

Hydrochemical changes in a small tropical island's aquifer: Manukan Island, Sabah, Malaysia

Abstract

Small islands groundwater are often exposed to heavy pumpings as a result of high demand for freshwater consumption. Intensive exploitation of groundwater from Manukan Island's aquifer has disturbed the natural equilibrium between fresh and saline water, and has resulted increase the groundwater salinity and leap to the hydrochemical complexities of freshwater-seawater contact. An attempt was made to identify the hydrochemical processes that accompany current intrusion of seawater using ionic changes and saturation indices. It was observed that the mixing between freshwater-seawater created diversity in geochemical processes of the Manukan Island's aquifer and altered the freshwater and seawater mixture away from the theoretical composition line. This explained the most visible processes taking place during the displacement. © 2008 Springer-Verlag.