

Monthly Report to the Provost – Faculty of Science – September 2024

Engaging Learners

Cherie Enns: The banner installation, an outcome of our 'Arts in the Alley' (CEWIL funding) summer planning studio, will take place in September. There will also be an exhibit in the gallery showcasing the work of an Indigenous artist who participated in the event and told the story of the planning studio. This excellent promotion for PGES highlights our connections with the community. The story weaves themes of sustainability, placemaking, youth/children, arts, and community. A few students will continue on reporting and documentation working with me into the fall. [Arts in the Alley - Demo Video](#)

Cherie Enns & Jennifer Hetherington: Geog 364: International Planning and Development Policy: Adapting to Climate Change Geog 364 co-taught by Cherie Enns and Jen Hetherington focussed on gamification, city policy and climate-resilience. One of the posters was awarded the top team award at City Studio Hubbub. Cherie Enns is exploring funding options with CIS to develop the game as a legacy for UFV.

Olav Lian: It was a busy spring and summer for members of UFV's Luminescence Dating Lab (LDL). From April 20 to 27 some of us spent time doing field work at Point Conception, California (just north of Santa Barbara). The project is in collaboration with faculty at University of California Santa Barbara (Ian Walker and Alex Simms) and the Chumash First Nations. It looks at the recent (c. last 10,000 years) activity of a unique set of sand dunes and how they have evolved in response to past climate and anthropogenic change. Field work was done by me, my postdoc Sam Woor, and new UBC MSc student Vanessa Brewer. Vanessa's MSc thesis forms a part of this project, is supervised by me, and her lab work is being done at UFV's LDL. Vanessa was a recent UFV BSc Honours graduate (Physical Geography). This research is funded by a research grant that the UFV LDL received from The Nature Conservancy (California).

From June 9 to 15 I attended, with my postdocs Maria Schaarschmidt and Sam Woor, the New World Luminescence Conference/Workshop at Desert Research Institute in Reno, Nevada. I gave the opening keynote talk and Maria and Sam gave oral presentations as well.

From June 23 to July 4, I conducted field work in southern Ontario and Quebec, and northern New York state. This work is part of a new well-funded project that I am collaborating on with Natural Resources Canada (NRCan), the Ontario Geological Survey, and colleagues from State University of New York (Potsdam, NY) and St. Lawrence University (Potsdam, NY). The research looks at the climate-driven evolution of ancient stabilized sand dunes in the region, and their use for people, animals, and plants. Part of this large project will form an MSc thesis for Nicola Ferguson. Nicola is currently a UFV BSc Honours (Physical Geography) student but will start her MSc in January 2025 at SFU, and will be supervised by me.

From August 17 to 22, several of us attended the 2024 Canadian Quaternary Association (CANQUA) Conference at University of Regina, Regina Saskatchewan. The LDL team included me, Nicola Ferguson, Vanessa Brewer, and Justine Stoeckly. Justine is a relatively new BSc Honours (Physical Geography) student associated with the LDL. All of us presented at the conference, including PhD student Tyler Hodder (University of Waterloo) who is currently a remote member of the LDL and who I am supervising with Martin Ross (UWat). All in all, members of UFV's LDL were authors or co-authors on 8 papers presented at this conference. It was busy!

We continued our work with UBC PhD student Mike Turley on sediment routing in Lillooet Valley, BC, who I am co-supervising with Marwan Hassan (UBC Geography). Mike Turley spent much time in UFV's LDL. He presented our research at European Geophysical Union General Assembly, Vienna, Austria, in April.

We continued our funded work with Stephen Wolfe (NRCan) and Mark Demitroff (Stockton University, New Jersey) on the postglacial stabilization of aeolian environments in the New Jersey Pine Barrens. Part of this work formed the BSc Honours thesis of UFV student Nicola Ferguson, which she presented at the CANQUA conference mentioned above. We previously presented the meat of this work at the International Conference of Aeolian Research at Las Cruces, New Mexico, USA, last July. UFV BSc Honours student, Justine Stoeckly was responsible for leading some of this research and she presented it at the CANQUA meeting, which included Abbotsford high school science student Xuani de Figueiroa as a co-author.

We continued our well-funded work research with Manitoba Geological Survey (Manitoba Provincial Government) and NRCan on unravelling the complex sedimentary stratigraphy in the Hudson Bay Lowland, a region with great potential for critical mineral resources. Much of this work forms Tyler Hodder's PhD work (mentioned above) and some of it formed the BSc Honours thesis work for UFV physical geography student Vanessa Brewer. Several presentations and journal papers have been published on this work over the year, especially over the last few months.

