



ESA-JAXA Pre-Launch EarthCARE Science and Validation Workshop

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Validation of ATLID lidar data by means of ground-based lidar
measurements in northern Sweden

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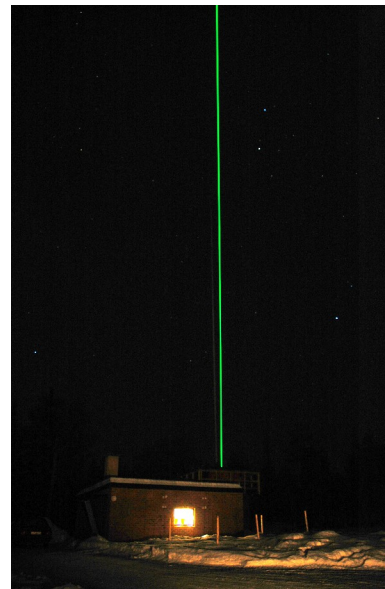
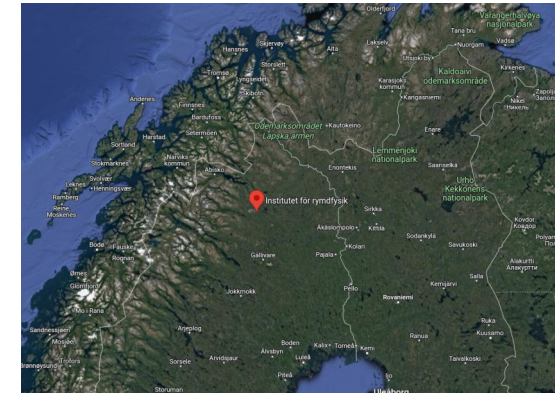
² Luleå University of Technology (LTU)



- Location: IRF, Kiruna, Sweden (67.83°N, 20.41°E)
(additional lidar at Esrange Space Center, 30km ENE for comparative observations)

Tool: backscatter lidar

<u>Specs:</u>	
Wavelength:	• 532nm // and ⊥
Pulse energy:	550mJ 600mJ
Pulse rep. rate:	30Hz 20Hz
Pulse length:	9ns
Beam divergence:	0.1mrad
Diam. of telescope primary mirror:	0.3m
Measurement range:	5 – 50km
Daytime capability:	Up to 15km
Height resolution:	30m
Time resolution:	133s 200s



IRF



Esrange



ATLID Validation in Northern Sweden



Validation targets:

- Cirrus clouds
- Polar stratospheric clouds
- Aerosols?
- Data products A-EBD, A-CTH

Measurements:

During whole validation period, whenever conditions allow for it and collocation criteria are fulfilled

Validation:

Cirrus: - Statistical analysis of measurements

- Comparison of individual cases for selected cases (e.g. mountain lee waves)
- balloonborne in-situ measurements of microphysical particle properties during overpass

PSC: Comparison of individual profiles

Results will be converted from 532nm to 355nm.

Current status:

Working on preparatory tasks

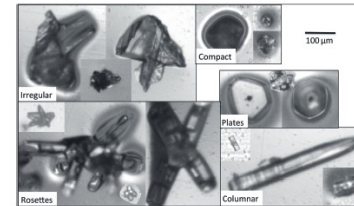
In progress:

- Updating of lidar & software (PV)
- Modification/development of inversion algorithm incl. wavelength conversion 532nm → 355nm (GG)
- Determination of typical microphysical & optical properties of particles in arctic cirrus (JS, TK, PV)

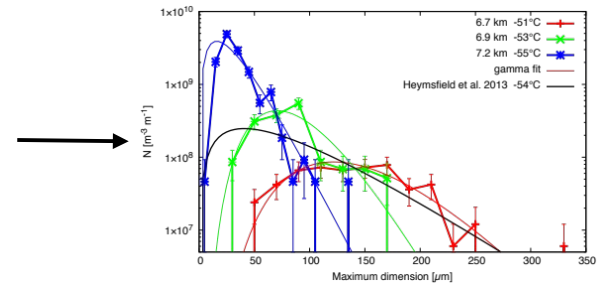
Still to be addressed:

- Estimation of influence of MS on our lidar measurements
- Thorough testing of inversion algorithm

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Kuhn et al., 2021



Kuhn et al., 2021

