

Home

Online Library ACP

- Recent Final Revised Papers
- Volumes and Issues**
- Special Issues
- Library Search
- Title and Author Search

Online Library ACPD

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Comment on a Paper

Impact
Factor
4.865

ISI
indexed



▣ Volumes and Issues ▣ Contents of Issue 1 ▣ Special Issue

Atmos. Chem. Phys., 9, 93-117, 2009

www.atmos-chem-phys.net/9/93/2009/

© Author(s) 2009. This work is distributed under the Creative Commons Attribution 3.0 License.

The SCOUT-O3 Darwin Aircraft Campaign: rationale and meteorology

D. Brunner^{1,2}, P. Siegmund³, P. T. May⁴, L. Chappel⁴, C. Schiller⁵, R. Müller⁵, T. Peter², S. Fueglistaler², A. R. MacKenzie⁶, A. Fix⁷, H. Schlager⁷, G. Allen⁸, A. M. Fjaeraa⁹, M. Streibel¹⁰, and N. R. P. Harris¹⁰

¹Empa, Swiss Federal Laboratories for Materials Testing and Research, Dübendorf, Switzerland

²Institute for Atmospheric and Climate Science, ETH Zurich, Zurich, Switzerland

³Royal Netherlands Meteorological Institute KNMI, De Bilt, The Netherlands

⁴Bureau of Meteorology Research Centre, Melbourne, Australia

⁵ICG-1, Forschungszentrum Jülich, Jülich, Germany

⁶Environmental Science, Lancaster University, UK

⁷DLR Institut für Physik der Atmosphäre, Oberpfaffenhofen, Germany

⁸Centre for Atmospheric Science, University of Manchester, Manchester, UK

⁹Atmosphere and Climate Change Department, NILU, Norway

¹⁰European Ozone Research Coordinating Unit, University of Cambridge, Cambridge, UK

Abstract. An aircraft measurement campaign involving the Russian high-altitude aircraft M55 Geophysica and the German DLR Falcon was conducted in Darwin, Australia in November and December 2005 as part of the European integrated project SCOUT-O3. The overall objectives of the campaign were to study the transport of trace gases through the tropical tropopause layer (TTL), mechanisms of dehydration close to the tropopause, and the role of deep convection in these processes. In this paper a detailed roadmap of the campaign is presented, including rationales for each flight, and an analysis of the local and large-scale meteorological context in which they were embedded. The campaign took place during the pre-monsoon season which is characterized by a pronounced diurnal evolution of deep convection including a mesoscale system over the Tiwi Islands north of Darwin known as "Hector". This allowed studying in detail the role of deep convection in structuring the tropical tropopause region, in situ sampling convective overshoots above storm anvils, and probing the structure of anvils and cirrus clouds by Lidar and a suite of in situ instruments onboard the two aircraft. The large-scale flow during the first half of the campaign was such that local flights, away from convection, sampled air masses downstream of the "cold trap" region over Indonesia. Abundant cirrus clouds enabled the study of active dehydration, in particular during two TTL survey flights. The campaign period also encompassed a Rossby wave breaking event transporting stratospheric air to the tropical middle troposphere and an equatorial Kelvin wave modulating tropopause temperatures and hence the conditions for dehydration.

▣ [Final Revised Paper](#) (PDF, 9067 KB) ▣ [Discussion Paper](#) (ACPD)

Copernicus Publications
The Innovative Open Access Publisher

Search ACP

Library Search

Author Search

News

- Sister Journals AMT & GMD
- Financial Support for Authors
- Journal Impact Factor
- Public Relations & Background Information

Recent Papers

01 | ACPD, 12 Mar 2009:
A new insight on tropospheric methane in the Tropics – first year from IASI hyperspectral infrared observations

02 | ACPD, 11 Mar 2009:
Comparison of analytical methods for HULIS measurements in atmospheric particles

03 | ACPD, 11 Mar 2009:
Vertical distribution of aerosols in Mexico City during MILAGRO-2006 campaign

Citation: Brunner, D., Siegmund, P., May, P. T., Chappel, L., Schiller, C., Müller, R., Peter, T., Fueglistaler, S., MacKenzie, A. R., Fix, A., Schlager, H., Allen, G., Fjaeraa, A. M., Streibel, M., and Harris, N. R. P.: The SCOUT-O3 Darwin Aircraft Campaign: rationale and meteorology, *Atmos. Chem. Phys.*, 9, 93-117, 2009. [Bibtex](#) [EndNote](#) [Reference Manager](#)