

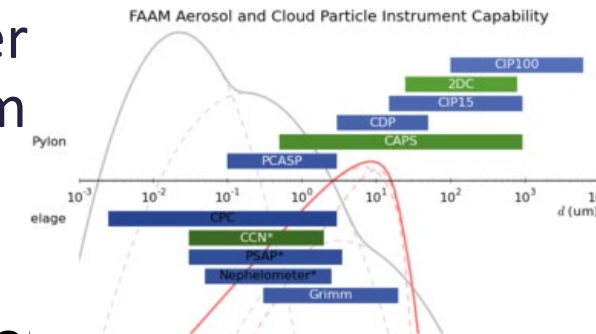
The first comparisons between level-2 EarthCARE products and in-situ measurements during the VERIFY campaign over the UK

*K. Mroz¹, R. Song², C. Westbrook³, T. Stein³, **FAAM team**
U.of Leicester, U.of Oxford, U. of Reading*

The FAAM Airborne Laboratory



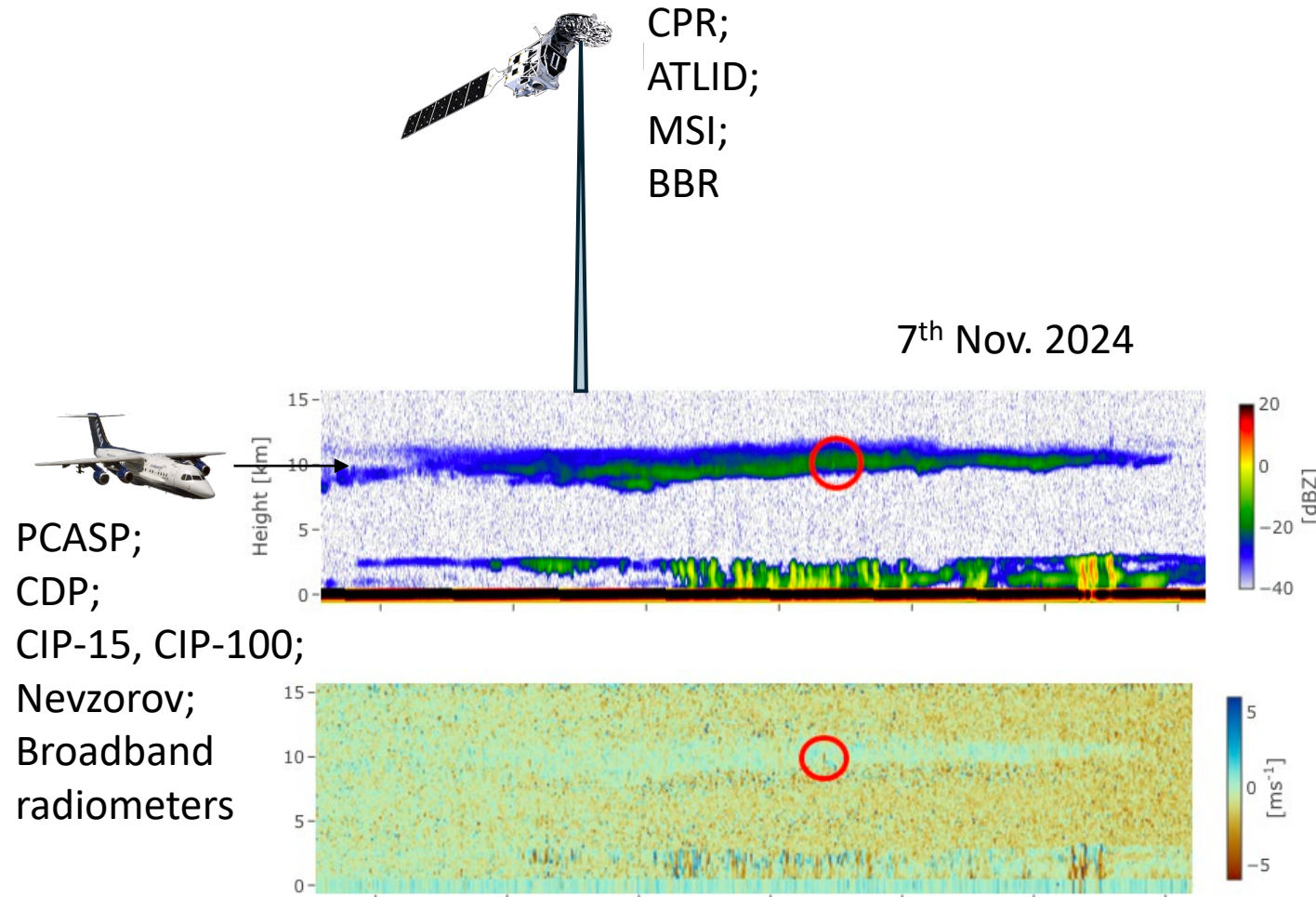
- Based at Cranfield Airport at Cranfield University
- BAe-146-301 large research aircraft
- Altitude: from 30m over water (150m over land) to 11km
- The aircraft can carry up to 4 tones of scientific equipment
- **Cloud physics instrumentation** : droplet counter imaging probes covering sizes from 3 μ m to 6.2m bulk ice and water content (Nevzorov & TWC probe)
- Aerosol, Meteorology, Chemistry instrumentation



