



# ESA-JAXA Pre-Launch EarthCARE Science and Validation Workshop

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## EVID: Validate Cloud Profiling Radar on EarthCARE against Aircraft Observations of Cirriform Cloud

*Author : Vaughan Phillips*

*Affiliation: Department of Physical Geography and Ecosystem Science, Lund University, Sweden*

Radar reflectivity



Retrieve PSDs and mean size of hydrometeors

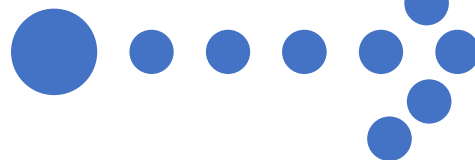
Lidar



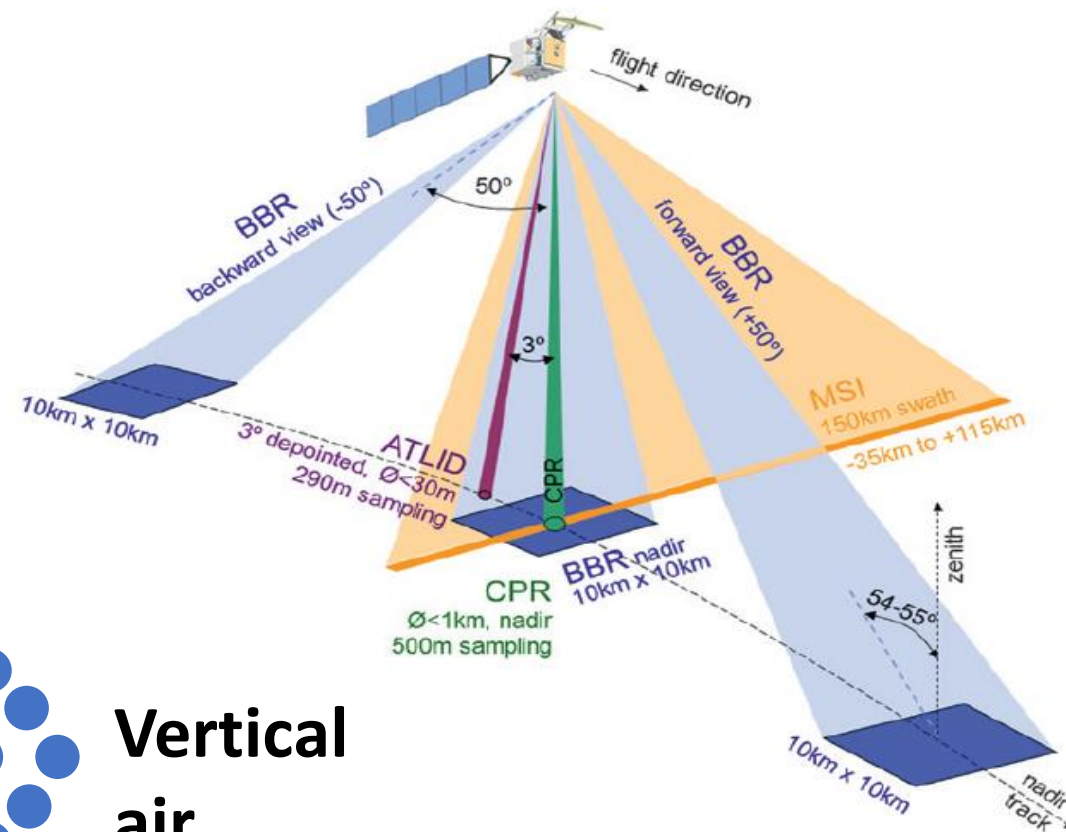
Doppler radar (94 GHz)



Vertical motion of hydrometeors (w.r.t. **air** and **Earth**)



