

REMOTE SENSING AND GEOLOGICAL MAPPING FOR A GROUNDWATER RECHARGE MODEL IN THE ARID AREA OF SEBT RBRYKINE: DOUKKALA, WESTERN MOROCCO.

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Pressure has recently been put on the water resources of Doukkala region, western Morocco, due to the development of agricultural and industrial activities, associated with strong demographic expansion. Doukkala's water resources must be better managed and remote sensing provides effective techniques for such an objective. This research illustrates the use of remote sensing for mapping the regional geology, surface hydrology and hydrogeology of the Sebt Brykine, regarded as a groundwater recharge zone for the populated plains of Doukkala.

A moderate resolution DEM (30 m pixels and 25 m contour intervals) was needed for the hydrological and geomorphological characterization. These derivative products from DEM will also be useful for environmental studies and assessing possible impacts of climate change. Multi-sensor remotely sensed datasets (SPOT, Landsat, and radar images), were used to produce several thematic map layers at 1:100 000 scale: (a big improvement on existing 1/200000 maps), notably lithologies, geological structures, and drainage. These maps allowed the characterization of the regional aquifers and aquicludes for a better understanding of groundwater circulation.

The construction of a groundwater recharge map highlighted pathways between zones of recharge and sites of abstraction. The results were checked and confirmed by measurement of data's fields. This research has led to improved rainfall water management, using dams, lakes and trenches, as well as better exploration and exploitation of groundwater resources.

Keywords: water resources management; remote sensing, hydro-geological mapping, recharge model, Morocco