Nunavut Research Institute - License Report – 2017

Project Title: NEIGE (Northern Ellesmere Island in the Global Environment)

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Person nights
May 25: DA, YK, SN arrive at Stuckberry
June 6: DA, YK, SN depart Stuckberry (3 x 12 = 36 person nights)

June 6: GD, AV arrive at Ward Hunt Island
July 12: GD, AV depart (2 x 41 = 82 person nights)
July 12: WV, AC, PB, NB, ML, DS arrive
July 21: WV, AC, PB, NB, ML, DS depart (6 x 9 = 54 person nights)
Total = 172 person nights

Aircraft Hours
Twin Otters chartered by PCSP and based in Resolute Bay were used to carry participants to Stuckberry Lakes and Ward Hunt Island for an estimated total of 32 hours flight time (four round trips). We made a brief helicopter excursion (several round trips to Lake A, 18 July; 2 hours total).

Fieldwork Location
Part of the work took place at Stuckberry Point and vicinity, while the rest was on or near Ward Hunt Island, with an afternoon of operations at Lake A.

Field Activities and Accomplishments
There were six aspects to our research (please also see the photographs, below):

1. Environmental monitoring. We continued our long term measurements from climate stations, permafrost monitoring and automated cameras on Ward Hunt Island. We are making these data available to all stakeholders including northern communities by publication in the online, open access data report series Nordicana D: www.cen.ulaval.ca/nordicanad/dpage.aspx?doi=44985SL-8F203FD3ACCD4138. We also retrieved a 1-year record of lake temperatures and underwater light at Ward Hunt Lake, and reinstalled the instruments for retrieval next year. We installed a new high resolution automated camera at Ward Hunt Lake to track the changes in ice cover more precisely.

2. Lake profiling. We continued our measurements tracking water column change, with profiling of Ward Hunt Lake and Lake A. These data are also available through Nordicana D:
http://www.cen.ulaval.ca/nordicanad/dpage.aspx?doi=45445CE-7B8194DB81754841;
http://www.cen.ulaval.ca/nordicanad/dpage.aspx?doi=45436CE-0E0A89CB98C148F4.

3. Microbiological research. This summer, we made ongoing progress with high resolution sampling of Ward Hunt Island Lake and Lake A. We were able to sample for viruses, other microbes, pigments and a wide range of physical and chemical measurements. We anticipate that these data will provide us with a baseline from which to study future change in these sensitive environments.

4. Ward Hunt Lake sampling: In addition to the usual profiling we continued our observations of inshore mats, underwater light, methane gas, oxygen fluctuations and water currents in the moat.

5. Geomorphological, hydrological and snow research (Geo-NEIGE). We continued our observations of hydrology and geomorphology in the Ward Hunt Lake watershed, with detailed measurements of snowbanks to measure snow melt, slope hydrology, geochemical properties and sediment transfers.

6. We had a very successful sampling trip to the Stuckberry Point lakes and obtained all sediment cores and water samples from four lakes, as planned.

Preliminary Results: All samples are currently being analysed.

Community consultation and Involvement

Quttinirpaaq National Park and Ward Hunt Island are located in a remote region, far from northern communities. Our interactions are through community consultation, Parks Canada and NRI license applications, interactions with Parks Canada staff, public media interviews, and by meetings with Resolute Bay and Grise Fjord residents at ArcticNet workshops and other events. In September 2017, we provided images, videos, publications and an interview concerning our work at Ward Hunt Island to the Parks Canada communications department for their website, as requested.

Challenges:

Logistics funding continues to be our greatest challenge. We had hoped for 3 days of helicopter time but because bad weather, had less than 3 hours of helicopter time. We appreciate the Parks Canada camp facilities and laboratory, which greatly facilitated our work, and PCSP logistics. A wind storm last year had destroyed our outhouse and moved other infrastructure (but there was no effect on the laboratory, which remained rock solid); we spent quite a bit of our time at Ward Hunt Island cleaning up and securing the camp before, during and after the visit by Parks Canada staff.

Plans for next season:

We would like to return in May-July 2018 to continue each of these projects, with the possibility of further sampling of lakes in the Stuckberry Point area (82.95°N, 66.72°W), ca. 100 km to the east of Ward Hunt Island, and a first visit to Thores Lake (82.65N; 73.68W), a long proglacial lake near Disraeli Fiord, and a return visit to Walker Glacier for ice microbiology.