

Climatological variability and trends in the Koshi River Basin, Nepal

Assem Sharma⁷

University of Northern British Columbia, Canada

Arun Shrestha

International Center for Integrated Mountain Development, Nepal

Sager Bajracharya

International Center for Integrated Mountain Development, Nepal

Research shows increasing frequency of climatic variability and extreme events throughout Nepal. However, there are not specific studies on the Koshi basin, one of the most important basins of the country in term of livelihood and economy. This study explores the pattern of climate change over the Koshi basin based on observed data from 1970 to 2010. The basin covers a total area of about 60400 km². The Koshi River and its tributaries, through agriculture and other natural resources, support approximately 5.2 million people living in this basin. Any changes in climate will have significant impacts on the agricultural based communities of Koshi.

Through this study we examine changes in climate indices and the trend of occurrence of extreme climate events over the study period. We provide recommendations of immediate, short term, and long term adaptation strategies and actions to cope with the changes.

Spatial and temporal climate indices pattern and trend over the basin were calculated based on daily temperature and precipitation data recorded in 52 stations over the basin. RClindex was used to calculate climate indices and trends and variations were plotted in R and GIS environments. Results show that frequency and trend of extreme weather events are increasing in the Koshi basin. Daily maximum and minimum temperature are increasing on average by 0.3OC/decade. Annual total rainfall in the Koshi basin shows an increasing trend (0.74mm/yr). Extreme climate indices are increasing, creating more climate risk in the region. The trend shows that there is increasing risk of extreme climate events over the region. It is recommended that the policy agencies should take strong action for proper adaptation to these changes and minimize the risk.

⁷ asharma@unbc.ca