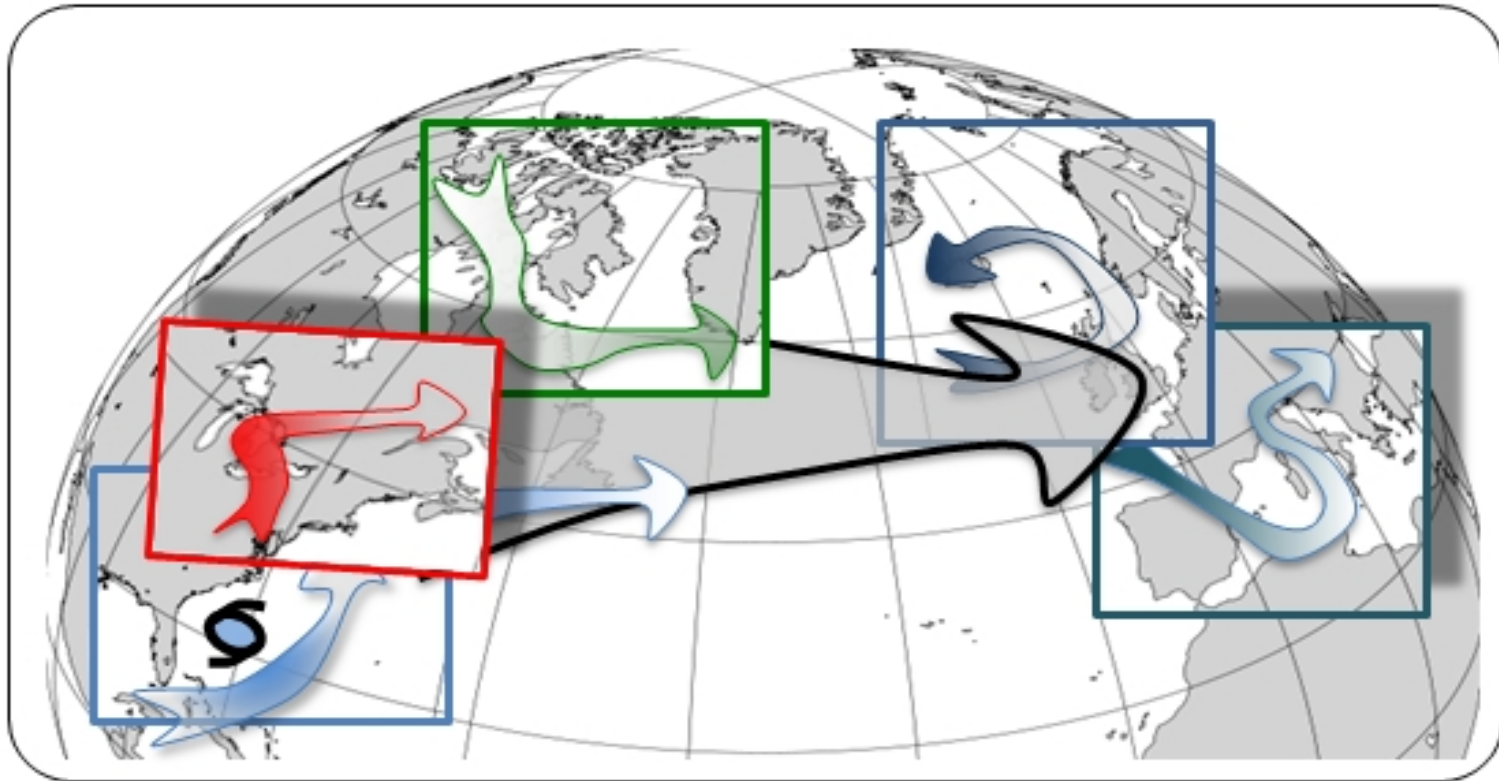


NAWDEX - General Planning Meeting

13 October 2016, Keflavik 11 UTC



NAWDEX – General Planning Meeting

13 October 2016, Keflavik 11 UTC

Key issues today:

1. Today's flights: HALO, FALCON, SAFIRE
2. Tomorrow flights: radiometer intercomparison with UK FAAM/HALO/SAFIRE
3. Flight plans and logistics for Saturday

NAWDEX – General Planning Meeting

13 October 2016, Keflavik 11 UTC

- 1.Today's flights
- 2.Aircraft status report by FX-Operations
- 3.Instrument status report by Instrument Manager
- 4.Short weather summary: information about flight options for the next days and update for planning for the next day with the latest forecast
- 5.Report of Ground-Based Observation
- 6.Friday flights: radiometer intercomparison with HALO, FALCON, SAFIRE
- 7.Possible Saturday flights

Today's Flights: Thursday October 13th

HALO

FALCON (x2)

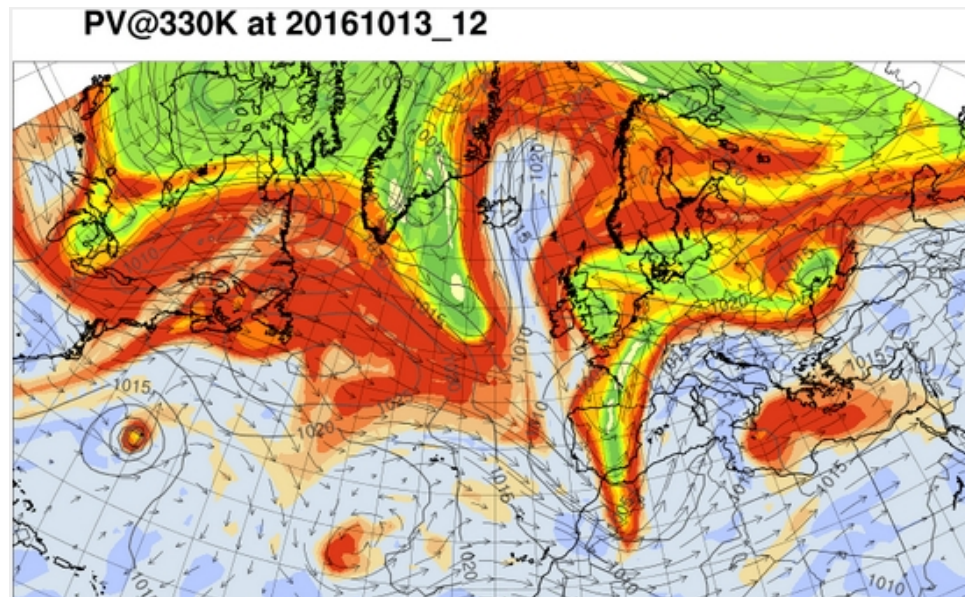
SAFIRE

Today's HALO flight

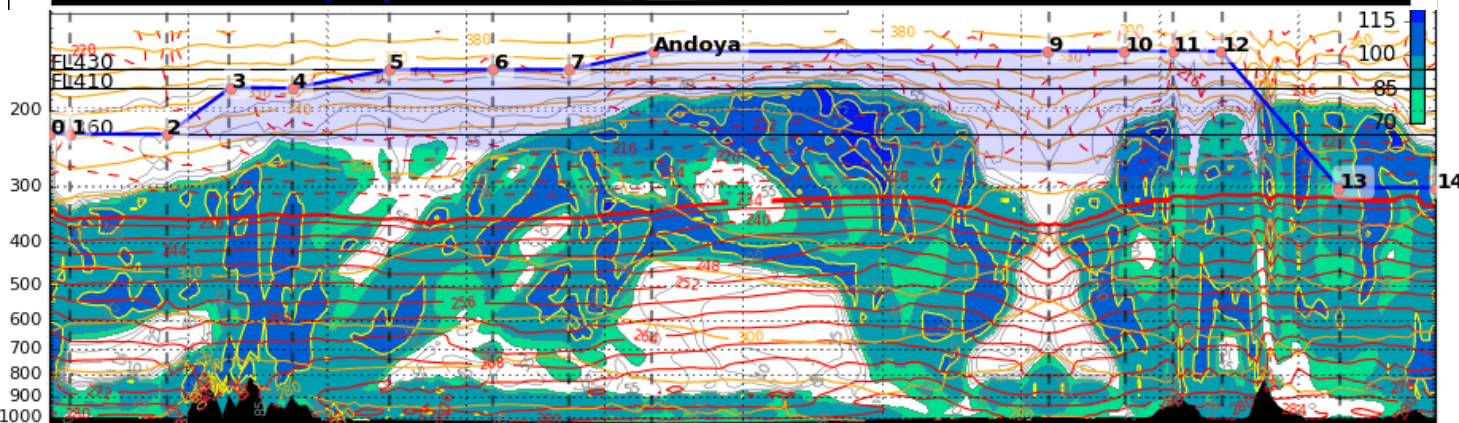
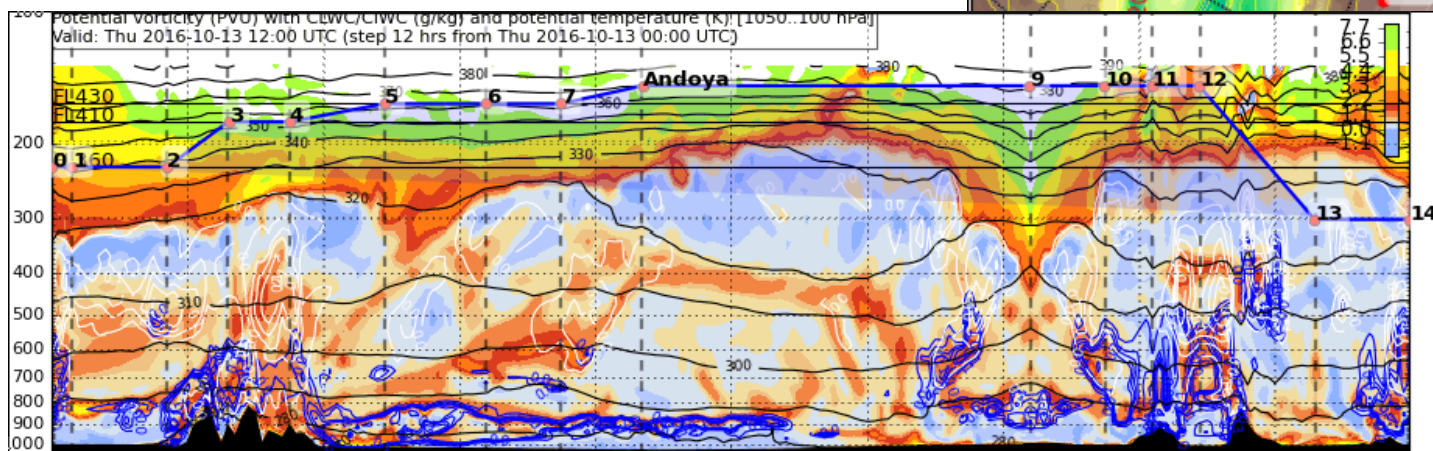
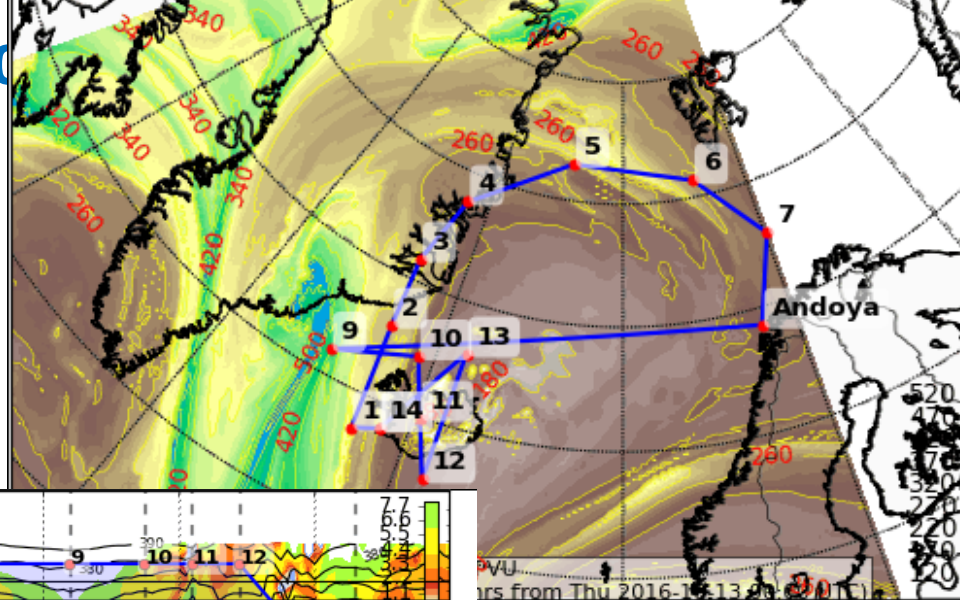
HALO Flight on Thursday 13.10.16: “Iceland-ridge Thor-Peter”

Objectives / features:

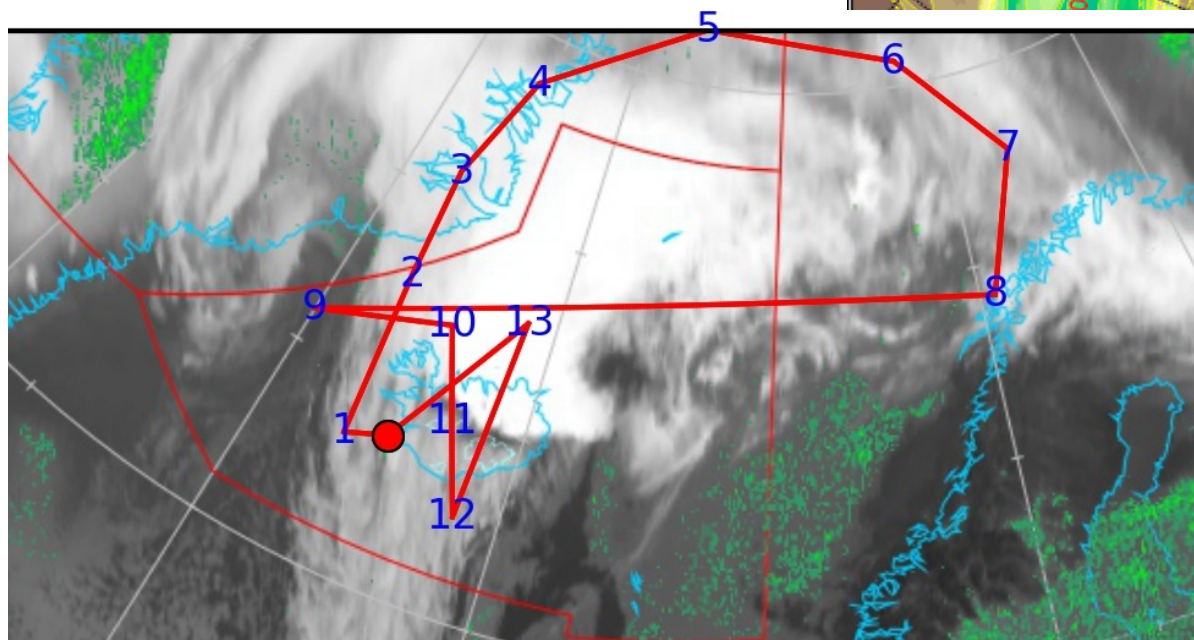
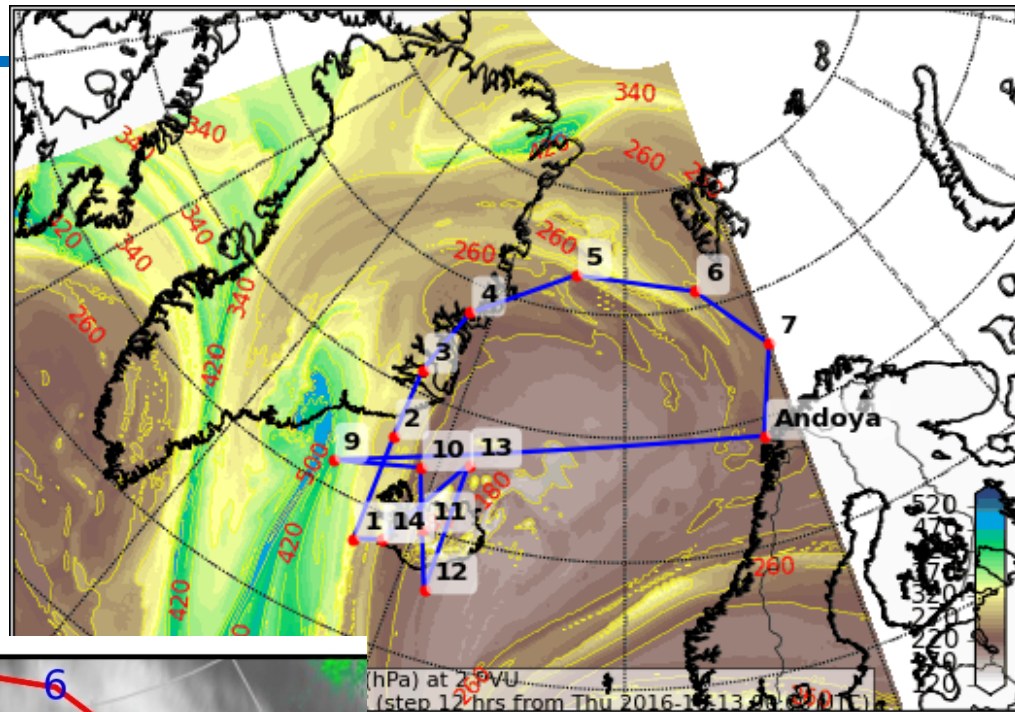
- Tropopause structure in ridge (moisture gradient)
- CAT measurement
- WCB outflow
- Satellite underpass (13:50)
- PV gradient measurement (PV-o-meter, with Falocon)
- Overflight of radar station “Andoya”
- Orographic gravity waves over Iceland
- Dropsonde and radiosonde sampling



HALO Flight on Thursday 13.10 “Iceland-ridge Thor-Peter”



HALO Flight on Thursday 13. “Iceland-ridge Thor-Peter”



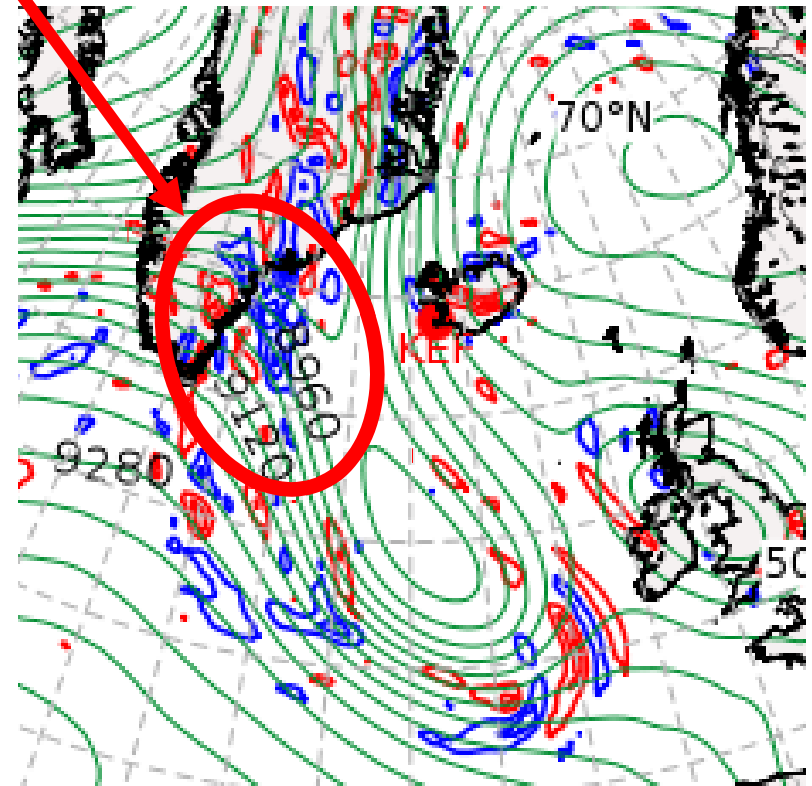
Today's FALCON second flight

Objectives

- Sampling of strong jet on western side of PV streamer
- In a region of spontaneous inertia-gravity waves emission from curved anticyclonic jet.

