

Simulating discharge time series in regions with contrasting seasons using duration curves

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Abstract Continuous discharge time series in ungauged basins where winter and summer flow generation mechanisms are distinctly different are simulated from limited observed meteorological data (rainfall, snow, temperature). Duration curves are used to convert the precipitation data from source gauges into a continuous hydrograph at an ungauged destination site. Temperature data is used as a control variable which determines whether precipitation is in a liquid (rainfall) or solid (snow) state, and whether the catchment is currently “active” to generate flow. The method is tested in several small catchments in Ontario, Canada, and is designed primarily for application at ungauged sites in data poor regions where the use of more complex and information consuming techniques of data generation may be difficult to justify.

Key words flow time series; flow duration curve; spatial interpolation; observed records; active storage; passive storage; precipitation index; ungauged basins