We continued our research on postglacial adjustment of major British Columbia rivers. This work was initiated by us, is the focus of my NSERC grant, and is currently focussing on the Thompson River valley. It is in collaboration with Mitch D'Arcy (UBC EAOC), UBC PhD student Henry Crawford (EOAS), and the Bonapart (St'uxwtéws) and Skeetchestn First nations. The work is being lead by my postdoc Sam Woor and early results were presented this month at the CANQUA conference mentioned above,

Kseniya Garaschuk and Vanessa Radzimski: organized a sessions titled "Supporting Numeracy for Non-STEM Students" at the 2023 Winter meeting of the Canadian Mathematical Society in Montreal. Presenters of the session address the ways in which they support the development of numeracy skills in their students from a variety of disciplines, including students that are pre-service and in-service teachers at the elementary and secondary levels. Session participants explored strategies for supporting flexible, proficient, and contextual understandings of mathematics through numeracy.

Transforming Lives

Cherie Enns: managed several multi-year international placements projects funded by Rideau Hall Foundation. Universities Canada -is featuring an UFV story on QES 2017 placement related to UFV student work with Mathare Roots, an youth led organization based in an informal settlement in Nairobi. This is a highly visible promotion for UFV and positions us well for next round of QES funding for UFV students focusing on the environment. We will have 11 students through GSO funding in Kenya this summer. [Queen Elizabeth Scholars](#)

Building Community

Kseniya Garaschuk: co-facilitated the Workshop on Teaching Problem-solving Using a Systematic Framework, held at Ontario Tech University August 19-21. The workshop brought together 15 participants, which included high-school teachers, college and university professors in math and math ed as well as

graduate students. The workshop is one element of the research study focusing on a pedagogical approach to teaching problem solving using a deliverable-driven problem-solving framework. Next steps of the research include analysing artifacts of workshop activities, holding follow-up sessions with participants throughout the next term and synthesising the findings.

FAI Hosts Inaugural One Health Meeting in early June the Food and Agriculture Institute and Dr. James Mandigo hosted the first-ever One Health visioning session at the Gathering Place on UFV's Chilliwack Campus. In the report A One Health Approach for UFV written by Dr. Newman, One Health is described as a transdisciplinary approach that studies interactions between human systems and their ecosystems, focusing on human, animal, and environmental health. The One Health strategy is being used by universities to create applied research solutions to emergent problems like a rise in zoonotic diseases and aligns with UFV's strengths in agriculture, environment, health, and Indigenization.

CONFERENCE PRESENTATIONS:

Sharon Gilles: Conference Presentation:

- Microplastics Found in Lower Fraser River Sediments
- Microplastics Found in Salmon and Bivalves

Cherie Enns: Conference Presentations:

Invited to speak at UBC Planning School April 5th, 2024 on International Planning

Cherie Enns: The accreditation package for BRCP was submitted and we are waiting for Canadian Institute of Planners -Planning Standards Board Response. There is still a process to work through but if accredited UFV will be the 10th university in Canada to offer an undergraduate accredited planning program in Canada. There are 2 others in BC.-UNBC focusses on rural and northern planning and SFU-REM is more focussed on Resources and Environmental management. [Professional Standards Board for Planning Profession in Canada](#)

Olan Lian: Conference presentations:

Woor, S.*, **Lian, O.B.**, D'Arcy, M., Schaarschmidt, M.*, and Crawford, H.*. 2024. Investigating different luminescence signals for dating Holocene fluvial and aeolian sediments in Thompson River valley, southcentral British Columbia. Canadian Quaternary Association and Canadian Geomorphology Research Group Biennial Meeting 2024, Regina, Saskatchewan. Program and Abstracts.

Hodder, T.J.*, Gauthier, M.S., Ross, M., **Lian, O.B.**, Schaarschmidt, M.*, Dalton, A.S., Finkelstein, S.A., and Gowan, E. 2024. Stratigraphic evidence for early ice advances and predominance of Quebec-Labrador Dome glacial dynamics across the western Hudson Bay Lowland. Canadian Quaternary Association and Canadian Geomorphology Research Group Biennial Meeting 2024, Regina, Saskatchewan. Program and Abstracts.

