# CURRICULUM VITAE

BRIAN JAMES MOORMAN, PhD, FRCGS

Department of Geography, University of Calgary

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**SUMMARY OF ACTIVITY:**

1. Active research programs in:
* Coastal periglacial geomorphology
* Glacial and permafrost hydrology
1. Over 100 reports and publications (74 peer reviewed articles)
2. Secured over $10 million in research support
3. Committed to graduate and undergraduate education, including field-based instruction
4. Leadership experience as Associate Dean, Department Head and a Founding Program Director
5. Chair, Canadian National Committee to the International Permafrost Association 2000-2008

EDUCATION

**1998 Ph.D. in Earth Science Carleton University**

 Areas of Specialization: geophysics, glacial hydrology, geocryology

 Thesis: *The Development and Preservation of Tabular Massive Ground Ice*

 Supervisor: Dr. Frederick Michel

**1990 M.Sc. in Geography University of Calgary**

 Areas of Specialization: geophysics, fluvial geomorphology, geocryology

 Thesis: *Assessing the Ability of GPR to Delineate Fluvial Lithofacies*

 Supervisor: Dr. Derald Smith

**1988 B.Sc. (High Honours in Geography) Carleton University**

Areas of Specialization: soil physics, geocryology, remote sensing

Honours Thesis: The Thermal Characteristics of a Subarctic Bog

Supervisor: Dr. Michael Smith

EMPLOYMENT

2007-present **Professor,** Department of Geography, University of Calgary

2021-2022 **Visiting Professor,** University of the West Indies, Cave Hill

2016-2020 **Adjunct Professor,** University of Waterloo

2013-2018 **Associate Dean-Research and Infrastructure,** Faculty of Arts, University of Calgary

2007-2012 **Head,** Department of Geography, University of Calgary

2001-2007 **Associate Professor,** Department of Geography, Department of Geology and Geophysics, University of Calgary

1996-2002 **Founding Director,** Earth Sciences Program, University of Calgary

1996-2001 **Assistant Professor,** Department of Geography, Department of Geology and Geophysics, University of Calgary

1990-1996 **Environmental Research Consultant**, self employed

1991-1996 **Teaching Assistant**, Department of Earth Sciences, Carleton University.

1993 **Instructor**, Department of Earth Sciences, Carleton University.

1987-1992 **Research Assistant**, Terrain Sciences, Geological Survey of Canada (summers)

1988-1990 **Teaching Assistant**, Department of Geography, University of Calgary.

RESEARCH INTERESTS

Geomorphology, hydrology coastal dynamics, environmental geophysics, remote sensing

 RESEARCH FUNDING

|  |  |  |
| --- | --- | --- |
| Date | Agency: Project Title | Value |
|  |  |  |
| 2024-2026 | Norwegian Research Council (Partner) | NOK 10,000,000  |
| 2023-2028 | NSERC: Discovery Grant | $175,000 |
| 2023-2028 | NSERC: Northern Supplement grant | $70,000 |
| 2019-2024 | NSERC: Strategic Network grant (co PI) | $7,100,000 |
| 2019-2024 | UCalgary: Research Network grant | $250,000 |
| 2017-2023 | NSERC: Discovery Grant | $132,000 |
| 2017-2022 | NSERC: Northern Supplement grant | $90,000 |
| 2016-2017 | Canadian Space Agency: SOAR grant | $48,000 |
| 2013-2018 | University of Calgary: ADR research support | $200,000 |
| 2012-2017 | NSERC: Discovery Grant | $190,000 |
| 2012-2017 | NSERC Northern Supplement grant | $75,000 |
| 1992-2016 | Polar Continental Shelf Project: Arctic permafrost and glaciology | $300,000 |
| 2011 | TECTERRA: Geomatics field school grant | $20,000 |
| 2007-2011 | NSERC: Discovery Grant | $84,000 |
| 2007-2011 | NSERC: Northern Supplement grant | $70,000 |
| 2009-2010 | ISEEE: Permafrost subsidence monitoring  | $80,000 |
| 2000-2009 | Natural Resources Canada: Coastal permafrost geophysics | $77,000 |
| 2007-2009 | International Polar Year: NWT Ice Patch Study | $624,324 |
| 2007-2012 | University of Calgary: Development of a subsurface positioning system | $45,000 |
| 2004-2005 | European Space Agency: Monitoring permafrost deformation  | $12,018 |
| 2005 | RadarSat International: Monitoring permafrost deformation  | $8,717 |
| 2004-2005 | NSERC-CRD: Monitoring permafrost deformation in the Mackenzie Delta  | $42,600 |
| 2004-2005 | Imperial Oil of Canada: Monitoring permafrost deformation in the Mackenzie Delta  | $67,634 |
| 2004 | Hamlet of Tuktoyaktuk: Cemetery mapping | $12,000 |
| 1999-2003 | CFI: Collaborative earth and environmental science initiative | $200,000 |
| 1999-2003 | IIPP: Collaborative earth and environmental science initiative | $200,000 |
| 1999-2003 | CFI (with B. Mayer): Assessment of anthropogenic perturbations of major biogeochemical cycles using stable isotope techniques -  | $198,830 |
| 1999-2003 | IIPP (with B. Mayer): Assessment of anthropogenic perturbations of major biogeochemical cycles using stable isotope techniques -  | $198,830 |
| 1996-2002 | University of Calgary: Earth Science Director’s research grant | $30,000 |
| 2000 | Sensors and Software: High resolution GPR imaging | $8,000 |
| 2000 | Town of Cochrane: Climate change and hydrological modeling | $2,000 |
| 1999-2000 | American Foundation for the Study of Man: Geophysical investigations at Mahram Bilqis | $30,192 |
| 1999 | Intermap Technologies Inc. Geophysical super computing project | $67,415 |
| 1996-1999 | Canadian Space Agency, European Space Agency, and Japanese Space Agency (with P.A. Vachon), Detecting ground subsidence using interferometric SAR | $80,000 |
| 1998 | University of Calgary: Permafrost Research | $10,000 |
| 1998 | NSERC Equipment Grant (with D. Smith) Electrical resistivity imaging | $70,000 |
| 1996 | National Science foundation (with E. Burden): Nunavut environmental assessment transect | $50,000 |
| 1986-1995 | Northern Science Training Program: Arctic Research | $28,000 |
| 1987 | Royal Canadian Geographic Society: Snow pollution in Subarctic Quebec | $1,200 |

PEER-REVIEWED PUBLICATIONS

Bash, E., Wecker, L, Rahman, M., Dow, C., McDermid, G., Samavati, F., Whitehead, K., Moorman, B., Medrzycka and Copland, L, 2023. A Multi-Resolution Approach to Point Cloud Registration without Control Points. Remote Sensing, Vol. 15 no. 4, 22p. doi.org/10.3390/rs15041161

Clark, A., Moorman, B. and Whalen, D., 2023. UAV-SfM and Geographic Object-Based Image Analysis for Measuring Multi-Temporal Planimetric and Volumetric Erosion of Arctic Coasts. Canadian Journal of Remote Sensing Vol. 49, no. 1 pp. 1-21

Stevens, I., Irvine-Fynn, T., Edwards, A., Mitchell, A., Cook, J., Porter, P., Holt, T., Huss, M., Fettweis, X., Moorman, B., Sattler, B. and Hodson, A., 2022. Spatially consistent microbial biomass and future cellular carbon release from melting Northern Hemisphere glacier surfaces. Nature Communications Earth and Environment, Vol. 3, no 275, 10 p. doi.org/10.1038/s43247-022-00609-0

Jennings, S., Hambrey, M., Moorman, B., Holt, T. and Glasser, N., 2022. Upscaling ground-based structural glaciological investigations via satellite remote sensing to larger-scale ice masses: Bylot Island, Canadian Arctic. Earth Surface Processes and Landforms, Vol. 47, no. 8, pp. 2130-2150

Clark, A., Moorman, B., Whalen, D. and Vieira, G., 2022. Multiscale Object-Based Classification and Feature Extraction along Arctic Coasts. Remote Sensing Vol. 14, pp. 1-22.

Ochwat, N., Marshall, S., Moorman, B., Criscitiello, A., Copland, L., 2021. Evolution of the firn pack of Kaskawulsh Glacier, Yukon: meltwater effects, densification, and the development of a perennial firn aquifer. The Cryosphere, Vol. 15, pp. 2021-2040. https://doi.org/10.5194/tc-15-2021-2021

Clark, A., Moorman, B., Whalen, D., Fraser, P., 2021. Arctic coastal erosion: UAV-SfM data collection strategies for planimetric and volumetric measurements. Arctic Science. Vol. 7, pp. 605-633

Bash, E. Moorman, B., 2020. Surface melt and the importance of water flow - an analysis based on high-resolution unnamed aerial vehicle (UAV) data for an arctic glacier. Cryosphere, Vol. 14, pp. 549-563. https://doi.org/10.5194/tc-14-549-2020

Bash, E. Moorman, B., Menounos, B., Gunther, A., 2020. Evaluation of SfM for surface characterization of a snow-covered glacier through comparison with aerial lidar. Journal of Unmanned Vehicle Systems. Vol. 8, pp. 119-139.

St Germain, S. and B.J. Moorman, 2019. Long-term observations of supraglacial streams on an Arctic glacier. *Journal of Glaciology*, Vol. 65, pp. 900-911

Stevens, Ian T., Tristram Irvine-Fynn, Philip R. Porter, Joseph M. Cook, Arwyn Edwards, Martin Smart, Brian J. Moorman, Andy J. Hodson, and Andrew C. Mitchell, 2018 “Near-Surface Hydraulic Conductivity of Northern Hemisphere Glaciers.” Hydrological Processes Vol. 32, no. 7, pp. 850–65.

