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2ⁿᵈ International Conference on
Hydrology & Groundwater Expo
August 26-27, 2013   DoubleTree by Hilton, Raleigh, NC, USA

Impact of climate change on variability of rainfall intensity-duration-frequency in Abbay (Upper Blue Nile) basin, Ethiopia

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The climate of the earth had been under pressure in recent years and forced to change its characteristic. The main cause for climate change are ocean currents, sunspots, tidal forces, continental drifts, changes in atmospheric compositions, belch from the deep, GHG emission, dust & aerosols, deforestation, ozone depletion and others. Climate change is real and happening very fast in all corners of the world. Extreme rainfall events and the resulting floods usually could cause significant damage to agriculture, ecology, infrastructure, disruption to human activities, loss of property, loss of lives and disease outbreak. Rainfall intensity is the rate at which the rain fall in a given period of time. Though, it is necessary to investigate the future climate change impact on Abbay basin. Abbay basin is a selected river basin for this study. Abbay river basin is extended in three regional states namely Amhara (64%), Oromiya (33%) and Benishangul-Gumuz (3%) region. The basin characterized by highland (75%) and lowland (25%). Climate condition of the basin is from hot to like desert in lowland and cold in mountainous pick areas. In this study develop a relationship between sub-daily extreme rainfall intensity (1, 2, 3, 6, 12 and 24 hour) and daily extreme rainfall based on historical data is the main focus. For the stations of the basin where there is limited data stochastic disaggregation models to disaggregate daily rainfall data in sub-daily (hourly). Additional climate data is extracted from climate data downscaling from global scale to regional scale is acquired for future projection of climate data's. Finally comparison of future and historical extreme rainfall data is done using appropriate statistical approaches.

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Hydrol Current Res 2013
ISSN: 2157-7587, HYCR an open access journal

Hydrology-2013
August 26-27, 2013

Volume 4 Issue 2

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