



Unprotected karst resources in western Iran: the environmental impacts of intensive agricultural pumping on the covered karstic aquifer, a case in Kermanshah province

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Bare and covered karst areas, with developed karstic aquifers, cover 35 percent of the Kermanshah province in western Iran. These aquifers are the vital sources for drinking and agricultural water supplies. Over the past decade, intensive groundwater use (exploitation) for irrigation imposed a significant impact on the carbonate environments. The huge amount of groundwater over-exploitations has been carried out and still goes on by local farmers in the absence of appropriate governance monitoring control. Increasing in water demands, for more intense crop production, is an important driving force toward groundwater depletion in alluvial aquifers. Progressive groundwater over-exploitations from underlying carbonate rocks have led to dramatic drawdown in alluvial aquifers and deep karst water tables. Detecting new sources of groundwater extractions and prohibiting the karst water utilization for agricultural use could be the most effective strategy to manage the sustainability of covered karst aquifers. Anthropogenic pressures on covered karst aquifers have magnified the drought impacts and caused dryness of most of the karst springs and deep wells. In this study, the combination of geophysical and geological studies was used to estimate the most intensively exploited agricultural zones of Islam Abad plain in the southwestern Kermanshah province using GIS. The results show that in the past decade a great number of deep wells were drilled through the overburden alluvial aquifer and reached the deep karst water resources. However, the difficulties involved in monitoring deep wells in covered karst aquifer were the main cause of karst water depletion. Overexploitation from both alluvial and karst aquifers is the main reason for drying out the Arkawazi, Sharafshah, Gawrawani karst springs, and the karst drinking water wells 1, 3 and 5 of Islam Abad city. Karst spring landscape destructions, fresh water supply deficit for inhabitants, decreasing of tourism and recreational activities are some outcomes of imbalance uses of unprotected karst water resources in Islam Abad plain.