COMPEX-EC Flight RF05 – Polar 5 – 2025/04/11

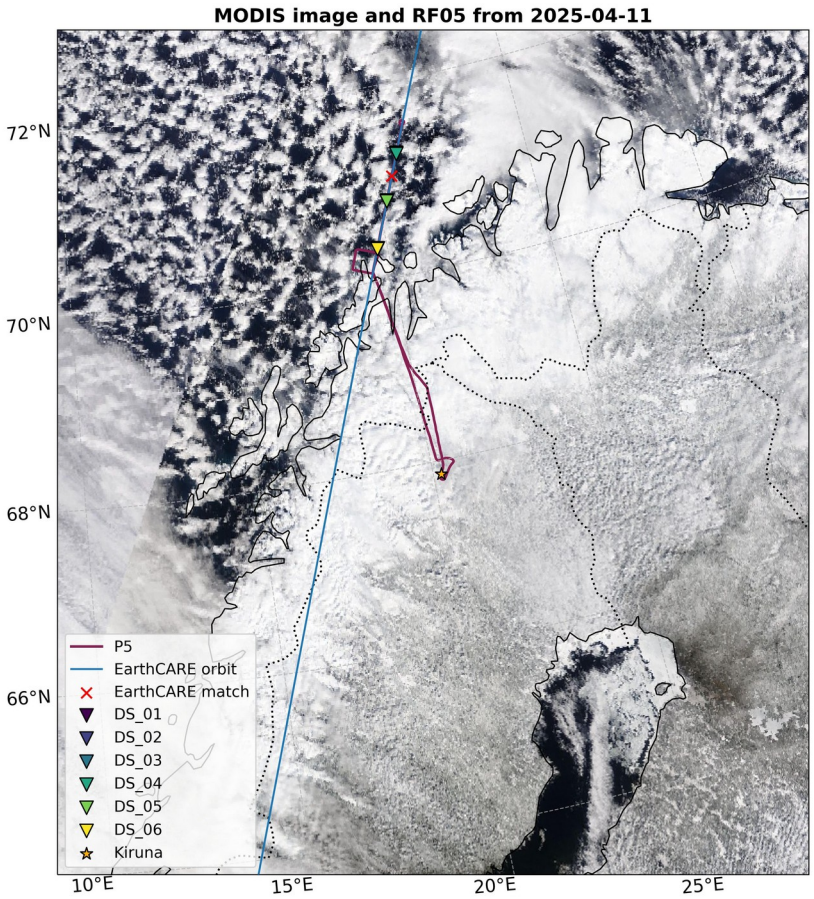
Pilot	**Kyle McLenaghan**
1st Officer	**Bailey Pegels**

Mission PI	**Mario Mech**
Basis Data	**Eduard Gebhard**
SMART/ Eagle/Hawk	**Joshua Müller**
MiRAC-A / HATPRO	**Lars van Gelder**
AMALi / Dropsondes	**Lena Bruder**

Take off	**12:04 UTC**
Touch down	**15:28 UTC**

Flight times:

Objectives: EarthCARE underflight back and forth

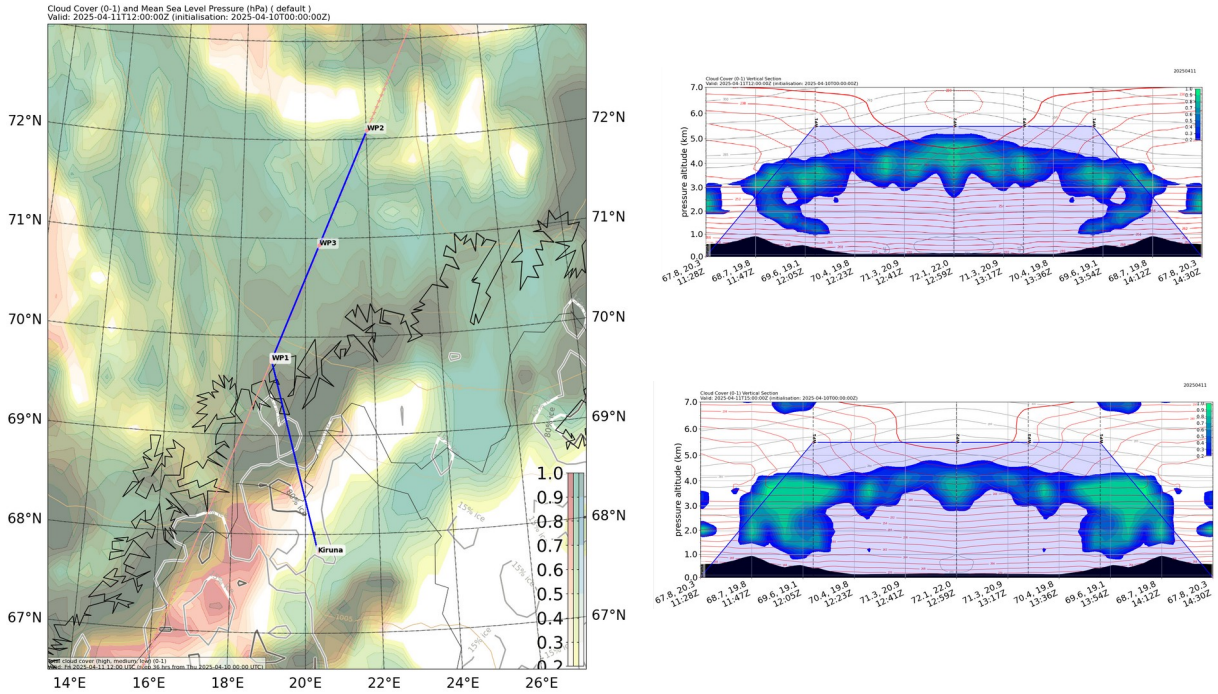


Flight and satellite track and dropsonde locations over MODIS RGB composite satellite image for RF05 on 11.4.2025.

Weather situation as observed during the flight (compare to forecast):

The weather situation for RF05 was similar to that of RF01. On the previous day, a weak low-pressure system moved from west to east, bringing in cold maritime air masses over the northern Norwegian Sea and Scandinavia. The associated snowfall area provided a few centimeters of fresh snow. On the day itself, temperatures of around -15 °C at 850 hPa prevailed in the area observed with a north-westerly flow. As predicted by the model, medium-high clouds with cloud top heights of up to just under 5 km were predominant, which is why flights were flown at approx. 5 km.

Overview:



Forecast for the flight time issued by ECMWF on 10.4.2025 00UTC. Left: total cloud cover of low-, mid-, and high-level clouds for 11.4.2025 15 UTC. Right: cross section at 12UTC (top) and 15UTC (bottom).

The idea was to study the temporal development of the clouds along the EarthCARE track. Therefore, we follow the predicted track against satellite orbit direction and after a turn with the satellite orbit direction. During both legs we launched sondes at exactly the same locations. Due to restictions by the Norwegian Authorities, the active remote sensing instrumentation will be switched on once we left the coast. Radiation square was not planned, but has been included.

Communication, timing, and all other operation worked quite well. Releasing dropsondes over the ocean was no problem.

Instrument Status:

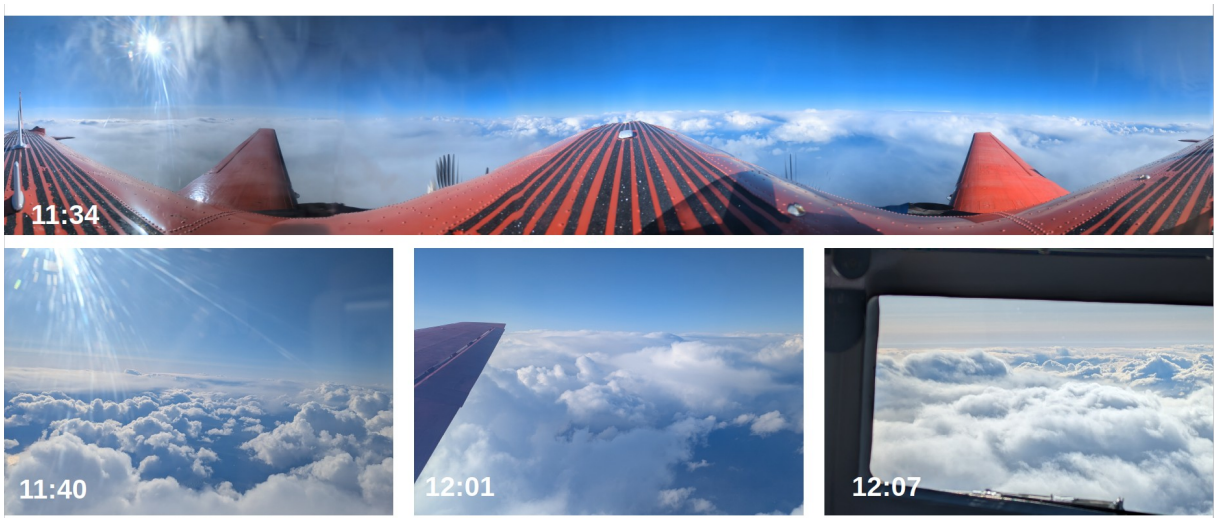
Polar 5	
Basis data acquisition	
MiRAC-A	
HATPRO	
AMALi	
SMART	
Eagle/Hawk	
Dropsondes	6/6

