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*Reference for
Mr. Jonas Lähnemann
exchange student at the Department of Physics, University of Nairobi*

Ground-based Differential Optical Absorption Spectroscopy (DOAS) measurements are a powerful tool for monitoring atmospheric composition with automated systems. Since August 2002, the University of Bremen is operating a multi axis DOAS instrument at UNEP, Nairobi. The main focus of the measurements is validation of satellite measurements of stratospheric O₃ and NO₂, but other trace gases such as BrO, HCHO, and tropospheric NO₂ are measured as well.

During his year as an exchange student at the Department of Physics, University of Nairobi, Jonas Lähnemann undertook a fourth year project on "Validation of satellite ozone measurements over Nairobi using MAX-DOAS 2003 - 2004". This work was supervised by Dr. Angeyo Kalambuka at Nairobi University, but as the data and software used were provided by the University of Bremen, Mr. Lähnemann was also in close contact with scientists from the IUP Bremen throughout his project.

The thesis submitted summarizes the current knowledge on atmospheric ozone and the measurement techniques used. It then describes the DOAS data analysis for ozone and the results obtained, mainly for the zenith-sky twilight observations. The main part of the thesis is concerned with the use of the DOAS data for the validation of satellite measurements of total ozone columns from TOMS, GOME, and SCIAMACHY and a statistical and physical interpretation of the results.

The thesis is well structured and clearly written. It provides a very good overview over the topic and substantial original results with a thorough analysis of the data. Both the size and the depth of the report sets it apart from most other fourth year projects.

During his project Jonas Lähnemann has demonstrated his ability to make himself familiar with a new field in a short time, to work independently and purposeful on a research project and to present his results in a clear and convincing way. His ability to communicate with scientists and staff in Nairobi and Bremen was very useful for the Nairobi project, as well as his technical support for the DOAS instrument.

We enjoyed working with Jonas, and wish him all the best for the future.

