



Technical Data:

Empty weight: 1198 kg
 Maximum takeoff weight: 1923 kg
 incl. Fuel (199), Staff (3x80) and extended
 payload (199)

Ceiling height: 6000m
 Typ. operating height 3000 - 4000m
 Typ. Speed 50 - 60 m/s

Experimental Power: 28V / 80A
 230V / 1000W

Aircraft can fly in non icing conditions with
 IFR, CVFR and VFR

Under wing installations <5kg possible,
 cable and teflon tubes are installed
 Rack space of 1m available

Description of the facility:

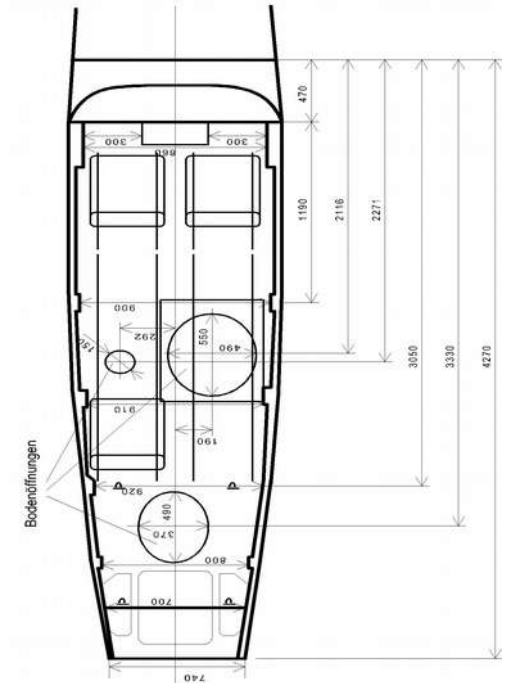
The Institute for Space Sciences of the Free University of Berlin (FUB) has experience in radiative transfer modeling (Fell & Fischer 2001), remote sensing of atmospheric and water properties (e.g. Rathke et al. 2000, 2002, Schüller et al. 2000, 2005) and the development of ground-, air- and spaceborne instrumentation. Major contributions have been performed for the definition and lay-out of MSG's SEVIRI and ENVISAT's MERIS satellite instruments. Among other contributions the institutes laboratory (LARSIA: laboratory for remote sensing instruments and applications) developed down- and upward looking spectrometers in the spectral range from 380 to 1650 nm, Fourier-spectrometer in the infrared for the Russian space station MIR (Furrer et al. 1994, Rathke et al, 2000), a multi-spectral polarimeter (Ruutz et al., 2001; Bösch 2006) as well as a dual aureole multi-spectral sun-photometers (Asseng et al., 2004; Zieger et al. 2007). Most of the instruments have been operated from the FUB research aircraft. An instrument AMSSP (Airborne Multi-Spectral Sunphoto- & Polarimeter) (Hollstein et al. 2009) and an Universal Radiation Measurement System (URMS) (Ruutz et al. 2009) is currently under development within the framework of a German priority program (PP 1294, "Atmosphären- und Erdsystemforschung mit dem Forschungsflugzeug HALO (High Altitude and Long Range Research Aircraft)").

The group participated at several national and international flight campaigns, such as ELAC (1990), EUCREX (1994), ACE II(1997), LACE (1998), Berlioz(1998), Coastlooc(1997-98), BBC I (2001), BBC II(2003), AgriSAR (2006), AERUV (2006), EUCAARI/Impact (2008), Vocals-Rex (2008).

The FUB is certified (LBA.21J.023) by the Luftfahrtbundesamt (LBA) to design changes to aircraft specifically designed and modified for research or scientific purposes and operates two research aircraft, a single engine CESSNA 207T, a motorglider ASK16 since 1989 and together with the Leibniz Institute IGB two UAV-Helicopter.

Staff: The Institute is headed by a full professor with 3 permanent research assistants, a number of post-docs, Phd-Students and Master and Bachelor students.

Experimental setup



Typical installations:



