# 1.229 Aircraft-based 2- and 3D Measurements of Trace Gases with the Heidelberger Airborne Imaging DOAS Instrument (HAIDI) during the Phase II Mission EMeRGe.

Early Career Scientist

Presenting Author:
**Katja Bigge**, Institute for Environmental Physics, Heidelberg University, Heidelberg, Germany, kbigge@iup.uni-heidelberg.de

Co-Authors:
**Denis Pöhler**, Institute for Environmental Physics, Heidelberg University, Heidelberg, Germany
**Udo Frieß**, Institute for Environmental Physics, Heidelberg University, Heidelberg, Germany
**Ulrich Platt**, Institute for Environmental Physics, Heidelberg University, Heidelberg, Germany

Abstract:

Remote sensing of atmospheric trace gases allows for a comprehensive probing of their distribution. Satellite instruments have excellent spatial coverage, but their spatial and temporal resolution is low. Also, vertically, no or very low spatial resolution is available. In contrast, aircraft-based remote sensing instruments can achieve a high spatial and temporal resolution during overflight and thus allows for an investigation of small-scale chemical and dynamical processes in the Earth's atmosphere. Sources of trace gases can also be identified and quantified.
The Heidelberg Airborne Imaging DOAS Instrument (HAIDI) has been developed to survey distributions of trace gases in 2D and 3D on the research airplane HALO. It was dispatched during the EMerGe (Effect of Megacities on the Transport and transformation of Pollutants on the Regional to Global Scales) missions in July 2017 in Europe and March 2018 in Asia to investigate the chemical composition of the outflow of megacities and the atmospheric impact of urban pollution. Target areas included Paris, London and the Po area as well as Manila, Taiwan cities and China outflow. A comprehensive set of mainly in-situ instruments was deployed to measure aerosols and many trace gases. HAIDI contributes remote sensing of a number of trace gases such as NO2, SO2, O3, BrO and HCHO.

We will present first results of the HAIDI measurements during the EMeRGe mission, as well as the overall instrumental concept and technical specifications of HAIDI.