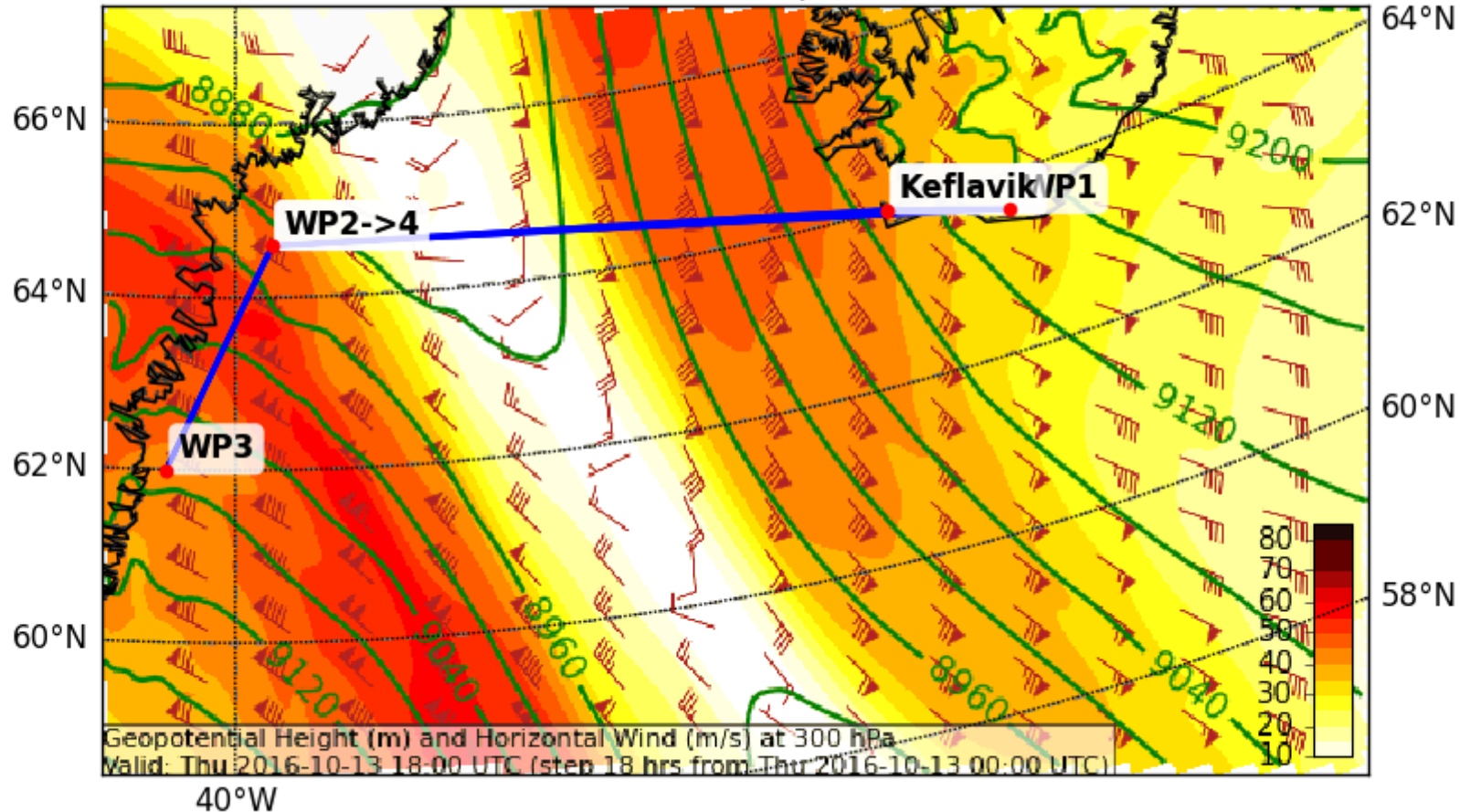
DIVERGENCE@300hPa
18UTC

STATUS: UNCHANGED



Thu 13 18Z – DLR Falcon Plan (2nd flight)

Geopotential Height (m) and Horizontal Wind (m/s) (Wind Speed 10-85 m/s) at 300 (hPa)
Valid: Thu 2016-10-13 18:00 UTC (step 18 hrs from Thu 2016-10-13 00:00 UTC)

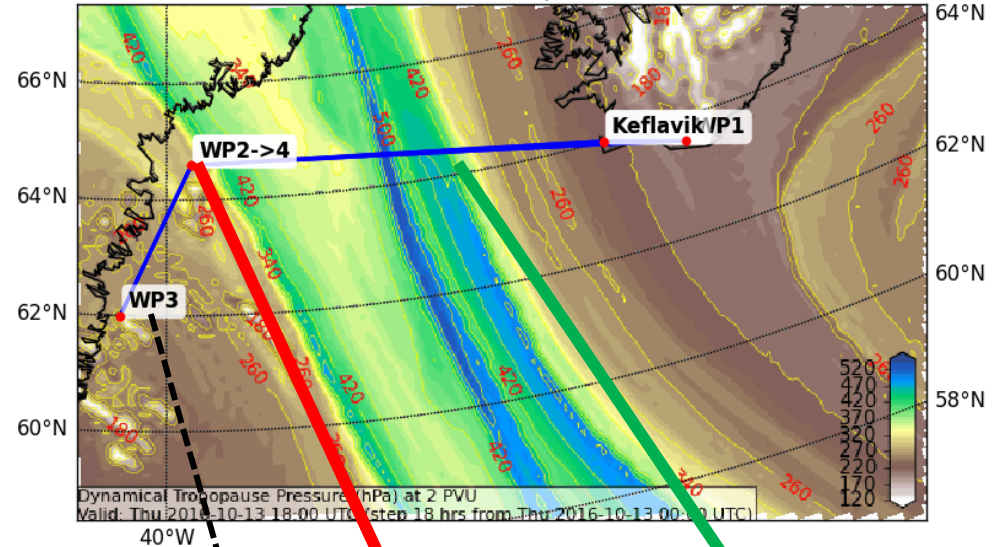


STATUS: UNCHANGED

Thu 13 18Z – DLR Falcon Plan (2nd flight)

Dynamical Tropopause (Pressure (hPa)) at 2000 (10^{-3} PVU)

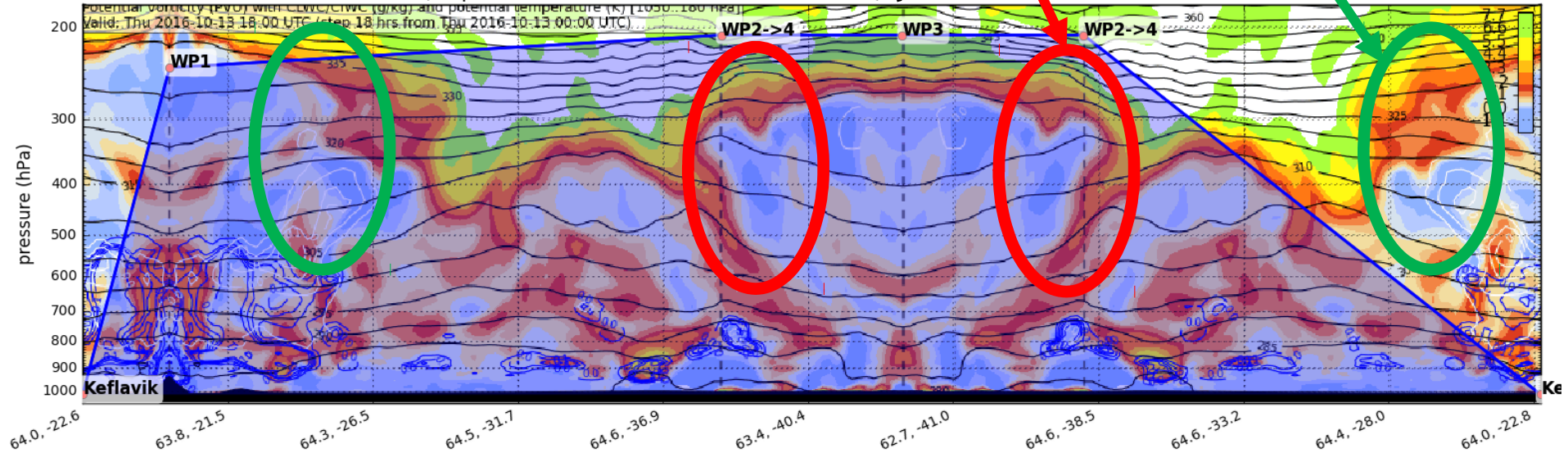
Valid: Thu 2016-10-13 18:00 UTC (step 18 hrs from Thu 2016-10-13 00:00 UTC)



Potential Vorticity (PVU) Vertical Section (Northern Hemisphere)

Valid: Thu 2016-10-13 18:00 UTC (step 18 hrs from Thu 2016-10-13 00:00 UTC)

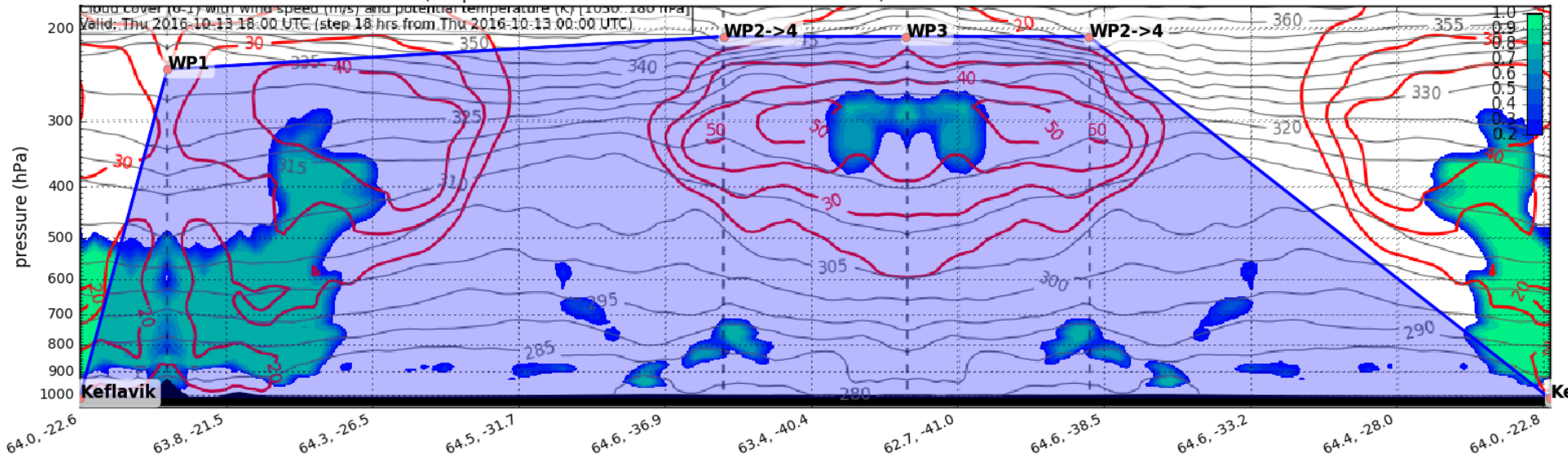
Valid: Thu 2016-10-13 18:00 UTC (step 18 hrs from Thu 2016-10-13 00:00 UTC)



Thu 13 18Z – DLR Falcon Plan (2nd flight)

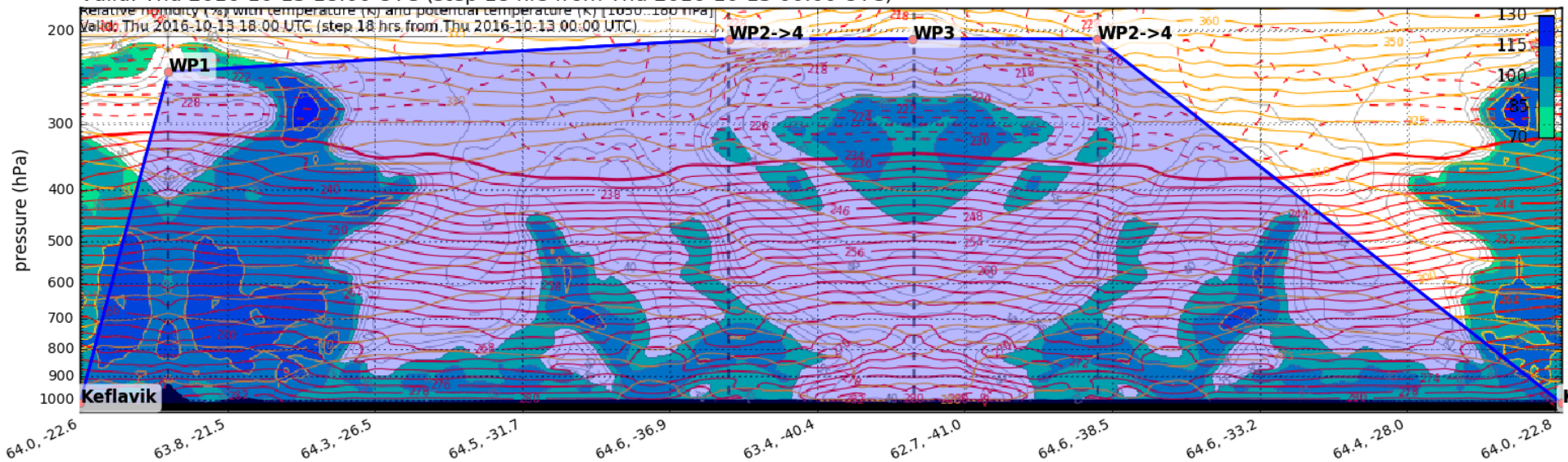
Cloud Cover (0-1) and Wind Speed (m/s) Vertical Section

Valid: Thu 2016-10-13 18:00 UTC (step 18 hrs from Thu 2016-10-13 00:00 UTC)



Relative Humidity (%) Vertical Section

Valid: Thu 2016-10-13 18:00 UTC (step 18 hrs from Thu 2016-10-13 00:00 UTC)



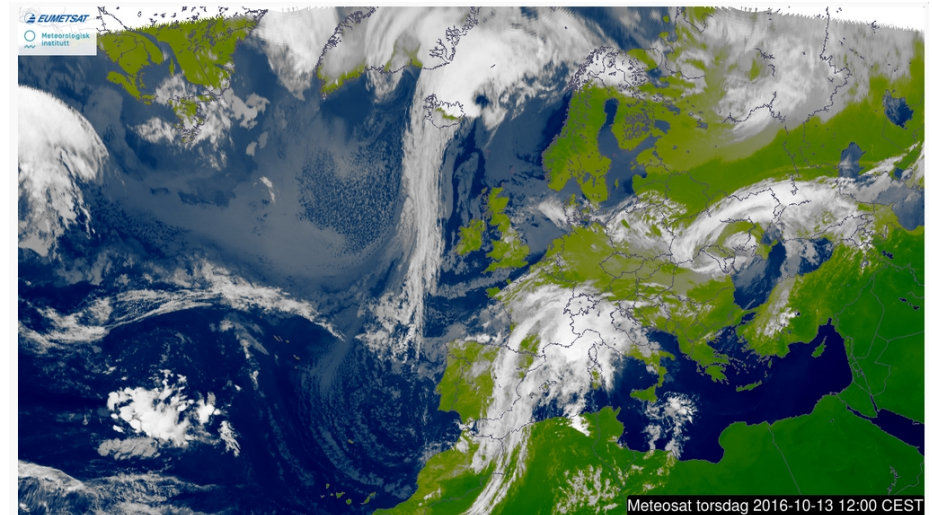
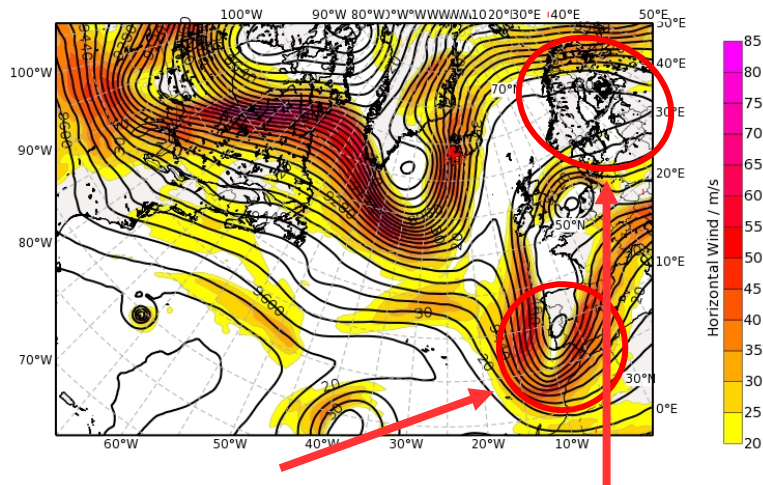
Weather summary

Analysis – 13 Oct 2016, 00 UTC

Z300, SAT
THE850

BT13/00Z

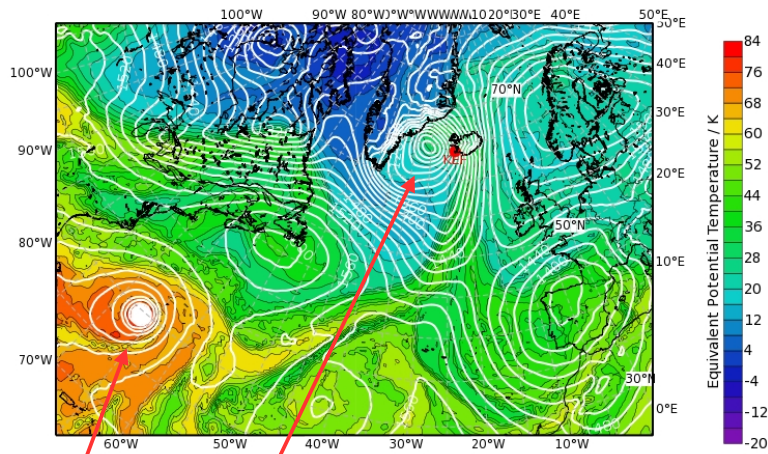
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Thu, 13 Oct 2016, 00 UTC (step 000 h from Thu, 13 Oct 2016, 00 UTC)



Cut-off "Brigitte"

Blocking over Scandinava

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Thu, 13 Oct 2016, 00 UTC (step 000 h from Thu, 13 Oct 2016, 00 UTC)