Campaign Objective



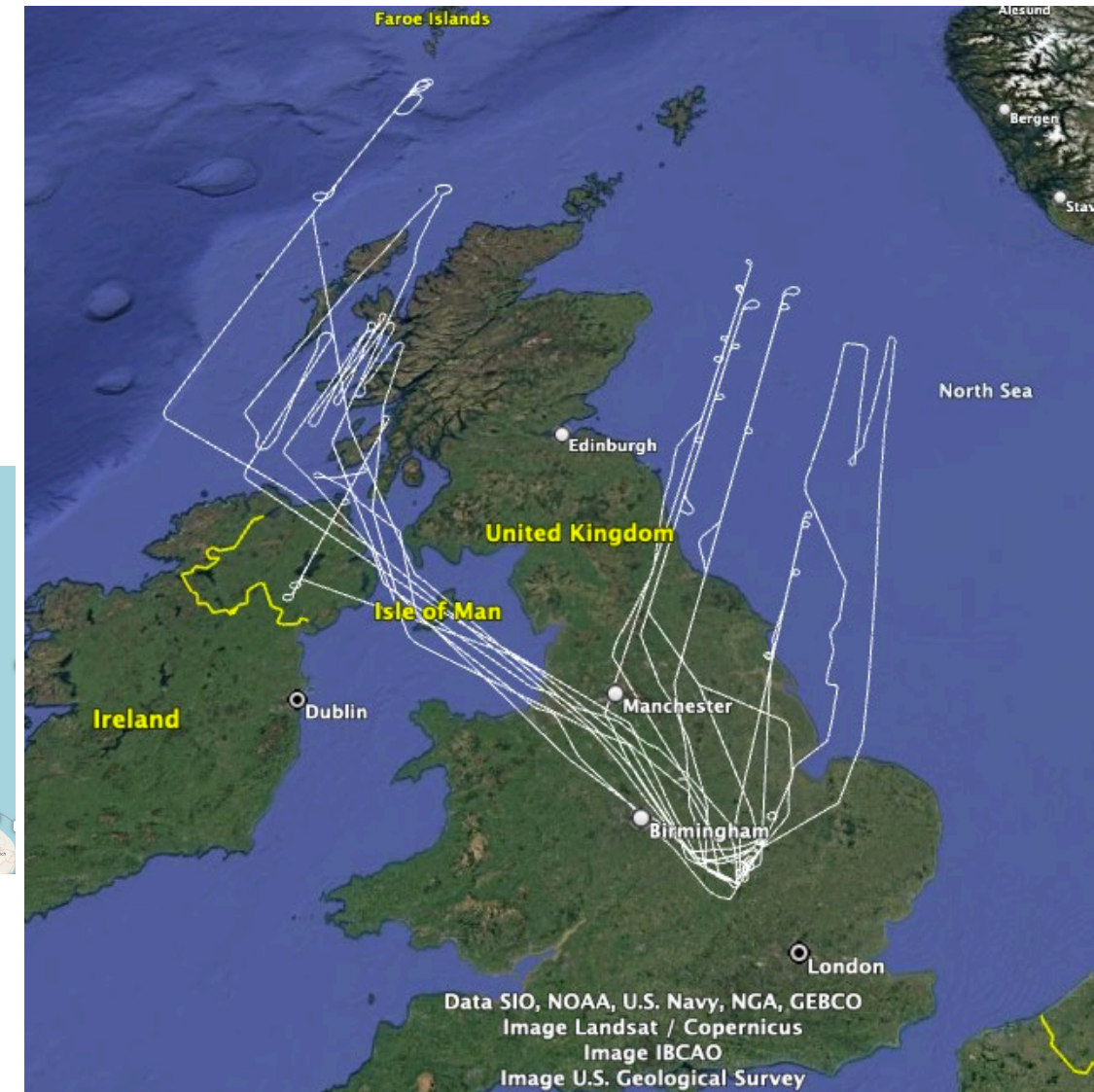
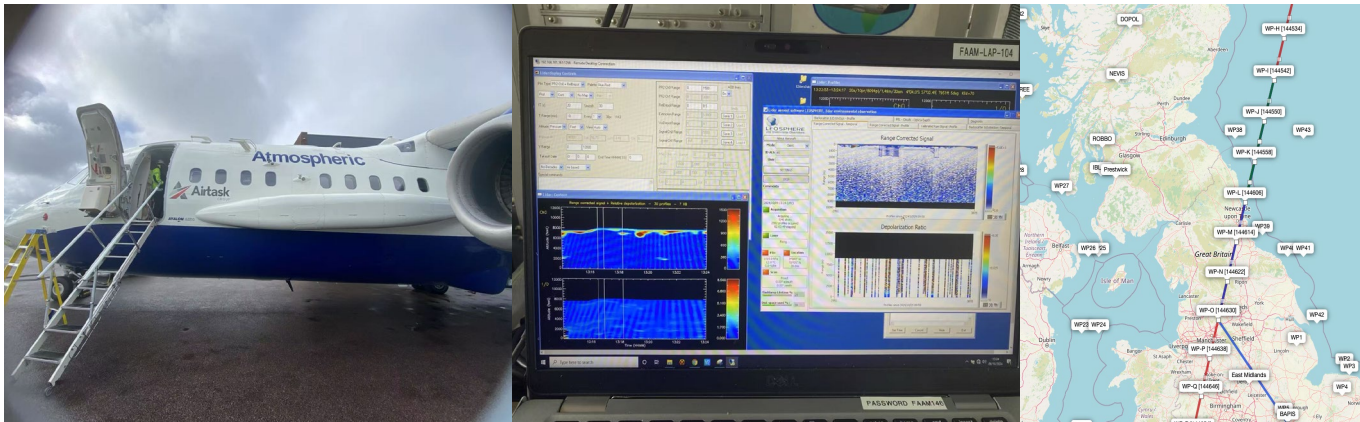
- Collect aircraft measurements of clouds and aerosols
- Within 10 minutes of the EarthCARE track
- at least 120 km long
- prioritise runs beneath EarthCARE
- Sample wide range of meteorological conditions (not covered by GEM simulations)
- 34 h of flights



Performed Sorties



- 9 flights performed (C393-C402) + 2 more flights in June
- <https://data.ceda.ac.uk/badc/faam/data/2025>
- <https://data.ceda.ac.uk/badc/faam/data/2024>

