

Measurements of Atmospheric Trace Gases with the WSU Multi-Function Differential Optical Absorption Spectrometer

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LAR has been involved for over 10 years with the NASA/Dutch Ozone Monitoring Instrument satellite project. We began our interaction with the development of that instrument in 1997 and followed through the construction, testing, calibration, and launch in 2004 of the instrument on the NASA AURA satellite. We have been actively involved in the use of that satellite data in Pacific NW air quality monitoring for ozone, nitrogen dioxide, and other species. In 2004, we received funding for construction of an innovative ground-based instrument to validate the space-based satellite measurements. This new instrument was constructed at WSU and has been on nearly a dozen field campaigns to verify satellite data (e.g. Houston, TX; The Netherlands; Huntsville, AL; Pacific NW National Laboratory; southern California; Goddard Space Flight Center). The instrument will go to Pittsburgh, PA for SO₂ measurements this summer and to China in the fall for HCHO, NO₂, and SO₂ measurements. The instrument observes the direct sun and scattered skylight to measure the UV-visible spectrum of the atmosphere. From those spectra, we can deduce the abundances of a number of trace gas species.

We are currently actively pursuing problems with the OMI BrO data product. Pursuant to resolving that problem, we need substantial measurements from Pullman, WA of direct sun spectra and scattered sky spectra. The REU student who will work with the instrument will be directly involved in making the measurements from the roof of Dana Hall and also in the reduction and interpretation of the data for comparison with the satellite measurements. There is the possibility of going on the trip in late June/early July to Pittsburgh for measurement of SO₂.