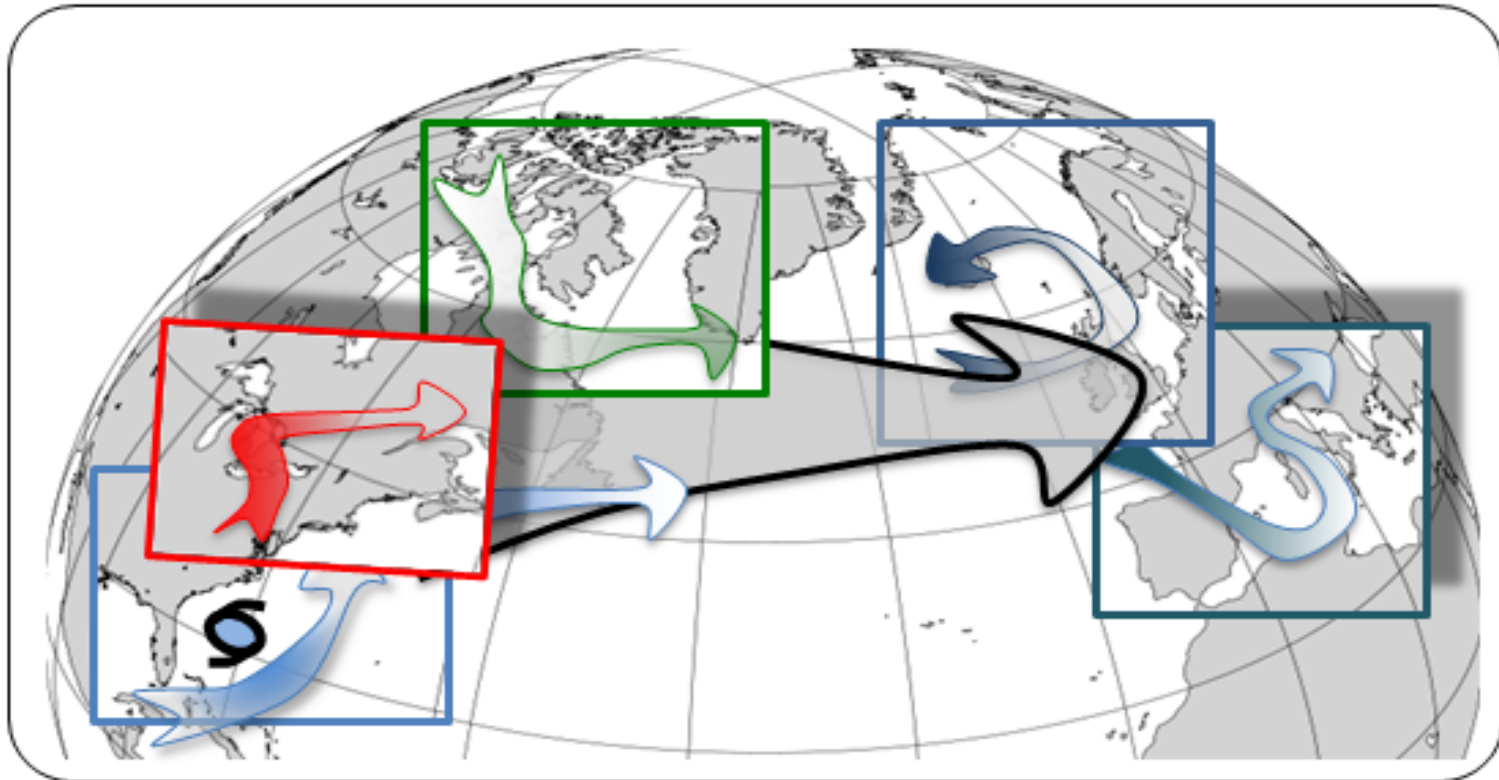


NAWDEX – General Planning Meeting

12 October 2016, Keflavik 11 UTC



NAWDEX – General Planning Meeting

12 October 2016, Keflavik 12 UTC

Key issues today:

1. Today's flights

- HALO & FALCON (Canceled), SAFIRE

2. Tomorrow's flights

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

NAWDEX – General Planning Meeting

12 October 2016, Keflavik 11 UTC

- 1.Current 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 coordinator
- 6.Thursday flights HALO, FALCON, SAFIRE
- 7.Friday flights: radiometer intercomparison

