PAN CONTRIBUTION TO THE NOY BUDGET DURING A HIGH-PAN EPISODE AT ALERT, NUNAVUT, DURING SPRINGTIME

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PeroxyAcetyl Nitrate (PAN) mixing ratios have been measured routinely at Alert, Nunavut, Canada, since 1987. On only two occasions in this 15-year record were extreme increases in PAN observed. One of these episodes lasted for ca. 3 days, and reached maximum PAN mixing ratios of up to ca. 800 pmol mol\(^{-1}\) on March 13, 2000.

As part of the Polar Sunrise Experiments ALERT 2000 NOy (≡ the sum of all oxidized N species (except N\(_2\)O), as measured after Au/CO conversion as NO) were also measured during this PAN increase. The PAN fraction of NOy during clean background periods at Alert was found to be on the order of 0.85 to 0.9 during March of 2000, while during the high-PAN episode this fraction increased to essentially unity. No increase in NOx was observed during most of this episode. Using HYSPLIT 10-day back-trajectories, the high-PAN airmass was found to have originated in Eastern Europe and Siberia.

We will discuss the effects of this plume on active photochemistry and the ozone budget in the Arctic.