



Modelling the water balance of the Eastern catchment of the Dead Sea under data scarcity

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Groundwater is the main water resource in Jordan and the only source in some areas. Anthropogenic changes represented by overexploitation and land use changes, together with natural changes represented by climatic changes directly affecting this main water resource.

The annual average abstraction from groundwater basins of Jordan exceeds the average recharge by 159%. The over-pumping ratio ranges from 146% in minor aquifers to 235% in major rechargeable aquifers. Land use changes and deterioration, such as urbanization and agriculture are the most important anthropogenic influences on climate, while urbanization is the most powerful and most visible anthropogenic force on earth-affecting its surface, atmosphere, and seas; its biodiversity and its people. On the other hand, clear evidences are showing that climatic changes are taking place in the region.

This research is focusing on modelling the water balance of the eastern catchment of the Dead Sea using a physically based spatially distributed hydrological model and a dense network of rainfall and weather stations. Satellite images and remote sensing techniques were used to get the best available data on the region taking in consideration the spatial and temporal resolution.

Understanding the water resources of the catchment area will help the decision makers in their strategies to maintain the sustainability of the ground water resources of the Dead Sea eastern aquifers and will provide a rigid base for further hydrological investigations and studies.