Water Resource Associates

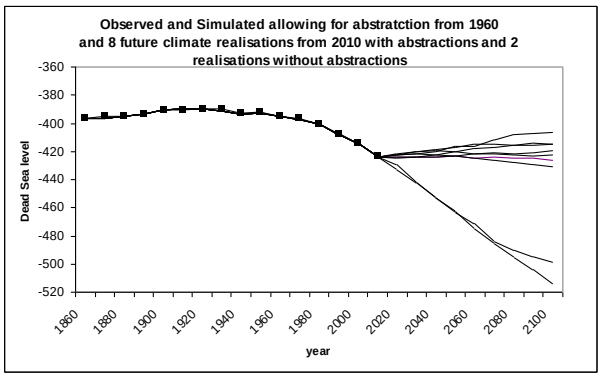
A network of consultants in hydraulics, hydrology, groundwater & environmental issues

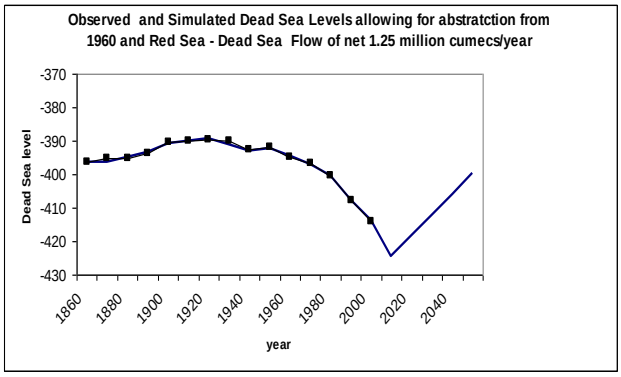
Project title: Water Life and Civilization: Impacts of Climate Change in Jordan

Summary: Hydrological Modelling of the Dead Sea Levels – Management and Restoration of Levels

Client: Leverhulme Trust	**Financed by:** Leverhulme Trust
Period of assignment: 2004-09	**Location**: Jordan
Project Value: £1.2 million	**WRA services**: £15,000
In co-operation with: University of Reading	

Background: As part of the Water Life and Civilization Project at the University of Reading (see www.waterlifecivilisation.org) which is funded by the Leverhulme Foundation, Paul Whitehead has undertaken a modelling study of the Dead Sea levels. The model is based on observed rainfalls and levels going back to 1860 and has been used to evaluate the effects of water abstractions on the levels. As shown in the figure below the levels from 1860 fluctuate but rapidly decline from the 1960s as abstractions start to have a major effect. The model has been used to evaluate the effects of future climate and as shown in the figure the levels would recover slightly with 8 future realizations of the climate from 2020 onwards, assuming no abstractions. However if abstractions are taken into account, the likely future levels will continue to fall as shown in the figure. Thus wetter future climate in the Jordan Valley will not improve the Dead Sea levels which will continue to fall, according to the model. However, there are plans for a new water transfer from the Red Sea to the Dead Sea and as illustrated in the second figure, Dead Sea levels could recover in future years irrespective of climate change and water abstractions.





Scope of work by Water Resource Associates Ltd Development of new hydrological models for the simulation of flows in the Jordan River and the Dead Sea Levels

Results Report to the Leverhulme trust and published paper **Whitehead P.G., Butterfield D., Black E and Plinston D** 2011,Modelling Dead Sea Levels and Rainfall: Past, Present and Future, in Water Life and Civilisation (edited S.J. Mithen), Wiley,

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Project number 127

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