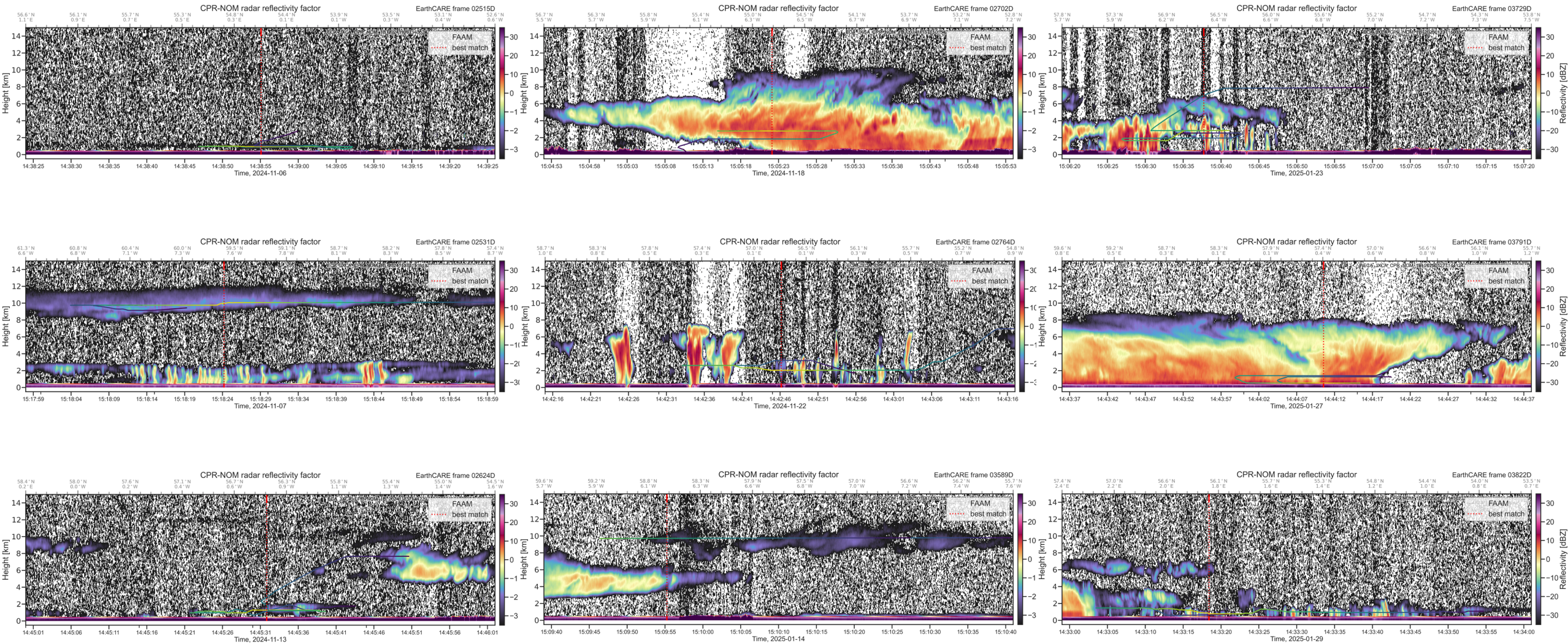


Performed Sorties

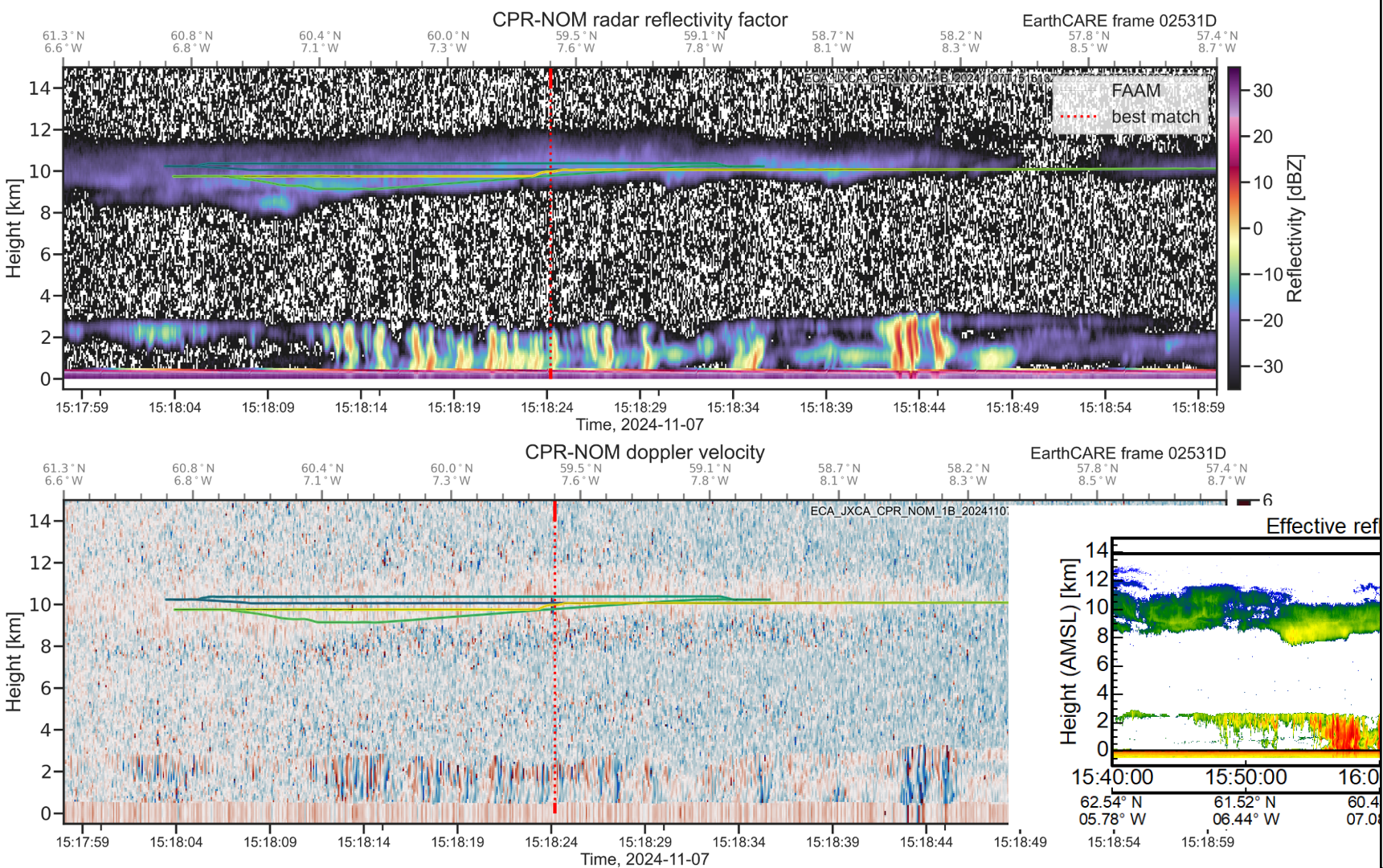


BASELINE: CA, reflectivity elevated by 1.6 dB (to match CB)

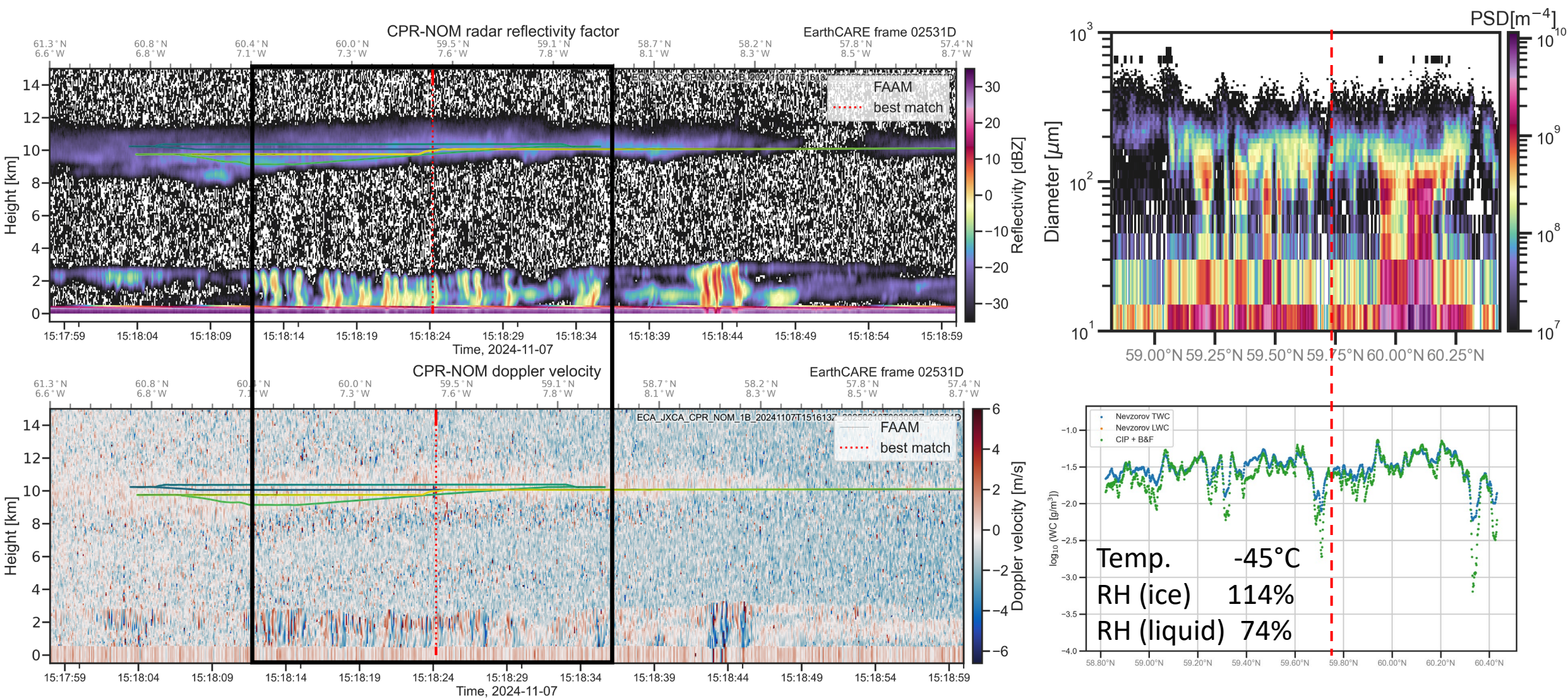
Credit: ectools of S. Mason (ECMWF)



