Data Set Description:
PI: Hideaki Nakane
Instrument: Lidar
Site(s): Tsukuba, Japan
Measurement Quantities: Ozone
Temperature
(Aerosol)

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Reference Articles:


Instrument Description:
March 1987 - February 1996

Transmitter
- Laser
  - XeCl excimer laser: 308 nm, 339 nm (D2 Raman shifter), 140 mJ
  - XeF excimer laser: 351 nm, 75 mJ
  - Repetition rate: 250 MHz (Max.), 94 Hz (Typ.)
  - 3 times expanded beam divergence: 0.07 mrad
  (Both excimer laser were Lambda Physik EMG 160TMSC injection locked lasers)

Receiver
- Telescope diameter: 2 m
- Field of view: 0.6 mrad (Typ.)
  - With chopper, dichroic mirrors, interference filters

Detectors
- Photomultipliers: Hamamatsu R3225 (6 channels)
  - With electrical gates (1-200 micro seconds) and 100MHz preamplifiers

Signal and data processor
- Photon counters with 1 micro second gate, 2048 segments (6 channels)
- Toshiba AS 475

Algorithm Description for Ver. 1 data:
- DIAL equation with aerosol correction assuming constant extinction/backscatter ratio.
- US standard atmosphere is assumed to obtain temperature and air density profiles for calculation of ozone profiles.

Expected Precision/Accuracy of Instrument:
- <10% depending on measurements and altitudes

Instrument History:
- 1987.3: Installation
- 1990.8: Modification of Transmitter/telescope system for better accuracy.
  - Stability of measurements and accuracy of the data were improved substantially.
- 1996.3: Modification of the transmitter and receiver system.