Rice, J., Campbell, H., Paulen, R., Schaarschmidt, M.*, **Lian, O.B.**, Gosse, J., Brouard, E., and Godbout, P.-E. 2024. New constraints on ice margin retreat along the Labrador coast. Canadian Quaternary Association and Canadian Geomorphology Research Group Biennial Meeting 2024, Regina, Saskatchewan. Program and Abstracts.

Gauthier, M., Hodder, T., Dalton, A., Brewer, V.*, **Lian, O.B.**, Finkelstein, S., Schaarschmidt, M.*, and Mereghetti, A. 2024. MIS 3 Laurentide Ice Sheet retreat and advance in the Roseau River area of southern Manitoba, Canada. Canadian Quaternary Association and Canadian Geomorphology Research Group Biennial Meeting 2024, Regina, Saskatchewan. Program and Abstracts.

- Lian, O.B.**, Schaarschmidt, M.*, Hodder, T.*, Gauthier, M., Brewer, V.*, Ferguson, J.*, and Stoeckly, J.*. 2024. Optical dating of 'old' (>100 ka) quartz sediment from Hudson Bay Lowland, northeastern Manitoba - opportunities and challenges. Canadian Quaternary Association and Canadian Geomorphology Research Group Biennial Meeting 2024, Regina, Saskatchewan. Program and Abstracts.
- Brewer, V.*, Hodder, T.*, Gauthier, M., Schaarschmidt, M.*, and **Lian, O.B.** 2024. Optical dating of proglacial lake sediments, Roseau River, Manitoba, Canada. Canadian Quaternary Association and Canadian Geomorphology Research Group Biennial Meeting 2024, Regina, Saskatchewan. Program and Abstracts.
- Stoeckly, J.*, Schaarschmidt, M.*, Wolfe, S.A., **Lian, O.B.**, Ferguson, N.*, Goeres, A.*, and de Figueiroa, X.* 2024. Assessing the timing of proglacial landscape stabilization using optical dating, New Jersey Pine Barrens, USA. Canadian Quaternary Association and Canadian Geomorphology Research Group Biennial Meeting 2024, Regina, Saskatchewan. Program and Abstracts.
- Ferguson, N.*, Schaarschmidt, M.*, **Lian, O.B.**, and Wolfe, S.A. 2024. Optical dating of paraglacial sand dunes in the Albany Pine Bush Preserve, Albany, New York, USA. Canadian Quaternary Association and Canadian Geomorphology Research Group Biennial Meeting 2024, Regina, Saskatchewan. Program and Abstracts.
- Lian, O.B.** 2024. Dating the Quaternary: My nearly 40-year personal journey with luminescence dating research – where it came from and where it is now. New World Luminescence Dating Workshop, Reno, Nevada, June 10–14. Program & Book of Abstracts, p. 27.
- Woor, S.*, **Lian, O.B.**, D'Arcy, M., Schaarschmidt, M.*, Durcan, J.A., Bouzari, F., and Barker, S.L.L. 2024. Estimating environmental dose rates for trapped charge dating using rapid measurements of potassium concentrations. New World Luminescence Dating Workshop, Reno, Nevada, June 10–14. Program & Book of Abstracts, p. 43.
- Schaarschmidt, M.*, **Lian, O.B.**, Hodder, T.J.*, Gauthier, M.S., Woor, S.*, Brewer, V.*, and Ferguson, N.* 2024. Characterizing the properties of optically stimulated luminescence signals from quartz from Manitoba, Canada. New World Luminescence Dating Workshop, Reno, Nevada, June 10–14. Program & Book of Abstracts, p. 37.
- Turley, M.*, Hassan, M., Zimmermann, A., Schaarschmidt, M.*, **Lian, O.B.**, and Friele, P. 2024. Linking connectivity to spatiotemporal variability in sediment dynamics and yield in glacierized, mountainous watersheds. European Geophysical Union General Assembly, Vienna, Austria, 14–19 April, EGU24-4447, <https://doi.org/10.5194/egusphere-egu24-4447>, 2024.
- Wolfe, S.A., Demitroff, M., Neudorf, C.M., Schaarschmidt, M.*, Woronko, B., Chmielowska-Michalak, D., and **Lian, O.B.** 2023. Late Wisconsinan eolian dune-field activity and stabilization near the Laurentide Ice Sheet limit, New Jersey Pine Barrens, eastern USA. International Conference of Aeolian Research, July 9–14, Las Cruces, New Mexico, USA. Program with Abstracts <https://www.icarxi.com/schedule-events/anthropogenic-interactions-paleoenvironments>.
- Hodder, T., Gauthier, M.S., Ross, M., **Lian, O.B.**, Schaarschmidt, M., and Dalton, A.S. 2023. Constraining the evolution of the Laurentide Ice Sheet through multiple glacial-interglacial cycles in central Canada. XXI INQUA Congress, Rome, Italy, June 14–20.

