The U.S. Mexico Transboundary Aquifer Assessment Program in Arizona: Current and Future Efforts

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UCOWR/NIWR Conference: Water in a Changing Environment
June 14, 2017

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The Transboundary Aquifer Assessment Program (TAAP)

- The Transboundary Aquifer Assessment Program (TAAP) is a joint effort between Mexico and the United States to evaluate shared aquifers.
- It originates from U.S. Public Law 109-448, which applies to the states of Texas, New Mexico, and Arizona.
- Four transboundary aquifers have been designated for priority assessment: Hueco Bolson, Mesilla, Santa Cruz and San Pedro.

2016 TAAP Meeting in El Paso, TX
Objectives of P. L. 109-448

- Apply new data, models, and information to evaluate strategies to protect water quality and enhance supplies; and
- Provide useful information to decision makers, including assessments of groundwater management institutions and policies.
The Binational Study of the Transboundary San Pedro Aquifer

The Binational Study of the Transboundary San Pedro Aquifer is a milestone output of the TAAP and was published in 2016.

First-ever binational aquifer study prepared and released simultaneously in English and Spanish by the International Boundary and Water Commission (IBWC).
WRRC Tasks

- The San Pedro binational study include information on climate, geology, soils, land cover, land use, and hydrology. However, the Santa Cruz aquifer study still needs to be completed and the UA-WRRC identified some gaps in knowledge with respect to climate change impacts and stakeholder engagement in both of the reports.

- The UA WRRC intends to fill some of this gaps by developing the following activities:
  
  **Task 1:** Completing the Binational Study of the Transboundary Santa Cruz Aquifer and other coordination activities.
  
  **Task 2:** Transboundary Stakeholder Engagement.
  
  **Task 3:** Climate Change Assessment.
Task 1: Completing the Binational Study of the Transboundary Santa Cruz Aquifer

BINATIONAL STUDY OF THE TRANSBOUNDARY SANTA CRUZ AQUIFER

ESTUDIO BINACIONAL DEL ACUÍFERO TRANSFRONTERIZO RÍO SANTA CRUZ
Binational Technical Meeting
March 2, 2017
Task 2: Transboundary Stakeholder Engagement

Introduce the TAAP and its associated products to communities in the U.S. and Mexico.
The Transboundary Aquifer Assessment Program (TAAP) is a joint effort between Mexico and the United States to evaluate shared aquifers. Under this program, scientists from each country collaborate on producing binational studies on shared waters. The Mexican and U.S. Principal Engineers of the International Boundary and Water Commission (IBWC) signed the "Joint Report of the Principal Engineers Regarding the Joint Cooperative Process United States-Mexico" for the TAAP. This IBWC "Joint Report" serves as the framework for coordination and dialogue to implement these studies.

The Binational Study of the Transboundary San Pedro Aquifer is a milestone output of this joint effort. Both countries contributed scientific knowledge and data on climate, geology, soils, land cover, land use, and hydrology. The report compiles and creates a database of scientific information and identifies data gaps and information to be updated in subsequent phases.

**The San Pedro Aquifer**

**Informe completo:**

For more information, please visit: cilia.sre.gob.mx/cilanorte

Para más información por favor visite: cilia.sre.gob.mx/cilanorte

https://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/pdfs/TAAP-bulletin-2017.pdf

The Joint Cooperative Framework for the Transboundary Aquifer Assessment Program

Poster Presentation

The Transboundary Aquifer Assessment Program and the Binational Study of the San Pedro Aquifer
Task 3: Climate Change Assessment in the Upper Santa Cruz River Basin (Initial Thoughts)

- IPCC global climate models (CMIP3 and CMIP5)
- Dynamically downscaled with the Weather Research and Forecasting model (WRF) used as a regional climate model.
- Global models include: HadCM2, MPI-ECHAM5, Had-GEM2, MPI-ECHAM6
  - Grid spacing: 25-50 km
  - Time period: 1950-2100 (approx.)
  - Emission scenario: A2 ‘business as usual’
- CMIP5-WRF Simulations follow the guidance of the North American Coordinated Regional Climate Downscaling Experiment (NA-CORDEX)  [https://na-cordex.org/](https://na-cordex.org/)
Proposed Efforts for Future Activities

Reconnaissance work in the Douglas-Agua Prieta watershed.

Assess effects of climate change, drought and effluent discharges in groundwater recharge downstream of the Nogales International Wastewater Treatment Plant in the aquifer modeling in the U.S. portion of the Santa Cruz River Aquifer Basin.
Proposed Efforts for Future Activities

Characterize alternative scenarios for surface water flows and groundwater recharge in the Santa Cruz River basin.

Transboundary Stakeholder Engagement

https://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/pdfs/Shamir_RioRicoTransferability13Nov2014CaseStudy.pdf

https://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/pdfs/WATEC_10_2013_0.pdf
Proposed Efforts for Future Activities

Analysis of the TAAP Cooperative Framework and its Applicability to Other Binational Water Efforts.

Determine what opportunities exist for cooperative and/or collaborative drought responses in the Santa Cruz and San Pedro aquifer regions and examine the adaptiveness of drought management capacity of water governance networks in these regions.

http://ecologic.eu/10962
Thank you!

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For more information see
wrrc.arizona.edu/TAAP ibwc.gov
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