



## **Spatial variability in streamflow along a temporary stream in the Okanagan, BC, Canada**

Emily Huxter (1) and Ilja van Meerveld (2)

(1) Simon Fraser University, Department of Geography, Burnaby, BC, Canada, (2) University of Zurich, Department of Geography, Zurich, Switzerland

Flow in temporary streams may start or cease from one moment to the other but often the occurrence of flow along the stream network and the wetting and draining patterns are complex. In order to better understand how streamflow varies along temporary streams, how flowing stream sections connect and disconnect, and what factors affect the occurrence of flow in the stream network, we mapped the spatial variability in streamflow along Long Joe creek in the southern Okanagan, British Columbia (BC), Canada during spring-fall 2011. The semi-arid southern Okanagan has experienced dramatic population growth and expansion of irrigated areas, so that that water supplies are now almost fully allocated. Little is known about temporary streams in the region, but they could provide a significant amount of water to the basin.

Field observations and streamflow measurements at 31 locations along the 3.5 km long stream showed a high spatial variability in the occurrence and amount of streamflow. During the spring freshet and wet early summer period, streamflow in the upper 1.5 km of the river increased roughly according to increase in contributing area but remained fairly constant along the lower 2 km section to the outlet, suggesting limited contributions to streamflow from the lower catchment area. During the summer, streamflow was highly variable, with many gaining and losing sections. During the late summer and early fall, flow ceased at many sections, at other sections only a very limited amount of flow occurred at night, and at yet other sections the stream continued to flow. Surface water and flow in early fall occurred at the locations where the river didn't freeze in winter, suggesting that these sites were influenced by groundwater discharge. These result highlight the large spatial variability in streamflow along the stream network and the importance of frequent field observations to determine how flowing stream sections connect and disconnect.