

Evan Miles Report 2013

This year I was one of two students fortunate enough to be awarded the CSAR Bursary for Applied Graduate Research, a new and competitive award for students pursuing innovative research topics with strong applications. The bursary enabled me to travel to Nepal for 6 weeks in May and June, 2013, to conduct preliminary fieldwork for my PhD, which examines the dynamics of lakes that form on top of debris-covered glaciers. These lakes can grow to enormous proportions as glaciers retreat and threaten to flood villages as far as 200km downstream when they outburst. However, they have been the subject of relatively little study due to the logistical challenges of the Himalaya: poor transportation, rugged terrain, bad weather, and high altitude. The trip has played a crucial role in framing my study of these supraglacial lakes, and I was privileged to witness a variety of phenomena in the field that emphasize the immediate importance of the lakes for glacial retreat. Additionally, I was able to measure ice melt rates, survey lake geometry, and install meteorological sensors to assist in modelling the evolution of the glacier's surface and the formation of lakes. These measurements make up a unique and difficult to obtain dataset that will strongly inform how we assess glacier hazards in high mountains. In addition to a remarkably successful scientific venture, my six weeks of fieldwork in Nepal were an outstanding experience. I experienced the cultural heritage of Kathmandu (greatest density of World Heritage Sites in the world), was scared out of my mind by the narrow and exposed roads, walked trails cut into steep cliff bands, crossed rivers on swaying bridges suspended high above raging gorges, evaded territorial yaks, trekked across glaciers to 5300m, and drank gallons of Tibetan tea. It was an experience of Himalayan proportions, and I'm terribly pleased that I must return. Attached are a few photographs from the trip, while a full album can be viewed [here](#)



Me, drilling into an ice cliff adjacent to a small lake to determine the rate of the lakes expansion.



A very large lake (200m across, 20-30m deep) that formed very rapidly in the last week of the fieldwork.



Me on an acclimatization hike, admiring the grandeur of the Himalaya.



Me, installing basic meteorological sensors at about 5000m in inclement weather.



Moving scientific equipment far up the Langtang Valley.

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