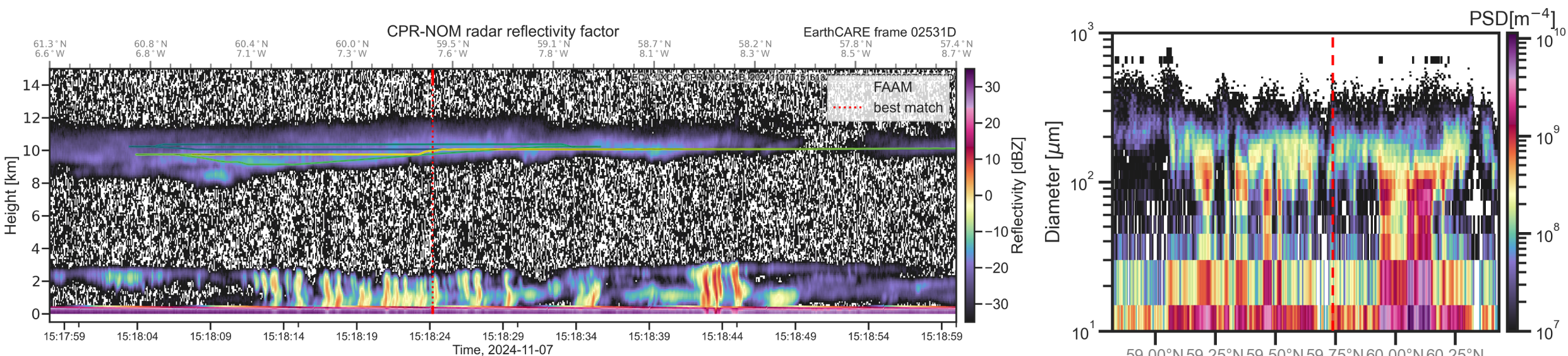
Flight C394 (7.11.2024)



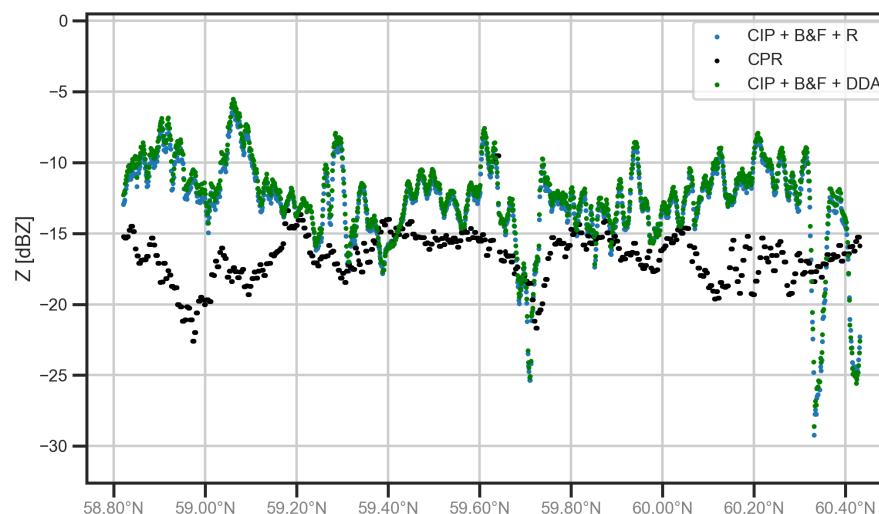
Flight C394 (7.11.2024)



Flight C394 (7.11.2024)