Instrument status as reported after the flight for all instruments on Polar 5.

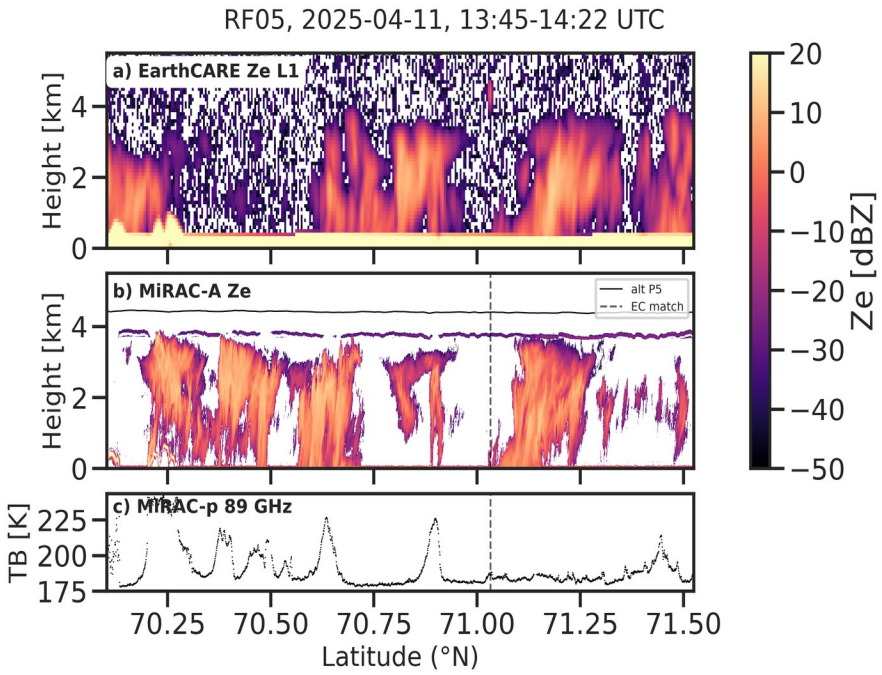
Comments: none

Detailed flight logs (all times UTC):

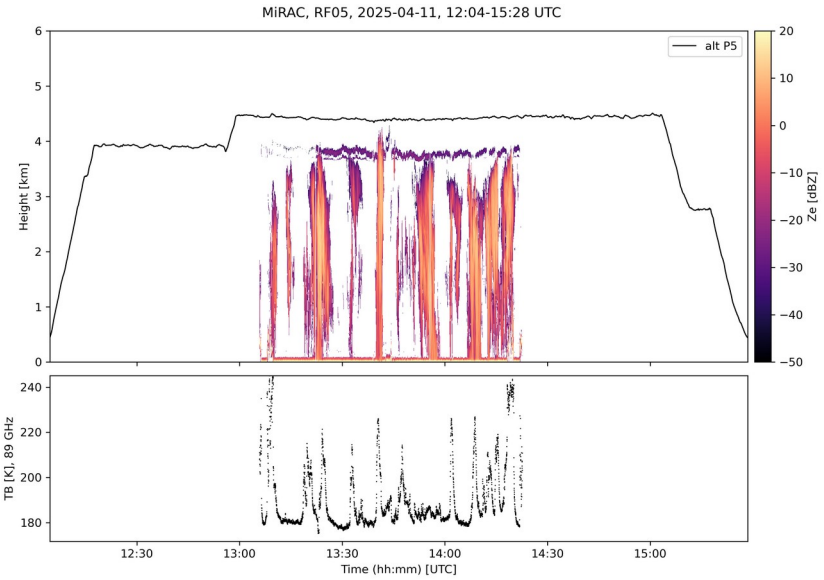
12:04 Take off
12:08 5000ft cloud bottom
12:13 10100ft cloud top
12:19 13000ft survey altitude
12:40 Border crossing
12:46 Cloud just above us
12:54 AMALi on
13:05 WP1
13:10 DS1
13:22 DS2
13:35 DS3
13:42 WP2 -> procedure turn
13:45 WP2
13:52 DS4
14:04 DS5
14:16 DS6
14:22 Radar and AMALi off
14:22 WP1
14:22 Radiation square
14:38 Radiation square finished
14:42 WP1
15:28 Landing



