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Morris Katz Lecture: Abrupt changes in the Arctic

Microbiologist Warwick Vincent, of the University of Laval's Aquatic Ecosystem Studies Laboratory, and Canada Research Chair in Aquatic Ecosystem Studies, will deliver Monday's Morris Katz Memorial Lecture in Environmental Research.

Vincent's special presentation will discuss current research that is underway in the Canadian Arctic. Findings suggest that global climate change has begun to induce abrupt, discontinuous shifts in high latitude ecosystems structure and function, and that Canada's Arctic frontier is moving into a new dynamic state that we urgently need to better understand.

Vincent will speak on Monday, May 28, at 2:30pm, in the Senate Chamber, N940 Ross Building. The lecture is free and open to the public.

Warwick Vincent

The Canadian Arctic contains a spectacular variety of aquatic ecosystem types including vast networks of lakes in glaciated basins, permafrost thaw lakes, large rivers discharging to the Arctic Ocean, ice shelves, lagoons and other coastal ecosystems, and perennially ice-capped, solar heated lakes. The Aquatic Ecosystem Studies Laboratory's analyses of the molecular microbiology of these waters reveals diverse communities in each of the three domains of microbial life, with implications for biogeography, food web structure and biogeochemical processes including greenhouse gas fluxes.

The Arctic is currently warming at more than twice the global average and some of these aquatic ecosystems have begun to experience step-like changes in their physical and ecological regimes. Over the last 10 years, several types of ice-dependent ecosystems at the Aquatic Ecosystem Laboratory's study sites in the High Arctic have experienced abrupt changes, resulting in complete habitat loss at some locations.

To obtain a longer term perspective, Vincent and researchers in the lab analyzed coastal sediment cores taken behind the Ward Hunt Ice Shelf. The results indicate large variability in past ice conditions, however the synchronicity of its current break-up with the collapse of ice shelves in the Antarctic Peninsula region is without precedent over the last 8,000 years, implying that we have entered a new phase of pole-to-pole deglaciation.

Vincent has conducted ecological research on lakes, rivers and coastal oceans in several parts of the world, including the subtropical convergence (South Pacific), Lake Titicaca (Peru-Bolivia), Lake Biwa (Japan) and the St Lawrence River. His research group has a special interest in the relationships between microscopic life at the base of aquatic food webs and physical aspects of aquatic ecosystems such as solar energy supply, temperature, mixing regimes and climate.

Most of his research, books and articles have focused on the polar regions, with his first expedition to Antarctica in 1979. Working with the USA National Science Foundation, he played an early role in the environmental protection of the McMurdo Dry Valleys of Antarctica (a Long Term Ecological Research Site), culminating in an internationally accepted management plan and Environmental Code of Conduct.

Vincent is currently working with Spanish collaborators on the Antarctic program LIMNOLPOLAR, but most of his research activities are in the Canadian North. He was a contributing author to the *Arctic Climate Impact Assessment* (2003), led the microbial ecology theme within the Canada Arctic Shelf Exchange Study and the terrestrial theme within ArcticNet Phase 1. He is working closely with Parks Canada in Quttinirpaaq National Park at the northern limit of Nunavut, on the diverse ecosystems of this region and their sensitivity and value as monitoring sites for global change.

In addition to his university teaching commitments, Vincent participated as an inaugural member of "Students on Ice", an ongoing Canadian initiative to take high-school students to both polar regions and to educate them about global science. He is past president of Canada's National Antarctic Committee and has chaired the Natural Sciences & Engineering Research Council of Canada (NSERC) Discovery Research Grants committee in Ecology and Evolution. In recognition of his commitment to environmental research and education he was awarded the New Zealand Gold Medal in Science and the Canadian Rigler Prize in Limnology. He is a Fellow of the Royal Society of Canada, and honorary fellow

of the Royal Society of New Zealand.

For more information on the Morris Katz Lectureship, contact Carol Weldon, Centre for Atmospheric Chemistry administration assistant, at ext. 55410, by fax at 416-736-5411 or by e-mail to cac@yorku.ca, or visit the Centre for Atmospheric Chemistry website.

Major contributions in support of this year's lecture have been made by York's Centre for Atmospheric Chemistry and Ontario's Ministry of the Environment.

About Morris Katz

Morris Katz, 1901-1987, was an outstanding scientist. He spent 35 years in public service, where he pioneered air pollutant sampling and measurement methodology and was among the first to demonstrate the presence of ozone damage to vegetation in Ontario. He taught chemistry at York until his death. He authored or co-authored more than 150 books and articles and was the recipient of numerous awards for his work.

The Morris Katz Lectureship was made possible by the establishment of an endowment fund created through contributions from his family, friends and colleagues, private companies, universities and government. Major contributions in support of this year's lecture have been made by York's Centre for Atmospheric Chemistry and the Ontario Ministry of the Environment.

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