

# NIWA Lauder NDSC UV/Visible Measurements at the Mauna Loa Observatory

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The National Institute of Water and Atmospheric Research (NIWA) started Network for the Detection of Stratospheric Change (NDSC) certified ultraviolet (UV)/visible spectroscopic measurements of stratospheric nitrogen dioxide (NO<sub>2</sub>) in July 1996 at the NOAA Mauna Loa Observatory (MLO). These measurements continued with the same instrument through 1999. Some degradation of data quality occurred between February and October because of the failure of a mechanical coupling in the wavelength drive rotator mechanism. This was rectified in October when a NIWA scientist visited MLO to help diagnose radio interference in the NIWA UV spectroradiometer operating there. On subsequent examination of the coupling at Lauder, it was determined that the failure was caused by volcanic dust that had penetrated the spectrometer box. Although the presence of a problem was diagnosed in March using standard quality-control procedures, it was not possible to implement repairs earlier than October. Fortunately the failure did not significantly compromise the value of the NO<sub>2</sub> measurements over this period

with the measurement random errors increasing by less than a factor of 2 over those normally expected.

In December 1999 a new UV/visible spectrometer was installed to measure stratospheric bromine monoxide, an important species in current attempts to model future nonpolar ozone trends. In addition to this new instrument, a second NO<sub>2</sub> measuring spectrometer was also installed in the NDSC building. It is planned to operate both NO<sub>2</sub> spectrometers for several months to provide a good overlap for intercalibration. The two new spectrometers are monitored and controlled over the Internet from Lauder, minimizing the work of MLO staff. The only routine task required is the cleaning of the two viewing windows.

Archiving of UV/visible data measured at MLO in the NDSC database has continued as required.

No publications have used just the MLO UV/visible data to date. However, global ground-based and satellite-derived NO<sub>2</sub> climatological studies are using the NDSC archive data sets.