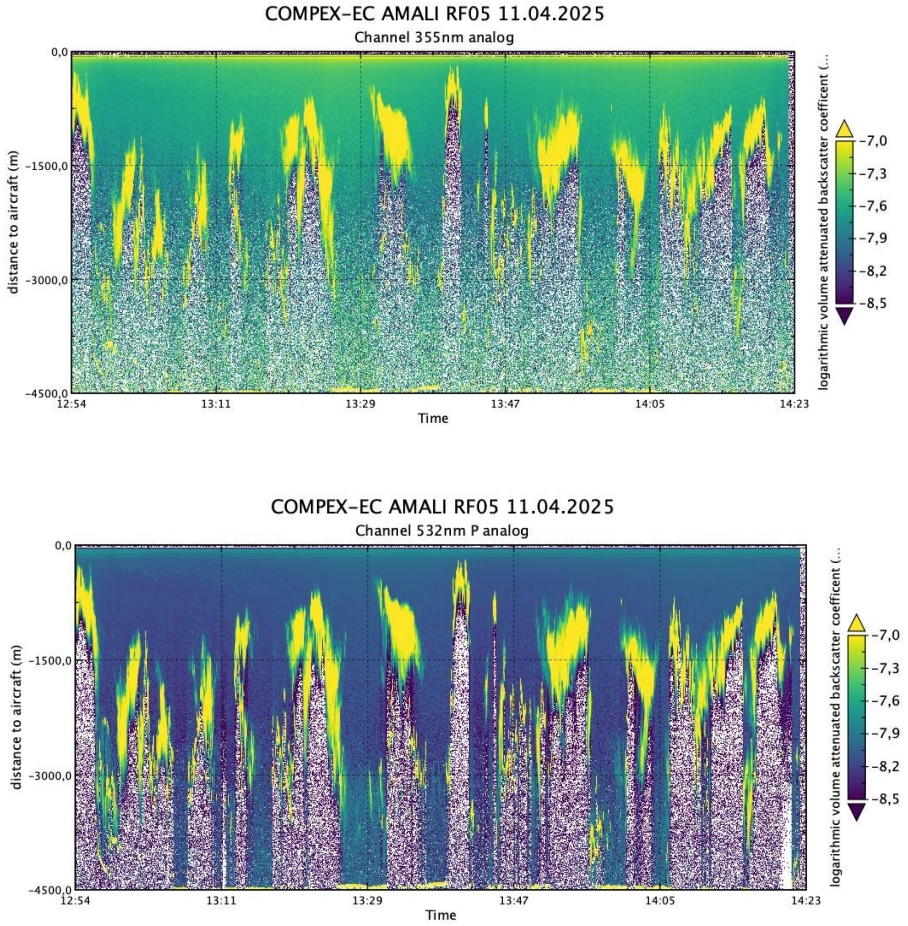
Quicklooks:



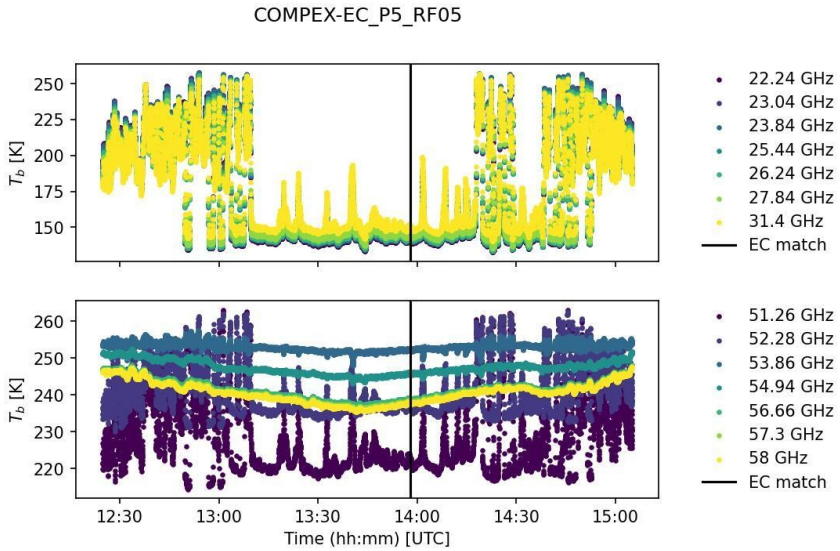
Comparison between EarthCARE Ze and MiRAC-A Ze together with the passive channel at 89 GHz for the direct overpass section.



