

Abstract: Simultaneous Airborne Wind and Water Vapor Lidar
Measurements during IPY-THORPEX

Andreas Doernbrack, Axel Amediek, Andreas Fix, Christoph Kiemle, Stephan Rahm,
Rudolf Simmet, Andreas Schäfler, Martin Wirth and Jon-Egill Kristjansson

DLR Oberpfaffenhofen
Institut für Physik der Atmosphäre
D - 82234 WESSLING
Germany

email: andreas.doernbrack@dlr.de

In the framework of the International Polar Year (IPY), the DLR performed
airborne observations between Greenland and Svalbard. One focus of the 3 weeks
field phase in February/March 2008 was to investigate the generation, structure
and development of Arctic storms.

This work was part of the IPY-THORPEX cluster and was co-sponsored by the
Research Council of Norway, the European Fleet for Airborne Research (EUFAR) and
the DLR. The observations were performed with the DLR research aircraft FALCON
which was based on Andøya (Vestnes, Norway) during IPY-THORPEX. The DLR
FALCON was equipped with a new generation of remote-sensing instruments: the
newly developed multi-wavelength Differential Absorption LIDAR (DIAL) WALES
which measured tropospheric aerosols and - for the very first time - water vapor
using four different wavelengths. Additionally, the 2-m-Doppler-LIDAR provided
simultaneous wind profiles below the aircraft.

In this presentation, an overview of the coverage and quality of the LIDAR data
is given. Operational analyses of the ECMWF's Integrated Forecast System are
used to place the data in the meteorological context. We present several ideas
how the LIDAR data can be utilized in the calculation of latent heat fluxes, in
the investigation of the vertical structure of polar lows and in data impact
studies.

Session: Regional Campaigns, IPY, YOTC