



Trailcam Hydrology – Can very low-cost wildlife cameras be used to monitor streamflow in an Alpine environment?

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High mountain environments provide a critical store of water in the form of winter snow that is released as liquid water in the summer months. Globally, one sixth of the human population is dependent on this meltwater as it moves down the mountains into more heavily populated regions. The rapid warming of our planet threatens the security of this resource, with winter snow becoming less predictable and glaciers shrinking at an accelerating rate. In this context, understanding the storage and release of water from the high alpine environment is an urgent research need.

The Big Thaw project aims to fill four observational gaps to improve intelligence relating to mountain water resource availability, with runoff being a key element. To supplement and inform modelling, a series of very low-cost wildlife cameras was installed in the Rofental region of the Austrian Alps, and programmed to obtain short videos of meltwater-fed rivers between three and four times a day. The videos were analysed and processed to provide a time series of streamflow using a Space Time Imaging Velocimetry (STIV) technique.

This presentation describes the success of this approach, as well as challenges relating environmental conditions, morphological change and the practicalities of operating low-cost sensors for long periods in harsh environments.