Geophysical Research Abstracts, Vol. 10, EGU2008-A-01787, 2008 SRef-ID: 1607-7962/gra/EGU2008-A-01787 EGU General Assembly 2008 © Author(s) 2008



## Developing an Interactive Hydro-economic Decision Support Tool for Managing Water Resources in Semi-Arid Regions

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Water is the limiting factor for growth in many water-stressed regions. This is particularly true for the Middle East, where severe water crises have been temporarily and short-sightedly averted through extensive mining of fossil aquifers and overabstraction of renewable ones. Consequently many of these resources have been irreversibly damaged necessitating a more balanced approach to manage these strategic reserves.

The current paper presents an interactive decision support tool (DST) designed for high level planning of groundwater stocks in the face of severe scarcity and intense intersectoral competition. The tool simulates water demand and productivity of the agricultural, urban and industrial sectors. It estimates the net present value of these stocks based on given discount rates, hydro-meteorological conditions, energy prices, and population growth. Users create scenarios to formulate and assess alternative policy options.

Built using the STELLA dynamic systems modelling environment, the DST is designed with emphasis on the intuitiveness and interactivity of the user interface to bring it into the reach of the widest spectrum of stakeholders to facilitate a shared vision approach for effective, equitable and sustainable management of water resources. As a case study, the DST is applied to explore policy options for managing the Amman-Zarqa Aquifer in Jordan.