Validation of ATLID lidar data with ground-based lidar in Northern Sweden

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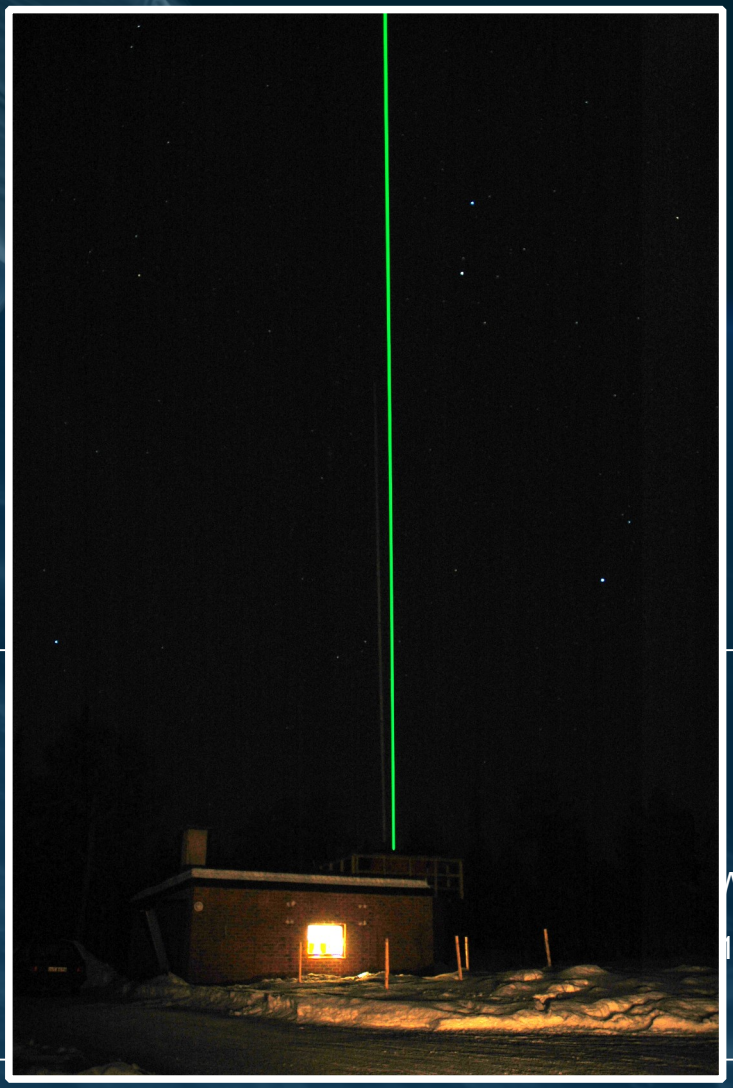
2nd ESA EarthCARE Validation Workshop

25-28 May 2021 (online)

- Location: IRF, Kiruna, Sweden (67.83°N, 20.41°E)
  ('backup' lidar at Esrange Space Center, 30km ENE)

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



Workshop

(online)

INSTITUTET FÖR RYMDFYSIK
Swedish Institute of Space Physics

LULEÅ UNIVERSITY OF TECHNOLOGY

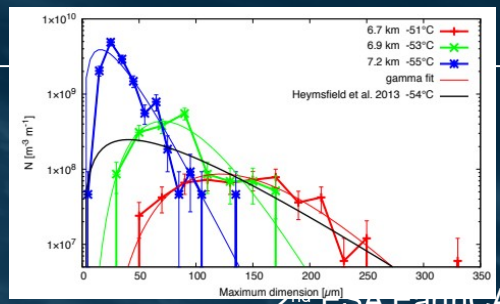
Preparations 1.step:

In-situ measurements of cirrus cloud particles with help of a balloon-borne particle imager

Interpretation of data, classification

Create a database of microphysical properties based on temperature, origin, etc.

Kuhn et al. 2021



Preparation 2. step:

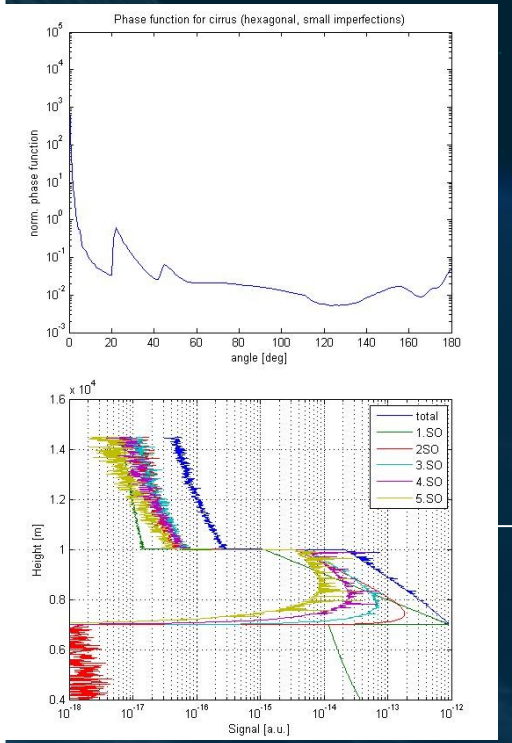
Calculation of optical properties of ice particles based on particle shape, size:

Extinction cross section, lidar ratio, depolarisation ratio

Simulation of lidar signals:

Estimates of multiple scattering contributions

Goal: set of typical parameters for polar cirrus clouds



Validation targets:
- Cirrus clouds
- Polar stratospheric clouds
- A-EBD, A-CTH

Measurements:
whenever conditions allow for it and collocation criteria are fulfilled

Statistical analysis of measurements

Additionally:
test how relaxation of collocation criteria affects validation results

Applied for funding from SNSA, decision expected end of 2021