

UP 8.3 Di 10:15 Poster TU HTF

**Absorptionseigenschaften von intern gemischtem Ruß - Vergleich verschiedener Messmethoden** — ●MARTIN SCHNAITER<sup>1</sup>, OTMAR SCHMID<sup>2</sup>, ANDREAS PETZOLD<sup>3</sup> und ERNEST WEINGARTNER<sup>4</sup> — <sup>1</sup>Forschungszentrum Karlsruhe — <sup>2</sup>Deutsches Zentrum für Luft- und Raumfahrt, Oberpfaffenhofen — <sup>3</sup>Max-Planck-Institut für Chemie, Mainz — <sup>4</sup>Paul Scherrer Institut, Villigen, Schweiz

Ein Großteil des frisch in die Atmosphäre emittierten Verbrennungsrußes mischt sich innerhalb von wenigen Stunden durch Koagulation und Kondensation mit anderen, primären oder sekundären Aerosolkomponenten. Um verlässliche Aussagen über die atmosphärische Aerosolabsorption treffen zu können, werden deshalb Messinstrumente benötigt, deren Absorptionsmessung nicht durch die Mischung mit anderen hauptsächlich streuenden Aerosolen beeinflusst wird.

In einer experimentellen Studie wurden die Resultate verschiedener im Feld eingesetzter Absorptionsmessmethoden im Falle von Ruß in definierten internen Mischungen mit organischen und anorganischen Aerosolkomponenten verglichen. Das Verhältnis von Rußabsorption zu Aerosolstreuung wurde dabei über einen weiten Bereich variiert. Im Einzelnen wurden verschiedene filterbasierte Methoden (Ätholometer, PSAP, MAAP) und eine photoakustische Methode (PAS) untersucht. Als Referenz diente eine Kombination aus Streu- und Extinktionsmessung bei mehreren Wellenlängen. Gefundene Übereinstimmungen bzw. systematische Abweichungen werden vorgestellt und diskutiert.

UP 8.4 Di 10:15 Poster TU HTF

**Atmospheric Remote-Sensing Reference Data from GOME-2: Temperature-Dependent Absorption Cross-Sections of Ozone in the 240 - 795 nm Range** — ●B. GÜR<sup>1</sup>, P. SPIETZ<sup>1</sup>, J. ORPHAL<sup>2</sup>, and J.P. BURROWS<sup>1</sup> — <sup>1</sup>Institute of Environmental Physics, University of Bremen, P.O. Box 330 440, 28334 Bremen, Germany — <sup>2</sup>Laboratoire de Photophysique Moleculaire, CNRS, Bat. 350, Centre d'Orsay, Orsay 91405 Cedex, France

## UP 9 Poster: Atmosphäre und Klima

Zeit: Dienstag 10:15–12:15

Raum: Poster TU HTF

UP 9.1 Di 10:15 Poster TU HTF

**Interactions of sulfur and halogens in the marine boundary layer** — ●ROLAND VON GLASOW<sup>1,2</sup> and PAUL J. CRUTZEN<sup>2,3</sup> — <sup>1</sup>Institut für Umweltphysik, Universität Heidelberg, Heidelberg, Germany — <sup>2</sup>Scripps Inst. of Oceanography, UCSD, La Jolla, USA — <sup>3</sup>Max-Planck Institut für Chemie, Mainz, Germany

The oxidation of DMS is the main source of SO<sub>2</sub>, MSA, and non-sea-salt sulfate in the clean marine boundary layer (MBL). Recently the importance of BrO - in addition to OH and NO<sub>3</sub> - has been suggested as oxidant for DMS. Furthermore HOCl(aq) and HOBr(aq) can increase the oxidation of S(IV) to S(VI) in aerosol and cloud particles. Chlorine and bromine in the MBL are derived from seasalt aerosol. We investigated the importance of these processes for the chemistry of the MBL and possible climate links with the one-dimensional chemical and microphysical model MISTRA-MPIC. BrO plays a very significant role as oxidant even under very low mixing ratios of 0.5 pmol/mol. We found that still significant uncertainty exists in the kinetics of DMS oxidation especially with regard to the endproducts of DMS oxidation. Under most conditions that we studied the net effect of halogens, especially under cloudy conditions, is an increase in particulate sulfur (MSA plus nss-sulfate) and decrease of precursors for the formation of new CCN.

