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## FORECASTING THE SALTWATER INTRUSION OF HOLOCENE AQUIFER IN THAI BINH PROVINCE, VIETNAM

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Over 10 years of experience in researching and teaching about groundwater and environmental hazards in Vietnam.

Thai Binh, a coastal province of Red River Delta in Vietnam, is surrounded by the river systems and coastlines and this condition has made groundwater quality of the area having complex characteristic. At present, in Thai Binh province, the water source for domestic operations has been exploiting from underground water sources. However, the quality of Holocene aquifer is not uniform, because salt water and freshwater zones in this aquifer is interspersed together. Researching results showed that the area of fresh water zones in Holocene aquifer is distributed mainly in Hung Ha, Dong Hung and a part of Quynh Phu, Kien Xuong districts. Nowadays, under the impact of climate change with sea level rise, the saltwater intrusion processes in coastal aquifer has been going on more intensely. Simulation results by MODFLOW model and code SEAWAT shown that groundwater level of Holocene aquifer will be decreased average 0.5 to 0.8 m until 2100 under the scenario of climate change and distribution boundaries between saline and fresh water will be changed so much. The area of saltwater zone will be expanded especially on coastal areas such as Tien Hai, Thai Thuy districts. The area of saltwater zones in Holocene aquifer will be 79.9; 94.1 and 109.7 square kilometres corresponding to scenarios B1, B2 and A2. By assessing the status of the distribution of saline and fresh water zones in Holocene aquifer in Thai Binh province and the movement of this boundary in the future, author's research results will be the basis that helps the managers give out protective solutions and sustainable using methods for this natural resource.

**Keywords:** aquifer, climate change, sea level rise, saline, intrusion.