Bash, E., Moorman, B. and Gunther, A., 2018. Detecting Short-Term Surface Melt on an Arctic Glacier Using UAV Surveys. Remote Sensing Vol. 10, issue 10, pp. 1-17.

Hird, J.N, Montage, A., McDermid, G.J., Kariyeva, J., Moorman, B.J., Nielsen, S.E., McIntosh, A.C.S., 2017. Use of unmanned aerial vehicles for monitoring recovery of forest vegetation on petroleum well sites. Remote Sensing, Vol. 9, pp.1-20

Irvine-Fynn, T.D.L., Moorman, B.J., Holt, T., Stevens, I., Cully, A., 2016. Flying high: the potential of photogrammetry and UAVs in glaciology, Sensed, Issue 62, pp. 19-22

St. Germain, S.L., and Moorman, B.J., 2016. The development of a pulsating supraglacial stream. Annals of Glaciology. Vol. 57 pp.31-38

Whitehead, K., Moorman, B., and Wainstein, P., 2014. Measuring Daily Surface Elevation and Velocity Variations Across a Polythermal Arctic Glacier Using Ground-Based Photogrammetry, Journal of Glaciology, Vol. 60(224), doi: 10.3189/2014JoG14J080.

Ng, T., Chen, L., Zhou, Y, Shapiro, B., Stiller, M., Heintzman, P., Varsani, A., Kondov, N., Wong W., Deng X., Andrews, T, Moorman, B, et al., 2014. Preservation of viral genomes in 700-y-old caribou feces from a subarctic ice patch. Proceedings of the National Academy of Science, Vol. 111, pp. 16842-16847.

Whitehead, K., Hugenholtz, C., Myshak, S., Broan, O., LeClair, A., Tamminga, A., Barchyn, T., Moorman, B.J. and Eaton, B., 2014. Remote sensing of the environment with small unmanned aircraft systems (UASs), Part 2: scientific and commercial applications. Journal of Unmanned Vehicle Systems. Vol. 2, pp. 86-202.

Whitehead, K., Moorman, B.J., Hugenholtz, C.H., 2013. Brief Communication: Low-cost, on-demand aerial photogrammetry for glacial measurement. The Cryosphere. Vol. 7, pp.1879-1884.

Hugenholtz, C., Whitehead, K., Brown, O., Barchyn, T., Moorman, B., LeClair, A., Riddell, K., Hamilton, T., 2013. Geomorphological mapping with a small unmanned aircraft system (sUAS): Feature detection and accuracy assessment of a photogrammetrically-derived digital terrain model. Geomorphology, Vol. 194, pp.16-24,

Wainstein, P., Moorman, B., Whitehead, K., 2013. Glacial conditions that contribute to the regeneration of Fountain Glacier proglacial icing, Bylot Island, Canada. Hydrological Processes, Vol. 28, pp. 2749-2760 DOI: 10.1002/hyp.9787.

Hugenholtz, C., Moorman, B., Riddell, K., Whitehead, K. 2012. Small unmanned aircraft systems for remote sensing and earth science research, EOS, Vol. 93, Issue 25,pp. 236-237, http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2324-9250.

Galloway, J., Adamczewski, J., Andrews, T.D., MacKay, G., Schock, D., Meulendyk, T. Bowyer, V., Venables, C., Moorman, B., Kutz, S., 2012. Past food habit for mountain woodland caribou inferred from plant fragment and pollen in dung preserved in 5000-year old alpine ice in the Selwyn Mountains, Northwest Territories, Canada. Arctic Vol. 65, pp. 59-79.

Meulendyk, T., Moorman, B.J., Andrews, T.D., MacKay, G., 2012. Morphology and development of ice patches in NWT, Canada. Arctic Vol. 65, pp. 43-58.

Irvine-Fynn. T.D.L., Hodson, A.J., Moorman, B.J., Vatne, G., Hubbard, A., 2011. Polythermal glacier hydrology: a review. Reviews in Geophysics, 49, paper number 2010RG000350.

Stevens, C.W., Moorman, B.J., Solomon, S.M., 2010. Interannual changes in seasonal ground freezing and near-surface heat flow beneath bottom-fast ice in the near-shore zone, Mackenzie Delta, NWT, Canada. Permafrost and periglacial processes, doi: 10.1002/ppp.682.

Stevens, C.W., Moorman, B.J., Solomon, S.M., 2010. Modeling ground thermal conditions and the limit of permafrost within the nearshore zone of the Mackenzie Delta, Canada. Journal of Geophysical Research, Vol. 115, F04027, doi: 10.1029/2010JF001786.

Wainstiein, P.A., Moorman, B.J. and K. Whitehead, 2010. Hydro-physical conditions of an Arctic proglacial valley, Bylot Island. Proceedings Geo2010 Calgary - 63rd Canadian Geotechnical Conference & 6th Canadian Permafrost Conference. Calgary, 8 p. Digital release.

Wainstiein, P.A., Moorman, B.J. and K. Whitehead, 2010. Importance of Glacier-permafrost interactions in the preservation of a proglacial icing: Fountain Glacier, Bylot Island, Canada. Proceedings Geo2010 Calgary - 63rd Canadian Geotechnical Conference & 6th Canadian Permafrost Conference. Calgary, 8 p. Digital release.

Odell, D.E., Smith, I.R. and Moorman, B.J., 2010. Detection and characterization of massive ground ice using ground penetrating radar and seismic shothole methods. Proceedings Geo2010 Calgary - 63rd Canadian Geotechnical Conference & 6th Canadian Permafrost Conference. Calgary, 6 p. Digital release.

Stevens, C.W., Moorman, B.J., Solomon, S.M., 2010. Sensitivity of sediment bed temperatures to changes in on-ice snow thickness beneath near-shore zones of bottom-fast ice in the Mackenzie Delta. Proceedings Geo2010 Calgary - 63rd Canadian Geotechnical Conference & 6th Canadian Permafrost Conference. Calgary, 6 p. Digital release.

Whitehead, K., Moorman, B.J. and Habib, A., 2010. Monitoring rapidly evolving landscape features using ground-based time-lapse photography: a case study for a proglacial icing. Proceedings of the Canadian Geomatics Conference, Calgary. 6 p. Digital release.

Whitehead, K., Moorman, B.J. and Wainstien, P.A., 2010. Use of ground-based photogrammetry and SAR interferometry to characterize the surface motion of an Arctic clacier. Proceedings Geo2010 Calgary - 63rd Canadian Geotechnical Conference & 6th Canadian Permafrost Conference. Calgary, 6 p. Digital release.

Whitehead, K., Moorman, B.J. and Wainstien, P.A., 2010. An investigation of the 3 km motion anomaly on Fountain Glacier using SAR interferometry and ground penetrating radar. Proceedings Geo2010 Calgary - 63rd Canadian Geotechnical Conference & 6th Canadian Permafrost Conference. Calgary, 8 p. Digital release.

Hugenholtz, C.H., Wolfe, S.A., Walker, I.J., Moorman, B.J., 2009. Spatial and Temporal patterns of aeolian sediment transport on an inland parabolic dune, Bigstick Sand Hills, Saskatchewan, Canada. Geomorphology, Vol. 105, pp. 158-170.

Stevens, C.W., Moorman, B.J., Solomon, S.M., Hugenholtz, C.H., 2009. Mapping subsurface conditions within the near-shore zone of an Arctic delta using ground penetrating radar. Cold Regions Science and Technology, Vol. 56, pp. 30-38,

Bode, J.A., Moorman, B.J., Stevens, C.W., Solomon, S.M., 2008. Estimation of ground ice in the Big Lake area, Mackenzie Delta, NWT, Canada. In Proceedings of the Ninth International Conference on Permafrost, Kane, D.L. and K.M. Hinkel (eds.) Institute of Northern Engineering, University of Alaska Fairbanks, pp. 131-136.

Gugolj, D., Moorman, B.J. Tait, M., 2008. Daily active layer heave and subsidence model development. In Proceedings of the Ninth International Conference on Permafrost, Kane, D.L. and K.M. Hinkel (eds.) Institute of Northern Engineering, University of Alaska Fairbanks, pp. 575-580.

Hugenholtz, C.H. Moorman, B.J., Barlow, J. and P.A. Wainstein, 2008. Large-scale moraine deformation at the Athabasca Glacier, Jasper National Park, Alberta, Canada. Landslides, Vol. 5,
pp. 251-260.

Hugenholtz, C.H., Wolfe, S.A., and B.J. Moorman, 2008. Effects of sand supply on the morphodynamics and stratigraphy of active parabolic dunes, Bigstick Sand Hills, southwestern Saskatchewan. Canadian Journal of Earth Sciences, Vol. 45, pp. 321-335

Irvine-Fynn, T.D.L., Moorman, B.J., 2008. Arctic glaciers and ground-penetrating radar. Case study: Stagnation Glacier, Bylot Island, Canada. In Applied Geophysics in Periglacial Environments, C. Hauck and C. Kneise (eds), Cambridge University Press, Cambridge UK, pp. 178-190

Kneisel, C., Hauck, C., Fortier, R. and B.J. Moorman, 2008. Advances in geophysical methods for permafrost investigations. Permafrost and Periglacial Processes, Vol. 19, pp. 157-178.

Solomon, S.M., Forbes, D.L., Fraser, P., Moorman, B.J., Stevens, C.W., Whalen, D., 2008 Nearshore Geohazards in the southern Beaufort Sea, Canada. In Proceedings of the 7th International Pipeline Conference, American Society of Mechanical Engineers, Calgary.