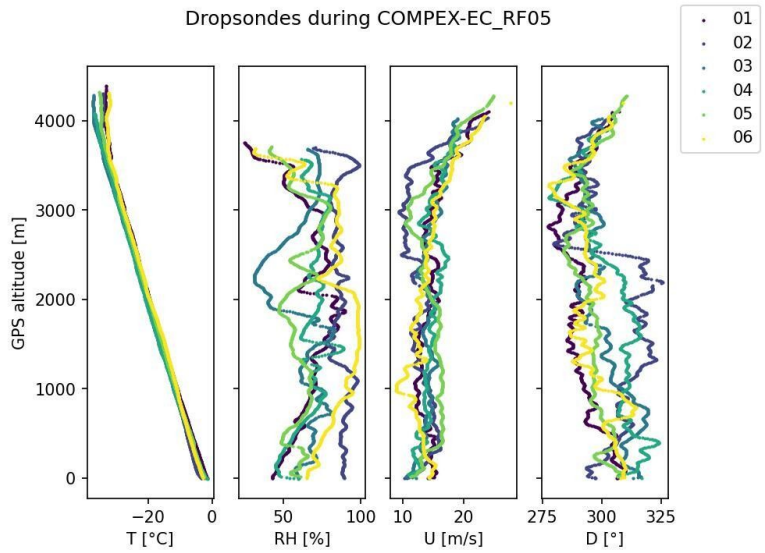
MiRAC-A radar reflectivity and 89 GHz passive channel for the whole flight.



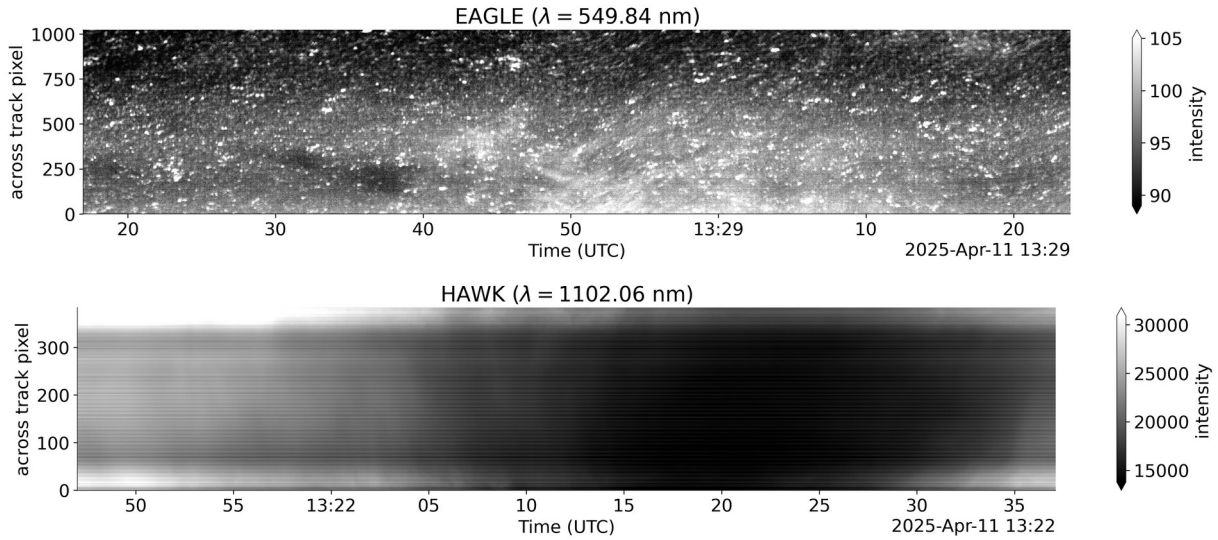
355 nm (top) and 532 nm parallel (bottom) analog for the whole flight.



