Abstract:

The study of climate change impacts on water resources availability and distribution has become inevitable in water resources planning and management. However, the uncertainties involved in such studies should be addressed to avoid misinterpretation of the results. This study was organized to explore the hydrological impacts of climate change on Pishin Dam catchment and assess the uncertainties involved. A hydrological model was run using bias corrected simulations of five general circulation models (GCM) under three representative concentration pathways (RCP) of greenhouse gasses emission. The soil and water assessment tool (SWAT) software was used for hydrological modelling of the case study and its parameter uncertainty was defined using the generalized likelihood uncertainty estimation (GLUE) method. The block uncertainty of all contributing sources (hydrological model parameters, GCMs, RCPs) was explored using the spread analysis technique. Although every GCM showed a different scenario for the Sarbaz river discharge into the Pishin dam reservoir they followed the same pattern according to the observed seasonality and monsoon characteristics of the region. It was also found that GCMs uncertainty is the major source of uncertainty in the case of this study and it is followed by RCPs in both the future periods, making the hydrologic model parameters uncertainty to be the least contributing source into the final uncertainty block.

Key words: Temperature, rainfall, climatic changes, general circulation mode, runoff.

University of Zabol

Graduate School

Facutly of Water and Soil

Department of Water Engineering

The Thesis Subrnitted for the Degree Of Master of Science

(in the Field of water Resources Engineering)

Uncertainty Modeling of Sarbaz River Flow Projection under Climate Change

Supervisors:

Dr. Omolbani Mohammadrezapour

Dr. Hadi Galavi

By:

Atefeh Amini Zad

Summer 2018