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Estimation of Melt Contribution to Total Streamflow in River Bhagirathi and River DhauliGanga at Loharinag Pala and Tapovan Vishnugad Project Sites

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ABSTRACT

Many of the major rivers in India originate from the Himalayas. These rivers have significant contribution from snow and ice which makes these rivers perennial. Due to steep slopes, all such streams have potential sites for hydropower generation. There is a requirement of estimation of the contribution from snow and glacier melt, rainfall contribution and sub surface contribution in the total runoff for sustainable supply of water to the hydropower plants. Considering this aspects, in this study a snowmelt runoff simulation model SNOWMOD suitable for Himalayan basins developed earlier has been modified and applied for simulation of flows. Input to the model such as glacier cover, permanent snow cover, seasonal snow cover generated through remote sensing techniques were used in conjunction with daily maximum and minimum temperature, rainfall and discharge. Two hydropower dam sites on major tributaries (Bhagirathi and DhauliGanga) of River Ganga have been selected for determination of different runoff components. However, though the data available was for a very limited period but the results indicate that these tributaries have significant contribution from snow and ice for long term sustainability of flows to these schemes.

KEYWORDS

Himalayas, Snow and Ice, SNOWMOD, Modeling, Hydropower Schemes

Cite this paper

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