Current Flights: Wednesday October 12th

HALO

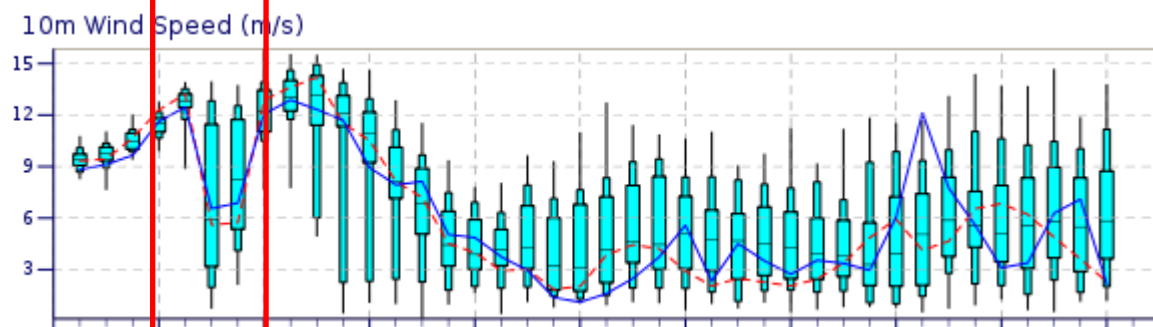
FALCON

CANCELED

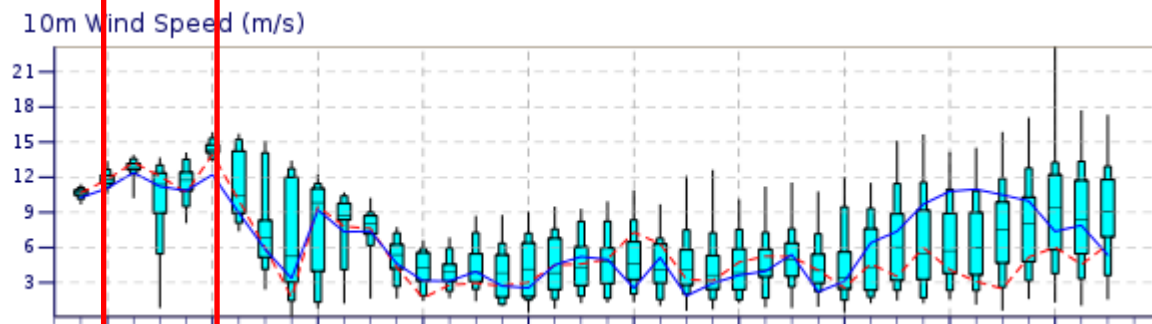
SAFIRE

Wind Forecasts at Keflavik

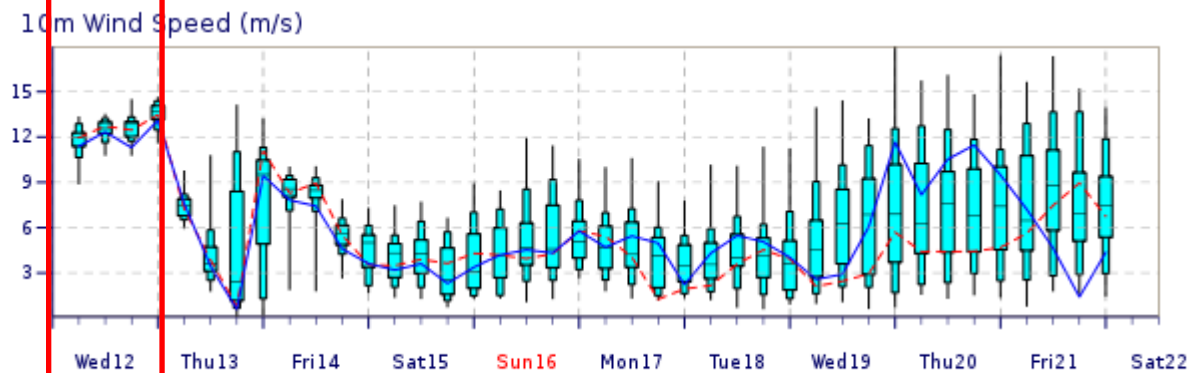
11/00UTC



11/12UTC