UP 9.2 Di 10:15 Poster TU HTF

**Water Vapour Retrieval from SCIAMACHY Nadir Data** — ●STEFAN NOËL, MICHAEL BUCHWITZ, JOHN P. BURROWS, and HEINRICH BOVENSMANN — Institute of Environmental Physics/Remote Sensing, University of Bremen, Germany

Measurements of the SCanning Imaging Absorption spectrometer for Atmospheric CHartography (SCIAMACHY) on-board the European environmental satellite ENVISAT have been used to derive water vapour total column amounts on the global scale.

For this purpose, the Air Mass Corrected Differential Absorption Spectroscopy (AMC-DOAS) approach has been applied to SCIAMACHY's nadir measurements in the spectral region around 700 nm.

Previous investigations already showed a good agreement of the water vapour columns derived from SCIAMACHY with correlative data from e.

The GOME-2 satellite spectrometer series consists of 3 flight models and is designed to record spectra of trace gases in the atmosphere and to derive a detailed picture of their atmospheric content and profile.

During the development of the GOME-1 satellite spectrometer, a recommendation was made by the GOME Science Advisory Group (GSAG)/Characterisation and Calibration Sub-group, that the temperature dependent trace gas absorption spectra should be measured under representative in-flight conditions with the GOME Flight Model.

For these measurements the spectroscopy team of the Institute of Environmental Physics developed a mobile absorption spectroscopy set-up called CATGAS (Calibration Apparatus for Trace Gas Absorption Spectroscopy) dedicatedly designed for this purpose.

ESA and EUMETSAT decided to use CATGAS for absorption measurements of O<sub>3</sub> with the GOME-2 FM's. In the past 2 years the CATGAS team performed 3 campaigns with two FM's (FM2, FM3, FM2-1), resulting in 3 data sets of temperature-dependent absorption spectra in the above mentioned wavelength range.

The absorption spectra are important as reference data for atmospheric remote-sensing of O<sub>3</sub> and other trace gases.

After a brief description of the set-up the current status of the results will be presented, together with a comparison to literature data.

UP 9.3 Di 10:15 Poster TU HTF

**Stratospheric Water Vapor in the Arctic: Measurements and Modelling** — ●MARION MÜLLER<sup>1</sup>, FEDERICO FIERLI<sup>2</sup>, VLADIMIR YUSHKOV<sup>3</sup>, ALEXANDER LUKYANOV<sup>3</sup>, and SERGEY KHAYKIN<sup>3</sup> — <sup>1</sup>Alfred Wegener Institute for Polar and Marine Research, Potsdam, Germany — <sup>2</sup>Institute for Atmospheric Sciences and Climate, CNR, Rome, Italy — <sup>3</sup>Central Aerological Observatory, Moscow, Russia

Water vapor is a greenhouse gas that is found to increase in the stratosphere. Here we present observations of the stratospheric water vapor mixing ratio inside, outside, and at the edge of the polar vortex measured by the FLASH-B Lyman-alpha hygrometer during the LAUTLOS campaign in Sodankylä, Finland, in January and February 2004. Analysing the measurements with the semi-lagrangian advection model MIMOSA, water vapor profiles typical for the polar vortex interior and exterior have been identified, and laminae in the observed profiles have been correlated to filamentary structures in the potential vorticity field. Applying the validated MIMOSA transport scheme to specific humidity fields based on the ECMWF T106 model, large discrepancies from the observed profiles arise. Although MIMOSA is able to reproduce weak water vapor filaments, the simulations reveal a dry bias of about 1 ppmv in the lower stratosphere above 400 K, accounting for a relative difference from the measurements in the order of 20 percent. The large dry bias in the models representation of stratospheric water vapor in the Arctic implies the need for future regular measurements of water vapor in the polar stratosphere to allow the validation and improvement of climate models.