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Entitled

THE EFFECT OF CLIMATE CHANGE ON GROUNDWATER RECHARGE IN THE UNITED ARAB EMIRATES

by

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Abstract

Climate change is impacting ecosystems and the water resources by causing temperature variation. Evapotranspiration rates are increasing when the temperature is high whereas, precipitation amount and intensity are varying based on geographical locations. This change in precipitation has an inevitable impact on the groundwater recharge. Quantification of groundwater recharge is a prerequisite for efficient and sustainable groundwater resources management in arid regions. Although, both surface and groundwater resources in the United Arab Emirates (UAE) are scarce; the anticipated climate change impacts could make these resources even scarcer. As such, the main aim of this research is to assess the potential impacts of future climate variability and change on groundwater recharge in the UAE. First, the thesis discussed rainfall characteristics and future projections in the UAE. Simulations of sixteen different climate change models are then presented under four distinctive scenarios, related to greenhouse gas concentrations, until 2099. The results showed that majority of the models presented increase in the projected precipitation which caused a consequence increase in groundwater recharge.

Keywords: Groundwater recharge, climate change, United Arab Emirates