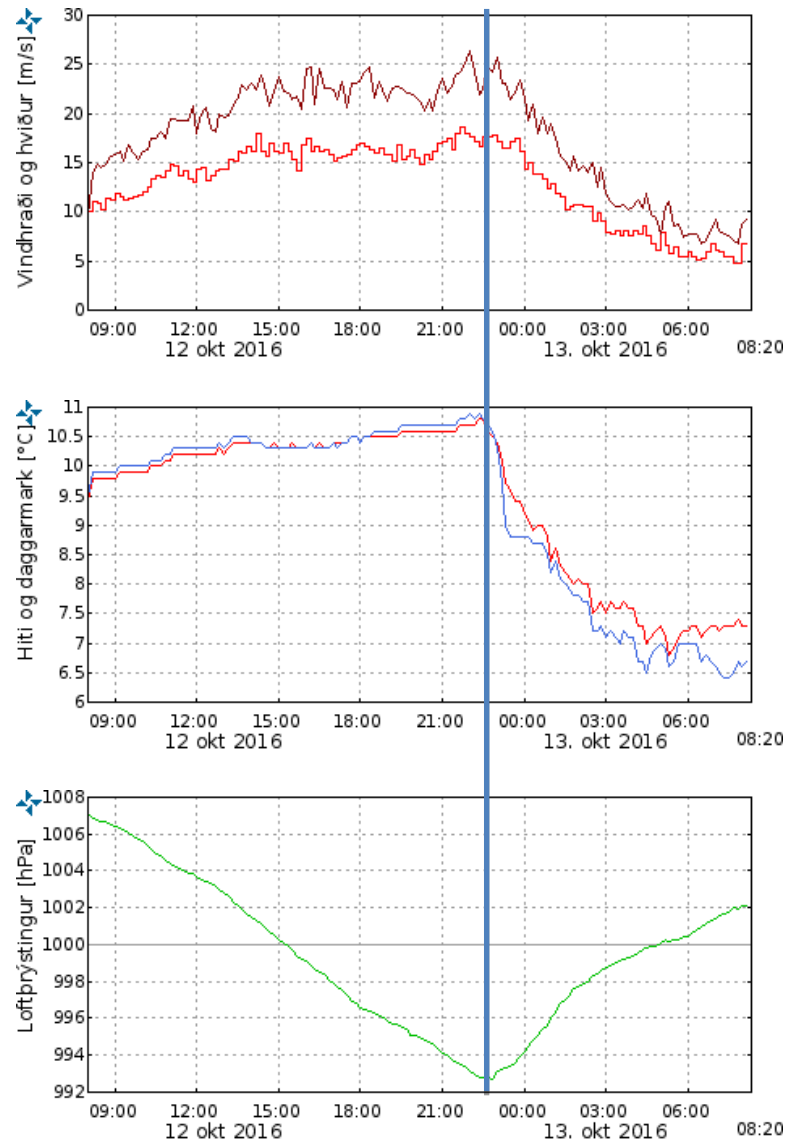


TC Nicole

Downstream
cyclone

Front passage Wednesday evening @ KEF

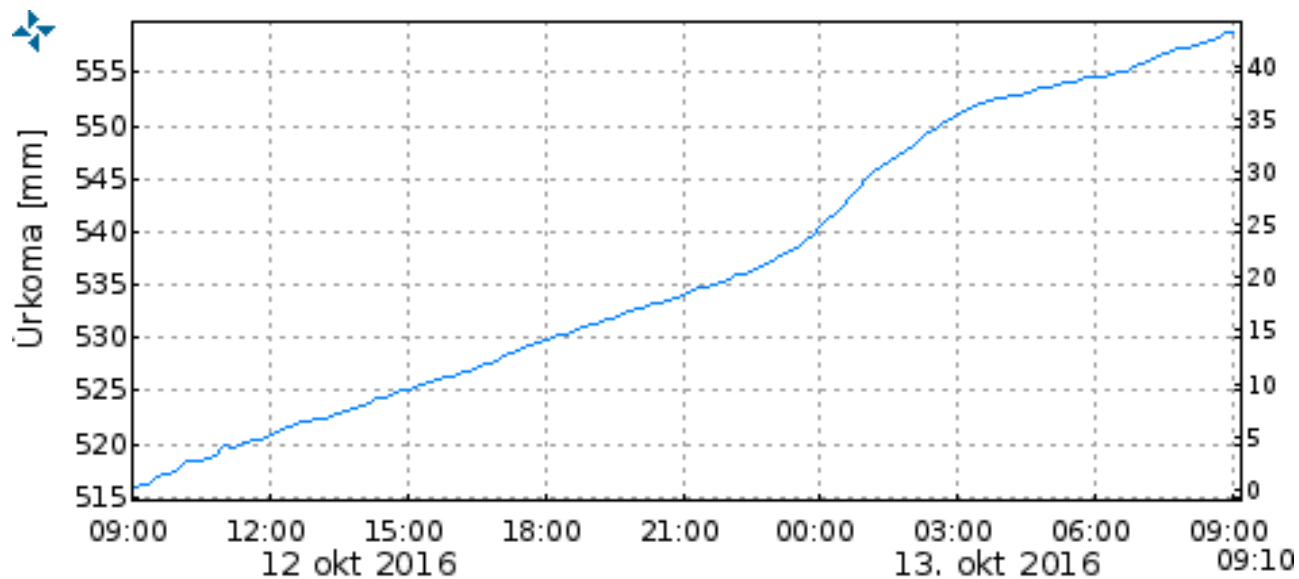
Measurements from
Keflavik airport



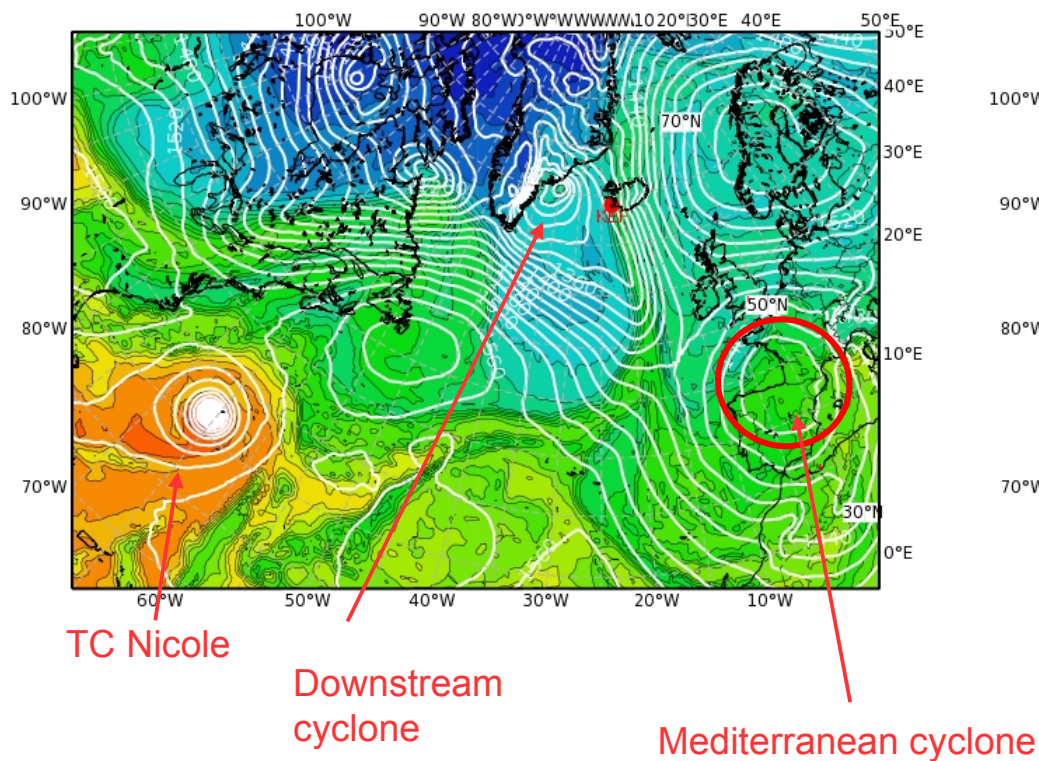
Front

Precipitation on the south coast of Iceland yesterday

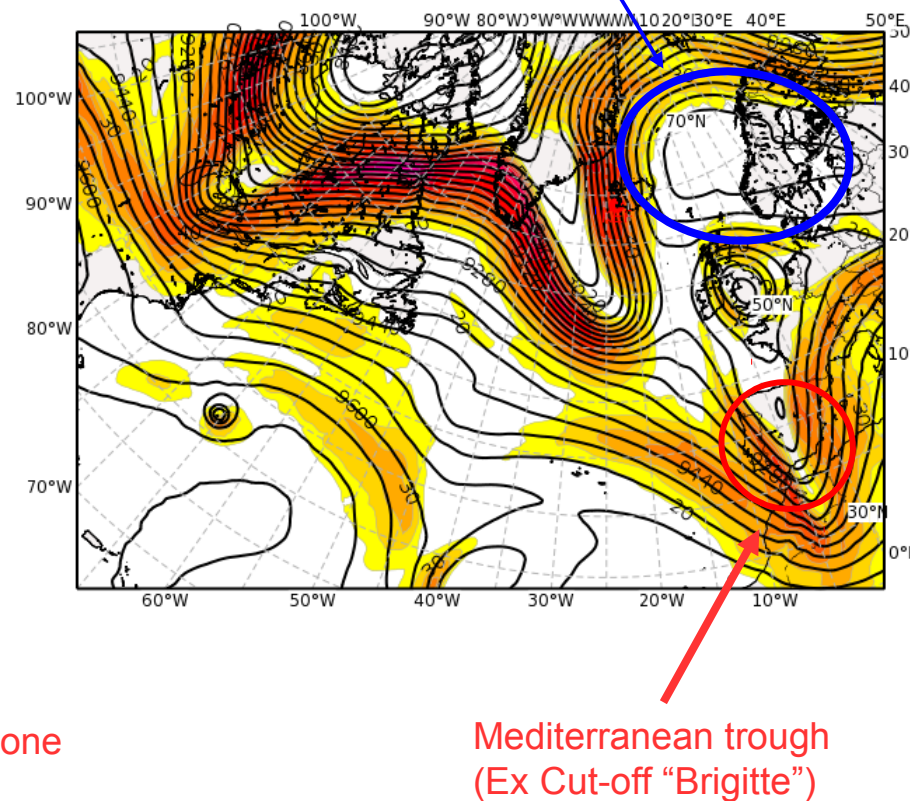
Kálfhól weather station, last 24 h



Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Thu, 13 Oct 2016, 12 UTC (step 012 h from Thu, 13 Oct 2016, 00 UTC)



Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Thu, 13 Oct 2016, 12 UTC (step 012 h from Thu, 13 Oct 2016, 00 UTC)



Ridge building "Peter"

TC Nicole

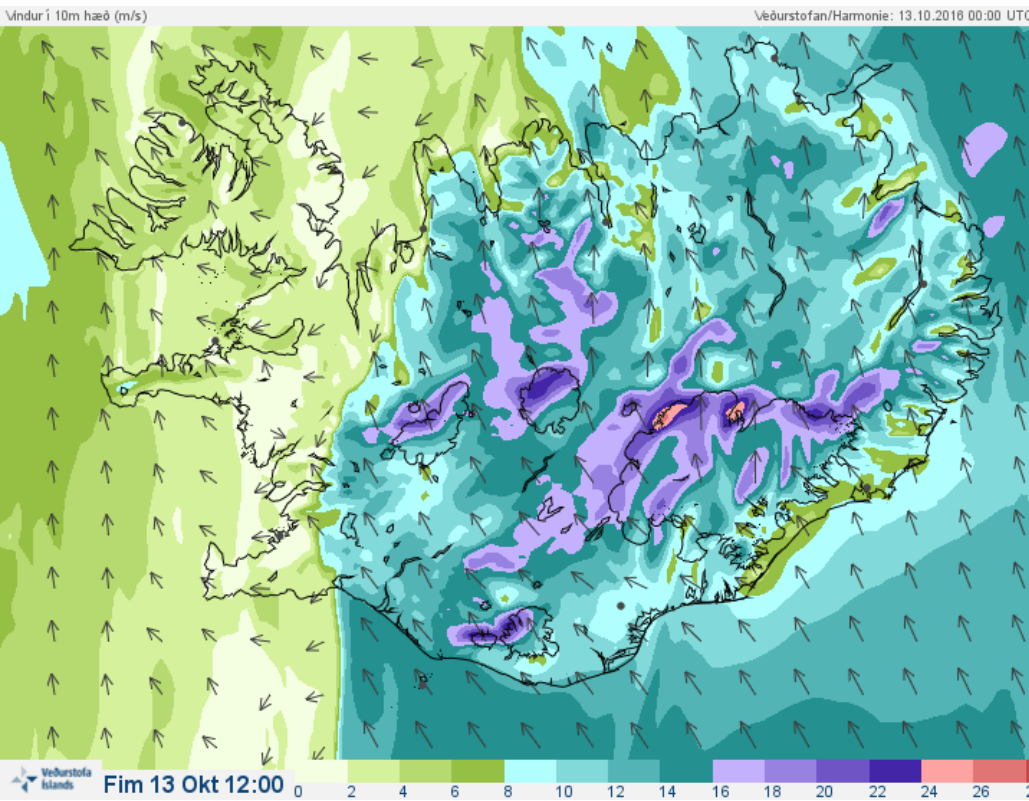
Downstream
cyclone

Mediterranean cyclone

Mediterranean trough
(Ex Cut-off "Brigitte")

Forecast for Thu, 13 Oct 2016 12 UTC

BT13/00Z



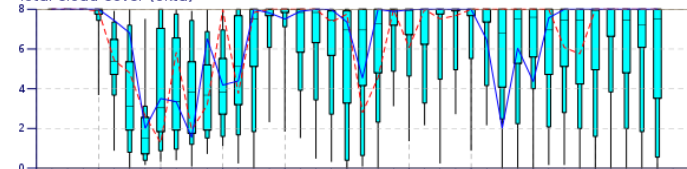
Strong winds later today, however,
weaker than yesterday.

ENS Meteogram

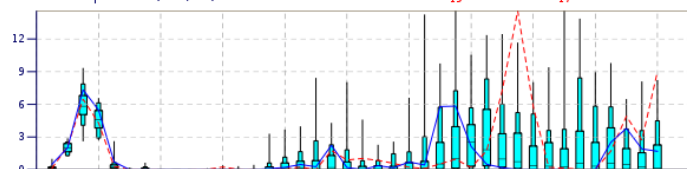
Keflavik, Iceland 63.89°N 22.26°W (ENS land point) 5 m

High Resolution Forecast and ENS Distribution Thursday 13 October 2016 00 UTC

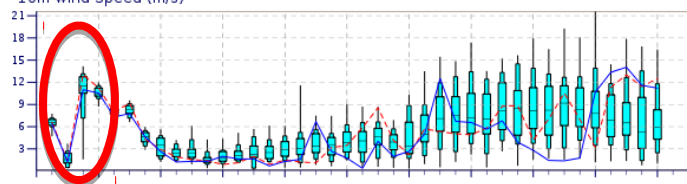
Total Cloud Cover (okta)



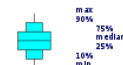
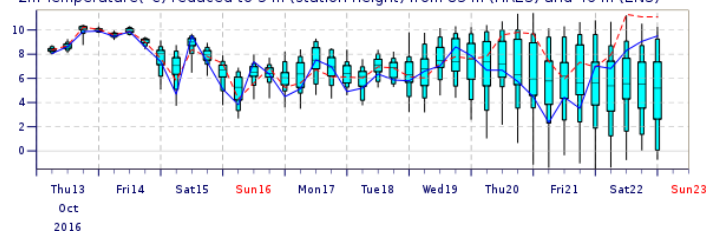
Total Precipitation (mm/6h)



10m Wind Speed (m/s)



2m Temperature(°C) reduced to 5 m (station height) from 83 m (HRES) and 46 m (ENS)

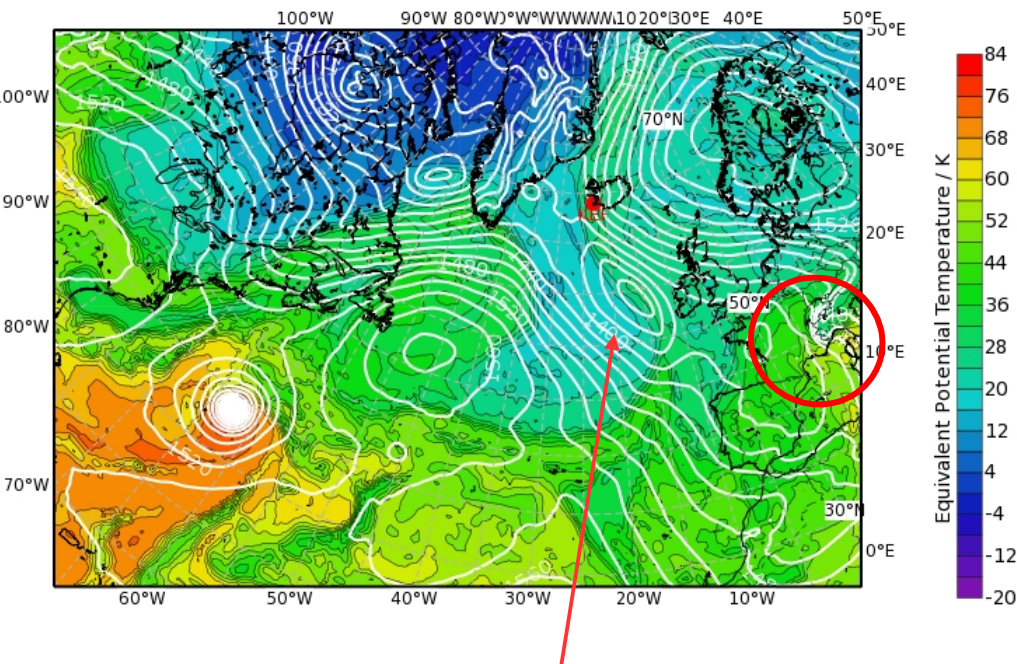


ENS Control(16 km)

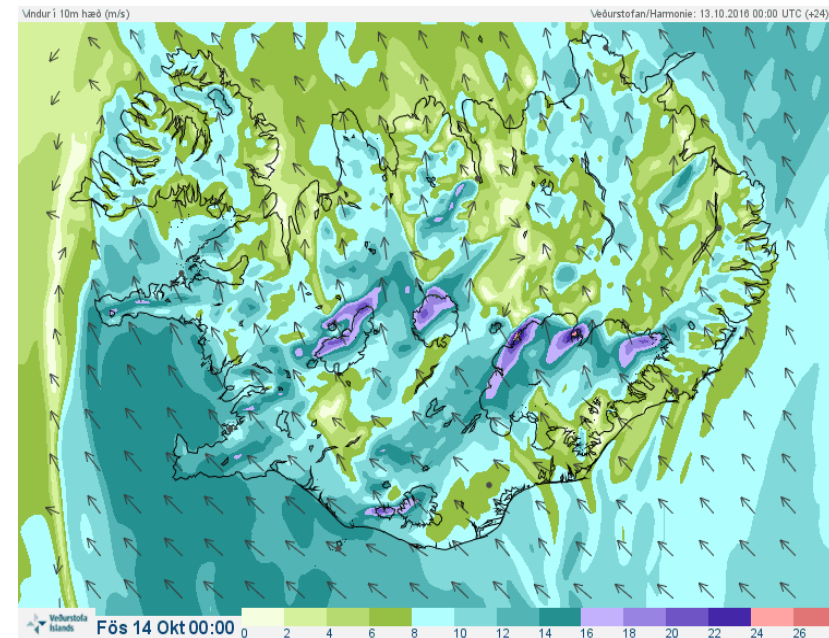
High Resolution (8 km)

Night between Thu and Fri: winds
@ Kef expected to increase

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Fri, 14 Oct 2016, 00 UTC (step 024 h from Thu, 13 Oct 2016, 00 UTC)



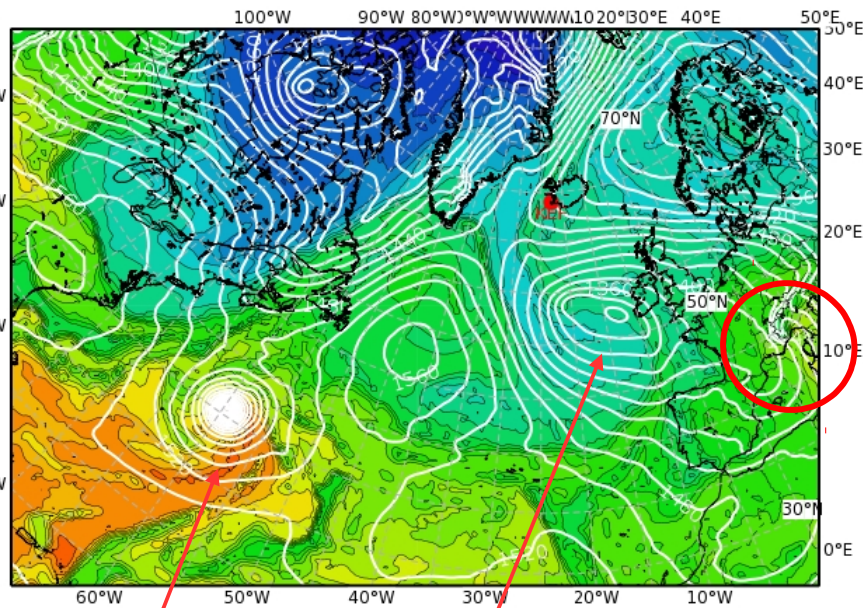
New Frontal
cyclone



Forecast for Fri, 14 Oct 2016 12 UTC

THE850, Z300 BT13/00Z

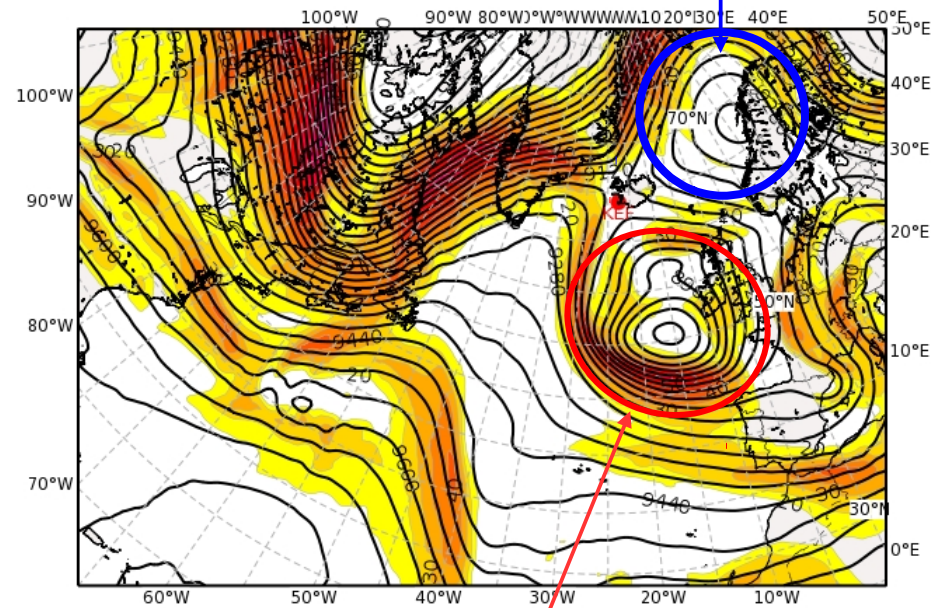
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Fri, 14 Oct 2016, 12 UTC (step 036 h from Thu, 13 Oct 2016, 00 UTC)