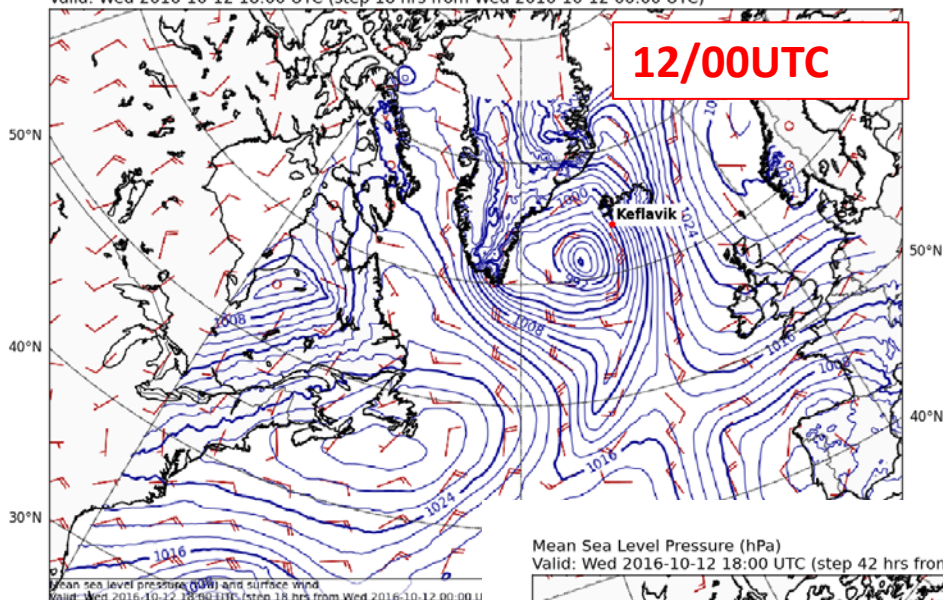


12/00UTC

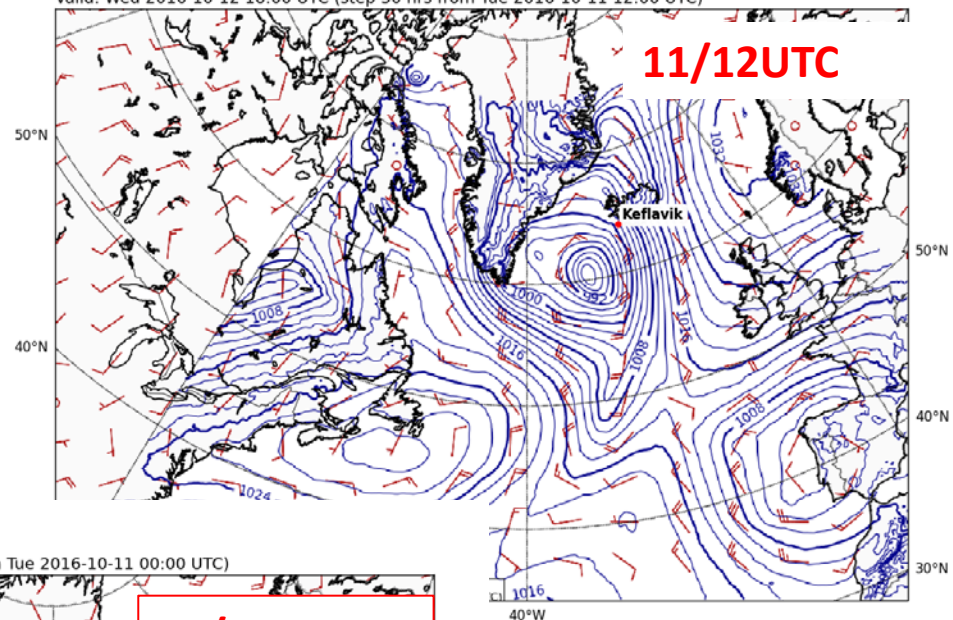


Wind Forecasts at Keflavik

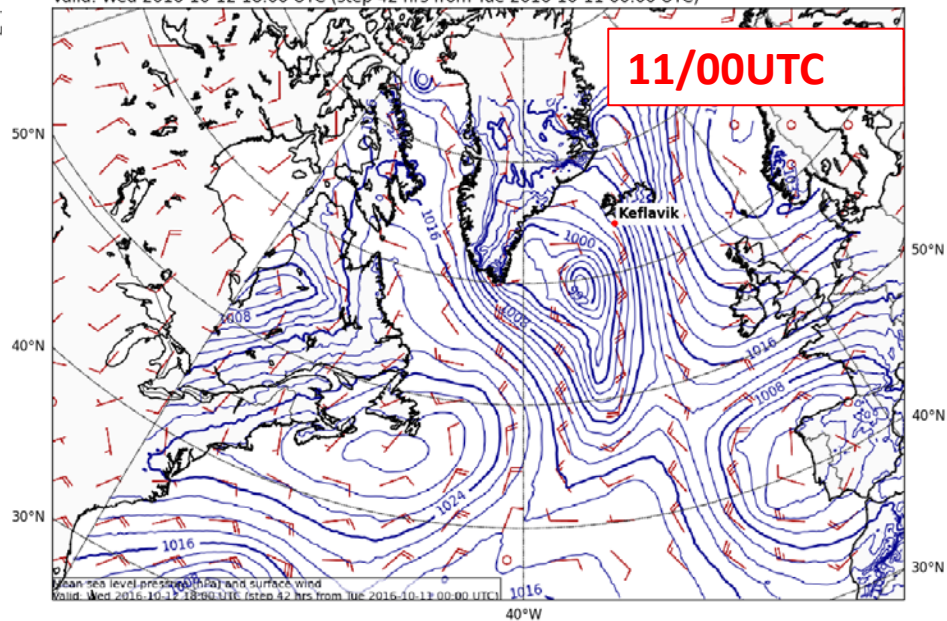
Mean Sea Level Pressure (hPa)
Valid: Wed 2016-10-12 18:00 UTC (step 18 hrs from Wed 2016-10-12 00:00 UTC)



