



Understanding the relative role of hillslope processes and geomorphology in Alpine catchments

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Hydrologic prediction in small Alpine catchments (up 50-200km²) plays a crucial role for water and flood management in downstream areas. In this generally steep environments, understanding the relative role of hydrologic processes in the hillslopes and of water transport in the channeled states (the river network) at hourly to daily time scales represents an important step towards building appropriate prediction tools and transferring them to catchments without observations. Here, we present a model-based framework to investigate the relative role of surface/subsurface runoff, the spatial origin of flows, the transport in the river network and the detail of spatial description of the meteorological drivers (namely precipitation and temperature). The obtained conclusions for the case study catchments in Switzerland are transferable to hydro-climatically similar catchments in the Alps. The general methodology has potential of being applied to different hydrologic regimes.