

Publications from Axel Heiberg Research

Refereed Journal

- Dutilleul, P., Haltigin, T. and Pollard, W. (in press – accepted March 2008) Analysis of polygonal terrain landforms on Earth and Mars through spatial point patterns. Envirometrics
- Couture, N.J. and Pollard, W.H., (2007) Modelling geomorphic response of a high Arctic polar desert to climatic change. Climatic Change, DOI 10.1007/s10584-007-9309-5
- Antoniades, D., Crawley, C, Douglas, M., Pienitz, R, Andersen, D., Doran, P., Hawes, I., Pollard, W., and Vincent, W. (2007). Abrupt environmental change in Canada's northernmost lake inferred from diatom and fossil pigment stratigraphy. Geophysical Research Letters, 34, doi10.1029/2007 GL030.
- Perreault, N., Andersen, D.T., Pollard, W.H., Greer, C.W. and Whyte, L.G. (2007). Culture independent analyses of microbial biodiversity in cold saline perennial springs in the Canadian High Arctic. Applied Environmental Microbiology, 73, 5, 1532-1543
- Steven, B., Briggs, G.; McKay, C., Pollard, W., Greer, C. and Whyte, L. (2007). Characterization of the microbial diversity in a permafrost sample from the Canadian Arctic using culture-dependent and culture-independent methods. Microbiology Ecology, 59, 513-523.
- Omelson, C.R., Pollard, W.H., and Ferris, F.G (2007). Inorganic species distribution and microbial diversity within high Arctic cryptoendolithic habitats. Microbial Ecology, 54, 740-752.
- Omelson, C.R., Pollard, W.H., and Ferris, F.G (2006a). Chemical and ultrastructural characterization of high Arctic cryptoendolithic habitats. Geomicrobiology Journal, 23, 189-20.
- Omelson, C.R., Pollard, W.H., and Ferris, F.G (2006b). Environmental controls on microbial colonization of high Arctic cryptoendolithic habitats. Polar Biology. DOI 10.1007/s00300-006-0155-0, 11 journal pages.
- Omelson, C.R., Pollard, W.H. and Andersen, D., (2006) Geochemical evolution of perennial springs and the formation of travertines at Expedition Fiord in the Canadian High Arctic. Applied Geochemistry, 21, 1-15
- Steven, B., Leveille, R., Pollard, W.H. and Whyte, L.G. (2006) Microbial Ecology and Biodiversity of Permafrost. Extremophiles ISSN: 1431-0651 (Paper) 1433-4909 (Online) DOI: 10.1007/s00792-006-0506-3
- Pollard, W.H. (2005) Icing processes associated with high arctic perennial springs on Axel Heiberg Island, Nunavut. Permafrost and Periglacial Processes, 16, 51-68.
- Andersen, D., Pollard, W., McKay, C. and Heldmann, J., (2005) Correction to "Cold springs in Permafrost on Earth and Mars". Journal of Geophysical Research, 110, E04007.10.1029/2004JE002384
- Juck, D., Whissel, G., Steven, B., Pollard, W., McKay, C., Greer, C., and Whyte, L. (2005) Utilization of Fluorescent Microspheres and a Green Fluorescent Protein-Marked Strain for Assessment of Microbiological Contamination of Permafrost and Ground Ice Core Samples from the Canadian High Arctic. Applied and Environmental Microbiology, 71, 1035-1041.