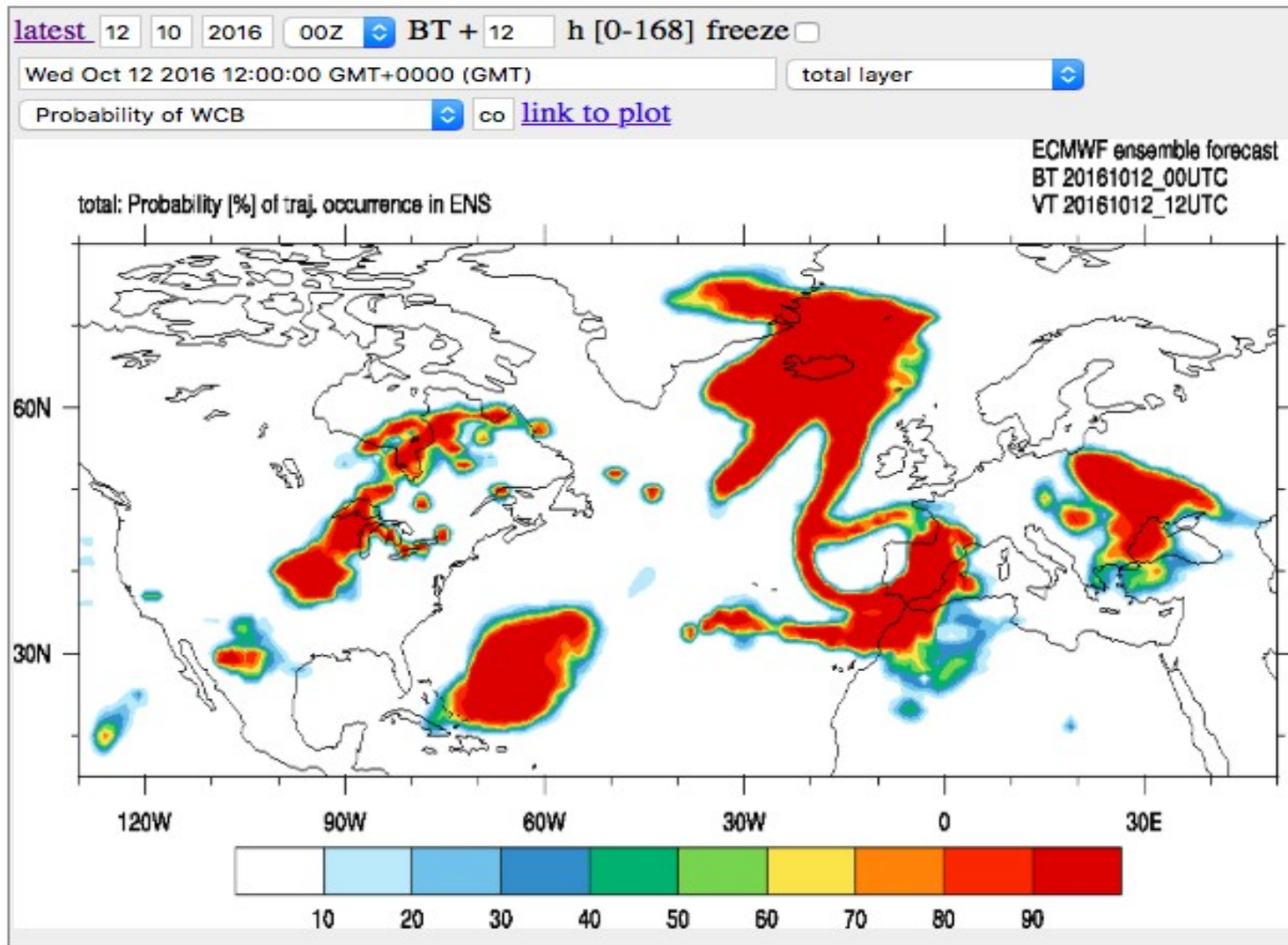
Mean Sea Level Pressure (hPa)
Valid: Wed 2016-10-12 18:00 UTC (step 30 hrs from Tue 2016-10-11 12:00 UTC)



