CANDAC
Canadian Network for the Detection of Atmospheric Change

Photo Credit:
Yann Blanchard, 2007

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Link for High-Resolution Photo:
http://www.candac.ca/candac/Links/Media/Images/YB-2007-StP-KB.jpg

Caption:
Konstantin Baibakov, a master's student at the Département de Géomatique Appliquée (Université de Sherbrooke), performs final adjustments on the starphotometer at Eureka, Nunavut Territory. PEARL, the Polar Environment Atmospheric Research Laboratory, is managed by the Canadian Network for the Detection of Atmospheric Change (CANDAC).

Summary:
The star tracking photometer is part of the aerosol photometry suite, combined with two sun tracking photometers. The starphotometer provides Polar winter measurements of stellar extinction from which are derived aerosol optical thickness and indicators of particle size information while the AERONET/AEROCAN sunphotometers provide summertime measurements of solar extinction and sky radiance from which one extracts aerosol optical thickness, particle size distribution and particle nature information. Applications include the characterization of the Arctic (pollution) haze phenomenon and the estimation of key (aerosol) radiative forcing parameters. The starphotometer and one of the sun photometers are housed at the lower altitude ØPAL site while the other sunphotometer is located at the Ridge Lab.

The Polar Environment Atmospheric Research Laboratory (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 - the Zero altitude PEARL Auxiliary Laboratory (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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