

Do tides affect water quality in the upper phreatic zone of a small oceanic island, Sipadan Island, Malaysia?

Abstract

Sipadan Island is a small oceanic island with limited storage of fresh groundwater. A study was carried out to determine the effect of tidal change on the groundwater quality of such an island using temperature, dissolved oxygen content, conductivity, salinity, and pH values as indicators. Overall, the results indicated that the groundwater quality changes with tides, but the trends of fluctuation differs between the observed parameters. It was found that the percentages of changes during the period of study were 0.8% (temperature), 53% (dissolved oxygen), 61% (conductivity), 58% (salinity), and 1.7% (pH) at the centre of the island; and 0.9% (temperature), 33% (dissolved oxygen), 40% (conductivity), 42% (salinity), and 9% (pH) at a station 120 m from the coast, based on 2.9-m and 2.8-m tidal ranges at each station.