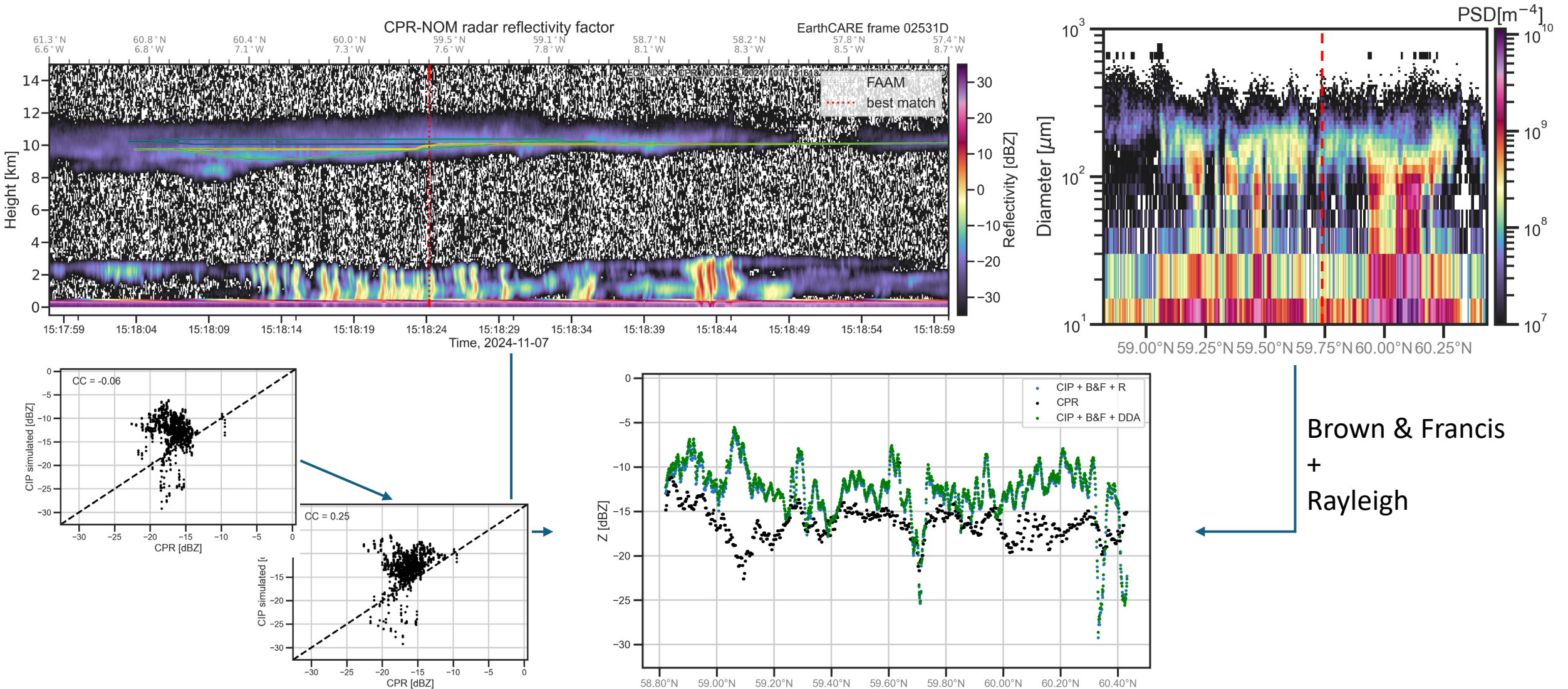


- Particles smaller than 0.1 of the wavelength
- B&F mass-size relation provides a good match with the Nevzorov probe but **not** with the CPR reflectivity

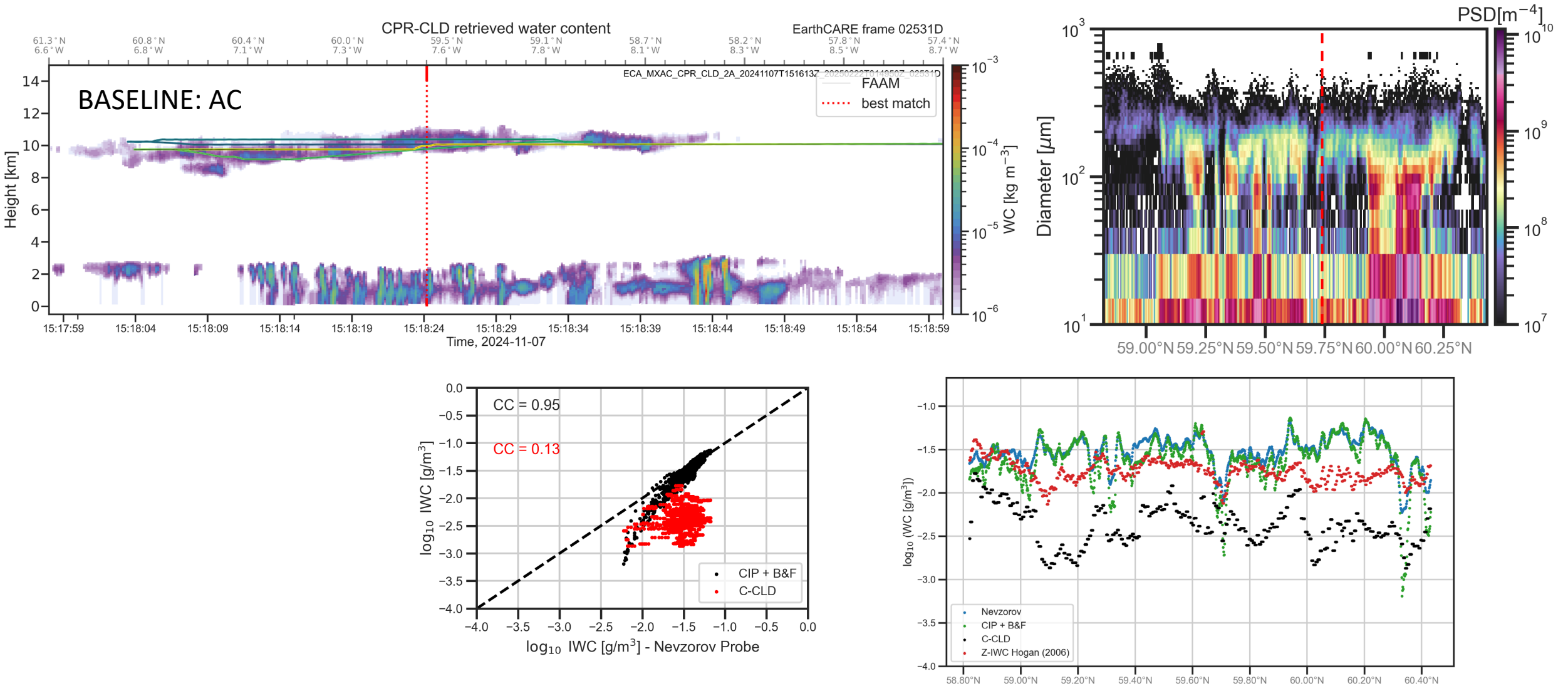


Brown & Francis
+
Rayleigh

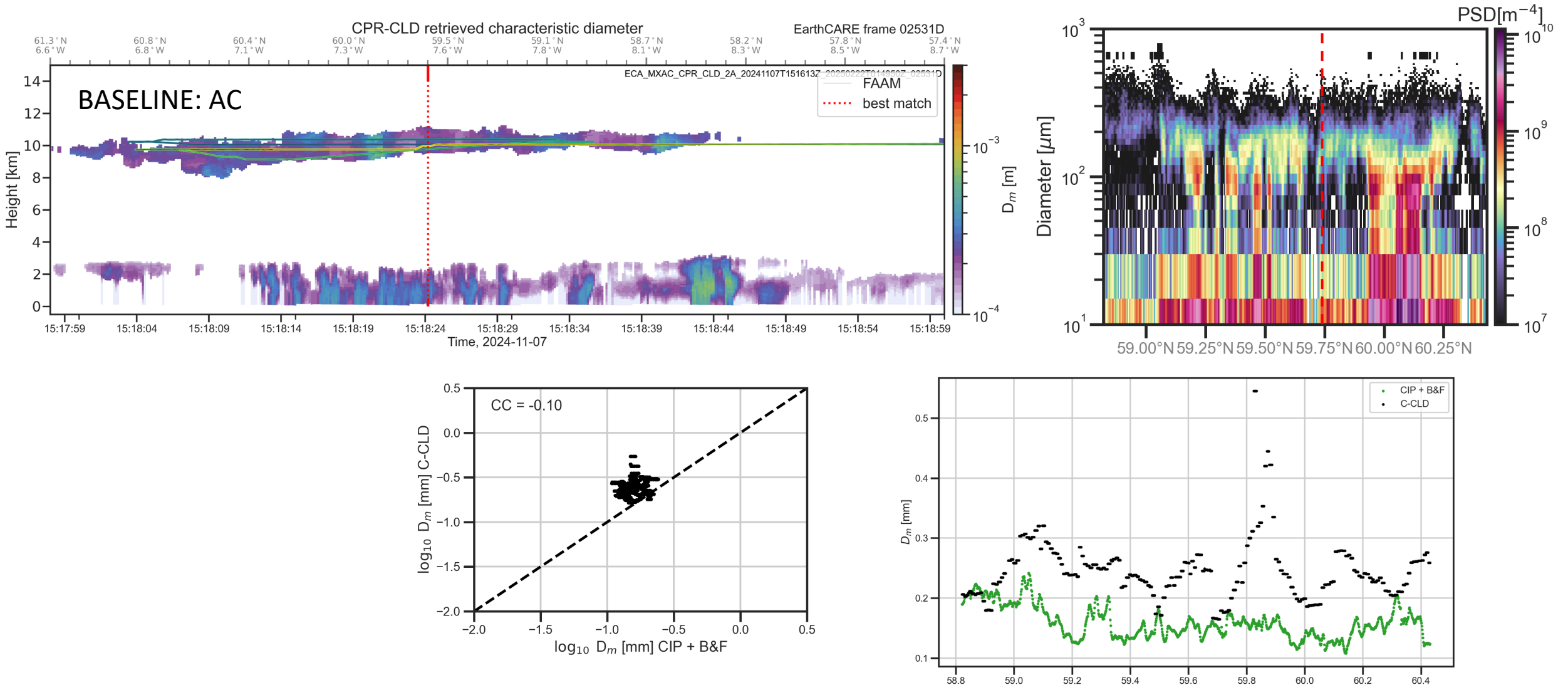
Flight C394 (7.11.2024)