List of Publications (UFV student names underlined)

Kashif, N., Albijanic, B., Xu, J.J., McGrath, T., Nazir M.K, **Hitch, M.**, Tadesse, B. (2024). "Investigating the drying behaviour of clay-containing slurries." (Volume 260). Applied Clay Science. <https://doi.org/10.1016/j.clay.2024.107500>

Cherie Enns and team have just published Mifood SHRCC Report Number 19 based on food security and young South Sudanese refugees in Nairobi to be published April 2024 Work Stream II will begin this month. UFV is one of 3 Canadian universities that are part of Mifood. [Migration and Food Security in the Global South \(MiFood\)](#)

Cherie Enns IDRC Women Rise project has approval for an One Health intervention in Kenya in May 2024. [Women Rise](#)

Gauthier, M.S., Hodder, T.J.*, Dalton, A.S., **Lian, O.B.**, Schaarschmidt, M.*, Ross, M., Väiliranta, M.*, and Finkelstein, S.A. 2024. Preservation of MIS 7 deglacial and nonglacial deposits near the edge of the Hudson Bay Lowland in Manitoba, Canada. Canadian Journal of Earth Sciences. In press.

Hodder, T.J.*, Gauthier, M.S., Ross, M., Kelley, S.E., **Lian, O.B.**, Dalton, A.S., and Finkelstein, S.A. 2024. Unravelling the fragmented sediment-landform assemblage in an area of thick Quaternary sediment, western Hudson Bay Lowland, Canada. Canadian Journal of Earth Sciences. In press.

Turley, M.*, Hassan, M.A., Zimmermann, A., and **Lian, O.B.** Sediment source partitioning and budgeting over historical timescales in a glacierized mountain catchment. Journal of Geophysical Research: Earth Surface. In review.

Gauthier, M.S., Hodder, T.J.*, Dalton, A.S., Brewer, V.*, **Lian, O.B.**, Finkelstein, S.A., Schaarschmidt, M.*, and Mereghetti, A.* 2024. South-central Laurentide Ice Sheet dynamics during MIS 3: ice streaming and formation of proglacial Lake Vita between 44 and 30 ka. Quaternary Research. In press.

Mesich, N., Gauthier, M.S., Hodder, T.J., Hathaway, J., Schaarschmidt, M.*, **Lian, O.B.** and Ross, M. 2023. Quaternary stratigraphic investigations along the Gods and Yakaw rivers, northeastern Manitoba (parts of NTS 54C2, 7), in Report of Activities 2023, Manitoba Economic Development, Investment, Trade and Natural Resources, Manitoba Geological Survey, p. 120–123.

Lian, O.B., and Schaarschmidt, M.* 2023. Thermoluminescence Dating. In Encyclopedia of Quaternary Science (3rd ed.) Elsevier, New York. In press.

Hodder, T.J., Gauthier, M.S., Ross, M., and **Lian, O.B.** 2023. Was there a nonglacial episode in the western Hudson Bay Lowland during Marine Isotope Stage 3? Quaternary Research, 116: 148–161.

Wolfe, S.A., Demitroff, M., Neudorf, C.M., Woronko, B., Chmielowska-Michalak, D., and **Lian, O.B.** 2023. Late Quaternary eolian dune-field mobilization and stabilization near the Laurentide Ice Sheet limit, New Jersey Pine Barrens, eastern USA. Aeolian Research, 62 (100877).

K. Garaschuk, [Navigating authenticity in math applications](#), Canadian Mathematical Society Notes, 56 (1).

Dring, C., Cremer, A., Glaros, A., **Pizzirani, S.**, Newell, R. & **Newman, L.** (2024). Vertical Agriculture Education Workshop Report. The University of the Fraser Valley, Abbotsford, BC.

Vancouver Sun. (2024, July 31). **Lenore Newman**: B.C. could double food production, but do we have the political will? Vancouver Sun.