Geophysical Research Abstracts
Vol. 12, EGU2010-7458, 2010
EGU General Assembly 2010

Geochemical characteristics of the San Miguel aquifer, Baja California, Mexico.

Miriam Tostado-Plascencia (1), Jose Rosas-Elguera (2), and Thomas Kretzschmar (1)

(1) Posgrado en Ciencias de la Tierra, CICESE, MEXICO (misuk02@gmail.com), (2) División de Ingenierías, Universidad de Guadalajara, Guadalajara, MEXICO

The valley of San Miguel, located in the state of Baja California, Mexico, is an important region because of the wine industry. It is therefore important to know groundwater characteristics. Two aquifers can be recognized in the San Miguel basin, first one is in fractured granitic rocks (in the upper part of the basin, called UB) and other is free-type in detritc sediments (in the lower part of the basin, close to the sea, called LB). The water temperature ranges between 25°C y 11°C without significant variations along the year. The conductivity increases with the water temperature and decreases in February when the temperature is lower. The pH of the waters in UB is between 8.5 and 6.5 but in the LB is in the range of 6.8 to 7.3. Our data show that Na, Mg, and HCO3- concentrations decrease during the rainy season due to ion exchange.
According to the Stiff diagrams the waters of the LB are classified as sodium chloride. In the UB the water classification includes calcium and magnesium bicarbonate, magnesium chloride, and few calcium chloride and sodium chloride. The saturation indexes of the waters suggest that the mineral phases which can be present are: K-feldspar, gibbsite, albite, quartz, calcite, aragonite, gypsum, and magnesite. Because of SI>0 then the first four phases can precipitate but the SI of magnesite and gypsum is negative thus the can be dissolved. Finally, calcite and aragonite are in equilibrium due to they are close to zero. Our results suggest that the aquifers of the San Miguel basin do not show evidence of saline intrusion.