



## **Hydrogeochemical processes in ground water in a tropical karst environment of Southern Mexico**

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The karstic aquifers are of a great strategic importance in many regions along the world. These aquifers belong to carbonated formations which have been affected by fissuration and dissolution (karstification) processes. The specific organization of the flows in this type of aquifer determines the methodologies to be used in its exploration, although much still unknown about the processes occurring in tropical environments.

This research has the overall aim to identify the hydrogeochemical processes affecting groundwater in the Rio Grande Basin of Comitán, in the state of Chiapas, Mexico. In the Rio Grande Basin are delimited 54 sub-basins having an area of 6126.67 km<sup>2</sup>.

The geology of the area is characterized by lithology dominated by Mesozoic sedimentary rocks of the Lower Cretaceous series, clastic and carbonate rocks limestone-dolomite type are the oldest. Another lithological association present in the area is limestone-shale. Consistent with the previous unit, a deposit of sediments consisting of shale, sandstone and limestone occurs. On these previous formations layers of siltstone and sandstone with interbedded limestone were deposited.

Deep and shallow wells used to supply water to the population, were used to establish a monitoring network aimed at identifying the types of groundwater and the processes occurring in the karstic aquifer. For the development of this work was carried out sampling September 2014, where 50 sites used for groundwater extraction were sampled, of which 20 are deep wells and 30 shallow wells.

The physicochemical parameters were measured in the field, while the chemical constituents were analyzed in the laboratory. The data obtained were drawn diagrams to identify hydrogeochemical facies of groundwater sampled, and contour maps of chemical content and some measured parameters.

Likewise, the field data have been interpreted with the help of hydrogeochemical models to identify the processes that may be changing water quality in the Basin. This paper presents the preliminary results of the characterization of the chemical composition of groundwater in the Basin.