Evidences and characterization of groundwater circulation in dryland piedmonts: impacts on aquifer recharge.

Example of the Andean Piedmont between 19.5°S and 20°S (Northern Chile)

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Abstract

The study area (between 19.5°S and 20°S) is located in the hyperarid Pampa del Tamarugal Central Depression (Northern Chile). The Andean Piedmont and the basin floor are composed of late-Cenozoic alluvial and pyroclastic deposits (hundreds of meters thick), above a pre-Oligocene bedrock [3]. The main groundwater resource of this area is the Pampa del Tamarugal Aquifer. Another resource identified in the piedmont consist in numerous springs, nowadays not studied, that supply water to local population.

Methodology:

The objective of this work is to assess the groundwater circulation in the piedmont area and to define the aquifer limits and boundary conditions.

The methodology consists in geophysical measurements (92 TDEM points with 6 validation boreholes), hydrogeological measurements (stream discharges and water table in wells) as well as geological and geomorphological surveys in the piedmont and the basin floor to propose a conceptual model of groundwater circulation.

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