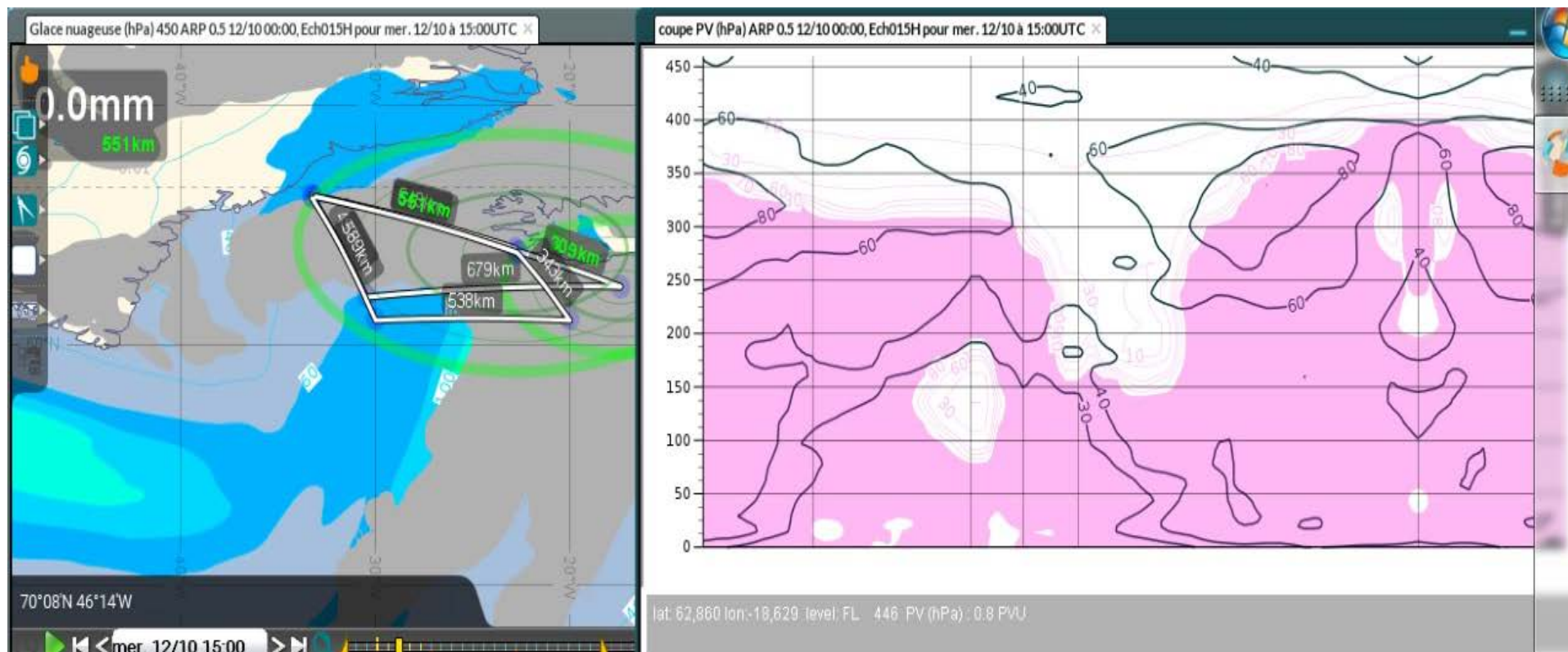
Mean Sea Level Pressure (hPa)
Valid: Wed 2016-10-12 18:00 UTC (step 42 hrs from Tue 2016-10-11 00:00 UTC)



Who's the guilty?.....