Stevens, C. W., Moorman, B.J. and S.M. Solomon, 2008. Detection of frozen and unfrozen interfaces with ground penetrating radar in the near-shore zone of the Mackenzie Delta, Canada. In Proceedings of the Ninth International Conference on Permafrost, Kane, D.L. and K.M. Hinkel (eds.) Institute of Northern Engineering, University of Alaska Fairbanks, pp. 1711-1716.

Wainstein, PA., Moorman, B.J. and K. Whitehead, 2008. Importance of Glacier – Permafrost Interactions in the Preservation of a Proglacial Icing: Fountain Glacier, Bylot Island, Canada. In Proceedings of the Ninth International Conference on Permafrost, Kane, D.L. and K.M. Hinkel (eds.) Institute of Northern Engineering, University of Alaska Fairbanks, pp. 1881-1886.

Wainstein, P.A., Wan Bun Tseung, J.-M., Moorman, B.J., Stevens, C.W., 2008. Integrating GPR and CCRI techniques: Implications for the identification and mapping of ground ice on Mars. Mars: The International Journal of Mars Science and Exploration, Vol. 4, pp. 1-13.

Hugenholtz, C.H., Moorman, B.J., Wolfe, S.A., 2007. Ground-Penetrating Radar (GPR) for Imaging the Internal Structure of an Active Parabolic Sand Dune. In Stratigraphic Analysis using Ground Penetrating Radar: Geological Society of America Special Paper 432. Baker, G.S., Jol, H.M., (eds) Geological Society of America, Boulder, CO, pp. 35-45.

Moorman, B., Robinson, S., and M. Burgess, 2007. Imaging near-surface permafrost structure and characteristics with ground-penetrating radar, CSEG Recorder, February 2007, pp. 23-30. Invited.

Hugenholtz, C.H., Wolfe, S.A., Moorman, B.J., 2007. Sand-water flows on cold-climate eolian dunes: environmental analogs for the eolian rock record and Martian sand dunes, Journal of Sedimentary Research, Vol., 77, pp. 607-614.

Venkatasubramanian, V. Leung, H., and Moorman, B.J., 2007. An interacting multiple model based abrupt change detector for ground penetrating radar, IEEE Geoscience and Remote Sensing Letters., Vol. 4, pp. 634-639.

Irvine-Fynn, T.D.L., Moorman, B.J., Williams, J.L.M., Walter, F.S.A., 2006. Seasonal changes in ground-penetrating radar signature observed at a polythermal glacier, Bylot Island, Canada. Earth Surface Processes and Landforms. Vol. 31, pp. 892-909.

Tait, M., Moorman, B.J., Li, S., 2005. The long-term stability of survey monuments in permafrost, Engineering Geology, Vol. 79, pp. 61-79.

Moorman, B.J., 2005. Glacier-permafrost hydrological interconnectivity: Stagnation Glacier, Bylot Island, Canada. In Cryospheric Systems: Glaciers and Permafrost. Harris, C. and Murton, J.B. (eds), Geological Society, London, Vol. 242, pp. 63 -74.

Irvine-Fynn, T.D.L., Moorman, B.J., Sjogren, D.B., Walter, F.S.A., Willis, I.C., Hodson, A.J., Williams, J.L.M., Mumford, P.N., 2005. Cryological processes implied in Arctic proglacial stream sediment dynamics using principal components analysis and regression. In Cryospheric Systems: Glaciers and Permafrost. Harris, C. and Murton, J.B. (eds), Geological Society, London, Vol. 242, pp. 83-98.

Irvine-Fynn, T.D.L., Moorman, B.J., Willis, I.C., Sjogren, D.B., Hodson, A.J., Mumford, P.N., Walter, F.S.A., Williams, J.L.M., 2005. Geocryological processes linked to High Arctic proglacial stream suspended sediment dynamics: examples from Bylot Island, Nunavut, and Spitsbergen, Svalbard. Hydrological Processes, Vol. 19, pp. 115-135

Moorman, B.J., Robinson, S.D. and M.M. Burgess, 2003. Imaging periglacial conditions with ground-penetrating radar. Permafrost and Periglacial Processes, Vol. 14, pp. 319-329.

Moorman, B.J., 2003. Glacier-permafrost hydrology interaction, Bylot Island, Canada. Permafrost: 8th International Conference, Zurich, 21-25 July, 2003, eds. Phillips, M., Springman, S.M., Arenson, L., A.A. Balkema Publishers, Lisse, pp. 783-788.

Moorman, B.J. and F.A. Michel, 2003. Burial of glacier ice by deltaic deposition. Permafrost: 8th International Conference, Zurich, 21-25 July, 2003 eds. Phillips, M., Springman, S.M., Arenson, L., A.A. Balkema Publishers, Lisse, pp. 777-782.

Tait, M. and Moorman, B.J., 2003. A feasibility study into monitoring deformation in the Niglintgak Region of the Mackenzie Delta. Proceedings; 11thFIG Symposium on Deformation Measurement, Santorini, Greece. pp. 319-326

Moorman, B.J., Maillol, J-M., Williams, J.L., Walter, F.S., and W.D. Glanzman, 2002. Imaging the past: Archaeological radar Stratigraphic analysis at Mahram Bilqis. Ninth International Conference on Ground Penetrating Radar, S.K. Koppenjan and H. Lee Eds. Proceedings of SPIE Vol. 4758, pp. 96-101.

Moorman, B.J. and F.A. Michel, 2000. *Glacial hydrological system characterization using ground-penetrating radar.* Hydrological Processes. Vol. 14. pp.2645-2667.

Moorman, B.J. and F.A. Michel, 2000. *The burial of ice in the proglacial environment on Bylot Island, Arctic Canada.* Permafrost and Periglacial Processes, vol. 11, pp. 161-175.

Moorman, B.J., Michel, F.A., Wilson, A., 1998. *The development of tabular massive ground ice at Peninsula Point, N.W.T., Canada.* Seventh International Conference on Permafrost, Yellowknife, N.W.T., Canada, 23-27 June 1998. pp.757-762.

Moorman, B.J., and F.A. Michel, 1997. *Bathymetric mapping and subbottom profiling through lake ice using ground penetrating radar.* Journal of Paleolimnology. vol. 18, pp. 61-73.

Moorman, B.J. Michel, F.A. and R.J. Drimmie, 1996. *Isotopic variability in Arctic precipitation as a climatic indicator*. Geoscience Canada, vol. 23, pp. 189-194.

Moorman, B.J., F.A. Michel and A. Wilson, 1996. *14C dating of trapped gases in massive ground ice, Western Canadian Arctic.* Permafrost and Periglacial Processes, vol. 7,
pp. 257-266.

Lapen, D.R., B.J. Moorman and J. Price, 1996. *Using ground-penetrating radar to delineate subsurface features along a wetland catena.* Soil Science Society of America Journal. vol. 60, pp. 923-931.

Vaikmäe, R., M. Böse, F.A. Michel and B.J. Moorman, 1995. *Changes in permafrost conditions.* Quaternary International, vol. 28, pp. 113-118.

Robinson, S.D., B.J. Moorman, A.S. Judge and S.R. Dallimore, 1993. *The characterization of massive ground ice at Yaya Lake, N.W.T. using radar stratigraphy techniques*. in Current Research Part B, Geological Survey of Canada Paper 93-1b., pp. 23‑32.

Robinson, S.D., B.J. Moorman, A.S. Judge, S.R. Dallimore and J.W. Shimeld, 1992. *The application of radar stratigraphic techniques to the investigation of massive ground Ice at Yaya Lake, Northwest Territories.* Muscox, vol. 39, pp. 39-49.

Moorman, B.J., A.S. Judge and D.G. Smith, 1991. *Examining fluvial sediments using ground penetrating radar in British Columbia*. in Current Research, Part A. Geological Survey of Canada Paper 91-1a, pp. 31-36.

Judge, A.S., C.M. Tucker, J.A. Pilon and B.J. Moorman, 1991. *Remote sensing of permafrost by ground penetrating radar at two airports in Arctic Canada.* Arctic, vol. 44 (supplement 1), pp. 40-48.

LaFleche, P.T., A.S. Judge, B.J. Moorman, B. Cassidy and R. Bedard, 1988. *Ground probing radar investigations of gravel road bed failures, Rae access road, N.W.T*. in Current Research, Part D. Geological Survey of Canada Paper 88-1d, pp. 129-135.

**NON-REVIEWED PUBLICATIONS**

Lafferty, Albert, Hugenholtz, Christopher, Moorman, Brian and Andrews, Tom, 2021. Integrating Geomatics, Geophysics, and Local Knowledge to Relocate the Original Fort Providence Cemetery, Northwest Territories. Arctic. Vol. 74, No. 3, pp. 407-416

Whitehead, K., Moorman, B.J., Wainstein, P., Habib, A., 2010. Monitoring rapidly evolving landscape features using ground-based time-lapse photography: A case study for a proglacial icing, CGC 2010: Canadian Geomatics Conference, International Society for Photogrammetry and Remote Sensing, Calgary, Published on-line at: [www.isprs.org/proceedings/XXXVIII/part1/02/02\_03Paper\_67.pdf](http://www.isprs.org/proceedings/XXXVIII/part1/02/02_03Paper_67.pdf)

Whitehead, K. Moorman, B.J., Wainstein, P.W., 2009. Determination of variations in glacier surface movements through high resolution interferometry; Bylot Island, Canada, Proceedings of 2009 IEEE International Geoscience & Remote Sensing Symposium, IEEE, Cape Town South Africa, July 2009, Vol. II, pp. 230-233

Wan Bun Tseung, J-M, Wainstien, P., Moorman, B.J., Stevens, C. and C. Hugenholtz, 2006. Proceedings: Lunar and Planetary Science XXXVII. On CD.

