



Exploration and management of an inland fresh water lens in the paraguayan Chaco

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The city of Benjamín Aceval is located in the lower Chaco region, 40 km north of Paraguay's capital Asuncion. The Chaco itself is a hot and semi-arid sedimentary plain between the Andes to the West and the Rio Paraguay to the East. As evaporation exceeds precipitation, freshwater is scarce and groundwater is mostly saline. Population density is accordingly very low. The city of Benjamín Aceval has a population of about 17.000 and is located on some isolated hills rising a few meters above the Chaco plain. Settlement was only possible due to the occurrence of fresh groundwater underneath these hills, which floats on the saline water, resembling a Ghijben-Herzberg lens.

Hardly anything about this lens was known. Overexploitation and intrusion of saline groundwater from the adjacent lowlands was feared. Therefore, in the framework of the Paraguayan-German project PAS-PY (Protection and sustainable management of groundwater in Paraguay) a hydrogeophysical exploration was performed. Its aims were to delineate the fresh water aquifer, to calculate groundwater extraction and recharge and to deduce a water balance. This information is imperative in order to develop a sustainable water management concept for this fragile and irreplaceable water resource. Water quality issues were also addressed as B. Aceval lacks a sewage collection and treatment system. Most household wastewater is re-infiltrated into the subsurface by thousands of infiltration wells, often abandoned dug wells.