Airborne and Lidar Validation of ADM Aeolus at ALOMAR (ALIVO ALOMAR)
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ADM AEOLUS CAL/VAL:

- wind measurements (airborne)
- aerosol profiles: backscatter & extinction (groundbased)
- aerosol column: AOD, Ångstrøm index (groundbased)
ADM AEOLUS CAL/VAL:

- two other proposal use Andøya
- Norwegian Met Office
- IAP Kühlungsborne
Airborne and Lidar Validation of ADM Aeolus at ALOMAR (ALIVO ALOMAR)

Michael Gausa, Sandra Blindheim
Andøya Space Center, Norway
Carlos Toledano
University of Valladolid, Spain
Jens Bange
University of Tübingen

michael@andoyaspace.no
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michael@andoyaspace.no
about 140 km NW of Kiruna
**Condensed List of ALOMAR Instruments**

**Active remote sensing:**

**5 Lidars**
- Rayleigh/Mie/Raman lidar (1064, 532, 355 nm; 607, 530, 529, 387 nm)
- Ozone lidar (308, 353 nm)
- Na resonance lidar (589 nm)
- Fe Resonance lidar (nm)
- Tropospheric lidar (1064, 532p/s, 355, 387 nm)

**6 Radars**
- 53 MHz coherent scatter radar (ALWIN radar)
- 32.5 MHz meteor radar (Sky-Met)
- 3 MHz partial reflection radar (SAURA radar)
- 2 MHz partial reflection radar

**Passive remote sensing:**
- H2O microwave radiometer (22 GHz / 1 cm)
- IR temperature mapper (1.5 - 1.65 μm)
- OH scanning radiometer (1.2 - 1.6 μm)
Activities within this Proposal

**Airborne Platform**
- wind measurements
- in parallel PTU
  - other (not relevant for ADM)
  - aerosol measurements
    - black carbon
    - 3 colour scattering

**Tropospheric Lidar**
- aerosol backscatter
- aerosol extinction
- aerosol depolarisation

**Sun/Moon Photometer**
- Aerosol Optical Depth
- Ångstrøm Index
- Water Vapour
- Size Distribution
- Microphysical Para
- Radiative Parameters
Platforms I
Cruiser II Technical Data:

- Wing Span: ca. 5.3m
- MTOW: ca. 65-70 kg
- Payload 25kg, fuel included (ca. 15l)
- Fuel consumption (cruising) ca. 0.9l/h
- Motor: 110cc, 11 kW
- Cruise speed 25-30 m/s
- Stall speed ca 18-20 m/s
- Max speed 40 m/s
- Service ceiling ca. 3000m
- Payload section: 100cm long, 30-40cm diameter
Airborne Wind Measurements
Airborne Wind Measurements
Airborne Wind Measurements
Airborne Wind Measurements
Airborne Wind Measurements

- Ascent, 0708 UTC
- Descent, 0738 UTC
- Hor. averages

Altitude, MSL / m

Wind speed / m s⁻¹

ANDØYA SPAC
Alternative Platform

mainly for onshore measurements:
Stemme S10VTX (Uni. Appl. Sci. Aachen)
ALOMAR Tropospheric Lidar

3+1+Depolarization Lidar

- 1064nm, 532

- based on experiences of the EARLINET and the mesosphere lidars at ALOMAR

- Data products: Backscatter, Extinction, Depolarisation from EARLINET SCC
CIMEL Sun/Moon Photometer

➢ 9 interference filters, 2 detectors


➢ Sky radiance: 440, 500, 670, 870, 1020, 1640 nm. (almucantar and principal plane)

➢ Field of view (sun&sky): 1°

➢ AOD accuracy: 0.01
Summary

ADM/Aeolus wind and aerosol validation with three (four) different platforms

Airborne -> Wind
Lidar -> Aerosol
Sun/Moon Photometer -> Aerosol