Moorman, B.J., 2006. *Physical Properties of Permafrost: The Impact of Ice in the Ground to Geophysical Surveys* Permafrost Geophysics, APEGGA, Calgary. On CD.

Tait, M. and Moorman, B.J., 2003. A feasibility study into monitoring deformation in the Niglintgak region of the Mackenzie Delta. Proceedings: 11th FIG symposium on Deformation Measurement, Santorini, August, 2003. pp. 319-326.

Moorman, B.J., J-M. Malliol, Williams, J.L., Walter, F.S., W.D. Glanzman, 2002. *Imaging the past: Archaeological Radar Stratigraphic analysis at Mahram Bilqis.* In Ninth International Conference on Ground Penetrating Radar (eds.) S. Koppenjan and H. Lee, Proceedings of SPIE Volume 4758, Society of Photo-Optical Instrumentation Engineers, Bellingham. pp. 96-101.

Moorman, B.J. Glanzman, W.D., Maillol, J.-M., A.L. Lyttle, 2001. Imaging beneath the surface at Mahram Bilqis. Proceedings of the Seminar for Arabian Studies. Vol. 31, pp. 179-187.

Vachon, P. W., D. Geudtner, A. L. Gray, K. Mattar, and B. J. Moorman, 1999. *Measurement of land subsidence due to wasting of tabular massive ground ice using differential JERS-1 SAR interferometry: Bylot Island test site.* In JERS-1 Science Program ’99 PI Reports. National Space Development Agency of Japan. pp. 27-31.

Moorman, B.J., 1998. *Advances in glacial hydrology using remote sensing.* 27th International Symposium on Remote Sensing of Environment. June 8-12, 1998, Tromso, Norway Proceedings pp. 367-370.

Moorman, B.J., and F.A. Michel, 1998. *The application of ground-penetrating radar to the study of glacial hydrology.* GPR '98: Seventh International Conference on Ground-Penetrating Radar, The University of Kansas, Lawrence, Kanasas, USA, May 27-30, 1998 Proceedings, pp. 137-142.

Moorman, B.J., and P.W. Vachon, 1998. *Detecting ground ice melt with interferometric synthetic aperture radar.* 20th Canadian Symposium on Remote Sensing. Calgary, Alberta, May 10-13, 1998, Proceedings, pp.154-158

Moorman, B.J., 1997. Book Review: Environmental Geology of Urban Areas. Edited by N. Eyles. Geoscience Canada, Vol. 24, No. 3, 1997, p. 150

Vachon, P. W., Gray, A. L., Mattar, K., Geudtner, D. & Moorman, B. J. 1997. *Measurement of land subsidence due to wasting of tabular massive ground ice using differential JERS-1 SAR interferometry: Bylot Island test site.* Interim Research Report, National Space Development Agency of Japan, 10 p. Published on CD.

Moorman, B.J., 1995. *Geotechnical investigations of woodchip slopes along the Norman Wells Pipeline (Northwest Territories): analysis of 1993 ground penetrating radar data*. Geological Survey of Canada Open File 3024, 230 p.

Burgess, M.M., S.D. Robinson, B.J. Moorman, A.S. Judge and T.W. Fridel, 1995. *The application of ground penetrating radar to geotechnical investigations of insulated permafrost slopes along the Norman Wells pipeline, N.W.T*. Proceedings of the 48th Canadian Geotechnical Conference, Vancouver, 1995 pp. 999-1006.

Robinson, S.D. and B.J. Moorman, 1995. *Ground Penetrating Radar Surveys Along the Norman Wells Pipeline Route; 1989 to 1994: a Summary of Results*. Geological Survey of Canada Open File 3094, 45 p.

Robinson, S.D. and B.J. Moorman, 1995. *Ground Penetrating Radar Surveys Along the Norman Wells Pipeline Route (N.W.T.) Summer 1994. Part 1: Site Descriptions and Radar Interpretations. Part 2: Radar Profiles*. Geological Survey of Canada Open File, 342 p.

Moorman, B.J., 1994. *Ground penetrating radar investigations of woodchip-covered slopes along the Norman Wells pipeline in the Northwest Territories*. Geological Survey of Canada Open File 2889, 125 p.

Moorman, B.J., A.S. Judge, M.M. Burgess and T.W. Fridel, 1994. *Geotechnical investigations of insulated permafrost slopes along the Norman Wells pipeline using ground penetrating radar*. Proceedings of the GPR '94: Fifth International Conference on Ground Penetrating Radar, Kitchener, pp. 477-491.

Moorman, L.A. and B.J. Moorman, 1994. *Science and Survival in the Arctic.* Northpoint, vol. 31, pp. 4-9.

**UNPULISHED REPORTS**

Stevens, C.W., Lapka, S.D., Moorman, B.J., 2009. Ground Penetrating Radar Investigation of Subsurface Conditions in the Outer Mackenzie Delta, March and April of 2009, Research report to the Geological Survey of Canada, 78 p.

Stevens, C.W., Moorman, B.J., 2008. Investigation of the thermophysical conditions beneath seasonal landfast ice in the outer Mackenzie Delta, Research report to the Geological Survey of Canada, 56 p.

Bode, J.A. and B.J. Moorman, 2007. *Bathymetric survey over kumak channel near Niglintgak island.* Research report to the Geological Survey of Canada 25 p.

Stevens, C.W., Moorman, B.J. and J.A. Bode, 2007. Geophysical study within the near-shore zone of the Mackenzie Delta: March of 2007. Research report to the Geological Survey of Canada 56 p.

Moorman, B.J., 2005. Tuktoyaktuk Cemetery DGPS and GPR survey, Report to the Hamlet of Tuktoyaktuk.

Moorman, B.J. and C.W. Stevens 2005. *Geophysical investigation of the Mackenzie Delta nearshore zone, using ground penetrating radar.* Research report to the Geological Survey of Canada 22 p.

Moorman, B.J. and C. Hugenholtz, 2004. Assessing the suitability of ground penetrating radar for mapping ice conditions, shallow bathymetry and stratigraphy in the Mackenzie Delta. Research report to the Geological Survey of Canada 29 p.

Moorman, B.J., 2002. Ground-Penetrating Radar Survey at Plummer’s Lodge, Taltheilei Narrows, Great Slave Lake, Northwest Territories. Technical report to Department of Indian and Northern Affairs. 24 p.

Moorman, B.J. and J-M. Maillol, 2000. Mahram Bilqis, Marib, Yemen: 1999 Ground penetrating radar investigation. Technical report to the American Foundation 44 p.

Moorman, B.J., 1991. *Current status of the Mackenzie Valley Climate Monitoring Program*. Report to Indian and Northern Affairs, 76 p.

Moorman, B.J., 1991. *A Study of Woodchip Covered Slopes Along the Norman Wells to Zama Pipeline Using Ground Penetrating Radar*. Report to Indian and Northern Affairs, 120 p.

Moorman, B.J. and S.M. Huang, 1987. *Snow chemistry variations; Schefferville, Quebec*. Report to The Royal Canadian Geographic Society, Ottawa, 38 p.

**CONFERENCE AND SEMINAR PRESENTATIONS AND POSTERS**

Moorman, B, 2023. Geography, climate and the specific history of residential schools in the Northwest Territories that shape the search process: Using geophysics to map unmarked graves in the Northwest Territories. Community Knowledge Sharing Event: Finding the children who never came home. Hosted by the National Advisory Committee on Residential Schools Missing Children and Unmarked Burials. Yellowknife, Canada. (Invited)

Moorman, B, Clark, A. and Whalen, D, 2023. Ice-rich permafrost coastline erosion processes. European Geophysical Union annual meeting Vienna, Austria

Moorman, B., Clark, A., Whalen, D., 2022. Measuring coastal erosion in a permafrost environment. Yellowknife Geoscience Forum, 2022. Yellowknife, Canada

Moorman, B., 2021. Rapid landscape evolution in a time of accelerating climate change. University of the West Indies Research Seminar Series. Bridgetown, Barbados

Bash, E., Wecker, L., Mustafizur Rahman M., Dow, C., McDermid, G., Moorman, B., Whitehead, K., 2021.Toward 4D automated change detection in cryospheric systems: A multi-resolution approach to point cloud registration without control points. American Geophysical Union fall meeting 2021, New Orleans, United States

Moorman, B., 2020. The Complexities of Coastal Retreat in a Permafrost Environment: a long-term geophysical study. Cold Regions Research Centre lecture. Sir Wilfred Laurier University, Waterloo (Invited)

Stevens, I., Irvine-Fynn,T. Edwards, A., Porter, P., Cook, J., Holt, T., Moorman, B., Hodson, A., Mitchell, A., 2020. Microbial abundance and transport in glacial near-surface meltwater. European Geophysical Union annual meeting Vienna.

Bieniada, A., Mwakanyamale, K., Moorman, B., Strack, M., 2019. Methane trapping and release in restored and unrestored peatlands. EGU, Vienna, Austria

Moorman, B.J., Stevens, C.W., Bratsch, J., 2018 Complications in predicting coastal erosion in permafrost environments. EUCOP5, The Fifth European Conference on Permafrost, June 23-July 1, 2018 Chamonix, France

Moorman, B., Whitehead, K. Gunther, A., 2018. Measuring Glacier Dry Calving with SAR Interferometry. Polar 2018. June 15-26, 2018, Davos, Switzerland

St. Germain, S. Moorman, B.J., 2018 Fluvial Processes and Solar Radiation Controls on Supraglacial Stream Canyon Formation. American Geophysical Union annual meeting, Washington.

