadal to intra-annual).
- Due to high inter- and intra-annual variability of historical and projected precipitation and streamflow, the use of groundwater as a strategic resource has intensified. In certain locations, this has led to aquifer depletion with significant risks to human uses (differentiated socio-economically) and to ecosystem services.
- Research on adaptive capacity has identified vulnerabilities and management shortcomings; this partnership will focus on capacity enhancement.
- Better tailoring hydrologic models to decision-making processing requires collaborative research and outreach.
- Through science-policy dialogues based on enhanced scientific understanding, this initiative will help strengthen water security.

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Project web site: <http://aquasec.org>



Agriculture consumes 70% - 90% of water in the region



Interactive stakeholder workshop



The arid Americas



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