



## **Tidal-induced Groundwater Responses in L-shaped Coastal Aquifers considering Storm Surge and Rainfall Effect**

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Sea level fluctuations influenced by tidal variations are natural phenomenon in coastal areas aquifers and had been recognized the key mechanisms controlling groundwater flow fields in coastal aquifers. This study considered an L-shaped coastal aquifer system that includes Fengshan Creek in Hsinchu County, Taiwan, to quantify groundwater responses induced by sea level fluctuations. This study employed MODFLOW model to simulate tidal-induced head fluctuation dynamics, storm surge and rainfall effect in the coastal aquifer. The numerical results will compared with those obtained from analytical solutions and in situ data. The simulation domain and input parameters were obtained based on the field data from three boreholes, one tide stations, two river level gauges, three groundwater wells, and the DTM for the local area. This study focuses on the development of theoretical models of groundwater hydrology system located downstream rivers, estuaries, coastal regions, such as tidal environment to investigate the groundwater level fluctuation and flow in tidal area considering environmental planning issues. On the basis of the numerical model, the groundwater head fluctuations induced by the joint effect of storm surge, rainfall and oceanic tides is investigated and discussed in the coastal aquifer.