Vertical air velocity



# PROPOSED WORK: METHOD

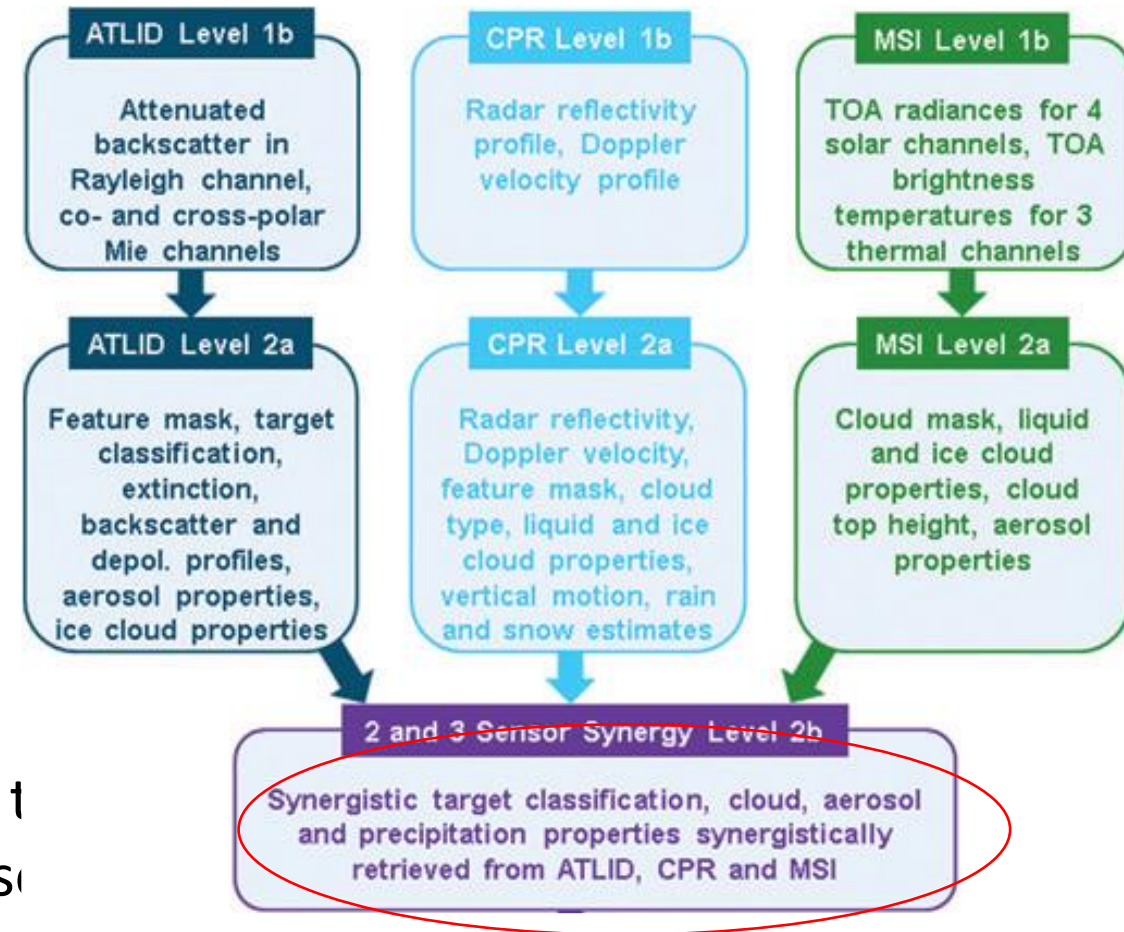


Compare satellite measurements of cloud-related properties with aircraft data for layer-clouds:

- vertical air velocity
- reflectivity-weighted fall-speed
- cloud-ice and snow contents
- mean sizes of crystals and snow
- corresponding particle size distributions

Assumptions causing biases will be examined

- E.g. precipitation above freezing level assumed to be ice, but really depends on ascent/solid aerosol



Illingworth et al. (2015)

# PROPOSED WORK: SUMMARY



EarthCARE satellite launch date: May 2024

Problem: aircraft field campaigns are only planned 1 or 2 years in advance, and Swedish space agency (SNSA) may fund projects in late 2024

Solution: After launch

- grant application to SNSA
- seek coincident aircraft campaigns

