

Key highlights

1. Effects of Land use, land changes, and climate variability on the Kulpawn River were investigated.
2. Landsat images and the Random Forest (RF) algorithm were used to classify LULC changes
3. The Soil and Water Assessment Tool (SWAT) was used to investigate the hydro-climatic dynamics of the basin.
4. Significant land cover transitions were observed over the study period (1995-2023)
5. Key water balance components showed significant variations over the study period.
6. There is a positive correlation between LULC changes, temperature, and rainfall
7. The combined effects of LULC changes and climate variability disrupted the natural hydrological equilibrium of the basin.