Moorman, B.., Bash, E., Gunther, A., Fraser, J., 2017. High resolution monitoring of cryospheric change with unmanned aerial systems. Arctic Change 2017. December 11-15, 2017, Quebec City

Moorman, B.J., 2017. Is climate change going to create a Zombie Apocalypse? 54th Department of Geography Conference, University of Calgary

Moorman, B.J., Cully, A., 2016. Measuring permafrost ground motion with unmanned aerial systems, 11th International Conference on Permafrost, Potsdam, Germany

Stevens, C.W., Moorman, B.J., 2016. Controls on permafrost distribution within the near-shore zone of the Mackenzie Delta, 11th International Conference on Permafrost, Potsdam, Germany

Moorman, B.J., 2016. Geomorphic evolution in an ice-rich glaciated permafrost environment, 11th International Conference on Permafrost, Potsdam, Germany

Waller. R.I., Hambrey, M.J., Moorman, B.J., 2016. Glacier-permafrost interactions, debris transfer mechanisms and the development of distinctive sediment-landform associations in a high arctic glacier environment: the case of Fountain Glacier, Bylot Island, Nunavut, Canada, 11th International Conference on Permafrost, Potsdam, Germany

Moorman, B.J., 2016. Ice-rich landscape evolution, 53rd Annual Department of Geography Conference, University of Calgary

Moorman, B.J., Stevens, C., 2015. Using ground penetrating radar to aid in the modeling of shallow water sedimentation and permafrost growth in the Mackenzie Delta, Canada, Geological Society of America, Baltimore, USA

Moorman, B., 2015. Arctic Geotechnical Challenges, Third annual ArcticTrain Summer School and Meeting, Banff2016 September

Whitehead, K. Moorman, B., 2013. An integrated system for monitoring patterns of mass change and flow dynamics of a small arctic glacier. MultiTemp 2013, Banff, Canada.

Whitehead, K. Moorman, B., 2013. Measuring changes to the vertical component of motion of an arctic glacier using multi-track interferometry, 5th TerraSAR-x/4th TanDEM-X Science Team Meeting, Munich, Germany.

Moorman, B., 2012. Remote sensing of permafrost, ground ice and glaciers: New ways to monitor a changing Arctic. Arctic Institute of North America Speaker Series, Calgary

Lapka, S., Moorman, B., 2012. Disturbance recovery monitoring of tundra vegetation by saline incursion from an oceanic storm surge within a freashwater arctic delta using Landsat. Tenth International Conference on Permafrost, Salekhard, Russia

Hugenholtz, C., Whitehead, K., Moorman, B., Brown, O., Hamilton, T., Barchyn, T., Riddell, K., LeClair, A., 2012. High-resolution terrain and landcover mapping with a lightweight autonomous UAV: a case study and accuracy assessment, European Geophysical Union annual meeting, Vienna.

Moorman, B., 2012. Permafrost Hydrology in Canada, Hydro-Perm, Longyearbyen, Svalbard, (Invited).

Moorman, B., 2012. Permafrost Hydrology research: understanding the processes, Hydro-Perm, Longyearbyen, Svalbard, (Invited).

Riddell, K., Hugenholtz, C., Moorman, B., Whitehead, K., Peddle, D., 2012. A new eye in the sky: lightweight remotely-piloted aircraft platforms for remote sensing, European Geophysical Union annual meeting, Vienna.

Lapka, S., Moorman, B., 2012. Disturbance regeneration monitoring of arctic vegetation caused by oceanic storm surges within the outer Mackenzie Delta, NWT, Canada, IPY 2012 conference, Montreal.

Stevens, C., Moorman, B., 2012. Controls on permafrost distribution within the near-shore zone of the Mackenzie Delta, Yellowknife Geoscience Forum 2012, Yellowknife.

O’Dell, D., Moorman, B., Smith, R., 2012. Detecting massive ice using ground penetrating radar in the Northwest Territories, Yellowknife geoscience Forum 2012, Yellowknife.

Moorman, B.J., 2009. The Geography of Canada, International Canadian Studies Institute, Calgary, Invited

Moorman, B.J., Whitehead, K., Stevens, C., Wainstein, P., Bode, J., Solomon, S., 2010. Arctic landscape evolution in a changing climate, CAG 2010, Regina.

Moorman, B.J., 2011. Scientific spinoffs: Cooperative field research contributions to local development, , Canadian Association of Geographers Annual Meeting, Calgary

Bode, J., Moorman, B.J., Solomon, S.M., 2008. Utilizing ground penetrating radar to calculate ice wedge volumes, 34th Annual Meeting of the Canadian Geophysical Union, Banff, May 2008.

Stevens, C.W., Moorman, B.J., Solomon, S.M., 2008. Imaging near-shore conditions beneath landfast ice with ground penetrating radar, Mackenzie Delta, N.W.T., Canada, 34th Annual Meeting of the Canadian Geophysical Union, Banff, May 2008.

Stevens, C.W., Moorman, B.J., Solomon, S.M., Whalen, D., 2008. An integrated approach to characterize frozen ground in the near-shore zone of the Mackenzie Delta, N.W.T., Canada, 34th Annual Meeting of the Canadian Geophysical Union, Banff, May 2008.

Butterworth, C. Tait, M., and B.J., Moorman, 2007. A feasibility study of permafrost subsidence monitoring using heave models, DGPS, DTM models and DInSAR. IPY GeoNorth Conference. Yellowknife.

Sjogren, D.B., Brennand, T.A., and B.J. Moorman, 2007. Esker morpho-sedimentary relationships in southern Alberta, Canada. Geological Society of America annual meeting, 28-31, October, 2007, Denver.

Stevens, C.W., Moorman, B.J., and S.M. Solomon, 2007. Influence of landfast ice on the development of seasonal frost in the near-shore zone of the Mackenzie Delta. Geological Association of Canada-Mineralogical Association of Canada annual meeting, Yellowknife.

Stevens, C.W., Moorman, B.J., and S. M. Solomon, 2006. Detecting subsurface arctic coastal hazards using ground penetrating radar, Arctic Coastal Dynamics 6th Workshop, University of Groningen, Netherlands.

Irvine-Fynn, T., Hodson, A., Ng, F. and B. Moorman, 2006. Non-temperate glaciers: should the 'Shrevian ideal' be reassessed, American Geophysical Union fall meeting, Francisco, USA, December

Moorman, B.J. and T.D.L. Irvine-Fynn, 2006. The Impact of Permafrost and Ice Thermodynamics on Ice Marginal Hydrology of Polythermal Glaciers. American Geogphysical Union fall meeting, San Francisco, USA.

Wan Bun Tseung J.-M., and B.J. Moorman, 2007. Retrogressive thaw slumps on Mars: constraints on potential formation mechanisms. Exploring Mars and its Earth Analongues: 2nd International Workshop, Tento, Italy.

Moorman, B.J. 2006. Modelling icing development at the glacier-permafrost interface, Canadian Geophysical Union Annual Meeting, Banff.

Irvine-Fynn, T. Hodson, A., Ng, F. and B.J. Moorman, 2006. Non-temperate glaciers: should the “Shrevian ideal” be readdressed? American Geophysical Union, annual fall meeting, San Francisco, Dec. 11-15, 2006

Stevens, C., Moorman, B.J., and S. Solomon, 2006. Detecting subsurface coastal hazards using ground penetrating radar. American Geophysical Union, annual fall meeting, San Francisco, Dec. 11-15, 2006

Irvine-Fynn, T. Hodson, A., Ng, F. and B.J. Moorman, 2006. Polarised: time to reconsider Shreve and Rothlisberger? IGSBB conference, Keele, UK.

Moorman, B.J., 2006 *Bathymetric and sub-bottom profiling with ground-penetrating radar.* Oral Presentation at Shell Canada’s Learn at Lunch Seminar Series. January 25, 2006 Invited presentation.

Solomon, S. M. Manson, G., Fraser, P., Moorman, B.J., Stevens, C. and D. Whalen, 2006. *The role of bottomfast ice in controlling nearshore processes and engineering conditions at the mouth of the Mackenzie River Delta, Beaufort Sea, Canada.* International Conference on Coastal Engineering, Sept 2006.

Moorman, B.J. 2005. *Modelling icing development at the glacier-permafrost interface.* Second European Conference on Permafrost, Potsdam, Germany, June 12, 2005

Moorman, B.J. and M. Tait, 2005. *Monitoring subsidence in the continuous permafrost zone with InSAR and active layer modelling, Mackenzie Delta, Canada.* EARSeL: 2nd Workshop on Remote sensing of the Coastal Zone, Porto, Portugal, June 09, 2005

Stevens, C. and B.J. Moorman, 2005. *Detecting subsurface arctic coastal hazards using ground penetrating radar.* Geological Society of America annual meeting, Salt Lake City, October18, 2005

Moorman, B.J., 2005. *Physical Properties of Permafrost: The Impact of Ice in the Ground to Geophysical Surveys* Permafrost Geophysics: Workshop on Hydrocarbon Exploration in the Arctic, Calgary, April 21-22, 2005 Invited keynote address

Moorman, B.J., 2004. *Permafrost hydrology and icing development Bylot Island, Nunavut.* Canadian Geomorphology Research Group/Quebec Quaternary Research Association Joint Meeting, Quebec City, May 15, 2004

Moorman B., Irvine-Fynn T., Lyttle A., Michel F., Williams J. and F. Walter, 2004 *Temporal variations in glacier retreat and bed characteristics derived from GPR data.* Canadian Geophysical Union/American Geophysical Union Joint Conference, Montreal, May 18, 2004.

