

## **Abstract**

As one of the most important issues of the century, today climate change has been affected the human society. Impacts of this phenomenon on various aspects of human life and activities has been proved; water resources development, spatial and temporal distribution of precipitation, surface waters, evaporation, groundwater recharge, water quality and sea levels rising are some examples of the impacts which could be effect on human settlements, agricultural productions and energy uses. Indeed, a comprehensive understanding of water resources management and optimize utilization between economic and social developments are the most influential factors. The Firozabad river Basin is an important basin in the Fars province because the Tangab Dam is constructing in this Basin as a main source for Firozabad water supply. The aim of this study is the investigating effects of climate change in the period 2011-2030 by using three general circulation climate models under three climate scenarios A2, B1 and A1B for basin water resources allocation. Results of Downscaling model SDSM in Hanifghan station shows decrease in rainfall in the months of February, March and January (during 2011-2030) in comparison to the base period (1971-2000). Results of Downscaling model LARS-WG in Tangab station shows decrease in rainfall in the months of January and February and increase in the months of December and March. In all the months of increasing temperature on all models-Scenarios were obtained. Discharge was used in this study come from several AI methods and Results of compares them with statistical analysis and graphical shown that neural network trained by the imperial competitive algorithm was selected as the best method. Results of future runoff, Shows reduce in Spring runoff, Most of uncertainty in runoff was for the month of April. WEAP (Water Evaluation And Planning) was used to study effects of climate change on water allocation. WEAP model results for nine different scenarios were examined and In order to cope with shortage of supply failure, an adaptation scenario was defined and Its ability to cope with scenarios assumed, was evaluated.

**Keywords:** Bar Basin River, Climate Change, Allocation of water resources, SDSM, LARS-WG, WEAP



University of Zabol  
Graduate school  
Faculty of Engineering  
Department of Civil Engineering

**The Thesis Submitted for the Degree of M.Sc (in the  
field of Civil Engineering - Water Engineering)**

**Evaluation of climate change impacts on  
water optimum allocation in the Firozabad  
river watershed in Fars province**

**Supervisor:**  
Dr. M. Molaienia

**Advisor:**  
Mr. Gh. GHandhari

**By:**  
A. Ajamzadeh

October 2014