

Effects of Basin Climate, Vegetation, Geology, and Topography to Flow Regime

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One of the final goal in forest hydrology and watershed hydrology is the forecast of hydrologic phenomena in any basin. In order to accomplish the goal, holistic view that includes diversity of the elements composed of the basin, interrelationship between the elements, and spatial distribution, is essential. Characteristic values on climate, geology, topography, and vegetation are extracted from numerical raster maps for the basins without human intervention such as dams or sluices. These features are analyzed for flow regime to understand the degree of contribution by multiple variable analysis.

Results show that the most important factor that determines the flow regime is climate, and the second important factor is found to be vegetation, especially in low flow domain. The value of flow regime is high in deciduous broad leaved forest and low in evergreen coniferous forest. As for geology, volcanic rocks in quaternary era shows large amount of annual runoff, and stable flow regime. Topographical features do not show any significant correlation.