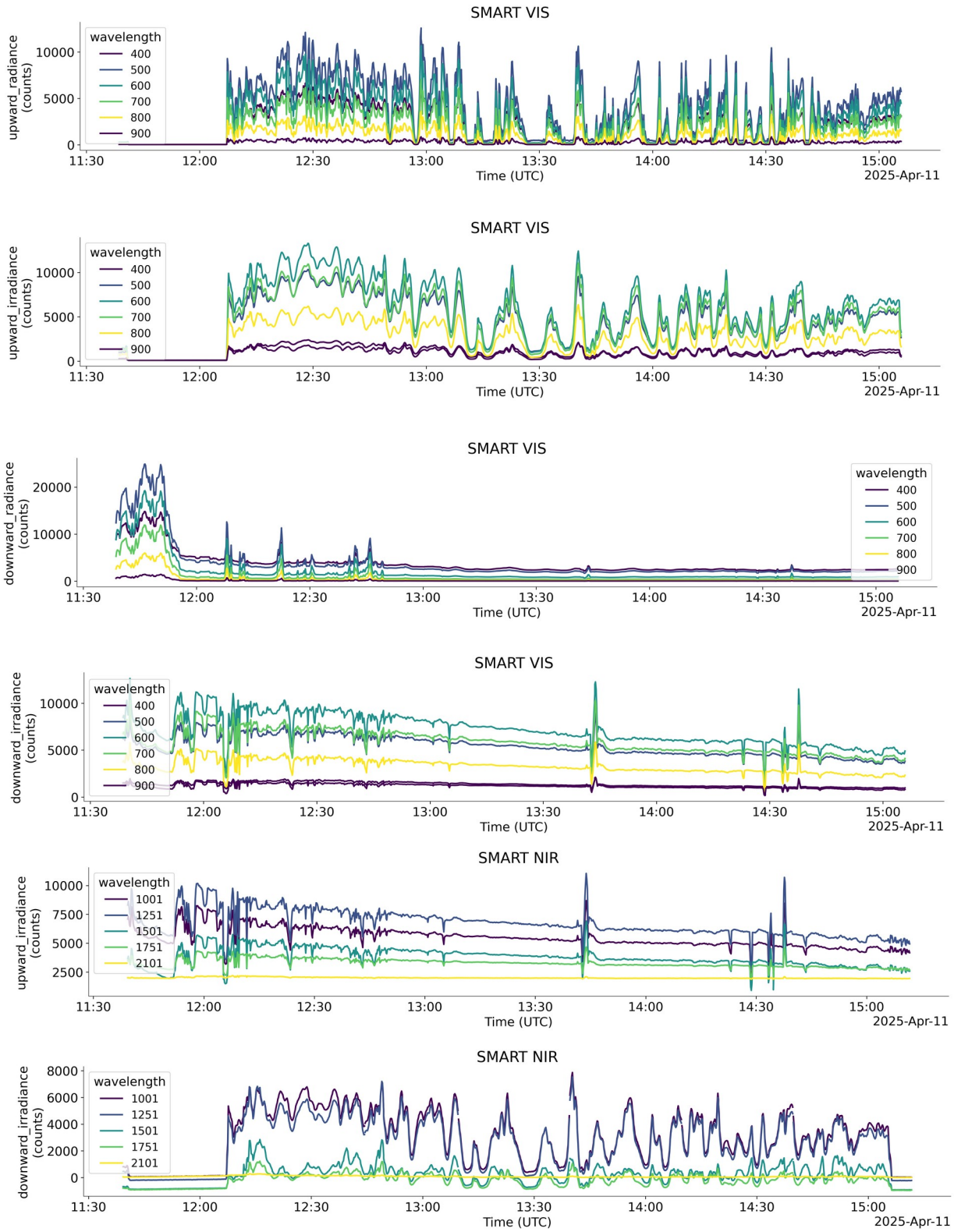
HATPRO channels at K- (top) and V-band (bottom) for the whole flight.



Dropsonde profiles from the flight.



EAGLE VIS (top) and HAWK NIR (bottom) for the whole flight.



Up- and downlooking, radiance and irradiance of SMART VIS for the whole flight. Lower panels show the NIR up- and downlooking SMART channels.