

# Developing an oasis-based irrigation management tool for a large semi-arid mountainous catchment in Morocco

C. de Jong<sup>a</sup>, K. Makroum<sup>b</sup> and G. Leavesley<sup>c</sup>

*a) [dejong@giub.uni-bonn.de](mailto:dejong@giub.uni-bonn.de), Geographical Institute, University of Bonn, Germany*

*b) Agence du Bassin Hydraulique Souss-Massa-Draa, Agadir, Morocco*

*c) Water Resources Division, USGS, Denver, USA*

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## Abstract

This study is concerned with the management of water resources and development of a DSS (Decision Support System) in MMS (Modular Modelling System) for the semi-arid, mountainous Drâa catchment in SE Morocco. The catchment relies heavily on oasis irrigation in three different geographical units. These include firstly, the High Atlas mountains, secondly, the basin of Ouarzazate above the Mansour Eddahbi dam reservoir and thirdly the ancient date palmeries below the reservoir. In 1972 the dam was put into operation for hydroelectricity and irrigation. Following decades of drought the dam's main function nowadays is irrigation. A DSS requires an efficient hydro-meteorological monitoring system including the infill levels of the reservoir and the water use upstream of the reservoir. It also involves close collaborative feedback between the developers and the water planning authorities and local end-users. In the mountains surface water is still more or less an unlimited resource but in the forelands it is very limited for irrigation.

Uncontrolled spread of mechanised pumping is seriously straining the groundwater resources. In terms of potential end-users, farmers in the mountain areas will be unable to implement a DSS due to high illiteracy. However, the interest will be high for centralized agricultural and regional hydrological organizations involved in water planning such as the ORMVAO (Organisation pour la Mise en Valeur Agricole de Ouarzazate), farming organisations and the ABH (Agence du Bassin Hydraulique) du Souss-Massa-Drâa.

**Keywords:** Oasis; Semi-arid mountains; Draa catchment; Decision Support System, Reservoir