

COMPARISON BETWEEN BLACK-BOX AND CONCEPTUAL
MODELLING APPROACHES

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A B S T R A C T

The primary objective of the study was to compare black-box and conceptual modelling approaches to recommend the suitable approach for a particular catchment of Northern area to simulate the streamflows. A conceptual, mathematical model, which simulates monthly river flows, was chosen and modified employing the snow melt simulation. A relationship between precipitation and its variation within a month was also developed and used in the model for better simulation. The data of the snow-covered area was available of only nine years, therefore, an autoregressive model was developed to generate the data for the remaining simulation period. The conceptual model was calibrated for the Gilgit river catchment using the ten years data (1960-1969) and then applied to generate monthly flows for nineteen years (1970-1988). For the comparison, a black-box model (regression model) was developed for the same area using six meteorological elements as independent variables. Finally, the results of conceptual and black-box models were compared and it was concluded that the conceptual model better simulates the monthly river flows of the area.