

Announcement of a seminar at the Institute of Environmental Engineering

Hydrogeology of alpine headwaters: Groundwater flow and storage in moraine and talus sediments

Time: 27.10.2010, 15:00

Place: Seminar Room of IfU, Höggerberg, HIL G 36.1

Speaker: **Masaki Hayashi**

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Currently a visiting researcher at:

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Abstract:

Understanding groundwater processes in alpine watersheds is critical to understanding the timing of water release and late-season stream flow for both headwater and downstream environments. Previous studies have indicated potential importance of moraine and talus units as groundwater reservoirs based on chemical and isotopic composition of stream water. However, mechanistic understanding of groundwater processes is limited due to a small number of hydrogeological studies in alpine environments. I will present the results of detailed hydrological and geophysical studies in a partially glaciated watershed of in the Canadian Rockies. Seismic refraction, electrical resistivity imaging, and ground penetrating radar have been used to delineate the internal structure of moraine and talus deposits, and to identify groundwater reservoirs and pathways. Hydrological monitoring and data analysis have been used to examine connectivity between surface water and groundwater, and to estimate hydraulic properties of sediments. The key findings are: 1) proglacial moraine has significant capacity to store groundwater, but talus appears to have limited storage capacity, 2) the topography of bedrock surface underlying coarse sediments has a strong influence on groundwater flow, 3) snowmelt and summer rainfall have equal importance as the recharge source of groundwater, and 4) permafrost and buried ice may have important hydrological functions that require further investigation.

For biography and research interests of Prof. Hayashi, please visit www.ucalgary.ca/hayashi/