Hugenholtz C.H., Moorman B.J. and S. Wolfe, 2004. *Internal structure and development of an active parabolic sand dune determined with ground-penetrating radar*. Canadian Geophysical Union/American Geophysical Union Joint Assembly, Montreal, May 19, 2004.

Irvine-Fynn T. D., Moorman B.J., Williams J.L. and F. Walter, 2004. *Temporal changes in ground penetrating radar characteristics observed at a polythermal Arctic glacier*. European Geophysical, 1st General Assembly, Nice, Fance, April 29, 2004

Moorman, B.J., Mottle, B. Sjogren, D., Maillol, J-M., Yackel, J., 2003. *The utilization of new technologies to enhance research focused field based experiential learning.* GeoSciEd IV: Earth Science for the Global Community conference, Aug. 10-14, 2003 Calgary, Poster presentation.

Irvine-Fynn, T.D., Moorman, B.J., Sjogren, D.B., Williams, J.L., Walter, F.S., Willis, I.C., Hodson, A.J. and Mumford, P.N., 2003. *Geocryological processes linked to high-Arctic proglacial stream suspended sediment dynamics: examples from Bylot Island Nunavut and Spitsbergen, Svalbard.* Canadian Geophysical Union annual meeting, Banff, May 10-13, 2003. Oral presentation

Irvine-Fynn, T.D., Moorman, B.J., Sjogren, D.B., Williams, J.L., Walter, F.S., Willis, I.C., Hodson, A.J. and Mumford, P.N., 2003. *High-Arctic pro-glacial stream suspended sediment dynamics: the significance of Geocryological processes in Bylot Island Canada and Spitsbergen, Svalbard.* BGRG/JAQR Conference – Cryospheric systems, London, January 13-14, 2003. Oral presentation

Moorman, B.J., 2003. *Subsurface water flow in a glacial-permafrost environment.* BGRG/JAQR Conference – Cryospheric systems, London, January 13-14, 2003. Oral presentation

Moorman, B.J., 2003. *Glacier-permafrost hydrological interconnectivity: Stagnation Glacier, Bylot Island Canada.* Canadian Geophysical Union annual meeting, Banff, May 10-13, 2003. Oral presentation

Moorman, B.J., 2003. *The development of Ice-Rich Soils on Earth: A Terrestrial Perspective on the Mars GRS Results.* Third International Conference on Mars Polar Science and Exploration. Lake Louise, Oct. 13-17, 2003. Invited presentation and participation in expert panel.

Moorman, B.J., Sjogren, D.B. and Brennand, T.A., 2003. *Imaging the 3-D architecture of a prairie esker with ground-penetrating radar: implications for inferring deglacial environments.* Geological Society of America, annual meeting, Seattle, November 2-5, 2003. Oral presentation

Moorman, B.J., 2003. *Applications of technology: Ground Penetrating Radar.* Communication, Microwaves and Antennas Chapter of the IEEE southern Alberta Section. November 20, 2003, Invited lecture.

Tait, M. and Moorman, B.J., 2003. *A feasibility study into monitoring deformation in the Niglintgak region of the Mackenzie Delta.* 11th FIG symposium on Deformation Measurement, Santorini, August, 2003. Oral presentation.

Walter, F.S.A., Williams, J.L.M., Sjogren, D.B. and Moorman, B.J. 2002. *Exploring disparate patterns of glacier terminus fluctuations using the hypsometric curve: preliminary results from Bylot Island, Nunavut, Canada.*  Meeting Agenda, 7th Annual CRYSYS Meeting, March 24 - 26, Victoria, British Columbia, Canada. Poster presentation.

Walter, F.S.A., Williams, J.L.M., Sjogren, D.B. and Moorman, B.J. 2002. *Hypsometric analysis of glacier terminus fluctuations: preliminary results from Bylot Island, Nunavut, Canada.* 32nd International Arctic Workshop, March 14 - 16, Institute of Arctic and Alpine Research, University of Colorado, Boulder, Colorado. Poster presentation.

Moorman, B.J., 2002. *Cryospheric systems interactions on Bylot Island.* Sirmilik National Park Resources Description and Research Priorities Workshop. February 3-5 2002, Ottawa. Invited oral presentation.

Moorman, B.J., J-M. Malliol, Williams, J.L., Walter, F.S., W.D. Glanzman, 2002. *Imaging the past: Archaeological Radar Stratigraphic analysis at Mahram Bilqis.* Ninth International Conference on Ground Penetrating Radar, Santa Barbra, California.

Maillol, J.M., Moorman, B.J., Walter, F.S., Williams, J.L. and W.D. Glanzman. *Multi-method Geophysical Investigations at Mahram Bilqis, Yemen – Unveiling the Temple of the Queen of Sheba.* SAGEEP 2002.

Moorman, B.J., 2001. Measuring Climatic Data on Bylot Island: Extreme Environmental Issues. CCAF-AIF Working Group meeting, Edmonton. Invited oral presentation

Moorman, B.J., W.D. Glanzman, J-M. Malliol, A.L. Lyttle, 2001. Imaging beneath the surface at Mahram Bilqis. The Seminar on Arabian Studies London.

Moorman, B.J., J-M Maillol, A.L. Lyttle, W.D. Glanzman, 2000. *Unveiling the temple of the Queen of Sheba: Initial results at Mahram Bilqis.* Poster presentation for the Chancellors Club Dinner, University of Calgary, November 23, 2000.

Moorman, B.J., 2000. *Archaeology, geomorphology, geophysics and other adventures in south Arabia.* Department of Geography Seminar Series, University of Calgary.

Moorman, B.J., 2000. *Recent advances in permafrost and Arctic glacial research and monitoring.* National Workshop on Climate Change Monitoring, Ottawa. Invited presentation

Moorman, B.J., J-M Maillol, A.L. Lyttle, W.D. Glanzman, 2000. *Results of the first Geoarchaeological investigation at Mahram Bilqis, Marib (Yemen),* Oral presentation at the Seminar on Arabian Studies, July 13-15, 2000, University of London, London.

Moorman, B.J. 2000. *"The "new" second year geography field school: Adventures in the mountains"* Oral presentation at the Department of Geography Seminar Series, November 8, 2000. University of Calgary

Moorman, B.J. and F.A. Michel, 1999. *The origins of massive ground ice revealed by analysis of trapped gasses.* Canadian Quaternary Association – Canadian Geomorphology Research Group, Annual Meeting, Calgary.

Moorman, B.J., 1999. *The development of high arctic proglacial icings and their radar stratigraphy.* Canadian Quaternary Association – Canadian Geomorphology Research Group, Annual Meeting, Calgary.

Moorman, B.J., Decock, C., and A.L. Lyttle, 1999. GPR/GPS *Integration for Geomorphic Analysis: A Glacier Case Study - Bylot Island 1999.* Canadian Quaternary Association – Canadian Geomorphology Research Group, Annual Meeting, Calgary.

Lyttle, A.L. and B.J. Moorman, 1999. Investigations in glacial hydrology through the use of ground-penetrating radar. Canadian Quaternary Association – Canadian Geomorphology Research Group, Annual Meeting, Calgary.

Mottle, B. and Moorman, 1999. *Maximizing soil textural information from automated particle size analyzers.* Canadian Quaternary Association – Canadian Geomorphology Research Group, Annual Meeting. August 23-27, 1999, Calgary.

Moorman, B.J., 1999. *3-D imaging of englacial hydrological networks.* Canadian Geophysical Union annual meeting, Banff.

Moorman, B.J., 1999. *Pre-survey site assessments: maximizing the effectiveness of ground-penetrating radar in archaeological field investigations.* Canadian Association of Geographers Annual meeting, Lethbridge.

Moorman, B.J., 1999. *A Serendipitous Study of Glacial Hydrology.* Department of Geology and Geophysics Friday Afternoon Talk Series, University of Calgary.

Moorman, B.J., Michel, F.A., Wilson, A., 1998. *The development of tabular massive ground ice at Peninsula Point, N.W.T., Canada.* Seventh International Conference on Permafrost, Yellowknife.

Moorman, B.J., 1998. *Remote Sensing and ground-penetrating radar techniques for investigating glacial and permafrost hydrology.* Seventh International Conference on Permafrost, Yellowknife.

Moorman, B.J., 1998. *Advances in glacial hydrology using remote sensing.* 27th International Symposium on Remote Sensing of Environment, Tromso.

Moorman, B.J., and F.A. Michel, 1998. *The application of Ground-penetrating radar to the study of glacial hydrology.* GPR '98: Seventh International Conference on Ground-Penetrating Radar, Lawrence.

Moorman, B.J., and P.W. Vachon, 1998. *Detecting ground ice melt with interferometric synthetic aperture radar.* 20th Canadian Symposium on Remote Sensing, Calgary.

Moorman, B.J. 1998. The gas talks…dating ground ice and the Quaternary history of the Mackenzie Delta. Quaternary Talk Series, University of Calgary.

Moorman, B.J., 1996. Investigating climate change *in the Arctic using oxygen isotope within precipitation.* Nunavut Environmental Transect Workshop, Pond Inlet. Invited presentation.

Moorman, B.J., F.A. Michel, A.S. Judge and S.D. Robinson, 1995. *Imaging massive ground ice with ground penetrating radar*. Canadian Geophysical Union annual meeting, Banff.

Allen, D.M., Moorman, B.J. and F.A. Michel, 1994.  *Gravity and ground penetrating radar as investigative methods for delineating fault structures for a ground water energy system.*  GAC/MAC Annual Meeting, May 16-18, 1994, Waterloo, Ontario.

