



Climate change impact on freshwater resources in a deltaic environment: A groundwater modeling study

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Climate change is expected to affect the hydrological cycle, altering seawater level and groundwater recharge to coastal aquifers with various other associated impacts on natural ecosystems and human activities. As the sustainable use of groundwater resources is a great challenge for many countries in the world, groundwater modeling has become a very useful and well established tool for studying groundwater management problems. This study investigates the impacts of climate change on the groundwater of the deltaic plain of River Pinios (Central Greece). Geophysical data processing indicates that the phreatic aquifer extends mainly in the central and northern parts of the region. A one-layer transient groundwater flow and contaminant mass transport model of the aquifer system is calibrated and validated. Impacts of climate change were evaluated by incorporating the estimated recharge input and sea level change of different future scenarios within the simulation models. The most noticeable and consistent result of the climate change impact simulations is a prominent sea water intrusion in the coastal aquifer mainly as a result of sea level change which underlines the need for a more effective planning of environmental measures.