- Heldmann, J., McKay, C., Pollard, W. Andersen, D. (2005), High Arctic saline icing dynamics. Arctic and Alpine Research, 37, 1, 127-135
- Heldmann, J., Toon, B., Pollard, W., Mellon, M., Pitlick, J., McKay, C., and Andersen, D. (2005). Formation of Martian gullies by the flow of simultaneously freezing and boiling liquid water. Journal of Geophysical Research, 110. E05004 10.1029/2004JE002261
- Mueller D.R. and Pollard, W.H., (2004) Gradient analysis of glacial cryoconite ecosystems: a bipolar comparison. Polar Biology, 66-74.
- Hawes, I., Andersen, D. and Pollard, W., (2002). Aquatic Macrophytes in Colour Lake, a naturally acidic polar lake. Arctic, 55, 320-327.
- Andersen, D., Pollard, W., McKay, C. and Heldmann, J., (2002) Cold springs in Permafrost on Earth and Mars. Journal of Geophysical Research, 107, E.3 10.10129/2000JE001436
- Mueller, D, Vincent, W., Pollard, W. and Fritsen, C. (2001). Glacial cryoconite ecosystems: A bipolar comparison of algal communities and habitats. Nova Hedwigia Beihefte, 123, 173-97.
- Omelson, C. R., Pollard W.H. and Marion, G.M. (2001). Seasonal formation of Ikaite ($\text{CaCO}_3 \cdot 6\text{H}_2\text{O}$) in saline spring discharge at Expedition Fiord, Canadian High Arctic: assessing conditional constraints for natural crystal growth. Geochimica et Cosmochimica Acta, 65, 29-37.
- Heldmann, J.L., Toon, O.B., Pollard, W.H., Mellon, M.T., McKay, C.P. and D.T. Andersen. (2000) Cold Springs in Thick, Continuous Permafrost on Earth and Mars, Eos. Trans. AGU, 81 (48)
- Cabrol, N., Grim, E. and Pollard, W.H. (2000). Possible frost mounds in an ancient Martian lakebed. ICARUS 145, 91-107.
- Pollard, W., Omelson, C., Andersen, D. and McKay, C. (1999). Perennial spring occurrence in the Expedition Fiord area, Axel Heiberg Island, Canadian Journal for Earth Sciences, 36, 105-120.
- Moisan, Y. and W. Pollard. (1995). Processus d'édification de la structure de poussée du Glacier Thompson, Ile Axel Heiberg, Territoires du Nord-Ouest. Canadian Geographer 39, 2, 33-40
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- Heldmann, J., Toon, O., McKay, C., Andersen, D., Pollard, W., (2003). High Arctic saline springs as analogues for springs on Mars. Proc. 8th International Permafrost Conference, Zurich, Switzerland 373-377.
- Omelson, C.R., Pollard, W.H., Ferris, F.G., Whyte, L, and Andersen, D. (2003). High Arctic cryptoendolithic microorganisms: ecological constraints and survival strategies in a polar desert environment. Proc. 8th International Permafrost Conference, Zurich, Switzerland 851- 857
- Budkewitsch, P., D'Iorio, M.A., Vachon, P.W., Pollard, W.H. and Andersen, D.T. (2000). Geomorphic, Active Layer and Environmental Changes Detected in SAR Scene

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- Pollard, W., Andersen, D., Vali, H., & McKay, C., and Arkani-Hamed J. (1999) A Mars Analogue Research Station (MARS) in the Canadian High Arctic. In: Proceedings Canada in Space Exploration: The Second Canadian Space Exploration Workshop, Canada Space Agency, University of Calgary, Calgary, Alberta. Oct. 17-21. 31-40.
- Pollard, W., Omelon, C., Andersen, D. & McKay, C. (1998). Geomorphic and hydrologic characteristics of perennial springs on Axel Heiberg Island, NWT. In: Lewkowicz, A.G. and Allard, M. (editors) Proceedings, Seventh International Permafrost Conference, Yellowknife, 23-27 June, Université Laval, Centre d'études nordiques, Collection Nordicana, No 57, 909-914.
- Pollard, W. & T. Bell (1998). Massive ice formation in the Eureka Sound Lowlands: A landscape model. In: Lewkowicz, A.G. and Allard, M. (editors) Proceedings, Seventh International Permafrost Conference, Yellowknife, 23-27 June, Université Laval, Centre d'études nordiques, Collection Nordicana, No 57, 903-908.
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Refereed contributions and book chapters

- Pollard, W.H. (2005) Axel Heiberg Island. In Encyclopedia of the Arctic. Edited by M. Nuttall, Fittsroy Dearborn Publishing Company, London, 181-182.
- McKay, C., Andersen, D., Pollard, W.H., Heldmann, J., Doran, P., Fritsen, C., Priscu, J., (2004) Polar Lakes, Streams, and Springs as Analogs for the Hydrological Cycle on Mars. In Water on Mars and Life, edited by T. Tokano, Springer-Verlag Berlin, 219-233.
- Pollard, W.H. (1998). Arctic Permafrost and Ground ice. In: Weatherhead, E. And Morseth, C.M. (eds.) Chapter 11: Climate Change, Ozone and ultraviolet Radiation. Arctic Monitoring and Assessment Program Report.
- Pollard W.H. and van Everdingen, R.O., (1992). in J.C. Dixon and A.A. Abrahams. Seasonal ice bodies. In Periglacial Geomorphology, The Binghampton Symposia in Geomorphology: International Series No 22. John Wiley and Sons, Chichester UK.: 281-304.
- Pollard, W.H., 1991. Observations on massive ground ice on Fosheim Peninsula, Ellesmere Island, Northwest Territories; in *Current Research, Part E*, Geological Survey of Canada, Paper 91-1E, p. 223-231.