SAFIRE flight Wed 12



Aircraft status report by FX- Operations

Instrument status report

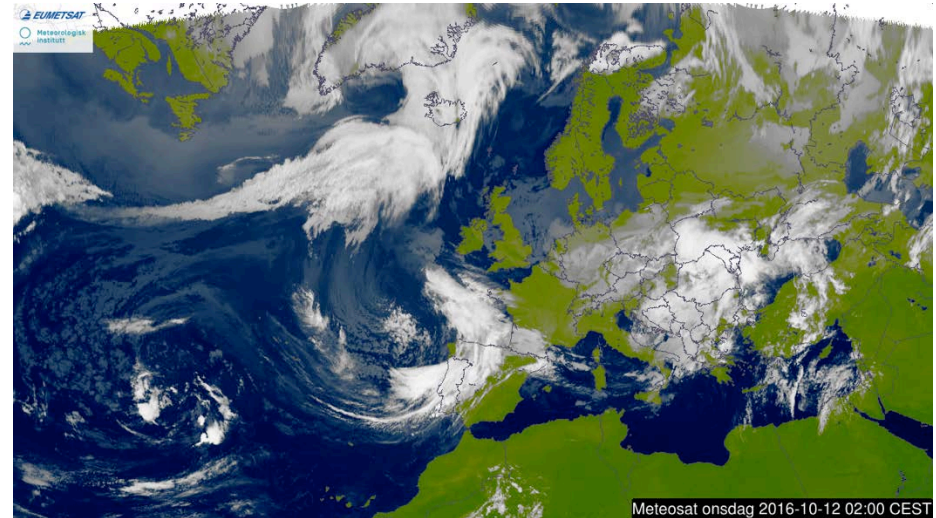
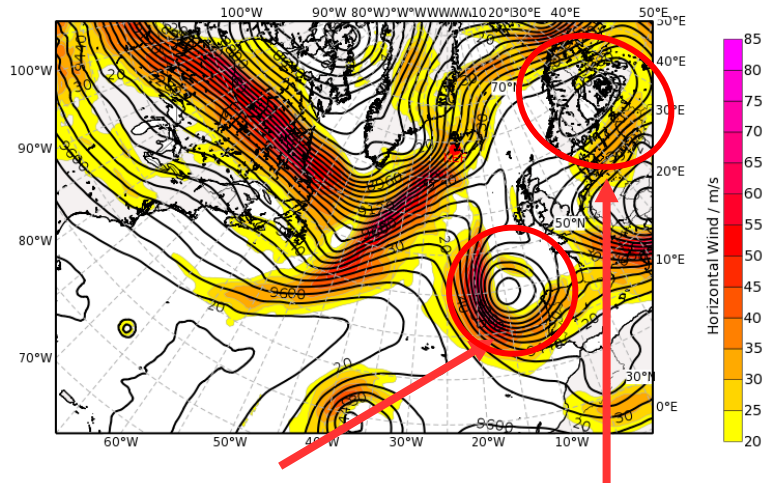
Weather summary

Analysis – 12 Oct 2016, 00 UTC

Z300, SAT
THE850

BT12/00Z

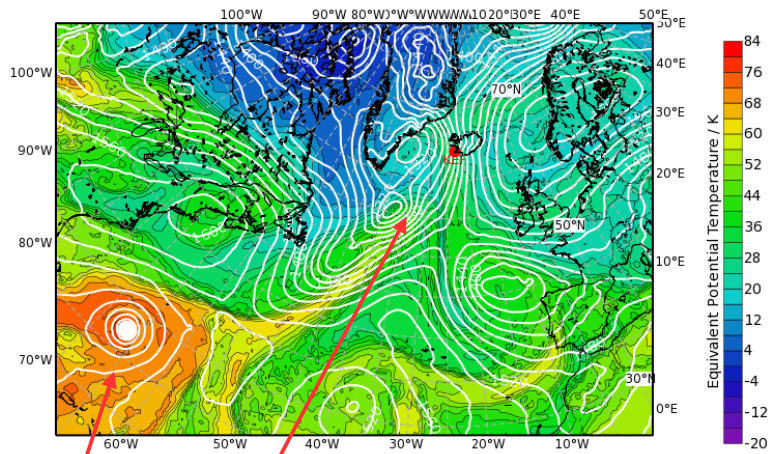
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Wed, 12 Oct 2016, 00 UTC (step 000 h from Wed, 12 Oct 2016, 00 UTC)



Cut-off "Brigitte"

Blocking over Scandinava

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Wed, 12 Oct 2016, 00 UTC (step 000 h from Wed, 12 Oct 2016, 00 UTC)

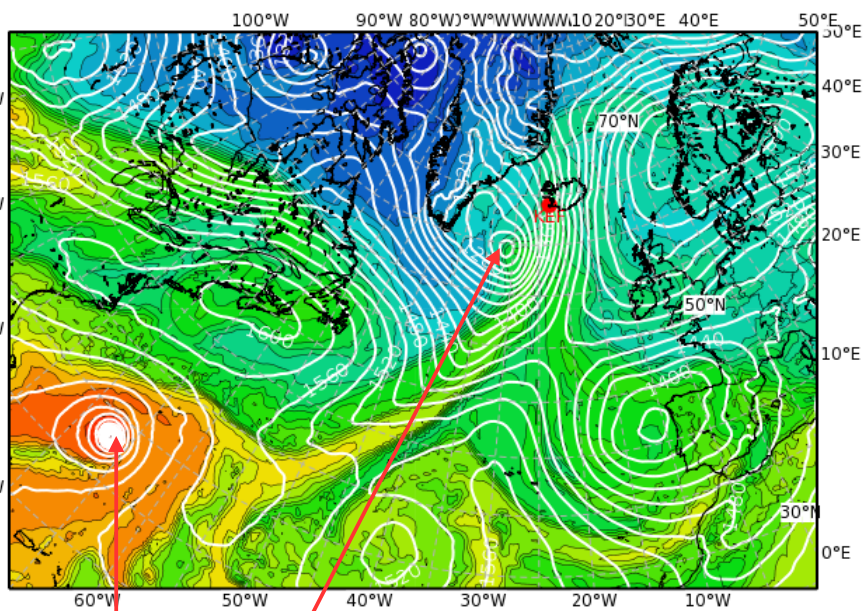


TC Nicole

Downstream cyclone

Stronger downstream cyclone than in yesterdays run, with a faster evolution than yesterday.