TC Nicole

Frontal cyclone

Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Fri, 14 Oct 2016, 12 UTC (step 036 h from Thu, 13 Oct 2016, 00 UTC)



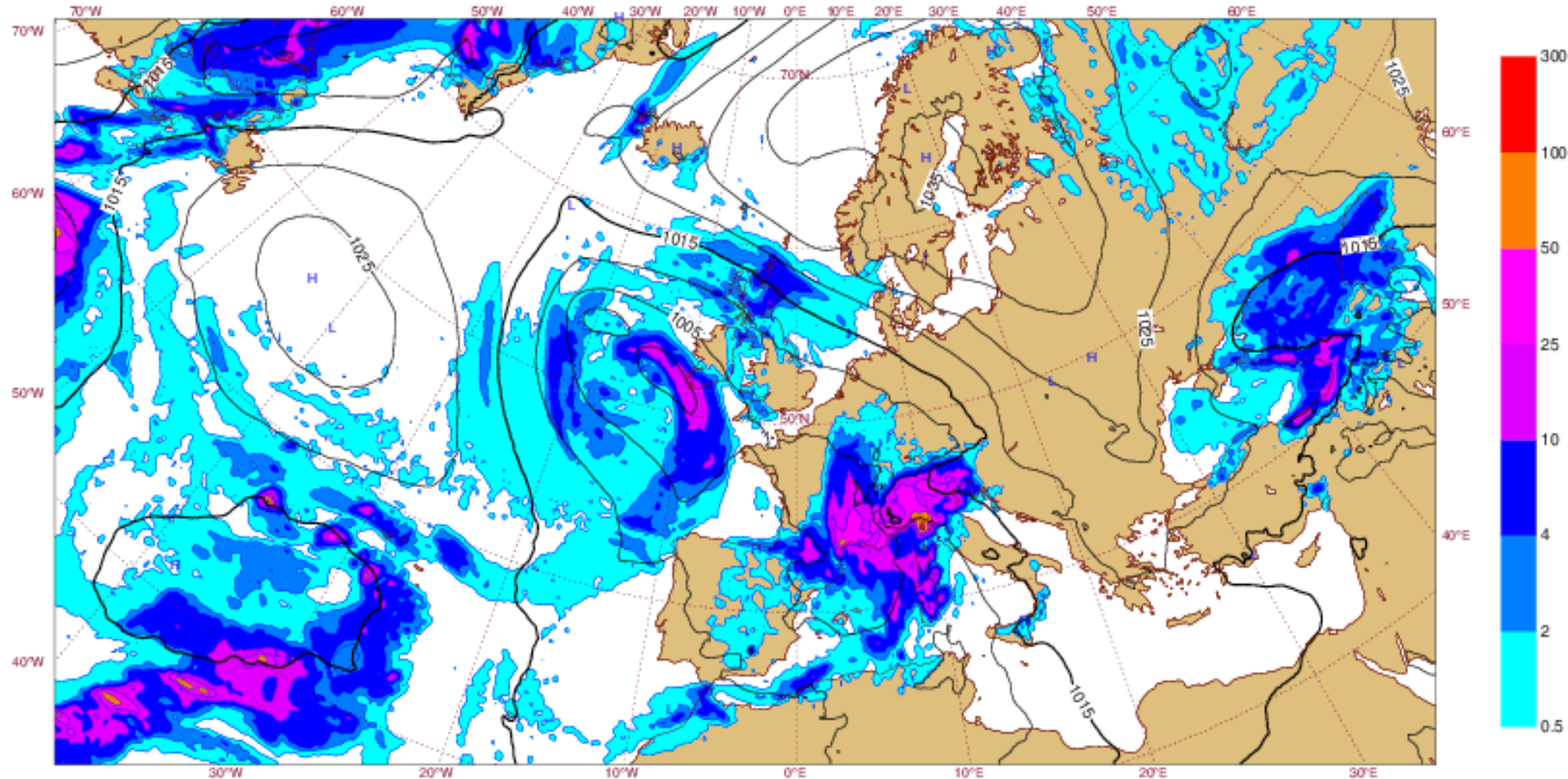
Newl cut-off

Ridge amplification

Precipitation for Fri, 14 Oct 2016 12 UTC

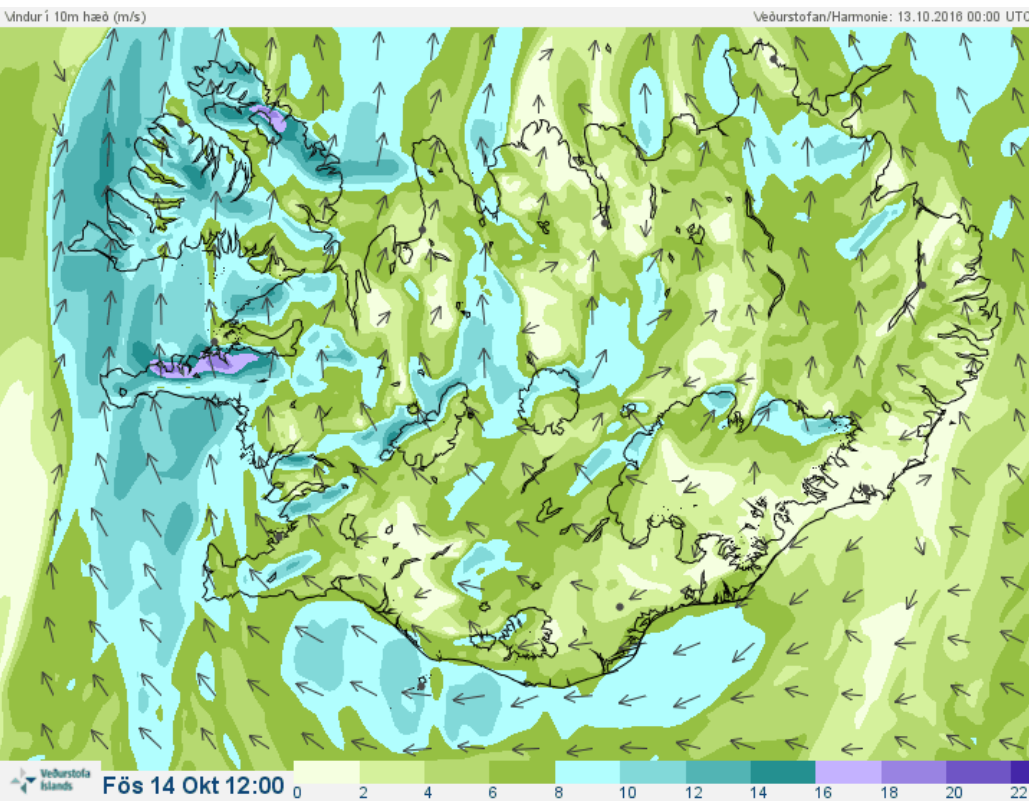
THE850, Z300 BT13/00Z

Thursday 13 October 2016 0000 UTC ECMWF t+36 VT: Friday 14 October 2016 1200 UTC
Surface: Mean sea level pressure / 12hr Accumulated precipitation (VT-6h/VT+6h)



Forecast for Fri, 14 Oct 2016 12 UTC

BT13/00Z

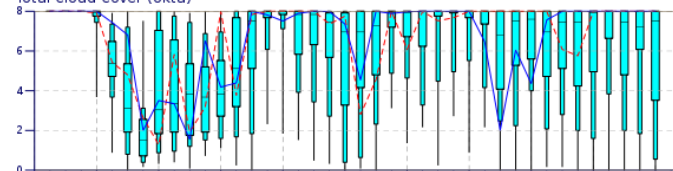


ENS Meteogram

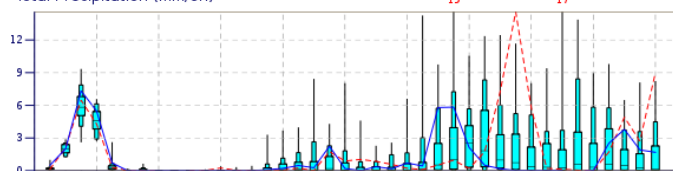
Keflavik, Iceland 63.89°N 22.26°W (ENS land point) 5 m

High Resolution Forecast and ENS Distribution Thursday 13 October 2016 00 UTC

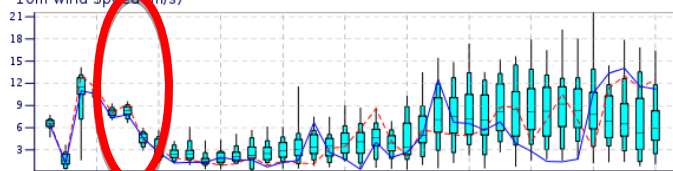
Total Cloud Cover (okta)



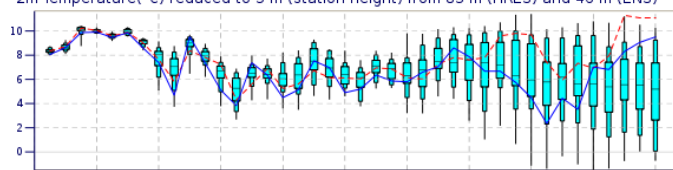
Total Precipitation (mm/6h)



10m Wind Speed (m/s)



2m Temperature(°C) reduced to 5 m (station height) from 83 m (HRES) and 46 m (ENS)

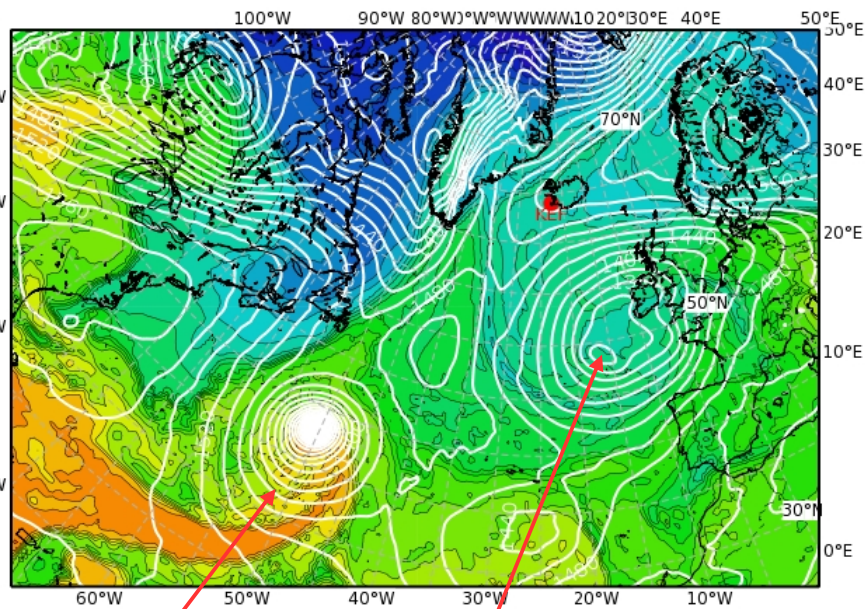


Fri: winds @ Kef expected to decrease during the day

Forecast for Sat, 15 Oct 2016 12 UTC

THE850, Z300 BT13/00Z

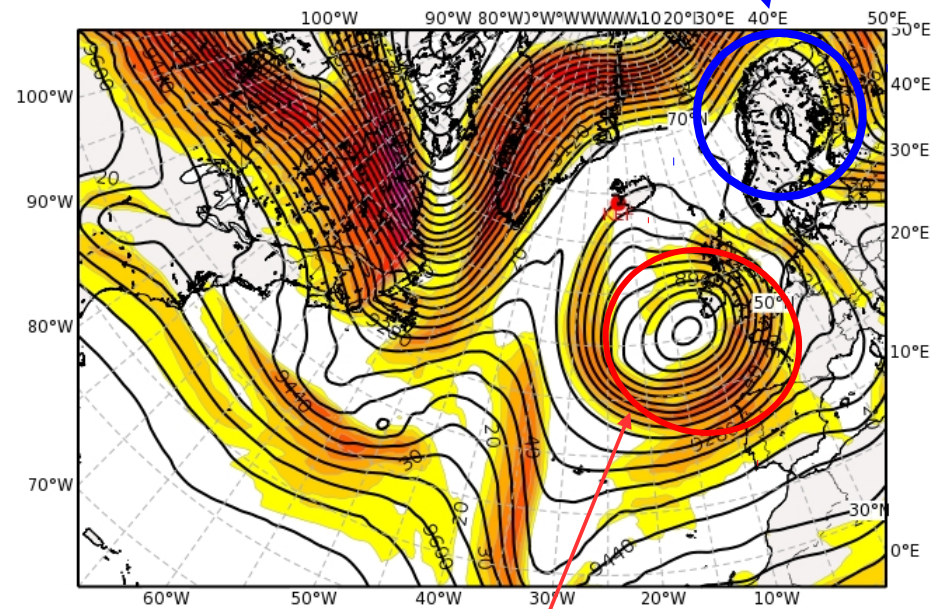
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Sat, 15 Oct 2016, 12 UTC (step 060 h from Thu, 13 Oct 2016, 00 UTC)



TC Nicole

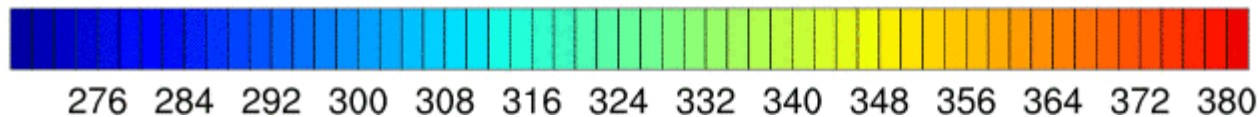
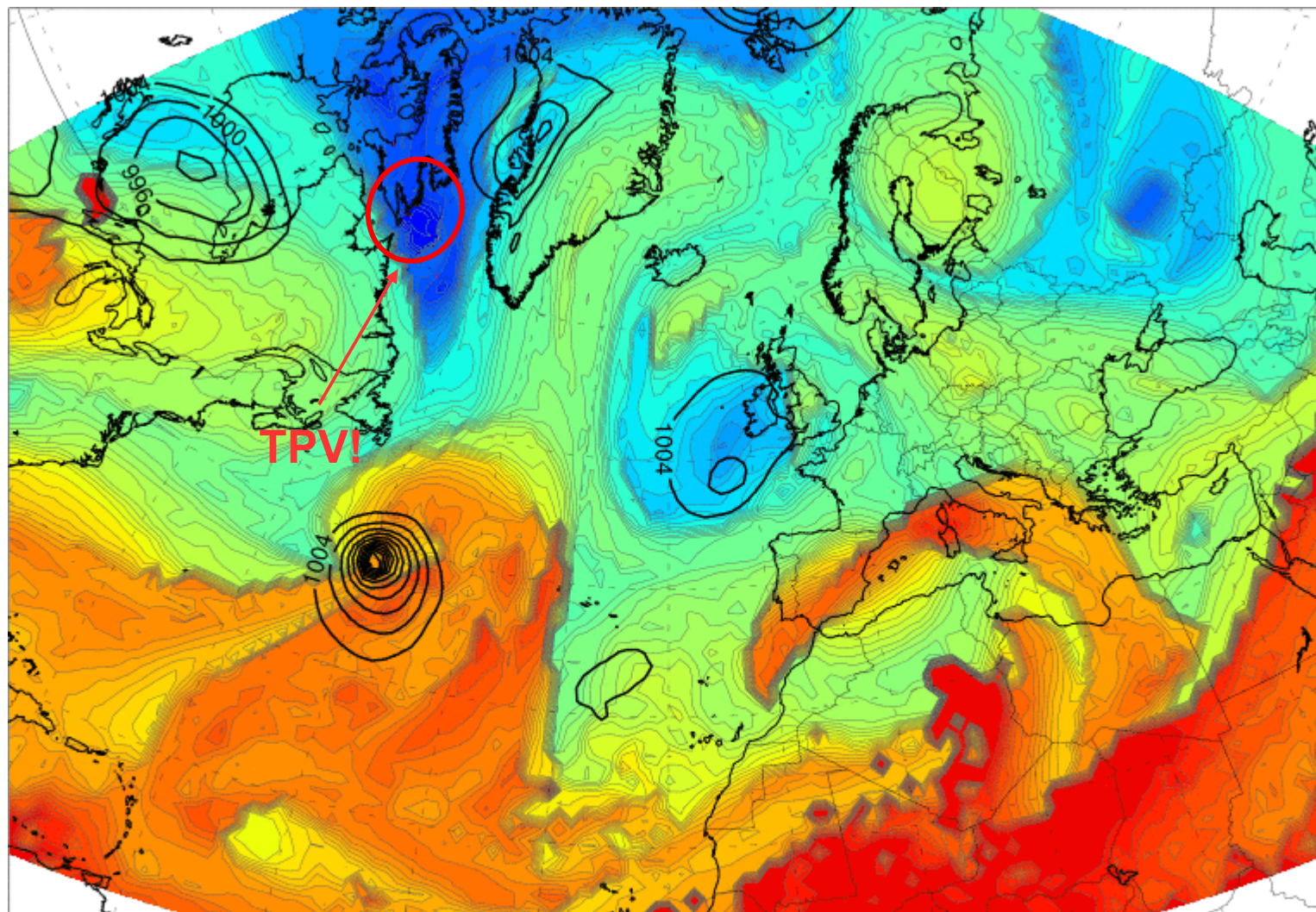
Frontal cyclone

Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Sat, 15 Oct 2016, 12 UTC (step 060 h from Thu, 13 Oct 2016, 00 UTC)



Newl cut-off

Ridge amplification



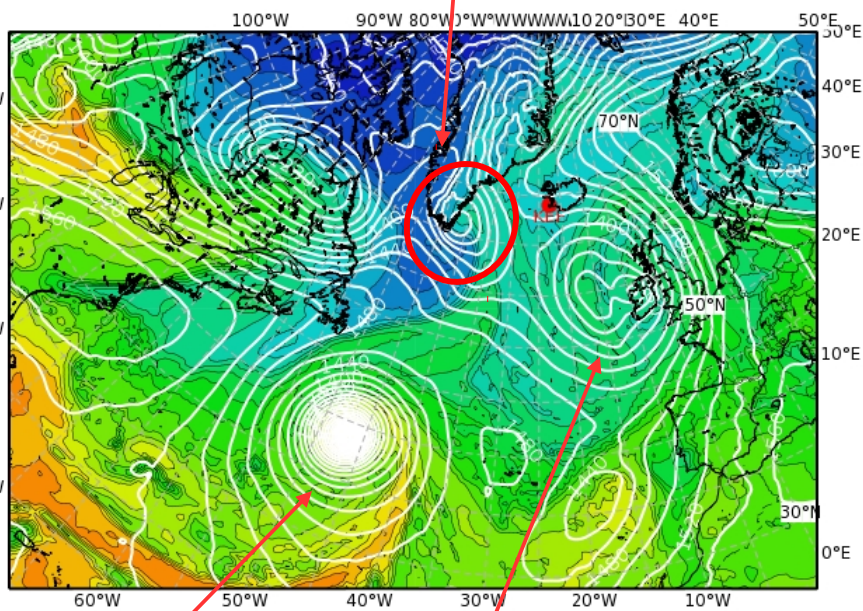
K

Forecast for Sun, 16 Oct 2016 12 UTC

THE850, Z300 BT13/00Z

New cyclogenesis

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Sun, 16 Oct 2016, 12 UTC (step 084 h from Thu, 13 Oct 2016, 00 UTC)

