



## **Hydrogeomorphic Change Following Forest Conversion and Conservation Practices in Karstic Tropical Uplands**

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Conversion of tropical forest to agricultural land is often attended by marked hydrogeomorphological responses and has arguably made a considerable contribution to global terrestrial change. The resulting impacts on small-holder agricultural production and potable water security is often an immediate concern for rural landholders in the tropics. A case study is presented for Leyte, Philippines where targeted soil conservation practices were promoted to reduce land degradation following forest clearance. Several transects were established to intensively monitor soil surface elevation and hydrology at hillslopes under different agronomic practices over a three year study. Forest removal and conversion to swidden agriculture was found to have less dramatic impacts on surface runoff than did soil disturbance associated with tilled agriculture and grazing. Soil erosion was more strongly associated with soil disturbance than with extent of surface runoff. The interplay between the shift in hydrologic processes and tillage frequency for the agricultural land uses resulted in the proposed conservation practice exacerbating the erosion rates within the catchments. Although on site erosion for the pasture catchment was minimal, this treatment was found to have the lowest infiltration capacity and likely contributed greatly to the loss of perennial springs in the uplands and erosion of lowland rice paddies. These results suggest that land uses and agricultural practices that maintain soil infiltration capacity will have the greatest success in maintaining local potable water sources and reducing hillslope soil export.