Moorman, B.J., A.S. Judge, M.M. Burgess and T.W. Fridel, 1994. *Geotechnical investigations of insulated permafrost slopes along the Norman Wells pipeline using ground penetrating radar*. GPR '94: Fifth International Conference on Ground Penetrating Radar, Kitchener.

Moorman, B.J. and F.A. Michel, 1994. *Burial of glaciers on Bylot Island*. Fourth National Student Conference on Northern Studies, Ottawa.

Moorman, B.J., S.D. Robinson, M.M. Burgess, A.S. Judge and T. Fridel, 1994. *Permafrost investigations along the Norman Wells pipeline using ground penetrating radar*. Fourth National Student Conference on Northern Studies, Ottawa.

Moorman, B.J. and F.A. Michel, 1994. *Examination of Ice bodies in the proglacial environment*. GPR '94: Fifth International Conference on Ground Penetrating Radar, Kitchener.

Moorman, B.J. and A.S. Judge, 1991. *Establishment of the Mackenzie Valley automated climate network*. Western Division of the Canadian Association of Geographers Meeting, Banff.

Moorman, B.J., D.G. Smith, A.S. Judge and H.M. Jol, 1990. *Assessing the ability of ground penetrating radar at delineating different fluvial sediments*. Third International Conference on Ground Penetrating Radar, Denver.

Moorman, B.J. and A.S. Judge, 1989. *The use of ground penetrating radar in delineating massive ground ice*. Geological Association of Canada annual meeting, Montreal.

Moorman, B.J. and S.M. Huang, 1988. *Airborne pollutants in the snow pack: variations near Schefferville, Quebec*. Second National Student Conference on Northern Studies, Ottawa.

GRADUATE STUDENT SUPERVISION

Current Graduate Students

|  |  |  |  |
| --- | --- | --- | --- |
|  | Start Date | Expected Completion | Topic |
| Liam Carson (MSc) | 2023 | 2025 | Permafrost terrain stability |
| Crystal Kersey (MSc) | 2022 | 2024 | Subglacial methane generation |
| Kristina Miller (PhD) | 2018 | 2024 | Kluane Lake hydrology |
| Andrew Clarke (PhD) | 2017 | 2024 | Permafrost coastal erosion |

Graduate Students Supervised and Graduated

|  |  |  |
| --- | --- | --- |
|  | Date | Title |
| Sarah St. Germain (PhD) | 2021 | Supraglacial canyon development |
| Christopher Rigimbal (MGIS) | 2020 | GIS in precision farming |
| Aneta Bieniada (PhD) UWaterloo | 2020 | Peatland gas production |
| Naomi Ochwat (MSc) | 2019 | Firn characterization Kaskawulsh Glacier |
| Eleanor Bash (PhD) | 2019 | Modelling glacier change with UAVs and SfM |
| Michel Blade (MSc) | 2017 | Icing dammed lake evolution |
| Jesse Fraser (MGIS) | 2016 | UAS Accuracy and precision |
| Sarah St. Germain (MSc) | 2015 | Evolution of a pulsating glacial stream |
| Taylor Graham (MGIS) | 2015 | LIDAR applications in archaeology |
| Dan Odell (MSc) | 2013 | Identifying massive ice and taliks using GPR |
| Ken Whitehead (PhD) | 2013 | Remote sensing of a polythernal glacier |
| Alison Cully (MGIS) | 2013 | Camera evaluation for use in aerial photography |
| Stephanie Lapka (MSc) | 2012 | Storm surge impact on the Mackenzie Delta |
| Pablo Wainstein (PhD) | 2011 | Development of an arctic proglacial icing |
| Christopher Stevens (PhD) | 2011 | Controls on permafrost beneath shallow water |
| Thomas Meulendyk (MSc) | 2010 | Morphology and development of ice patches |
| Jennifer Bode (MSc) | 2009 | Quantifying ground ice volume in the Mackenzie Delta |
| Jean-Michel Wan (MSc) | 2008 | Retrogressive thaw slumps on Mars |
| Chris Stevens (MSc) | 2007 | Shallow-water permafrost investigations with GPR |
| Davor Gugolj (MGIS) | 2007 | Active layer motion modeling in GIS |
| Chris Hugenholtz (PhD) | 2006 | Controls on dune activity in the northern Great Plains |
| Bruce Burwell (MGIS) | 2005 | Implementing a GIS geodatabase for archaeology |
| Jeffery Williams (MSc) | 2005 | The detection subglacial water storage |
| Tristram Irivine-Fynn (MSc) | 2004 | Polythermal glacial hydrology |
| Frederic Walter (MSc)  | 2003 | Glacier fluctuations and glacier hypsometry |
| Amy Lyttle (MSc) | 2001 | Using GPR in Glacial Hydrology |

Graduate Student Examination Committees

|  |  |  |
| --- | --- | --- |
|  | Date | Department |
| Samatha Jones (PhD) | 2023 | Geography |
| Seyed Zakieh Mohammidi (PhD) | 2023 | Civil Engineering |
| Anna Pekinosva (PhD) | 2023 | Civil Engineering |
| Khatereh Roghanger (PhD) | 2023 | Civil Engineering |
| Kelsey Serviss | 2023 | Geography |
| Clay Wearmouth (MSc) | 2022 | Geography |
| Malik Mahmud | 2021 | Geography |
| Gryphen Goss (MSc) | 2021 | Geoscience |
| Danika Ouellette (MSc) | 2021 | Civil Engineering |
| Malik Mahmud (PhD) | 2020 | Geography |
| Samantha Jones (PhD) | 2019 | Geography |
| Kelsey Ann Pennanen (MA) | 2019 | Political Science |
| Adrienne White (PhD) | 2019 | Geography, University of Ottawa |
| Cullen Mulroy (MGIS) | 2018 | Geography |
| Samira Samimi (PhD) | 2018 | Geography |
| Brent MacDonald (MGIS) | 2017 | Geography |
| Majur Bior (MGIS) | 2016 | Geography |
| Samaneh Ebrahimi (PhD) | 2016 | Geography |
| Alexandra Mozil (MSc) | 2015 | Geoscience |
| Mark Fuller (PhD) | 2015 | Geography |
| Maryam Tagh Bostani (PhD) | 2015 | Civil Engineering |
| Carmen Braden (MFA) | 2015 | Music |
| Sharif Mahmood (PhD) | 2015 | Geography |
| Michael Conlan (PhD) | 2015 | Civil Engineering |
| Kyle Sulphur (MSc) | 2015 | Geoscience |
| Micheal Callaghan (PhD) | 2014 | Geoscience |
| Francis Gauthier (PhD) | 2013 | Geography, Université Laval |
| Surendra Adhikari (PhD) | 2012 | Geography |
| Jocelyn Hirose (MSc) | 2012 | Geography |
| Ekaide Ukat (MGIS) | 2012 | Geography |
| Katherine Johnston (MSc) | 2011 | Civil Engineering |
| Philip Bonnaventure (PhD) | 2011 | Geography, University of Ottawa |
| Eleanor Bash (MSc) | 2011 | Geography |
| Surendra Adhikari (PhD) | 2011 | Geography |
| Keller Kahn (MGIS) | 2010 | Geography |
| Nichole Schaffer (MSc) | 2010 | Geography |
| Dominic Lacroix (MA) | 2009 | Archaeology |
| Keely Obert (MSc) | 2009 | Civil Engineering |
| Xiaoxiang Liu (PhD) | 2008 | Electrical and Computer Engineering |
| Geoff Claypool (MEng) | 2007 | Civil Engineering |
| M. Chris Fuller (MSc) | 2007 | Geography |
| Arie van de Velden (PhD) | 2007 | Geology and Geophysics |
| James Floyer (PhD) | 2006 | Geology and Geophysics |
| Stephan Howell (PhD) | 2006 | Geography |
| Micheal Jacobson (MSc) | 2006 | Geography |
| Ryan Minkus (MSc) | 2006 | Geography |
| Kate Sinclair (PhD) | 2006 | Geography |
| Nicoleta Cutlac (MSc) | 2006 | Geology and Geophysics |
| Maged Shenouda (MSc) | 2006 | Electrical and Computer Engineering |
| Xiang Du (PhD) | 2005 | Geology and Geophysics |
| Torsten Geldstzer (PhD) | 2005 | Geography |
| Carlos Nieto (MSc) | 2005 | Geology and Geophysics |
| Joel Kliner | 2005 | Civil Engineering |
| Randall Scharien (MSc) | 2004 | Geography |
| Gisele Fortier (MSc) | 2004 | Geography |
| Steve Howell (PhD) | 2004 | Geography |
| Abdul Al-Shuhail (MSc) | 2004 | Geology and Geophysics |
| Brooke Berard (MSc) | 2004 | Geology and Geophysics |
| Lindsay Dunn (PhD) | 2003 | Geology and Geophysics |
| Robert Vestrum (PhD) | 2003 | Geology and Geophysics |
| Michele Asgar-Deen (MSc) | 2003 | Geology and Geophysics |
| Shawn Rushton (MSc) | 2003 | Geology and Geophysics |
| A. Yousuf (PhD) | 2002 | Geology and Geophysics |
| Brian Junck (MSc) | 2001 | Geography |
| Andy Paul (PhD) | 2000 | Biology |
| Nichole Trenholm (MSc)  | 2000 | Geology and Geophysics |
| Gary Parkstrom (MSc) | 2000 | Geography |
| David Baines (MSc) | 2000 | Geography |
| Paul Tarrent (MSc) | 2000 | Geography |
| Jeffery Patterson (PhD) | 1999 | Geology and Geophysics |
| Grechin Grech-Kirtland (PhD) | 1999 | Geology and Geophysics |
| John Rhodes (MSc) | 1998 | Geology and Geophysics |
| Leif Burge (MSc) | 1997 | Geography |
| Alice Goldthorpe (MSc) | 1997 | Geology and Geophysics |
| Arron Clack (MSc) | 1997 | Geography |