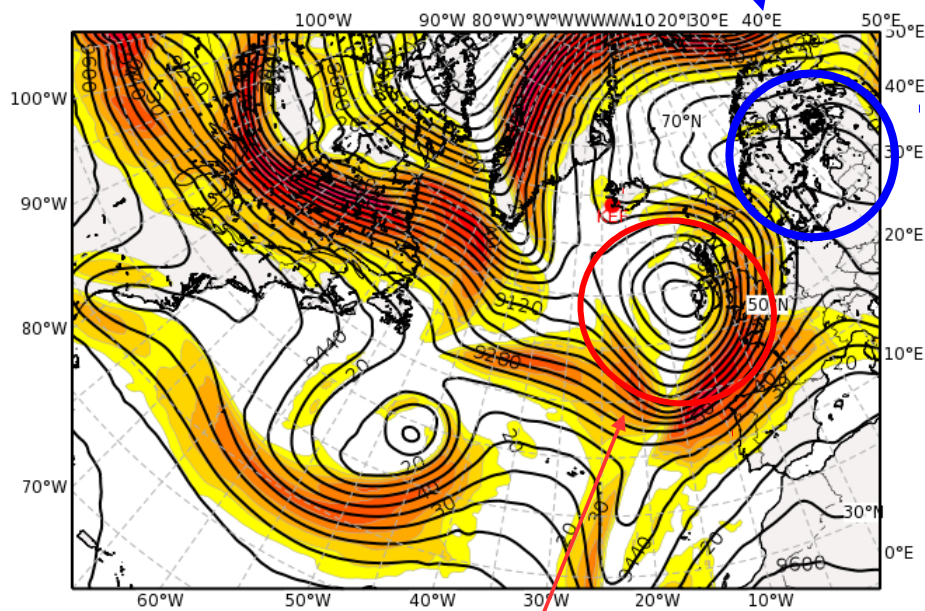


TC Nicole

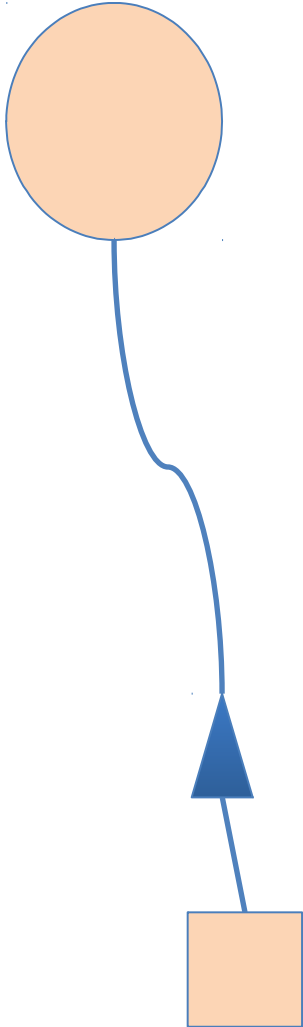
Frontal cyclone

Stationary Ridge

Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Sun, 16 Oct 2016, 12 UTC (step 084 h from Thu, 13 Oct 2016, 00 UTC)



New cut-off



Report from ground based observations:

- Today and tomorrow already planned
- Report from Radiosoundings in Keflavik
- Radiosonde decision for Saturday/Sunday

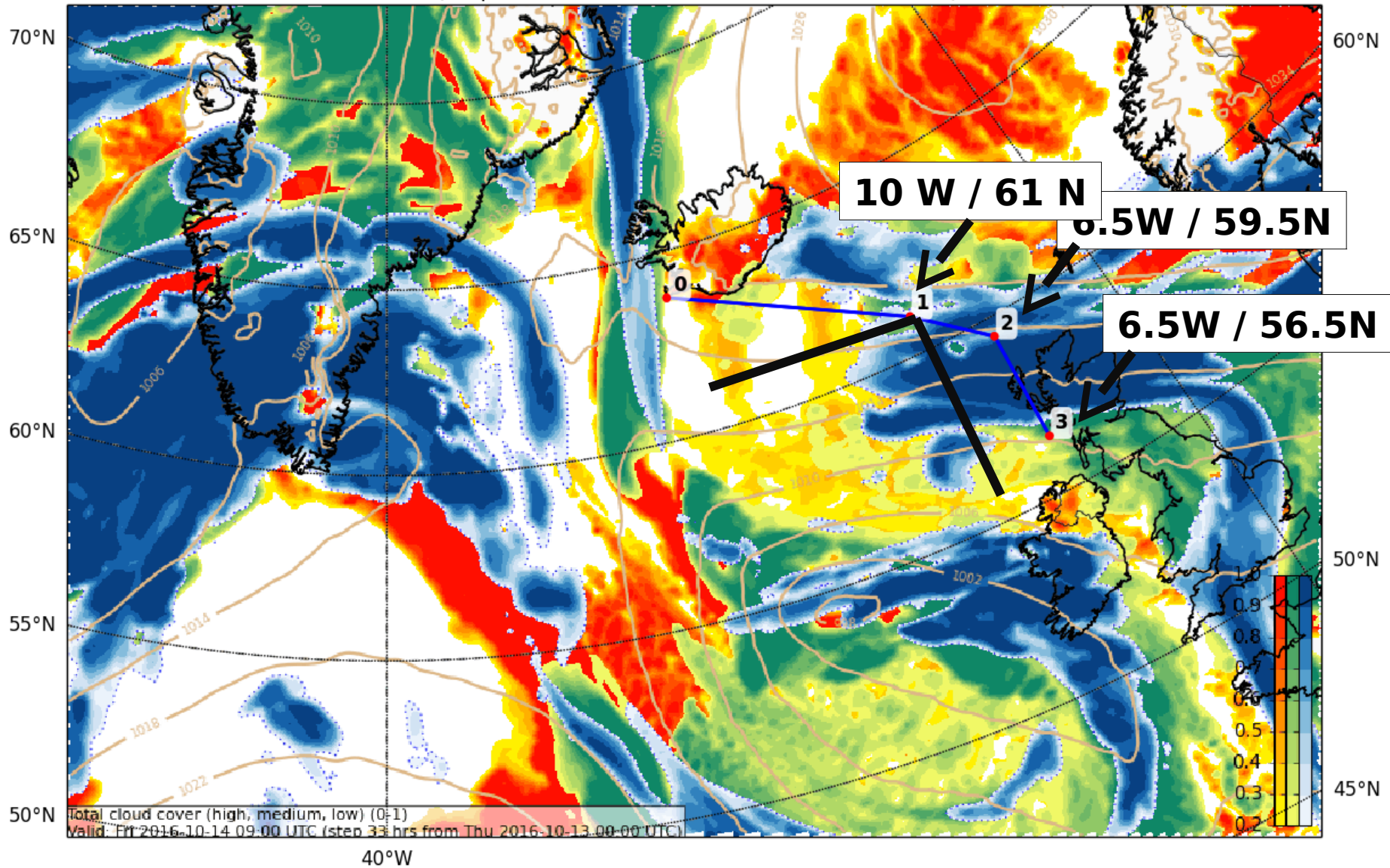
Iceland Soundings



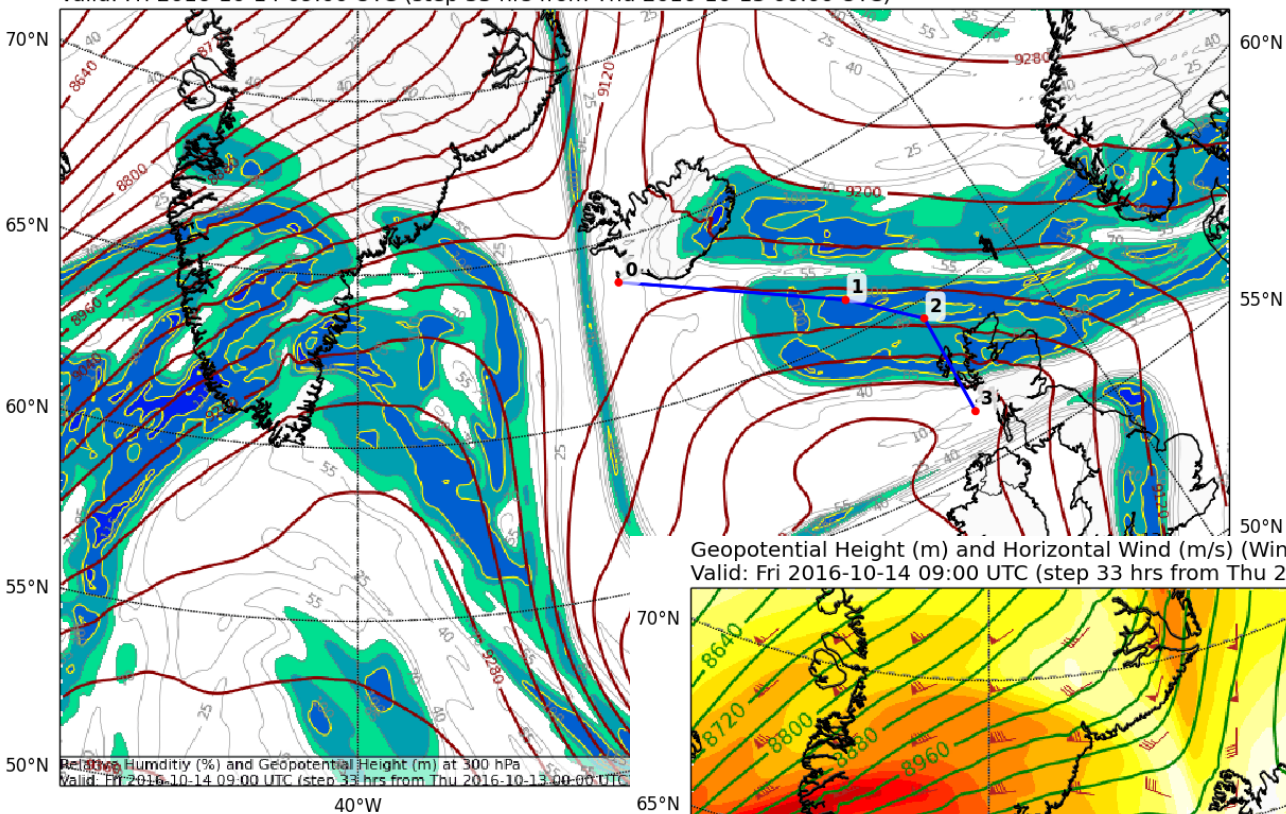
Friday flights: radiometer intercomparison FAAM/HALO/SAFIRE

Cloud Cover (0-1) (Total Cloud Cover)

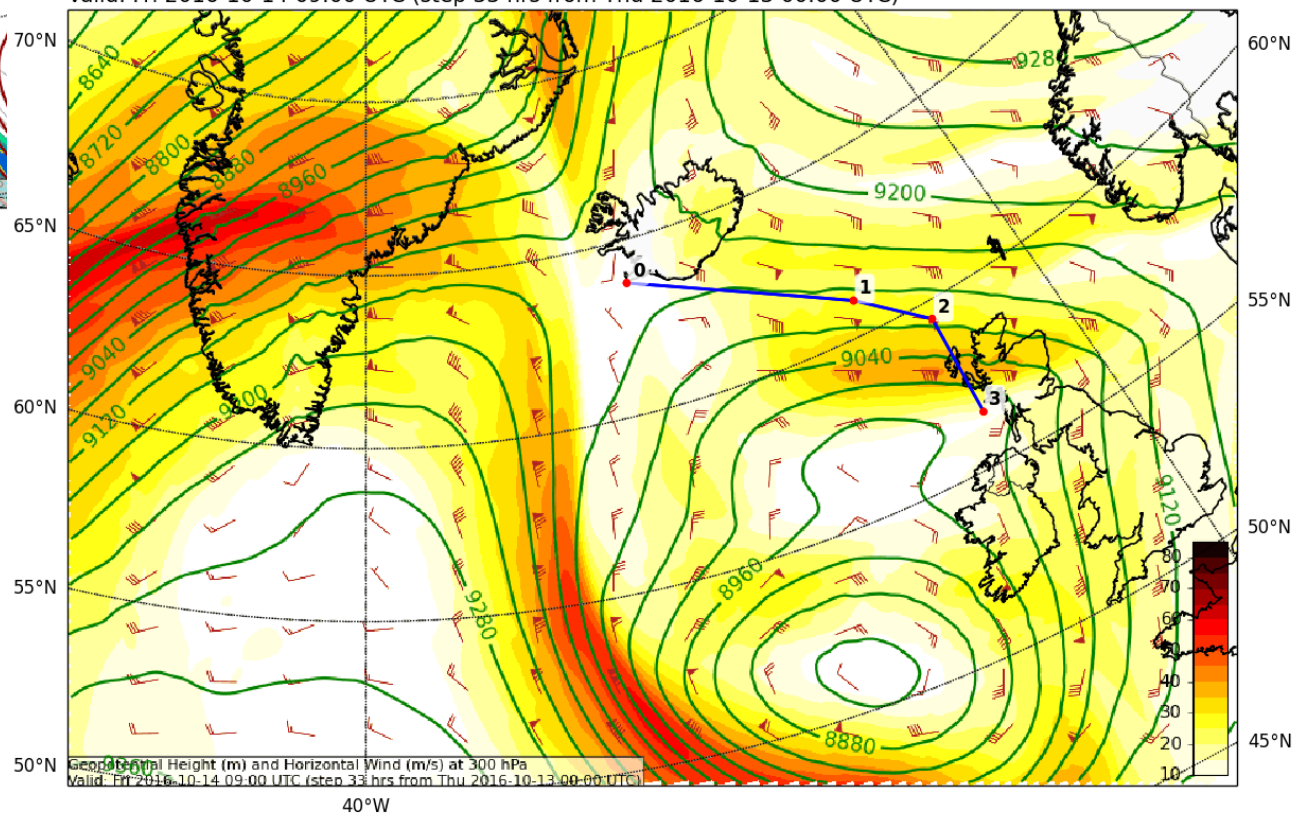
Valid: Fri 2016-10-14 09:00 UTC (step 33 hrs from Thu 2016-10-13 00:00 UTC)



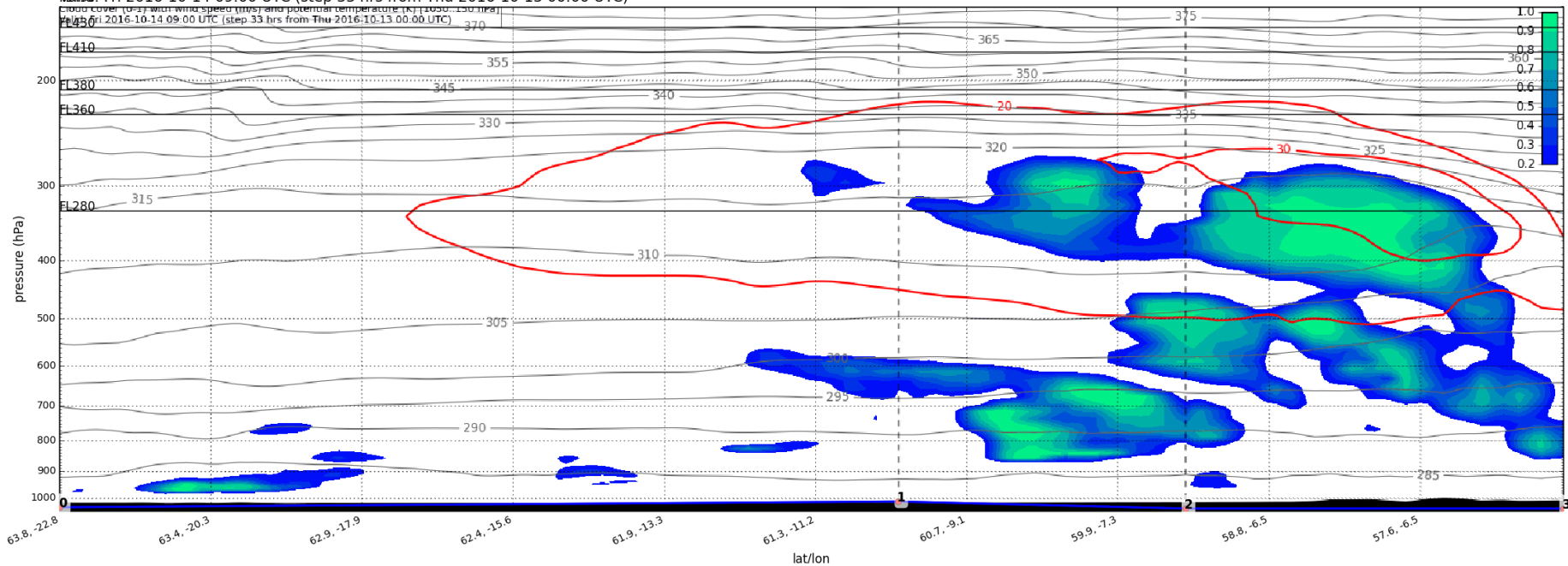
Relative Humidity (%) and Geopotential Height (m) at 300 (hPa)
 Valid: Fri 2016-10-14 09:00 UTC (step 33 hrs from Thu 2016-10-13 00:00 UTC)



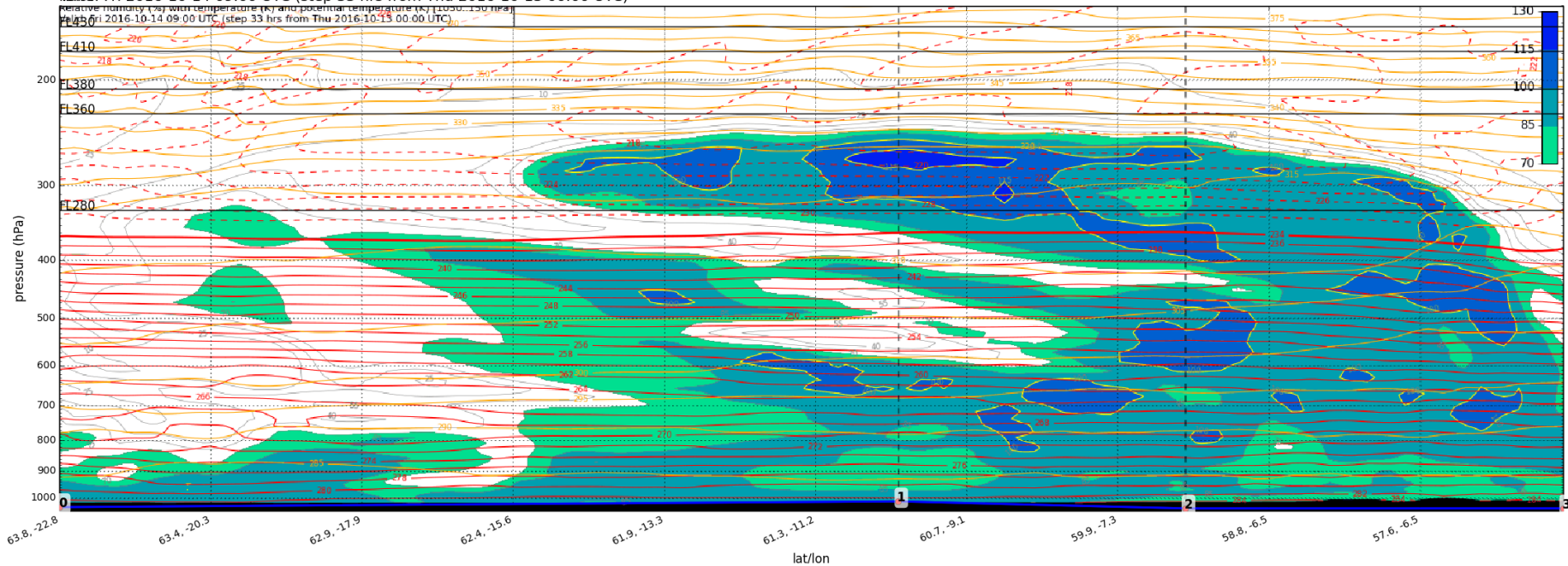
Geopotential Height (m) and Horizontal Wind (m/s) (Wind Speed 10-85 m/s) at 300 (hPa)
 Valid: Fri 2016-10-14 09:00 UTC (step 33 hrs from Thu 2016-10-13 00:00 UTC)