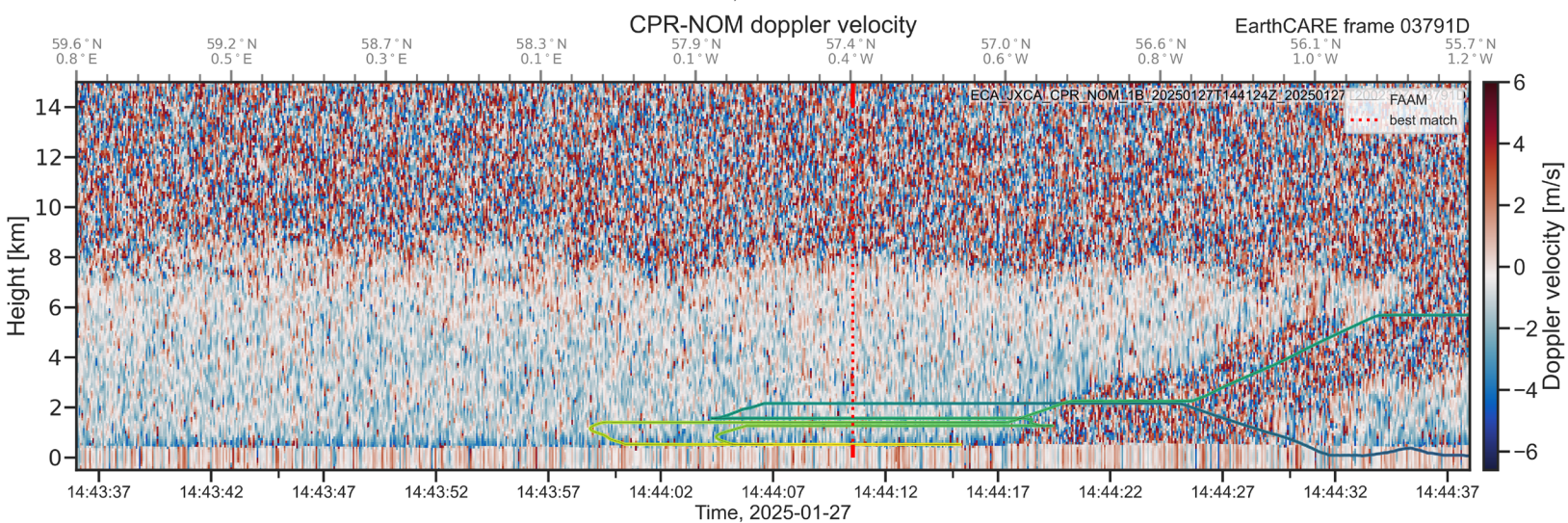
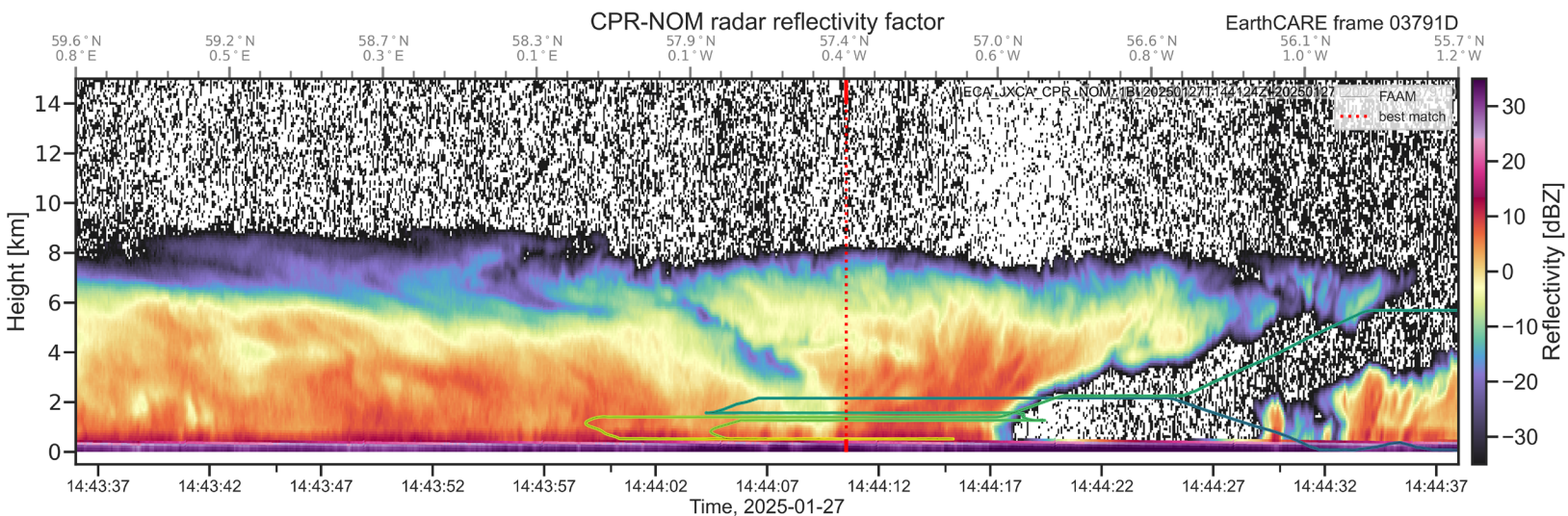


Flight C394 (7.11.2024)

