

Groundwater resources assessment using numerical model : a case study in low-lying coastal area.

ABSTRACT

The impacts of climate change and human pressure in groundwater have been greatest threats facing small islands. This paper represents a case study of groundwater responses towards the climate change and human pressures in Manukan Island Malaysia. SEAWAT-2000 was used for the simulations of groundwater response in study area. Simulations of six scenarios representing climate change and human pressures showed changes in hydraulic heads and chloride concentrations. Reduction in pumping rate and an increase in recharge rate can alter the bad effects of overdrafts in Manukan Island. In general, reduction in pumping rate and an increase in recharge rate are capable to restore and protect the groundwater resources in Manukan Island. Thus, for groundwater management options in Manukan Island, scenario 2 is capable to lessen the seawater intrusion into the aquifer and sustain water resources on a long-term basis. The selection of scenario 6 is the preeminent option during wet season. The output of this study provides a foundation which can be used in other small islands of similar hydrogeological condition for the purpose of groundwater resources protection.

Keyword: Climate change; Human pressure; Pumping rate; Recharge rate.