



## **Tomographic DOAS measurements of the 2D trace gas distribution above the city centre of Heidelberg, Germany**

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Longpath DOAS (Differential Optical Absorption Spectroscopy) tomography is a novel method for the measurement of 2 or 3 dimensional trace gas distributions. Average concentrations of different trace gases are measured along 10 to 40 light paths and inverted into concentration distributions using tomographic techniques (see Mettendorf et al., Hartl et al., this issue). Here we present the instrumental setup and first results from a tomographic configuration set up over the city of Heidelberg in spring 2005. Three Multibeam instruments and 10 to 20 retro arrays will be installed over an area of 3 km x 4 km. From each Multibeam telescope, four to six parallel light beams are emitted simultaneously towards mirrors in a distance of 15 to 50 m. The mirrors turn round the light beams to retro arrays located at 1 to 5 km distance at various buildings with similar altitude. From there, the light beams are reflected back over the mirrors towards the telescopes, where they are coupled into optical fibres and spectrally analyzed simultaneously using Cherny Turner spectrometers with 2D CCD detectors. The preliminary aim is to derive 2D distributions of NO<sub>2</sub>, SO<sub>2</sub>, O<sub>3</sub>, HCHO, and HONO with similar accuracy like well-known 1D trace gas distributions measurement techniques.

With further retro arrays at buildings with higher altitude, 3D distributions of trace gases can be analyzed.