Conference presentations with Abstracts (partial listing)

- Andersen, D.T., Heldmann, J. L., C. P. McKay, W. H. Pollard, H. Vali, L. Whyte, M. Zentilli (2005), Relic and Active Cold Permafrost Springs in the Arctic as Martian Analogs, 2005 AGU Fall Meeting, San Francisco, CA, 5-9 December 2005.
- Perreault N., Andersen D.T., Pollard W.H., Greer C.W., and Whyte L.G. (2005) Microbial Biodiversity of Cold Perennial Springs in the Canadian High Arctic. Invited presentation

- for the Microbial Ecology and Bioremediation in Cold Climates (MECBIO) Workshop. Kangerluusaq, Greenland, Sept. 12-16.
- Whyte L.G., Whissel, G., Perreault N., Steven, B., Juck, D., Andersen D.T., Pollard W.H., and Greer C.W. (2005). The Canadian High Arctic as a Martian Analogue for Exobiology Investigations: Microbial Ecosystems in Unique Sites in the High Arctic. 5th Canadian Space Exploration Workshop, Canadian Space Agency, Montreal, May 12-13.
- Heldmann, J.L., Toon, O.B., Pollard, W.H., Mellon, M.T., Pitlick, J., McKay, C.P., Andersen, D.T., (2005) Formation of Martian Gullies by the Action of Liquid Water flowing under Current Martian Environmental Conditions, 37th annual meeting of the Division for Planetary Sciences, Cambridge, UK. 2005.
- Zentilli, M., Williamson, M-C., Budkewitsch, P., Pollard, W.H., Hamilton, C., Mosher, A., Lyon, S.A., Grist, A.M., Jensen, A.B.O. and Schwerdtner, W.M. (2005) Evaporite diapirs in Axel Heiberg Island, Nunavut: gauging their past and present growth rate and their geothermal energy potential.
- Whyte, L.G., Juck, D., Labbé, D., Koval, S., Lawrence, J., Andersen, D., Pollard, W. and Greer, C.W. (2001). Microbial composition of perennial springs in the Canadian High Arctic. 9th International Symposium on Microbial Ecology (ISME-9). Amsterdam, Holland, Aug. 26-31, 2001.
- Whyte, L.G., Juck, D., Labbé, D., Koval, S., Lawrence, J., Andersen, D., Pollard, W. and Greer, C.W. (2001). Microbial investigations of perennial saline springs in the Canadian High Arctic. 51st Annual Canadian Society of Microbiology Meeting, Waterloo, Canada, June 10-13, 2001.
- Andersen, D.T., W.H. Pollard, C.P. McKay, J. Heldman (2001), Cold Springs in Permafrost on Earth and Mars. (Poster Presentation) The Third Canadian Space Exploration Workshop (CSEW3), Canada Space Agency, Montreal, Montreal, Quebec May 25-26, 2001.
- Pollard, W.H., Andersen, D.T., Vali, H. Omelon, C., McKay, C.P.(2001), Analogue research in the Canadian High Arctic, (Poster Presentation) The Third Canadian Space Exploration Workshop (CSEW3), Canada Space Agency, Montreal, Montreal, Quebec May 25-26, 2001.
- Lyle Whyte, Diane Labbé., Susan Koval, John Lawrence, Dale Andersen, Wayne Pollard, Charles Greer, (2001) Microbial investigations of perennial saline Springs in the Canadian High Arctic. (Poster Presentation) The Third Canadian Space Exploration Workshop (CSEW3), Canada Space Agency, Montreal, Montreal, Quebec May 25-26, 2001.
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- Andersen, D.T., W.H. Pollard, C.P. McKay, Heldman, J. Toon, B., Jakosky, B. (2000), Cold Springs in Permafrost on Earth and Mars. (Poster Presentation) In: Bulletin of the American Astronomical Society (BAAS), Vol. 32, number 3, 32nd Annual Meeting of the Division for Planetary Sciences of the American Astronomical Society, October 23-27, 2000.