



Auto-Max DOAS first results

O. W. Ibrahim, T. Stein, T. Wagner, R. Sinreich and U. Platt.

Institut für Umweltphysik, Heidelberg University, Germany
(oibrahim@iup.uni-heidelberg.de)

Measurements of tropospheric and stratospheric trace gases using the well-established Multi Axes Differential Optical Spectroscopy (MAX-DOAS) technique are widely used nowadays. The MAX-DOAS instruments are mounted on different types of mobile platforms (airplanes and ships) besides the stationary ground-based measurements.

Here we present the description and the first results of atmospheric trace gas measurements of the ground-based mobile MAX-DOAS (Auto-MAX DOAS). A small size MAX-DOAS instrument was mounted on a car and measurement of NO₂ from different types of pollution sources was carried out (industrial area, heating facility and a power plant). Results showed elevated Slant Column Densities (SCDs) of NO₂ downwind from the source areas as expected. The measurements from this new platform provide the possibility of encircling certain and well-defined targeted polluting areas (e.g. industrial, heavy traffic) to estimate the in-flux and out-flux of tropospheric pollutants from them (such as NO₂) or from urban areas affected by them as well.

The Auto-MAX measurements provide a spatial resolution better than that of Satellites and airplanes for city pollution scale and also gives more possibilities for measurement strategies than those of stationary ground-based measurements. In the near future, efforts for improving the temporal resolution of the Auto-MAX spectrometer (i.e. Integration time) will improve its spatial resolution to be of the order of a few tens of meters. Thus it will open more possibilities for measurements on the scale of cities' polluted air masses and single plumes.