THE 26TH ANNUAL HAROLD I. SCHIFF LECTURE

FACULTY OF SCIENCE

Presented by:
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Aerosol in the Arctic Summertime: Sources, Impacts, and Melting Sea Ice

Wednesday, September 13, 2017
2:30 PM
320 Norman Bethune College (map attached)
York University

Abstract: As part of a large NSERC-funded network project, NETCARE, field measurements were made in the Arctic in the summer of 2014 to investigate the nature of aerosol in the high Canadian Arctic. Our goal was to study the fundamental processes that control the size, abundance, and composition of Arctic aerosol particles in light of a rapidly changing Arctic environment: Will melting sea ice affect Arctic aerosol and clouds? To address this question, measurements were made from both the Alfred Wegener Institute (AWI) POLAR6 aircraft and the CGCS Amundsen Icebreaker. A consistent story arose wherein a biologically active ocean provides a source of volatile gases to the atmosphere that are oxidized to promote both new particle formation and growth in this cool, pristine environment. Under specific conditions, the numbers of cloud condensation nuclei increase with ensuing effects on cloud droplets. The summer environment will be contrasted against the much better understood character of the aerosol in the Arctic springtime, i.e. during the period of Arctic Haze. In particular, NETCARE also made measurements in the spring of 2015, adding to our understanding of the importance of long-range transport and different depositional processes in controlling aerosol abundance during this time period. The work to be presented reflects the combined efforts of a great number of NETCARE personnel and collaborators. Especially important were scientific, financial and logistical contributions from Environment and Climate Change Canada, the Department of Fisheries and Oceans, AWI, and a number of foreign collaborators.

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