CASI and IR-Camera
 on stabilized platform



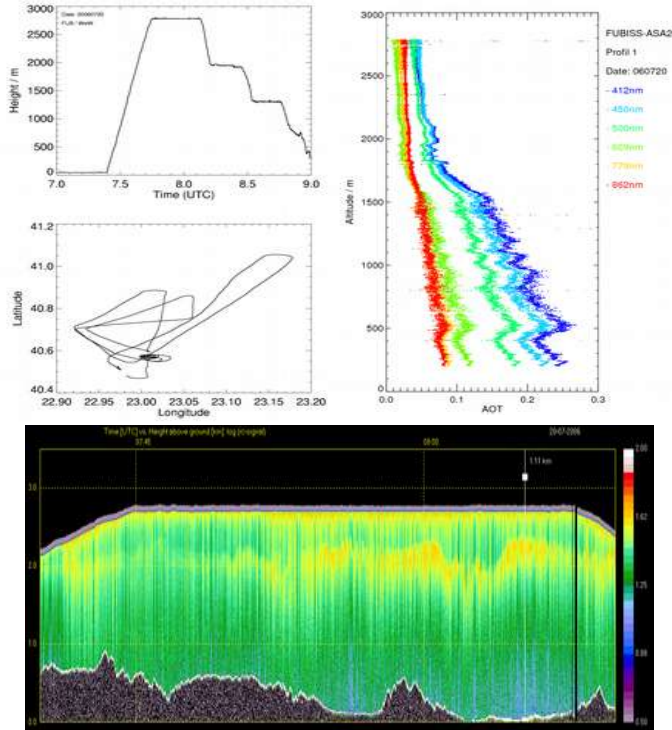
POLIS (UNI München)
 Lidar installation



HySpex (GFZ Potsdam), IR-
 Camera (IGB/FUB), RGB-
 Camera (DLR)

Applications

Aerosol monitoring



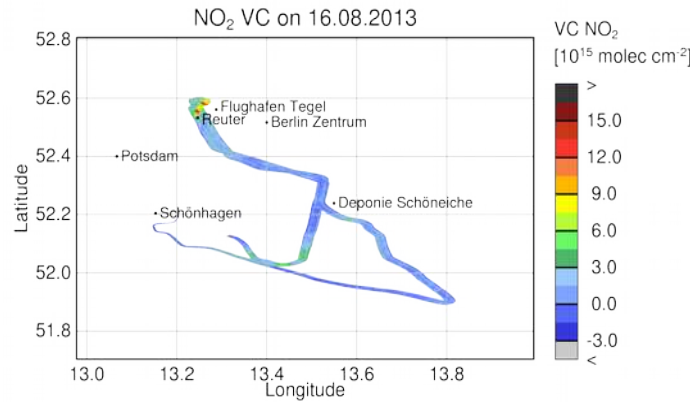
POLIS Lidar and FUBISS-ASA2 measurements during EUFAR Scout-O3/AERUV campaign 20. July 2006 Thessaloniki

Berlin at night



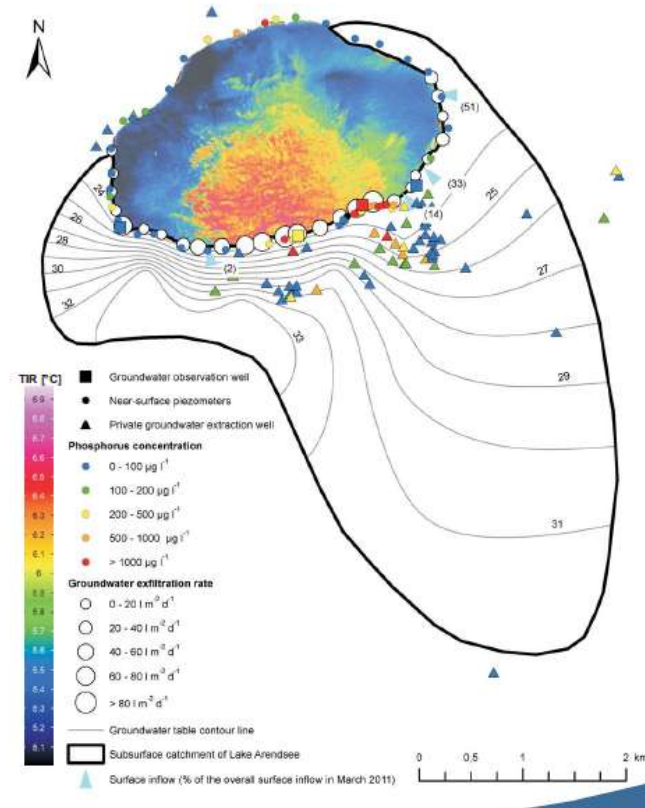
Mosaic of >3000 images with <1m resolution
Characterization of light pollution
bmbf project: Verlust der Nacht (IGB / FUB)

Imaging DOAS (IUP, Uni Bremen) Instrument testing



NO₂ vertical column trace gas measurements in Berlin (e.g. power plant Reuter in Berlin)

Lacustrine groundwater discharge (IGB/FUB)



Combination of airborne and ground based studies

References:

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Hagen Asseng, Thomas Ruhtz and Jürgen Fischer „Sun and aureole spectrometer for airborne measurements to derive aerosol optical properties“ Applied Optics, No. 43, Page 2146 - 2155, (2004)

M. Schröder, R. Bennartz, J. Fischer, and T. Ruhtz „Airborne Remote Sensing of cloud radiative smoothing during the Baltex Bridge Cloud Campaign“ Atmospheric Research, Volume 72, Issues 1-4, Pages 107-127, (2004)

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