



## **Impacts of various burning treatments and rehabilitation on the streamflow responses of high altitude grassland catchments in the uKhahlamba Drakensberg, South Africa**

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Hydrological responses of a catchment are dependent, inter alia, upon the land use of the catchment, and are sensitive to changes in land use. However, in some instances it may be that the management of the land may have a greater effect on the hydrological response of a catchment than the land use itself. The grasslands of the uKhahlamba Drakensberg, South Africa are fire adapted and require periodic burning to remain in a grassland state. This study analysed long term observed data (1956 – current) from the Cathedral Peak research catchments located in the uKhahlamba Drakensberg, South Africa to determine the impacts on streamflow when these burning practices are altered as well as the changes in streamflow following the removal of planted commercial *Pinus patula* and rehabilitation with *Eragrostis curvula*. In the catchment that was afforested, the streamflow increased noticeably following the clearing of *Pinus patula* as expected. However, despite the rehabilitation of the catchment, the streamflow response has not returned to pre-afforestation conditions. Furthermore, the periodic burning in the catchment has an impact on the streamflow response while the biannual burning in the pristine grassland catchment has no discernible impact on flows. The fire exclusion catchment has experienced marked vegetation change from grassland species to woody vegetation (bush encroachment), with gradual changes in streamflow. To better understand the observed changes, rainfall records were analysed for trends over time as well as evapotranspiration.