

File Revision Date:

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Data Set Description:

PI: Osamu Uchino, Tomohiro Nagai, Allan I. Carswell

Instrument: Lidar

Site(s): Eureka, Canada

Measurement Quantities: Aerosol Backscatter and Depolarization

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Reference Articles:

O. Uchino: Global lidar monitoring of the Pinatubo volcanic aerosols and their effects on climate, Abstracts of papers of 17th International Laser Rader Conference, 381-384, 1994.

T. Nagai, O. Uchino, T. Itabe, T. Shibata, K. Mizutani, T. Fujimoto and M. Hirota: Lidar observations of the PSCs and stratospheric aerosols over Eureka in Canadian Arctic. Advances in Atmospheric Remote sensing with Lidar. 505-508, 1997.

T. Nagai, O. Uchino, T. Itabe, T. Shibata, K. Mizutani and T. Fujimoto. Polar stratospheric clouds observed at Eureka (80oN, 86oW) in the Canadian Arctic during the 1994/1995 winter. Geophys. Res. Lett., 24, 2243-2246, 1997.

Instrument Description:

Location:

Eureka, NT, Canada  
80.00 N, 85.93 W, elevation 607msl

Transmitter:

Continuum Powerlite Nd:YAG laser  
1,064 nm (500 mJ), 532 nm (500 mJ), 10 Hz

Receiver:

50 cm diameter Newtonian Telescope for 1,064 nm  
25.4 cm diameter Schmidt Cassegrain Telescope for 532 nm  
bandwidth 3 nm

Detectors:

2 Hamamatsu R3236 photon counting PMTs for 1,064 nm  
2 Hamamatsu R331 photon counting PMTs for 532 nm

Signal and data processing:

4-channel photon counter (700 MHz, 1200 bins, 32 bits).

Algorithm Description:

The calculation is which uses a Rayleigh normalization at reference altitude of around 30 km to 35 km. The atmospheric density comes from Eureka radiosonde and CIRA atmospheric model.

Expected Precision/Accuracy of Instrument:

Accuracy:

Instrument History:

The instrument built in January and February 1993. The new receiver including the 25.4 cm diameter receiving telescope for 532 nm channel, the new 1,064 nm receiving optics for 50 cm telescope and the new Nd:YAG laser (Continuum Surelite-II) were installed on December 1993 to solve many problem happened on the original system. The new high power laser was installed on December 1994 to improve the system performance.