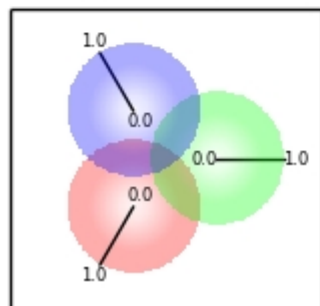
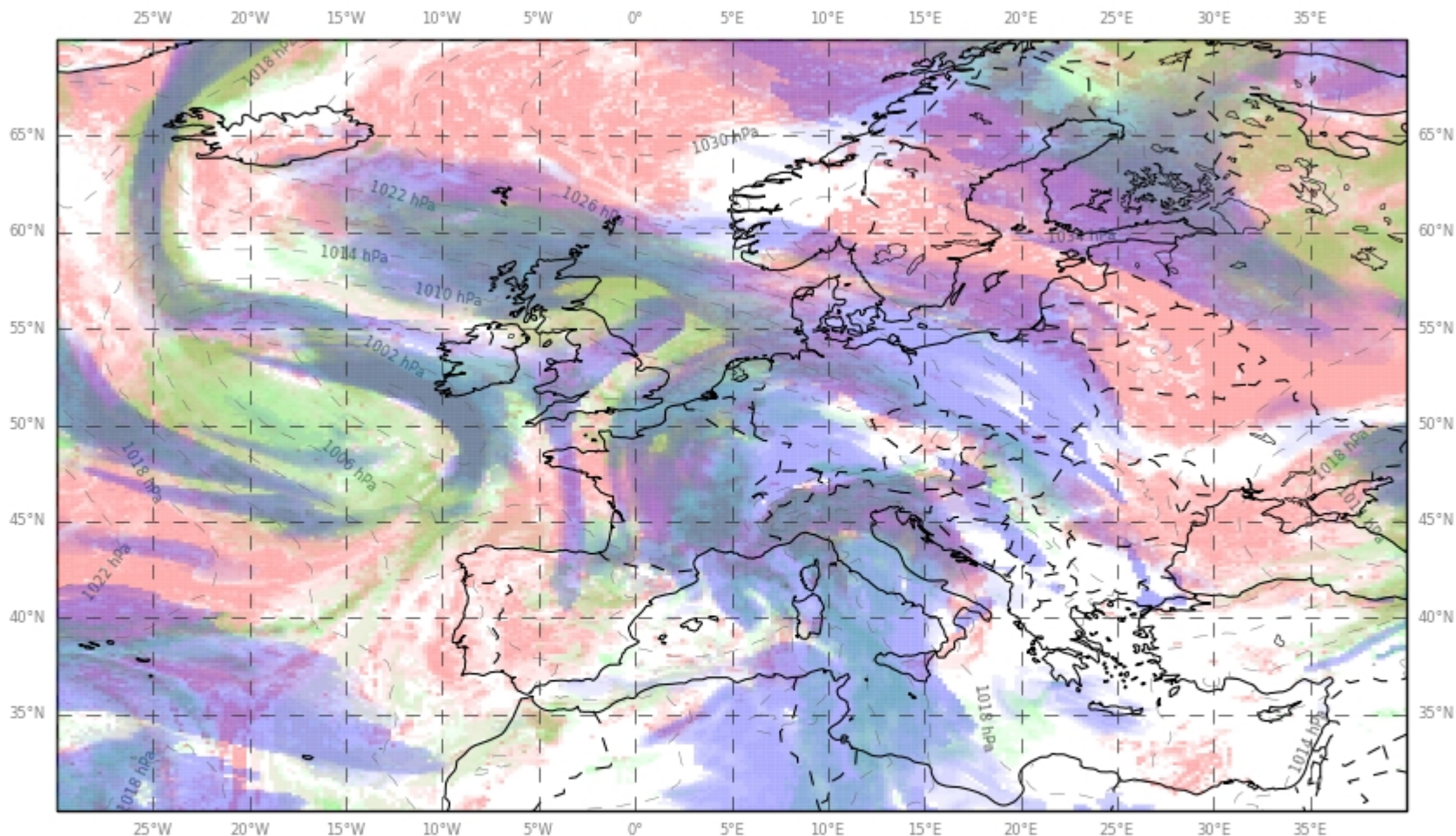


Cloud Cover (0-1) and Wind Speed (m/s) Vertical Section
 Valid: Fri 2016-10-14 09:00 UTC (step 33 hrs from Thu 2016-10-13 00:00 UTC)

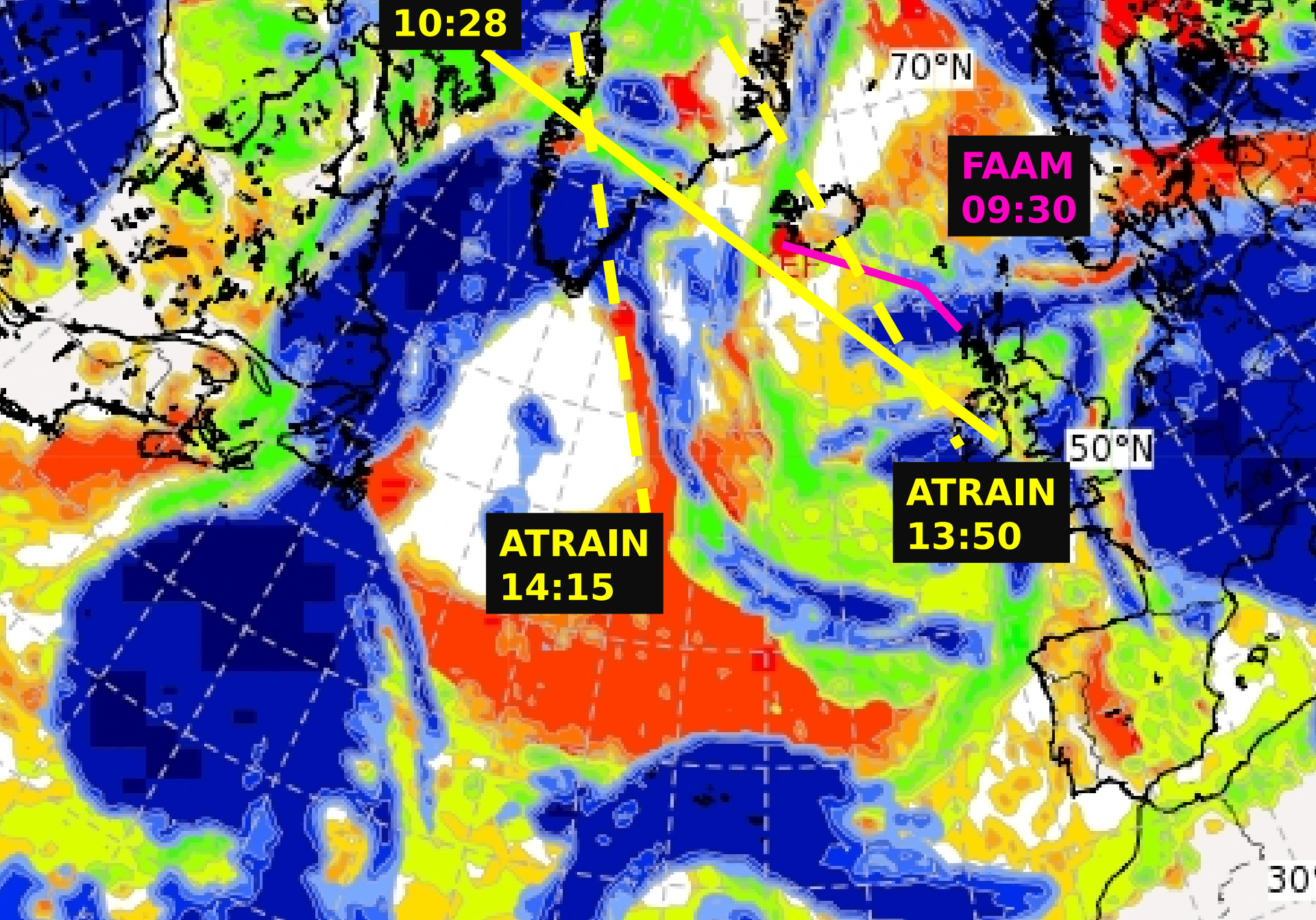


Relative Humidity (%) Vertical Section
 Valid: Fri 2016-10-14 09:00 UTC (step 33 hrs from Thu 2016-10-13 00:00 UTC)

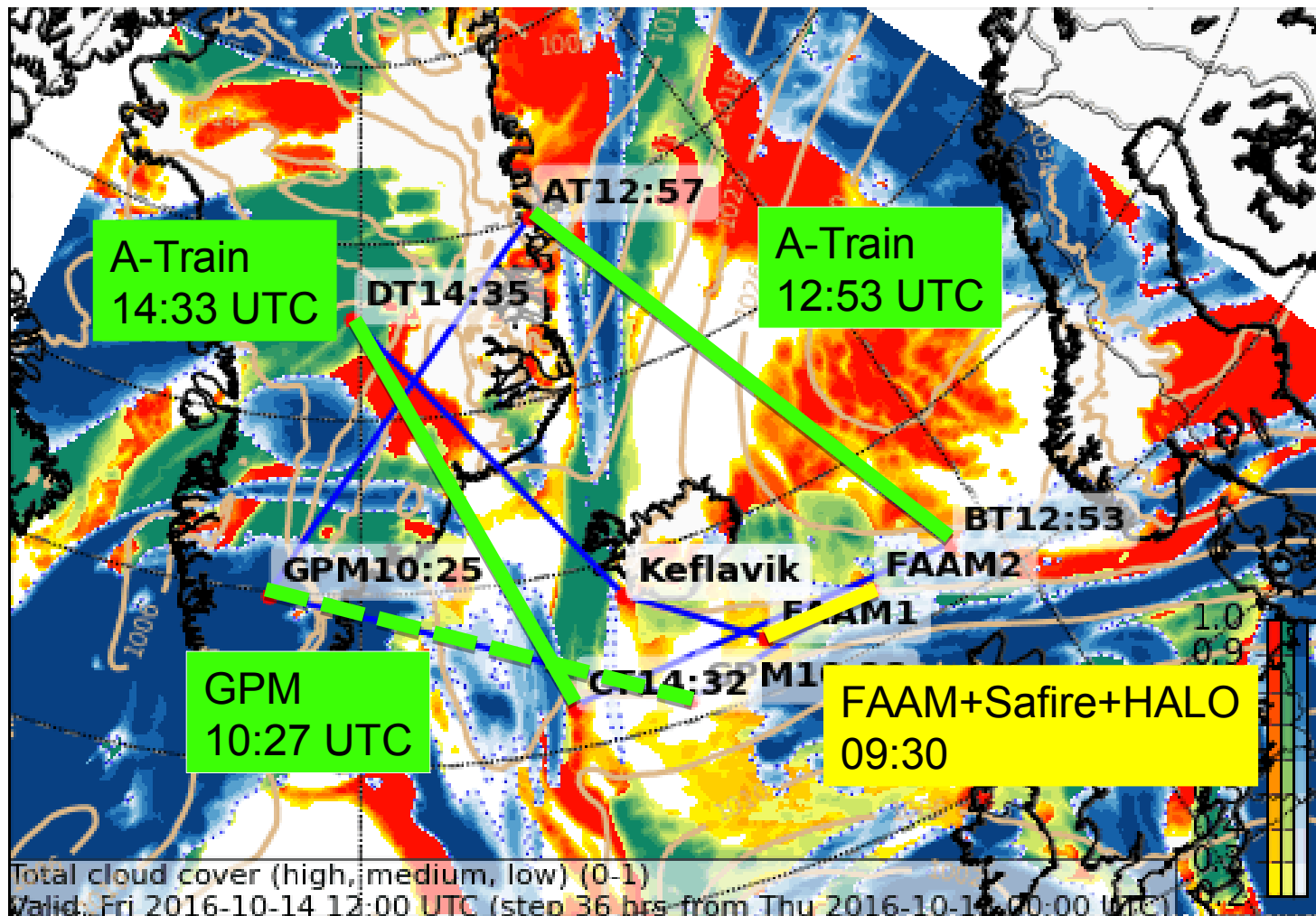




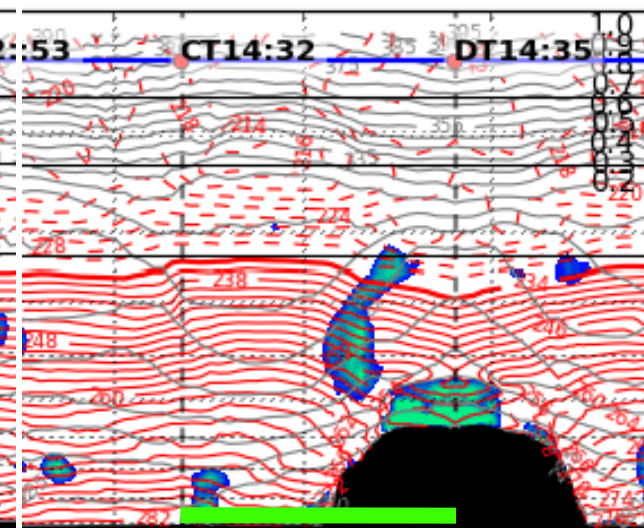
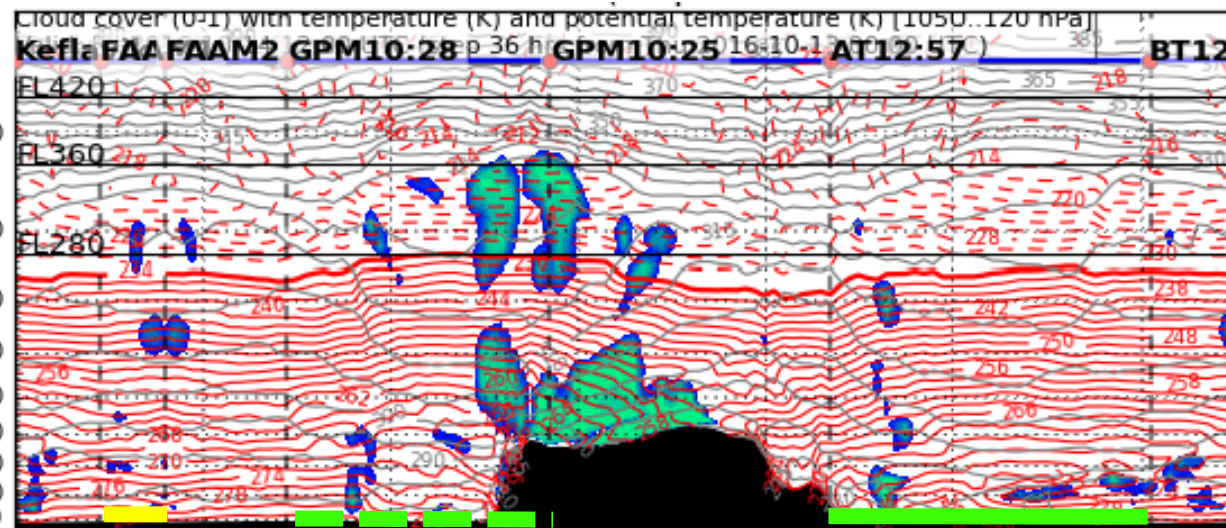
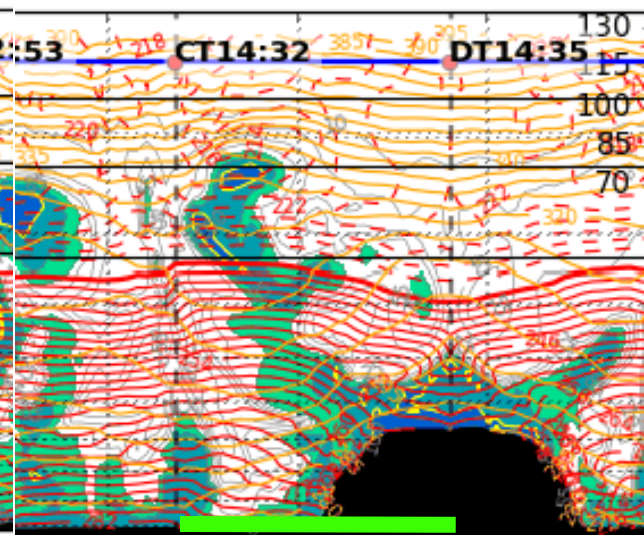
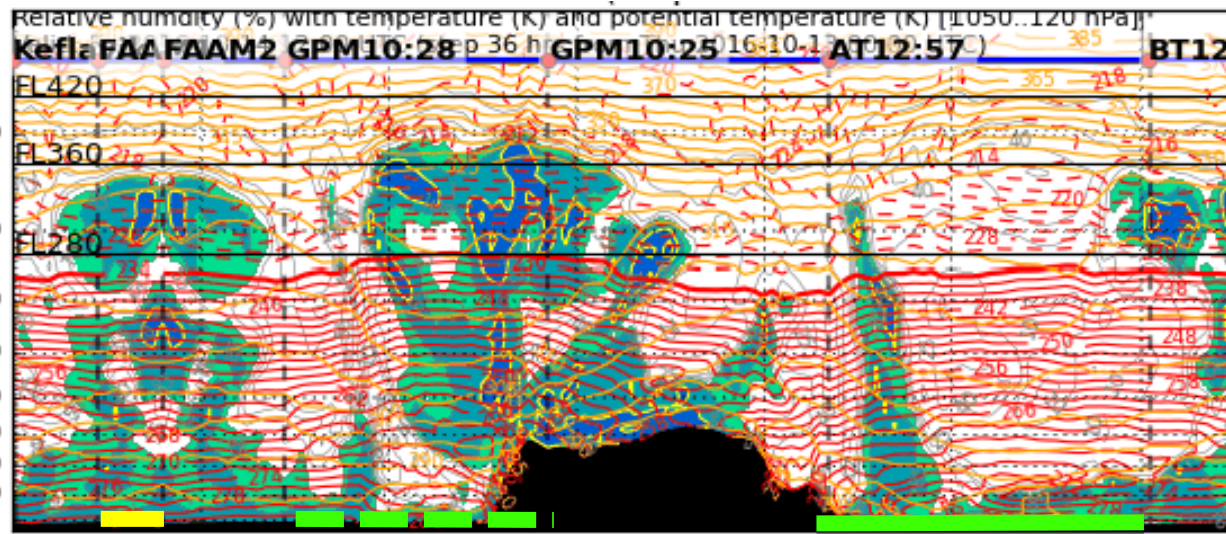
High cloud (~18000ft to ~45000ft) is blue,
mid-level cloud (~6000ft to ~18000ft) is green,
low cloud (surface to ~6000ft) is red
and the cloud types are combined as shown.