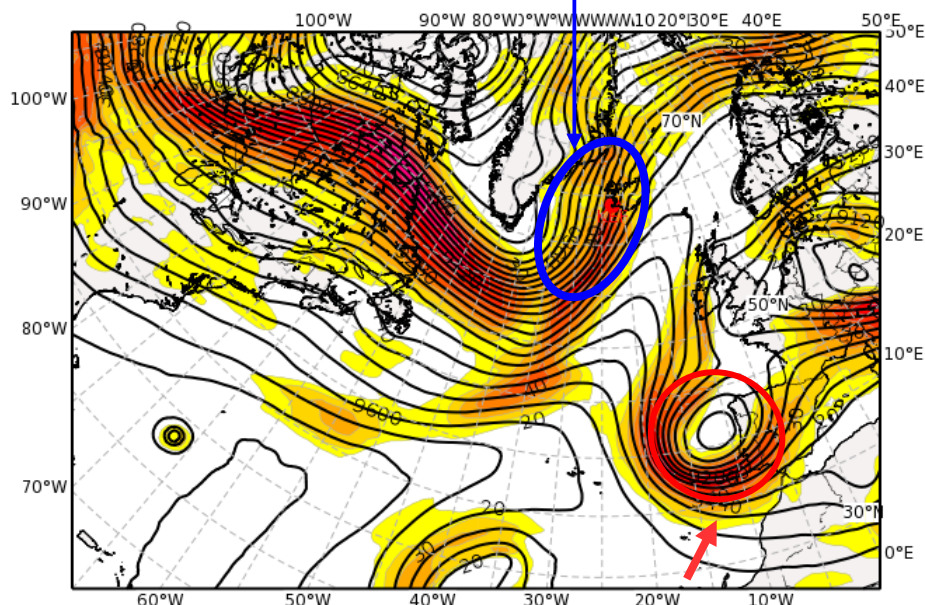
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Wed, 12 Oct 2016, 12 UTC (step 012 h from Wed, 12 Oct 2016, 00 UTC)



