



# CANDAC

Canadian Network for the Detection of Atmospheric Change

**Photo Credit:**

Paul Loewen, 2011

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**Link for High-Resolution Photo:**

<http://www.candac.ca/candac/Links/Media/Images/PL-2011-CRL.jpg>

**Caption:**

The CANDAC Raman Lidar (CRL), operated at the Zero altitude PEARL Auxilliary Laboratory (ØPAL) site at Eureka, Nunavut Territory, is part of PEARL, the Polar Environment Atmospheric Research Laboratory. PEARL is managed by the Canadian Network for the Detection of Atmospheric Change (CANDAC). The CRL measures temperature profiles, aerosol and cloud optical properties and water vapour mixing ratios, all important quantities in understanding atmospheric radiance.

**Summary:**

PEARL is a unique national and international resource. It is located on Ellesmere Island at Eureka, Nunavut (80N, 86W). The cornerstone of PEARL is the Ridge Laboratory. This iconic red building was built in 1992-93 by Environment Canada and operated as the Arctic Stratospheric Ozone observatory (AStrO) until 2002 when it was mothballed due to lack of funding. It was revitalized in its present form when a collaboration between university researchers and government departments, the Canadian Network for the Detection of Atmospheric Change (CANDAC), undertook its operation in 2005. The Ridge Lab is situated about 15km from the Eureka weather station by road. Since the laboratory is at 610m above sea level, an additional site - ØPAL - was established at the edge of the Environment Canada weather station at approximately sea level. In addition, the Surface Atmospheric Flux and Irradiance Remote Extension (SAFIRE) site, was established for instruments that require minimal impact from surrounding surface features both natural and man-made. SAFIRE is located near the Eureka runway approximately 3km from the weather station proper.

PEARL contains instrumentation distributed between these three sites that measure the atmosphere from the ground to about 100km. These measurements provide scientists with information on everything from the temperature, to composition and aerosol distributions, to radiation balance and energy transport. It is one of the most broadly instrumented atmospheric research sites located anywhere on the globe, and a significant contribution to the understanding of the Arctic atmosphere in particular.

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