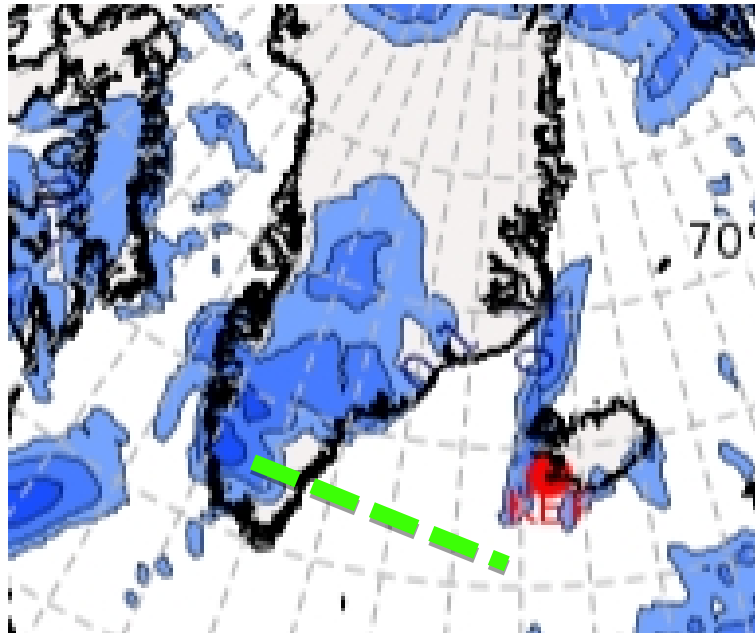
HALO flight Fri 14 Oct



HALO flight Fri 14 Oct

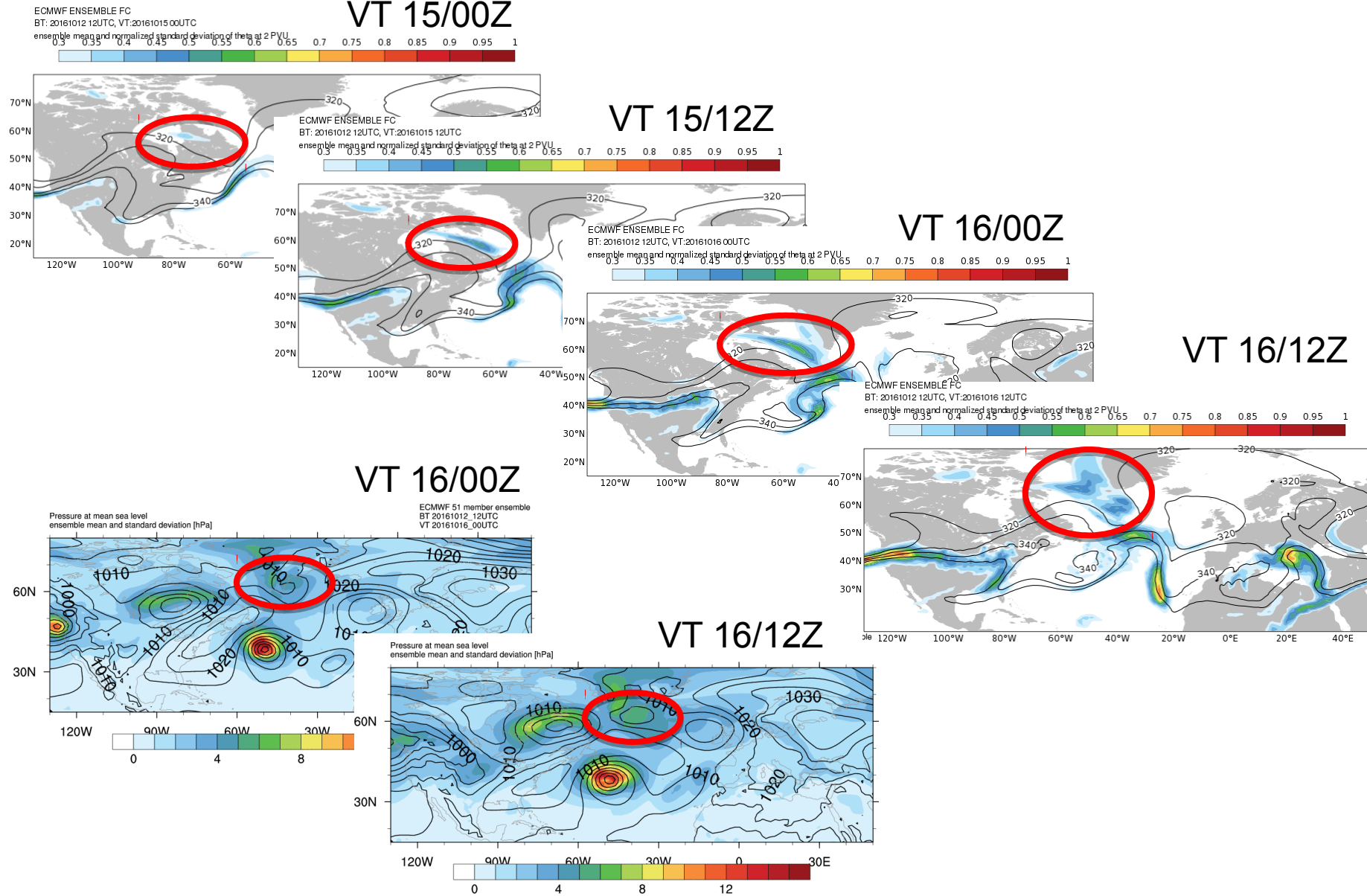


HALO flight Fri 14 Oct



Saturday flights: HALO, FALCON

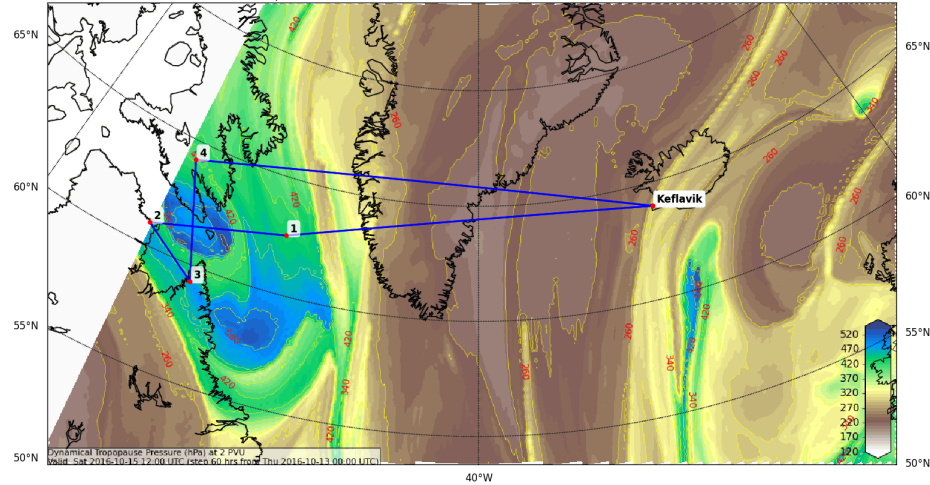
Saturday HALO flight



Tropopause polar vortex – 15 Oct

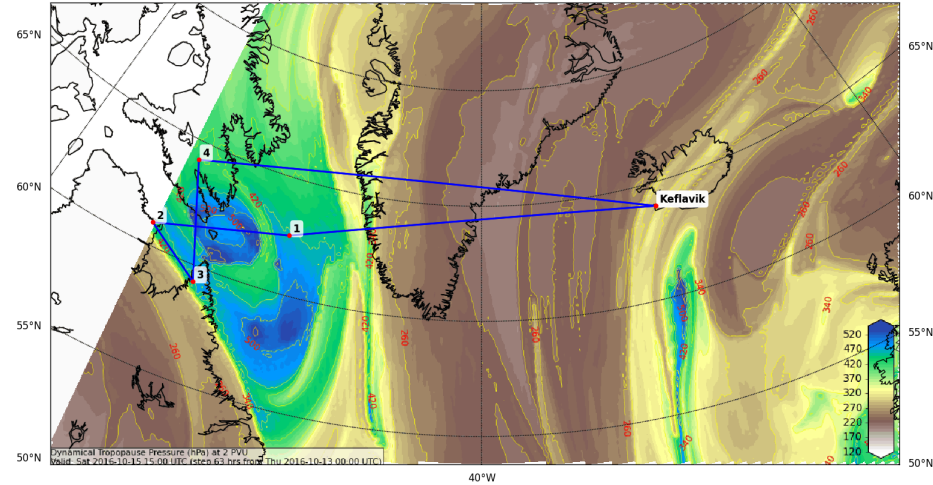
15 Oct, 12 UTC

Dynamical Tropopause (Pressure (hPa)) at 2000 (10^{-3} PVU)
Valid: Sat 2016-10-15 12:00 UTC (step 60 hrs from Thu 2016-10-13 00:00 UTC)



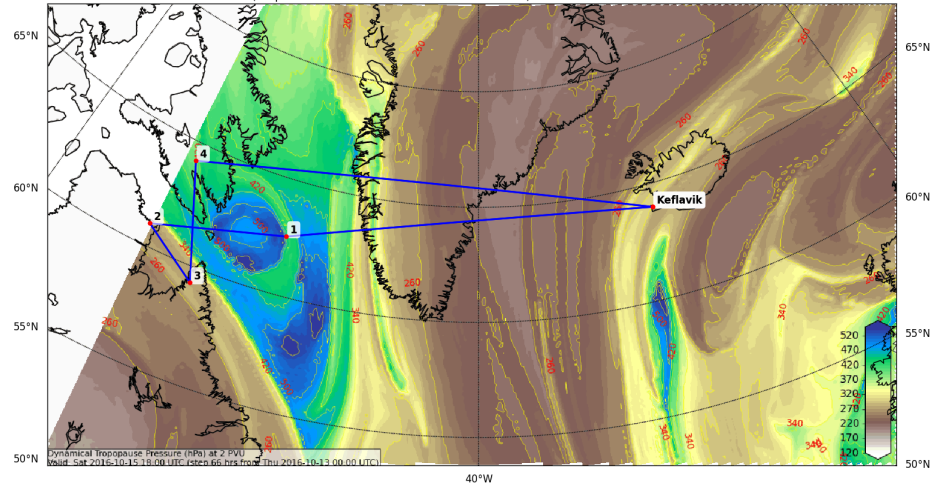
15 Oct, 15 UTC

Dynamical Tropopause (Pressure (hPa)) at 2000 (10^{-3} PVU)
Valid: Sat 2016-10-15 15:00 UTC (step 63 hrs from Thu 2016-10-13 00:00 UTC)



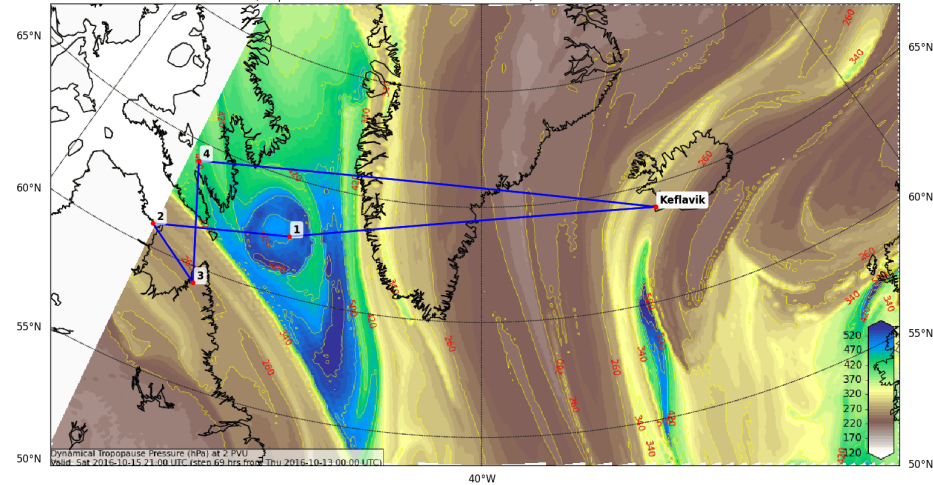
15 Oct, 18 UTC

Dynamical Tropopause (Pressure (hPa)) at 2000 (10^{-3} PVU)
Valid: Sat 2016-10-15 18:00 UTC (step 66 hrs from Thu 2016-10-13 00:00 UTC)

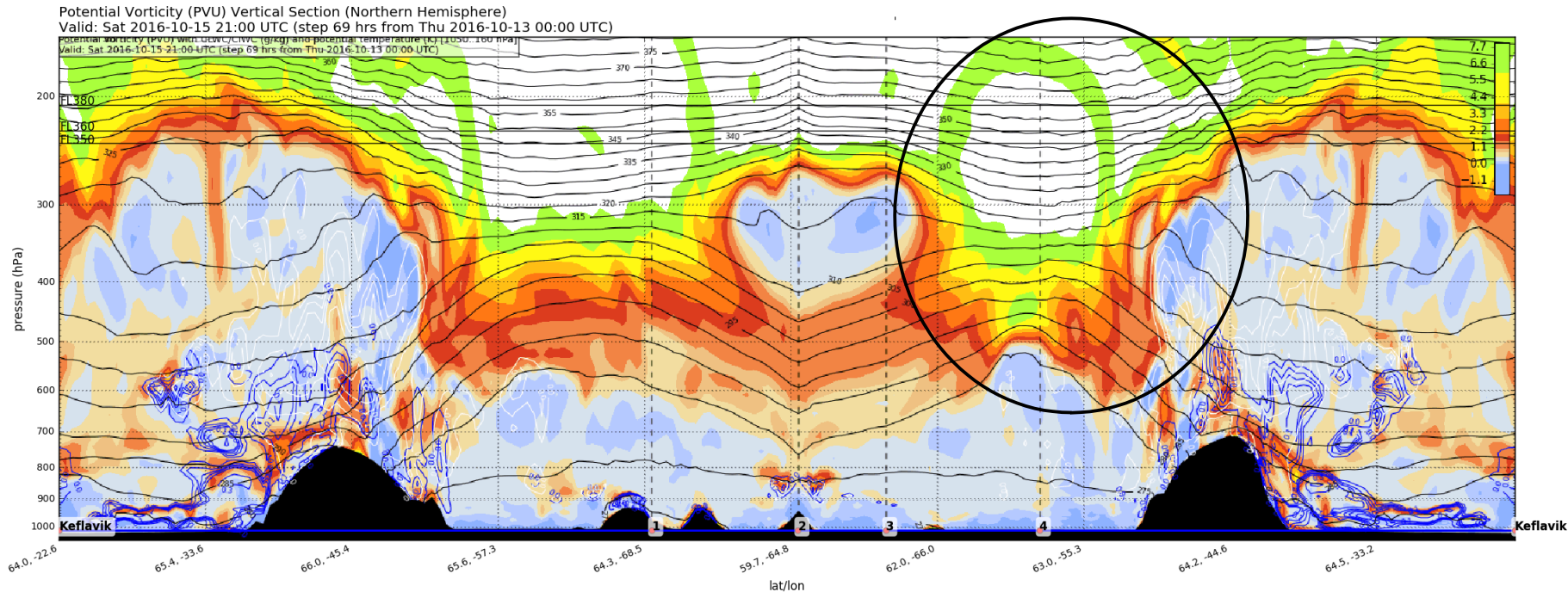


15 Oct, 21 UTC

Dynamical Tropopause (Pressure (hPa)) at 2000 (10^{-3} PVU)
Valid: Sat 2016-10-15 21:00 UTC (step 69 hrs from Thu 2016-10-13 00:00 UTC)



Tropopause polar vortex – 15 Oct



- Moisture gradient across deep tropopause fold and below TPV
- Dropsondes across tropopause fold/TPV → measurements in region where TPV interacts with waveguide → very exciting in terms of predictability
- Mixed phase clouds and moisture structure across ridge over Greenland
-
- Scientifically most interesting time: 15 Oct 2016, 21 UTC

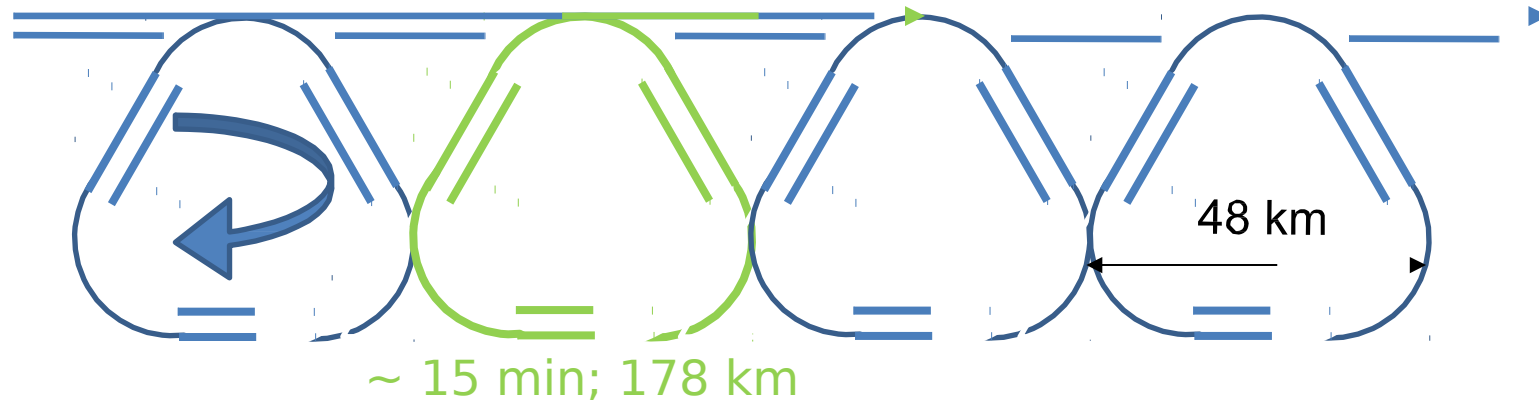
Saturday October 15th

1st FALCON flight

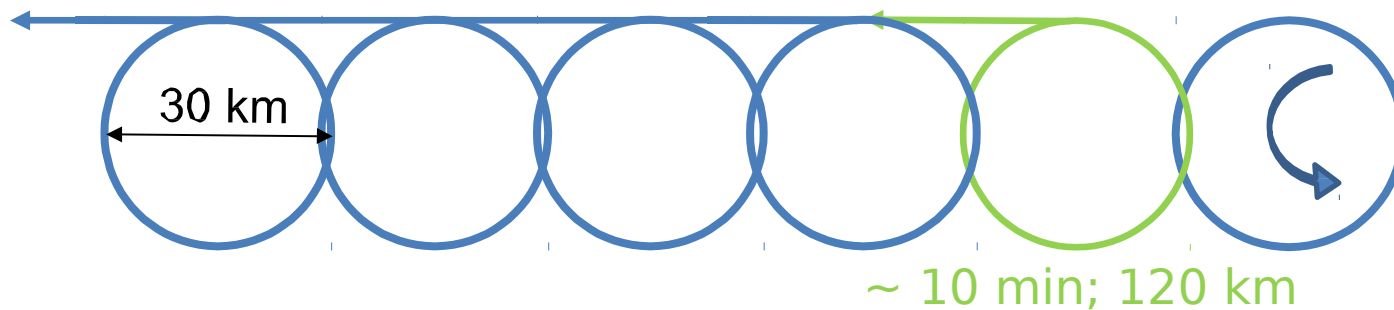
Saturday October 15th FALCON Flight 09:30 – 13:00 UTC

Flight-patterns A2D Windscan
18 km straight (90 s. 5 Observations)
20° curves (12 km radius)
45 km box. 35 km maximum wind profile separation
130 km total per scan (~ 11 min)

> Turns 20° right and straight:

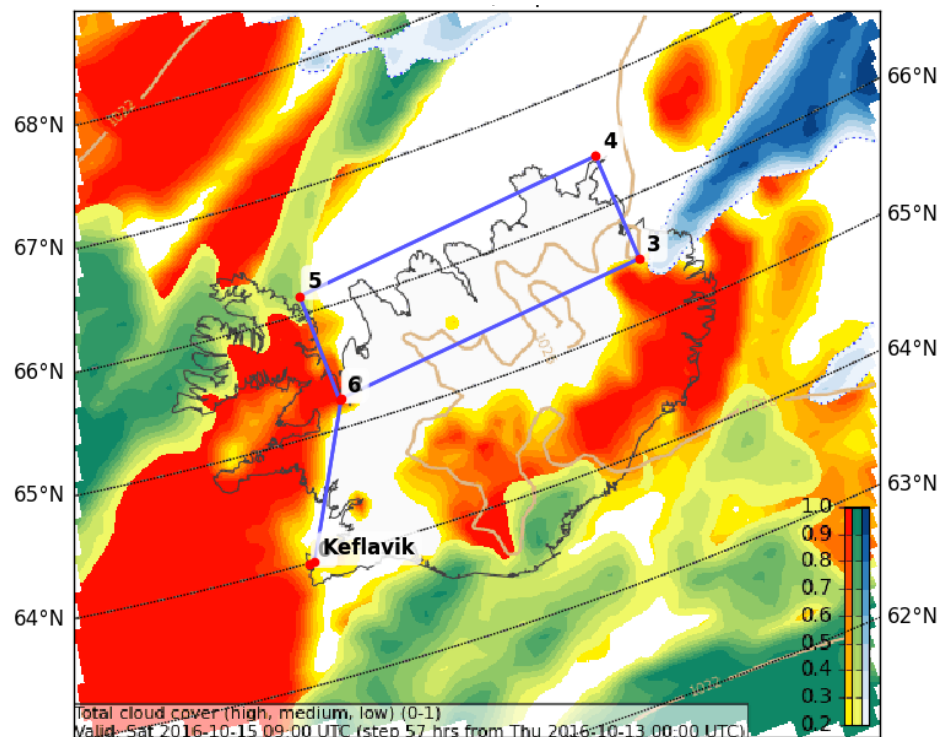


> Turns 15° left on the way back:

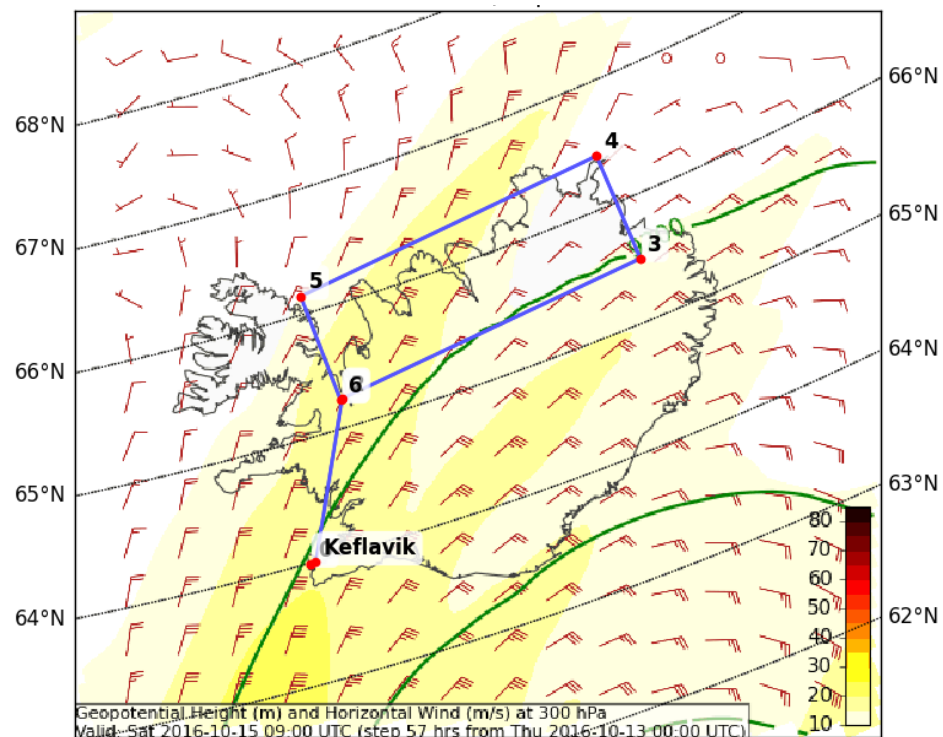


Saturday October 15th FALCON Flight 09:30 – 13:00 UTC

Total Cloud Cover



Hor Wind (m/s) at 300 hPa



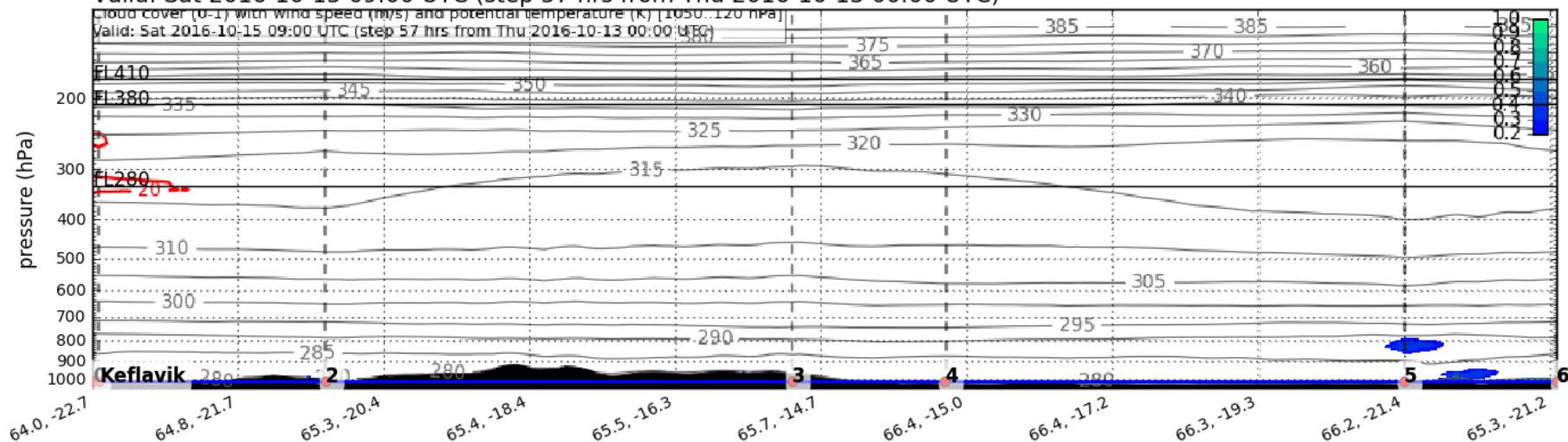
BT13/00Z VT15/09Z

- Scan pattern in box > estimate 3D wind
- Mostly cloud free region
- FL360

Saturday October 15th FALCON Flight 09:30 – 13:00 UTC

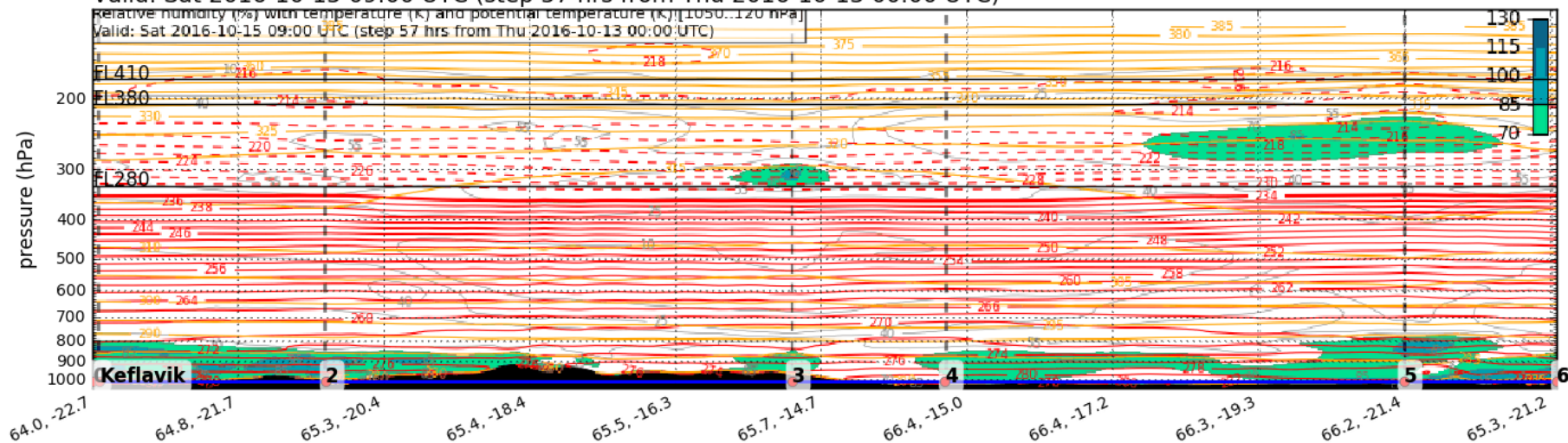
Cloud Cover (0-1) and Wind Speed (m/s) Vertical Section

Valid: Sat 2016-10-15 09:00 UTC (step 57 hrs from Thu 2016-10-13 00:00 UTC)



Relative Humidity (%) Vertical Section

Valid: Sat 2016-10-15 09:00 UTC (step 57 hrs from Thu 2016-10-13 00:00 UTC)

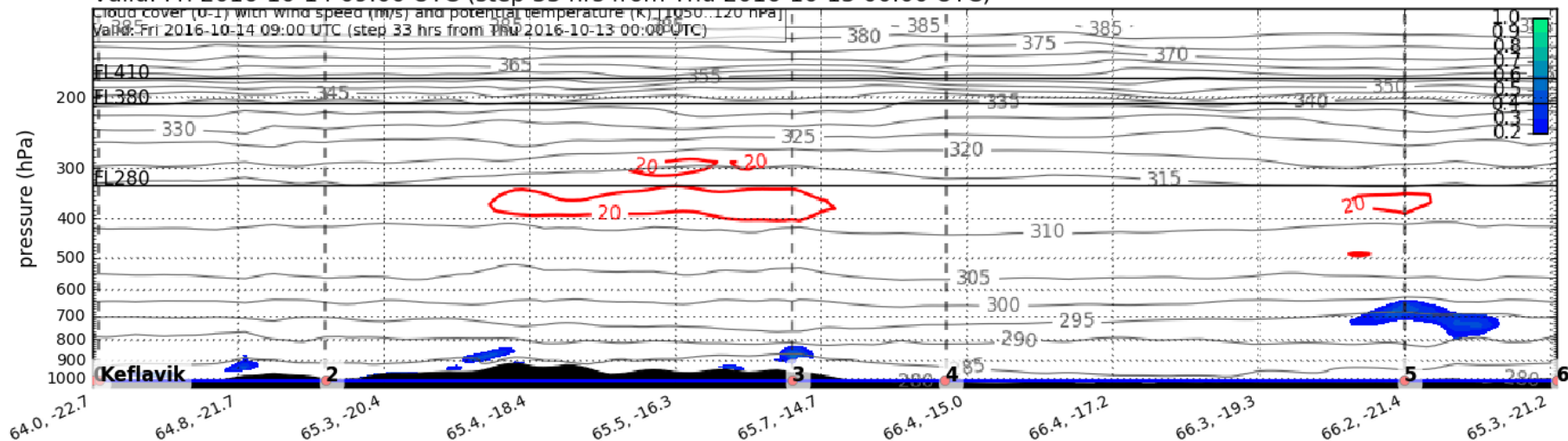


BT13/00Z VT15/09Z

Friday October 14th FALCON Flight 09:30 – 13:00 UTC

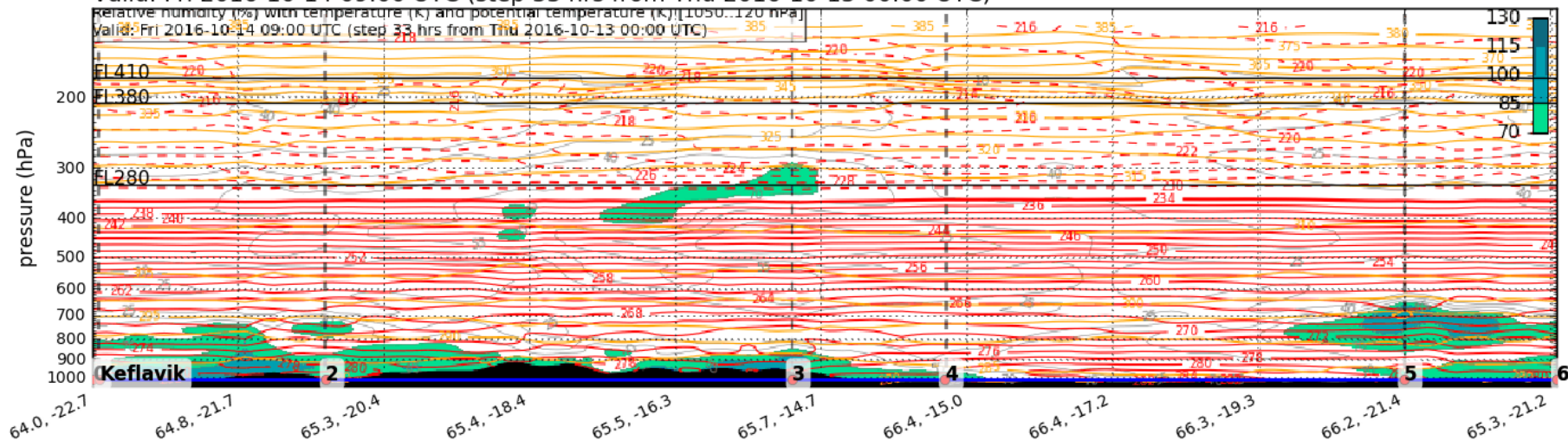
Cloud Cover (0-1) and Wind Speed (m/s) Vertical Section

Valid: Fri 2016-10-14 09:00 UTC (step 33 hrs from Thu 2016-10-13 00:00 UTC)



Relative Humidity (%) Vertical Section

Valid: Fri 2016-10-14 09:00 UTC (step 33 hrs from Thu 2016-10-13 00:00 UTC)



BT13/00Z VT14/09Z

Saturday 15th October

DLR Falcon Plan

2nd Flight

Sat 15 18Z – DLR Falcon Plan (2nd flight)

Objectives

-> Calibration for the A2D incoherent lidar

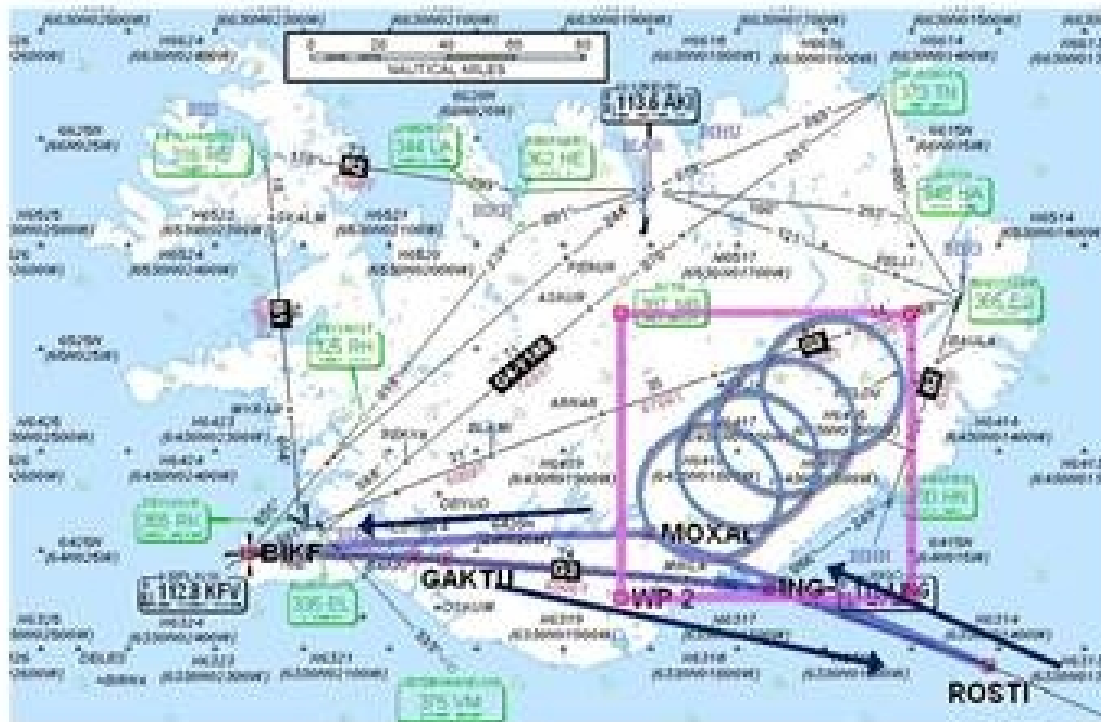
Needs clear sky above Icelandic glaciers

PREVIOUS FLIGHT: 28.09.2016

D-CMET – Meteorological Research Flight - „NAWDEX” Campaign



German
Aerospace Center



Date of flight: **28 SEPT 2016**

Callsign: **D-CMET**
Type of Aircraft: **FA20**

Departure Aerodrome: **BIKF**
Destination Aerodrome: **BIKF**
Alternate Aerodrome: **BIAR**

Takeoff: **0900z**
EET: **3h30m**
Requested Flight levels: **btw FL350 and FL380**

Routing
KPV G3 ROSTI DCT MOXAL DCT KPV

Remarks
ETA MOXAL 1000z

Request to circle within designated box for approx 2H00.

Each circle (~30 minutes) has to be in one FL 350 - 380

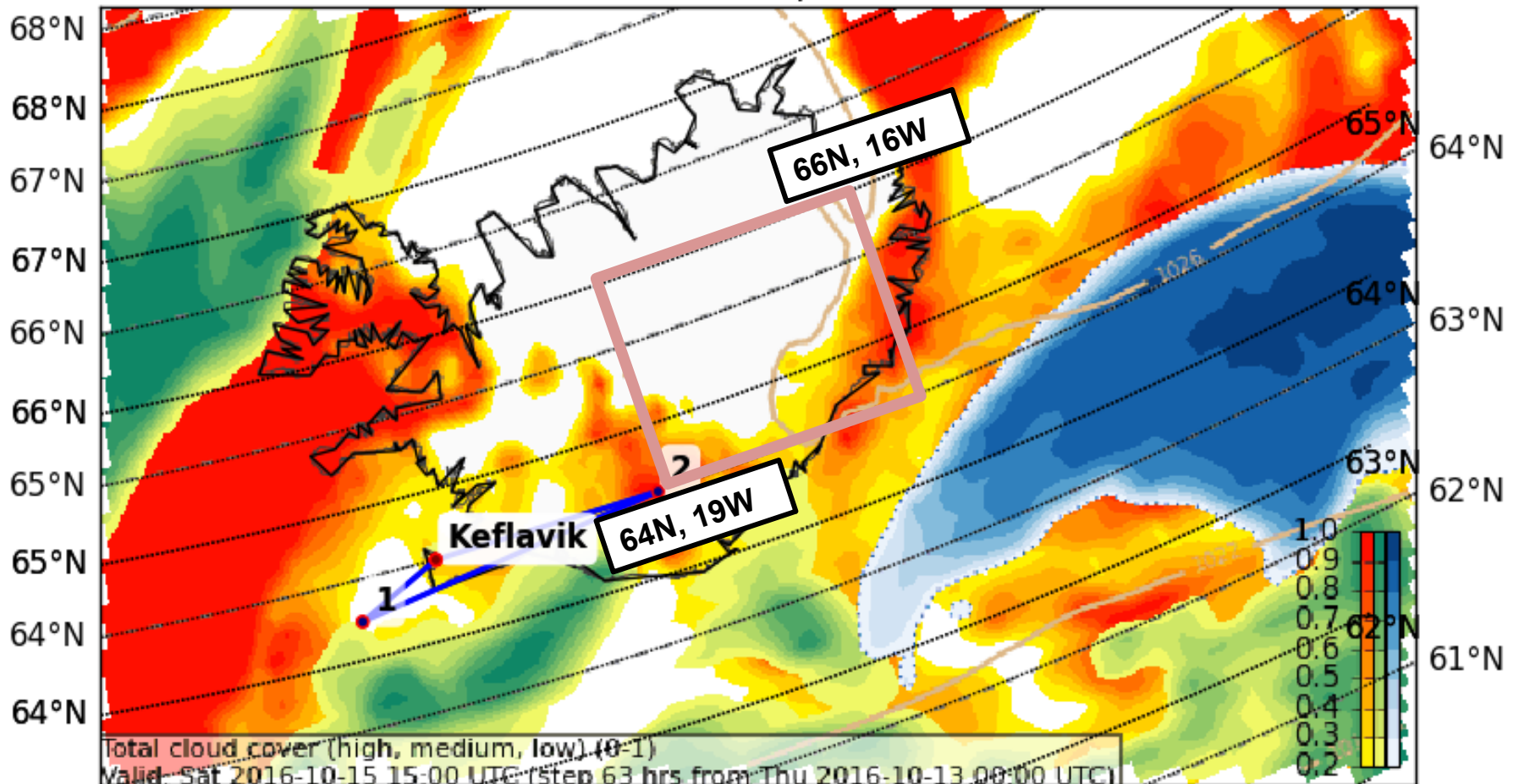
Box Coordinates:
6510N01820W (NW corner)
6510N01500W (NE corner)
6345N01500W (SE corner)
6345N01820W (SW corner)

Circular patterns in a box “reserved” for us between FL 350 and 380.

Sat 15 18Z – DLR Falcon Plan (2nd flight)

Cloud Cover (0-1) (Total Cloud Cover)

Valid: Sat 2016-10-15 15:00 UTC (step 63 hrs from Thu 2016-10-13 00:00 UTC)



FL-380 - Circles over the glaciers in a box NW of WP2, for more or less 2 hours.

NAWDEX – General Planning Meeting

13 October 2016, Keflavik 11 UTC

Today's summary:

1. Today

- HALO & FALCON (double flight), SAFIRE flight planned

2. Friday radiometer intercomparison (UK FAAM, HALO, SAFIRE)

3. Possible and interesting flights on Saturday

4. Logistics decisions for the weekend (Day off)