

ABSTRACT

The simulations performed with the SWAT hydrological model under four climate and land use change scenarios allowed us to foresee the evolution of three hydrological processes (surface runoff, water discharge, and sediment yield) in the Upper Tarlung watershed, at monthly, seasonal, annual and multi-annual level for 2020–2100 divided into three periods. Compared to the baseline (1979-1988), at the monthly level, the projections regarding the evolution of the surface runoff, water discharge, and sediment yield are either increasing or decreasing in all time periods. At the seasonal level, the projections show variations from season to season. At the annual level, the projected tendency is alternative, increasing or decreasing, depending on the climate change scenario and time interval. The multiannual average shows an exclusive increasing trend for surface runoff and water discharge in all climate and land use change scenarios, while for sediment yield an alternative trend is projected consisting of increments in all climate change scenarios coupled with land use scenario S3 and decreases in scenarios S1 and S2. Finally, the annual projections of surface runoff and water discharge frequency shows a prevalent increasing trend, highlighted also by the prevalence factor value, while for sediment yield a prevalent decreasing trend is projected, regardless of climate and use change scenario.