GEOCHEMICAL VARIATIONS OF GROUNDWATER IN THE SOUTHWESTERN COASTAL PLAIN, TAIWAN

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We present the geochemical data of groundwater collected from the southwestern coastal plain of Taiwan with an attempt to understand the groundwater quality. The coastal plain is constituted of late Quaternary sediments, which were deposited in fluvial to coastal environments. This area has been identified as a part of an active foreland basin with a quite rapid subsidence rate. A distinct disconformity, which corresponds to the Pleistocene-Holocene boundary, was found at depths between 80~100m as confirmed by radiocarbon ages.Concentrations of anions and cations were measured for more than 80 porewater samples squeezed out from sediment cores collected from the drill holes aligned roughly along the groundwater flow direction of this area. Based on vertical variations, two major types of groundwater quality can be identified: the fresh water below and the brackish water above the depositional disconformity. The signature of original formation water in the upper aquifer can still be recognized. Dilution effect is stronger in the upstream wells. On the contrary, porewater in the lower aquifer has already been typical fresh water in character. It's worthy to note that evaporation and/or menbrane filtration effects might be responsible for the high salinity (sea water) in the downstream sites.It’s suggested that care must be taken to avoid the contamination of the lower fresh water aquifer by the brackish water in the upper aquifer due to overpumping.