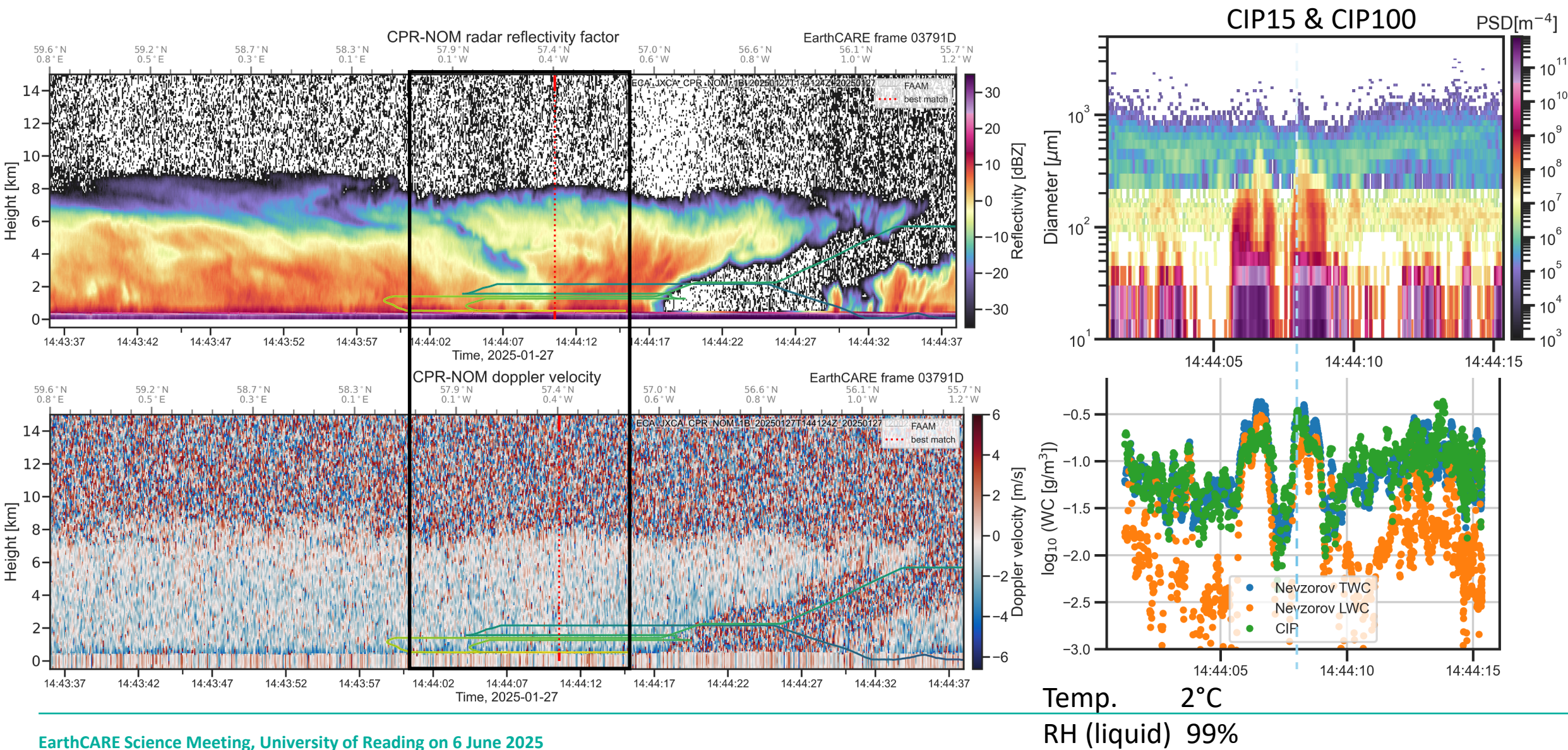


Flight C394 (7.11.2024)

