Geophysical Research Abstracts,
Vol. 11, EGU2009-2197-1, 2009
EGU General Assembly 2009

Irrigation and water scarcity in the Zerqa Triangle, Jordan or why archaeology is relevant for understanding current practices

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Scarcity of water resources for development is a recurrent and important issue, and has been for thousands of years. Based on the case of the Jordan Valley, this contribution will argue that our understanding of current issues can be improved by studying ancient contexts. At the same time, archeology can benefit from analysis and models applied in the engineering domain. In the Zerqa triangle in the Jordan Valley, irrigation would have been an important instrument to deal with the arid climate and its associated uncertainties concerning rainfall for societies in different periods. Before irrigation modernization efforts were started in the 1960's, the people of the Zerqa area used the known ethnohistorical irrigation system, which dates back to the Mamluk period. This system consisted of a number of sub-systems tapping water from the Zerqa river and transporting water to the fields through open canals under gravity. The settlement pattern of the Iron Age points to an irrigation system of similar type being in use during this period. The location of Early Bronze Age settlements along natural watercourses suggests that a form of flood irrigation was practiced, without a dedicated canal system. Each of these settings will have had its specific uncertainties in terms of water availability to deal with, which will be discussed. In other words, each setting provided specific materially structuring conditions for societies to develop responses in terms of agriculture, institutions and power relations. This contribution discusses these uncertainties and responses for the different periods. In the discussion, insights from both archaeology and irrigation engineering will be integrated.