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Impacts of climate change induced precipitation variability on high mountains of Nepal - Kaligandaki river basin, north of Nepal

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Abstract

Many scientists throughout the world have been analyzing the climate and environmental factors that can affect our health or ecology, and the level of risk. Every year Nepal experiences natural calamities such as draughts, and Glacier Lakes Outburst Floods (GLOF) etc. Likewise the impacts of global warning are felt in agriculture, energy production, and pollution also, which ultimately affects the economy of the nation. Research recommends a sustainable policy framework on how the imbalance of climate change could significantly be reduced by using different appropriate measures.The goal of this study is to develop different scenarios of water resource availability in near upstream of Kaligandaki River basin, under climate change-induced parameters such as precipitation and temperatures variability, rainfall extreme floods, droughts etc. Climate models suggest that global warming could bring warmer, drier conditions to Nepalese high Mountains due to the large topographical differences of the climate parameters. A detailed knowledge of mass-balance observation and discharge measurement are considered and the combination of both will be analyzed by means of either Water Balance Model (WatBal) or General Climate Model (GCM) with multicriteria model performance evaluation. For this discharge measurements should be taken during the melting season which demonstrates that timing of runoff. Mostly, the Water Balance Model CLIRUN3 was combined with years of basic climate information records (precipitation, potential evapotranspiration and water flow) to simulate monthly river runoff in the river basin. If both temperature and precipitation increase, the mean runoff value in the region will be reduced by considerable amount from monsoon to non-monsoon season., this will help to formulate numerical flow line glacier model on high Mountains of Nepal at upstream of Kaligandaki river and forcing mechanisms for flows in the next few decades. This is an indication that with extreme events, hydro hazards, depleting permafrost areas and glacier melts have close links with river flows and sediment. At the end, in next few decades in climate continue changing more than at present rate

Biography

LN Bagale currently stands as a Ph.D. Research Scholar at the Tribhuvan University, Institutes of Science & technology, Kathmandu, Nepal, he has completed two master's degree one is Master's Degree of Engineering (Hydrology) from the University of Roorkee (IIT Roorkee), India (2000 with UNESCO Fellowship) and another is Master's in Science, from Tribhuvan University, Nepal (1992). Mr. Bagale has been working as a post of Hydrologist-Engineer, at the Government of Nepal, since 1998 to date. Also involving teaching as a Senior lecturer for Statistics and Research Methodology. Mr. Bagale has Specialization on Ground Water Hydrology & Water Resource Engineering. He has strong professional skills towards Hydrology, Hydropower, and Environmental fields. He has been published various text books, papers, abstracts for national and international journals. Mr. Bagale is a life member of the Society of Hydrology and Meteorology (SOHAM) and Nepal Engineering Council (NEC) as well as members of the various technical organizations