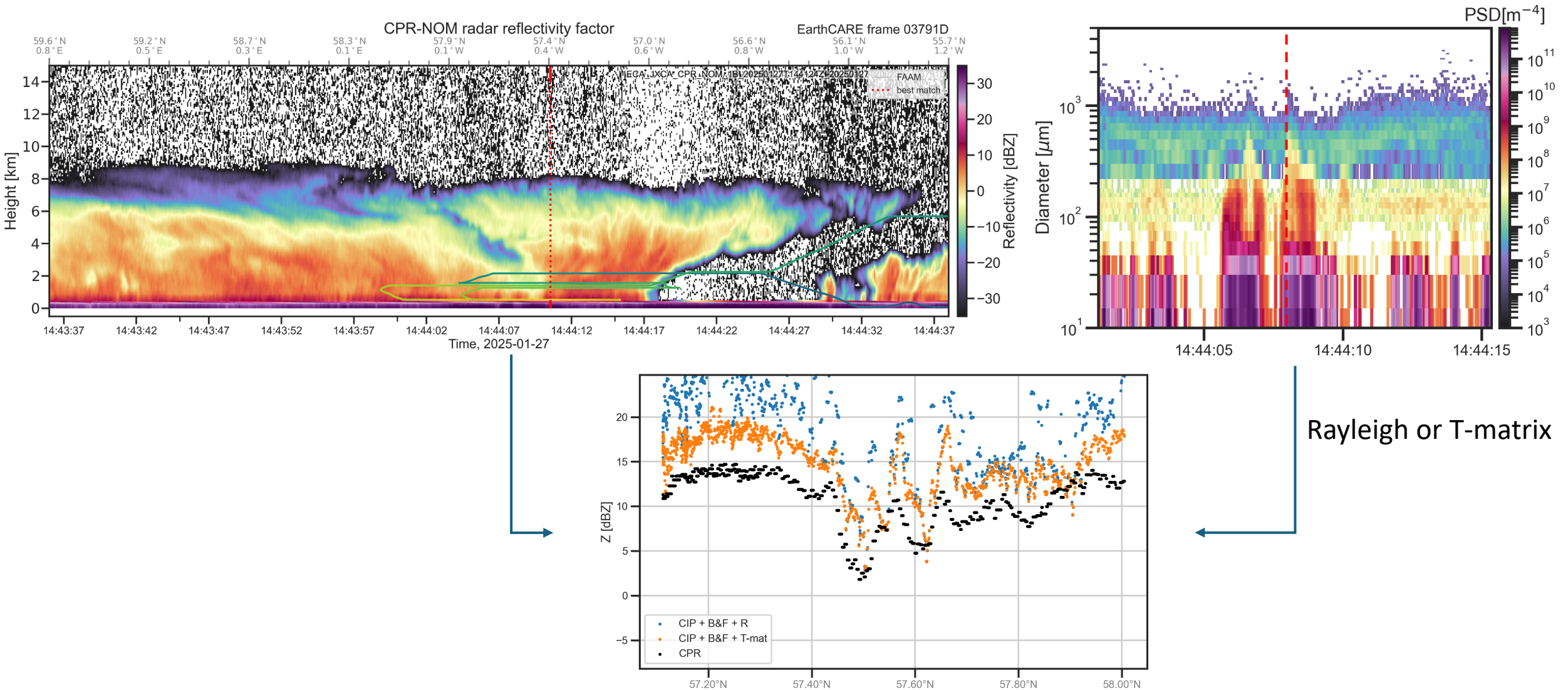




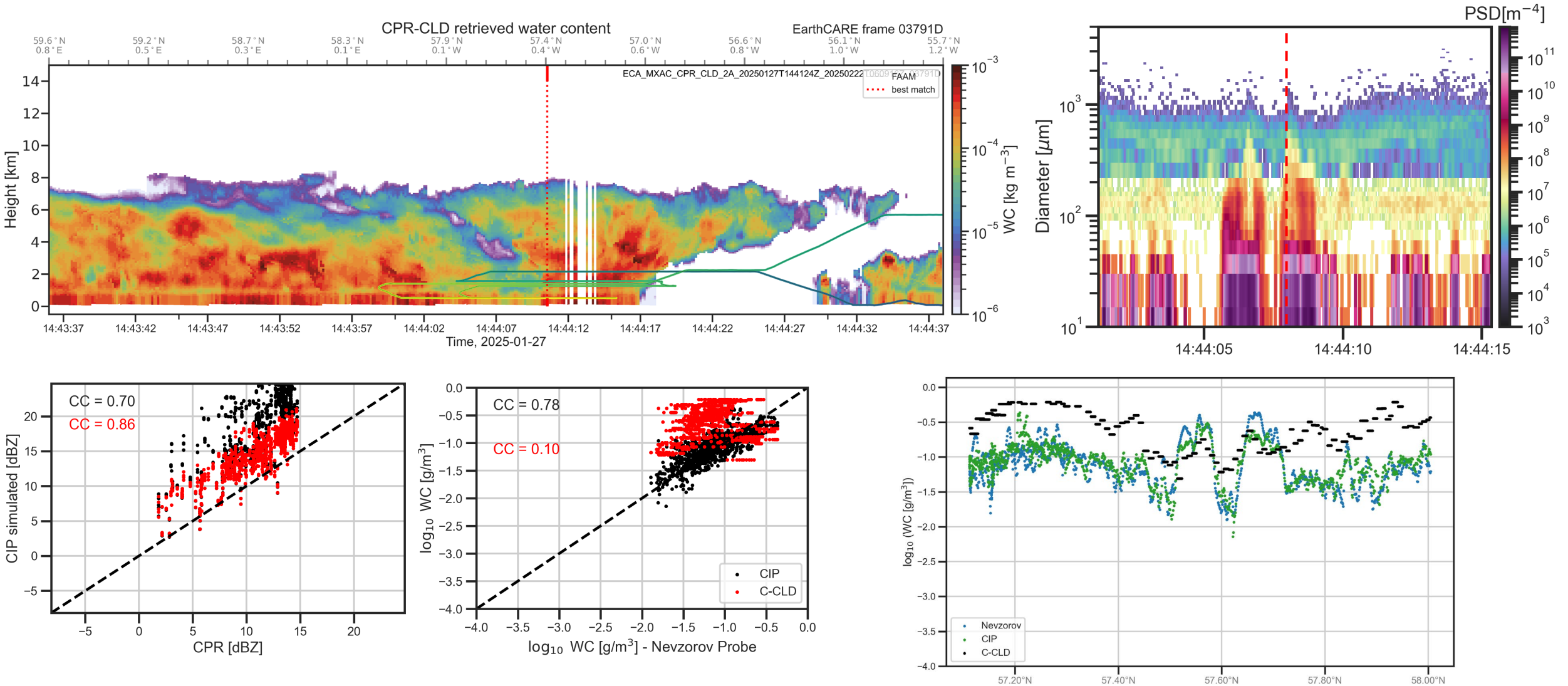
Flight C401 (27.1.2025)



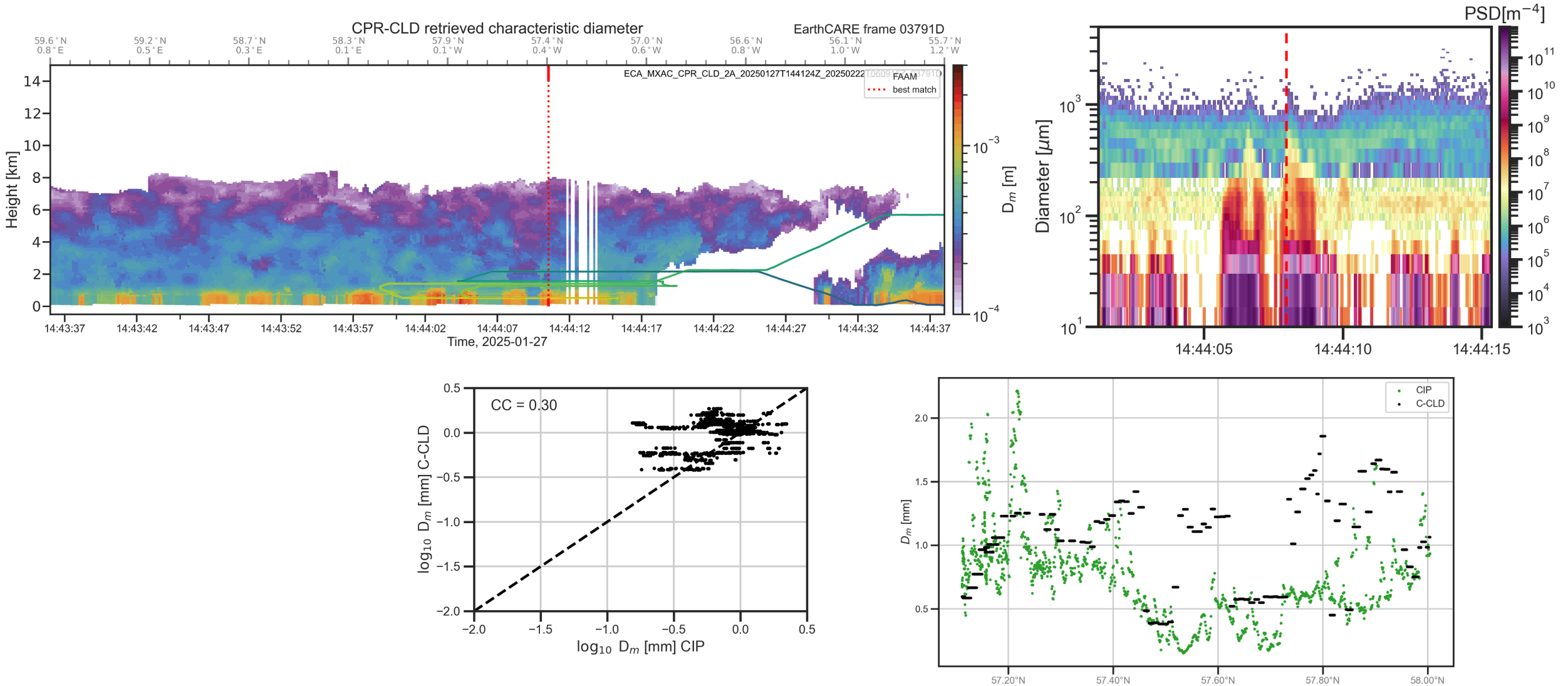
Flight C401 (27.1.2025)



Flight C401 (27.1.2025)



Flight C401 (27.1.2025)





Summary:

- 9 flight performed
- Variable cloud regimes
- Close match-up
- Comparison results are still preliminary
- More comparisons are needed with other instrument/products
- Sedimentation velocity estimates need to be refined

