



Assessment of Climate Change Impacts on Water Resources in Islam Abad Aquifer and Land Allocation Optimization

Khalil Jalili¹, Hamid Reza Moradi^{2*}, Omid Bozorg Haddad³

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Abstract

In arid and semiarid regions, water demands of different sectors are related to groundwater resources. Therefore, the assessment of its changes is very important to achieve sustainable development and optimal management of aquifers in the future periods. The aim of this study was to evaluate the effects of climate change on Islamabad aquifer. For this purpose, the output of general circulation climate models was used. For the generation of future weather data in the region, LARS-WG model was calibrated using meteorological data and then, HADCM3 model was applied and its results was downscaled using LARS-WG model in Islam Abad synoptic station for period of 2011 to 2030. The impacts of climate change on groundwater resources were analyzed based on A2 scenario in the period of 2011 to 2030. Then, optimization of these resources was done using LINGO software. Results of LARS-WG model indicated that the monthly rainfall, minimum and maximum temperatures and radiation will change to 2.04, 2.31, 13.66 and 0.4 %, respectively, compared to the baseline period. These conditions affect water demand and available water volume. Moreover, the benefits of optimizing agricultural production in terms of climate change to the current situation dropped to 3.9%.

Keywords: Desertification, Climate Change, LARS-WG, LINGO, Islam Abad.

1. Ph.D. Student of watershed management engineering Department, Tarbiat Modares University, khaliljalili@yahoo.com

2. Corresponding Author, Associate Professor of watershed management engineering Department, Tarbiat Modares University, hrmoradi@modares.ac.ir

3. Associate Professor, Department of Irrigation & Reclamation Engineering, University of Tehran, OBhaddad@ut.ac.ir