RESEARCH ASSISTANT SUPERVISION

* A. Culley, research assistant 2013-2017
* H. Peterson, field assistant, 2007
* B. Mottle, laboratory technician 1997-2002
* B. Neish, laboratory assistant, 2000
* C. Deacock, field assistant, 1999
* M. Kunes, field and laboratory assistant 1998

Courses Instructed

* Geography 201 The Physical Environment (1996)
(nominated for a Students Union Teaching Excellence Award)
* Geography 204 Global Environmental Change (2020, 2021, 2023, 2024)
* Geography 205 Gateway to Geography (2016)
* Geography 331 Introduction to Cartography (1997)
* Geography 391 Geographic Field Studies (2000-2019)
* Geography 409 Permafrost (2002-2008)
(nominated for a Students Union Teaching Excellence Award)
* Geography 413 Soils (1997)
* Geography 437 Applied Mapping Techniques (1998-1999)
* Geography 502 Arctic System Science (2019, 2023)
(nominated for a Students Union Teaching Excellence Award)
* Geography 503 Climate Change (2019)
* Geography 509 Permafrost (2008-2017)
* Geography 591 Consolidation seminar in geography (2001 - with others)
* Geography 595.16 GIS Applications (2001)
* Geography 595.16 Arctic Geophysical Applications (2001)
* Geography 599.10 High Arctic Pollution (1999)
* Geography 599.32 Advanced Thematic Map Design (1999, 2001)
* Geography 599.39 Hydrological Spatial Modeling (2000)
* Geography 599.40 Applied Climate Change Assessment (2000)
* Geography 685 Arctic Systems Science (2009, 2012, 2016)
* Geography 689 Advanced Geocryology (2008-2017)
* Geography 699.10 Arctic Deltaic Processes (2007)
* Geography 699.12 Glacial Hydrology (2000)
* Geography 601 Graduate Research Seminar (2020, 2021)
* Geography 799.15 Glacial and Permafrost Hydrology (2000)
* Geography 799.16 Geophysics of Glacial (1999)
* Geography 799.21 Ice Petrography and Metamorphism (2006)
* Geology 209 Introduction to Geology I (1996-2007)
(nominated for a Students Union Teaching Excellence Award)
* Geology 335/337 Geologic Field Methods (1996-2005)
* Geology 509.25 Remote sensing applications in earth sciences (2001)
* Geophysics 701 Independent Study (examiner of 3 projects 2000-2005)
* Northern Planning and Development Studies 307 Northern Planning II (2001)
* INTPART Arctic field school, Tromso, Norway (2017)
* INTPART Arctic field school, Barrow, Alaska (2018)
* INTPART Arctic field school, Kluane Lake, Yukon (2019)
* Carleton University High School Enrichment course in Geology (1994)

Guest Lectures

* Civil Engineering 699 – Permafrost Engineering (2020)
* Strategic Studies 649.19 – Climate Change and Global Security (2020)
* AG-330/AG830, UNIS Svalbard – permafrost geophysics (2013-2015)
* Anthropology 553 Introducing GPS technology for use in the Belize field school (2013)
* Environmental Science 502 Special problems in environmental management (2000, 2001, 2003)
* Geography 591 Consolidation seminar in geography (2004)
* Geography MGIS program Global Positioning Systems and Datums Workshop (2004)
* Geography 511 Fluvial Geomorphology and field methods (1998)
* Geology 699.06 Planetary surfaces (1999)
* Geophysics 355 Ground-penetrating radar (2000)

SERVICE

Professional Service

* Member, Board of Directors, PermafrostNet, 2021- present
* Member, Alliance to Support Residential School Missing Children Investigation, representing the Canadian Permafrost Association, 2021-present
* Chair, PermafrostNet Annual General Meeting, 2020
* Member, Arctic journal, Editorial Advisory Board 2018-present
* Member, Board of Directors, Arctic Institute of North America, 2014- present
* Awards Committee, Royal Canadian Geographic Society, 2010-2013
* Vice-Chair, GeoCalgary – CanCOP VI Calgary, 2010
* Chair, Canadian National Committee to the International Permafrost Association 2000-2008
* Associate Editor, 9th International Conference on Permafrost Proceedings
* Organizing committee, 8th International Conference on Permafrost, 2003
* Technical Review Panel, Proceedings of GPR 2002 Conference
* Field Trip coordinator, WDCAG 2001 annual meeting
* Treasurer, CANQUA-CGRG ’99 annual meeting
* Associate Editor, 7th International Conference on Permafrost Proceedings
* Reviewer: Permafrost, and Periglacial Processes Journal, Journal of Arctic, Antarctic, and Alpine Research, International Conferences on Permafrost Proceedings, Journal of Paleolimnology Geoscience Canada, Tectonophysics, *Environmental Geology: An Earth System Approach, Environmental Geology of Urban Areas, Physical Geology and the Environment,* NSERC grants, NSF grants
* Mentor, Calgary High School Science Enrichment Program

University Service

Departmental

* Curriculum review committee, 2022 – present
* Unit review committee, 2022-2023
* Department Head, 2007-2012
* Graduate Program Director, 2006-2007, 2020-2021
* Geography seminar series committee, 1998-1999, 2004-2005
* Graduate committee, 2003-2005
* Geography public relations committee, 2001-2005
* MGIS steering committee, 2001-2003
* Earth Science Program steering committee, chair, 1996-2002
* Environmental Science Program internal advisory committee, 1997-2002

**Faculty**

* Research and Creativity committee, 2023- present
* Award Leaders Advisory Group, 2018-present
* Associate Dean, Research and Infrastructure, 2013-2018
* Faculty of Arts Dean Hiring Committee, 2011-2012
* Arts Change leader 2011
* Social Science promotions/tenure review committees, 2002-2004
* Science student recruitment committee, 2001-2002
* Science/Social Science Calendar committees, 1996-1998

University

* General Merit Committee 2019-2020
* Graduate Studies Scholarship committee, 2006-2007
* Northern Science Training Program granting committee, member, 2000-2004
* Northern Science Training Program granting committee, chair, 2005-2007

***Public Service***

* School lectures “Iqaluit: Very far away in many ways” Hamptons School, University School, Monterey Park School, numerous times
* Public talk “Ancient DNA discovered in ice patch” Calgary Nerd Night 2017
* Public talk “Is climate change going to create a zombie apocalypse?” Science Centre 2017
* Public talk “Minerals, Rock and Dinosaur Poop” Scouts Canada, 2006, 2007
* TV documentary “Kendall Island Bird Sanctuary”, CBC Yellowknife, Nov. 2006
* Documentary “ Thawing Winterland” Calgary Arts Academy and Research Centre, 2006.
* Interview “Glacial Response to Climate Change on Bylot Island”, La Presse, 2005
* Interview “The role of geophysics in Mars exploration”, Globe and Mail, 2004
* Interview “Discovery of the “lost” cemetery at Fort Providence”, Northern News Service, 2004
* TV Documentary “The White Frontier: Episode 6 – Heat wave in the Frozen North”. Tele-images and Greenspace productions, 2002
* Radio interview “Dene graves sites found at a fishing lodge”. (CBC Radio 1) 2002
* Interview Feature article on Bylot Island research. Canadian Geographic magazine, 2002
* Geomorphology hike, Cross Conservation Area Continuing Education Program, 2001
* Interviews “Geophysical Investigations at the Mahram Bilqis, Yemen”. 2000 (numerous interviews for TV, radio, newspapers and magazines – est. TV audience of over 75 million)
* Interview “Predicting the effect of climate change on glacier mass balance in the Rocky Mountains and the hydrology of the Bow River”. June 9, 2000. The Calgary Herald and the Cochrane Times.
* Demonstration “Earth Science in the Mall” Northland Mall Calgary, 1999
* Interview ”Glacier chemistry and climate change”, 1999 (CBC Radio 1)
* Interviews “The search for buried babies at the Holy Cross Hospital”, 1998 (14 interviews for TV, radio, newspapers, and magazines)
* Interviews “The use of GPR to locate bodies at the Cochrane Public Library (Calgary Herald, Cochrane Times) 1998
* Radio interview “Time zones in the Arctic”, 1998 (CBC North)
* Interview “Gravity through the Earth” (interview for a syndicated newspaper science column)
* Poster Massive ice in the Mackenzie Delta (for public display at the Aurora Research Institute, Inuvik, NWT)

**HONOURS**

* University of Calgary “Great Supervisor” award 2018
* Fellow of the Royal Canadian Geographic Society (elected in 2010)

**ACADEMIC MEMBERSHIPS**

* Canadian Permafrost Association
* Canadian Geophysical Union
* Canadian Association of Geographers
* Canadian Quaternary Association
* American Geophysical Union

**PROFESSIONAL ACTIVITY AND CONSULTING**

*Professional expertise for a variety of earth science challenges have been provided to the following organizations.*

* BGC Engineering
* Geological Survey of Canada
* Indian and Northern Affairs Canada
* Town of Cochrane
* Carma Developments
* Calgary Regional Health Authority
* Klohn Crippen Berger
* Shell Canada
* Imperial Oil Canada
* Hamlet of Tuktoyaktuk
* Town of Fort Providence
* Town of Fort Simpson
* Prince of Wales Northern Heritage Centre
* Carleton University
* American Foundation for the Study of Man