

Supplementary Information

Characteristic	Description
Daily Mean Precipitation	Average amount of daily precipitation received in the catchment (in mm/day).
Daily Mean Solar Radiation	Average solar radiation received across the basin (in W/m ²).
Daily Mean Air Temperature	Average air temperature in the catchment over time (in °C).
Daily Mean Vapor Pressure	Average vapor pressure, representing humidity, across the basin (in kPa).
Soil Porosity	Percentage of soil volume consisting of voids, which can hold water, measured in %.
Soil Moisture	Average soil moisture content in the catchment (in %).
Hydraulic Conductivity	Rate at which water moves through the soil (in cm/h).
Soil Texture	Breakdown of soil components including percentages of sand, silt, and clay.
Vegetation Cover	Characterization of vegetation type, such as forest, shrubland, grassland, etc.
Leaf Area Index (LAI)	A measure of the area of leaves per unit of ground area, representing vegetation density.
Green Vegetation Fraction (GVF)	The percentage of land covered by green vegetation in the catchment.
Elevation	Average elevation of the basin above sea level (in meters).
Slope	Description of slope variations across the catchment area (in degrees).
Catchment Area	Total surface area of the catchment contributing to runoff (in square kilometers).
Runoff Coefficient	Proportion of rainfall that turns into runoff, calculated as a percentage.
Land Use	Dominant land use in the catchment area (e.g., urban, agricultural, forested).
Evapotranspiration	Rate at which water is transferred from land to the atmosphere by evaporation and transpiration (in mm/day).