TC Nicole

Downstream cyclone

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

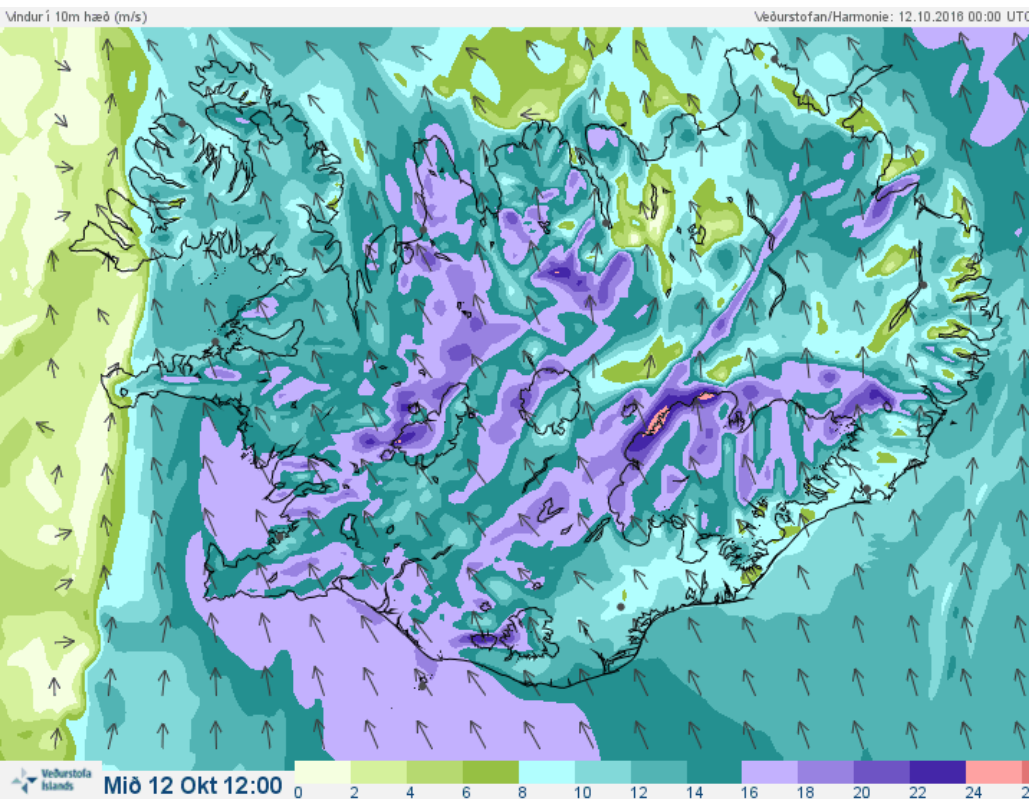


WCB ascent, outflow

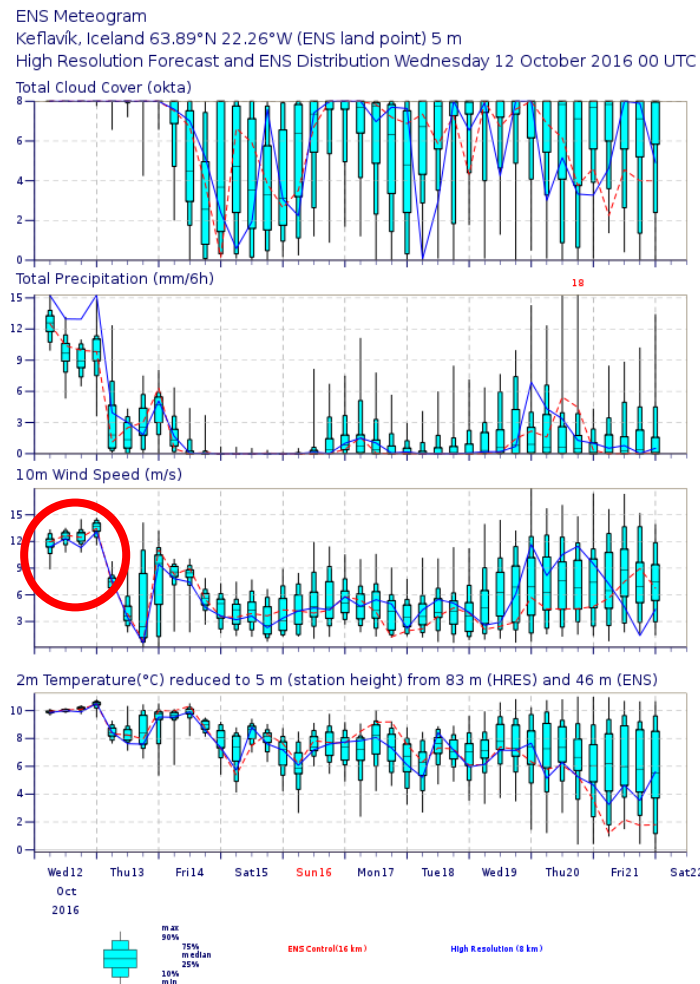
Cut-off "Brigitte"

Forecast for Wed, 12 Oct 2016 12 UTC

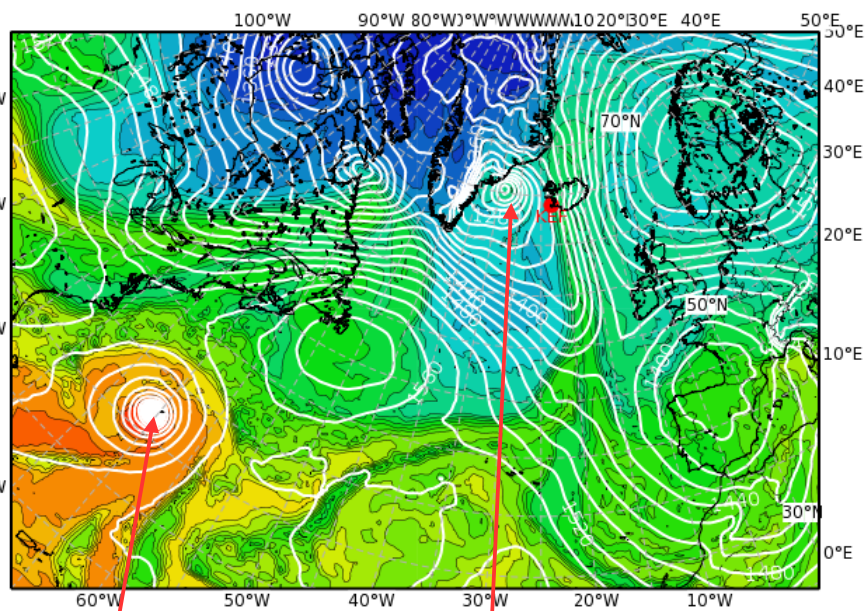
BT12/00Z



Strong winds in HARMONIE today, however some uncertainty and hope for today's flights remain.



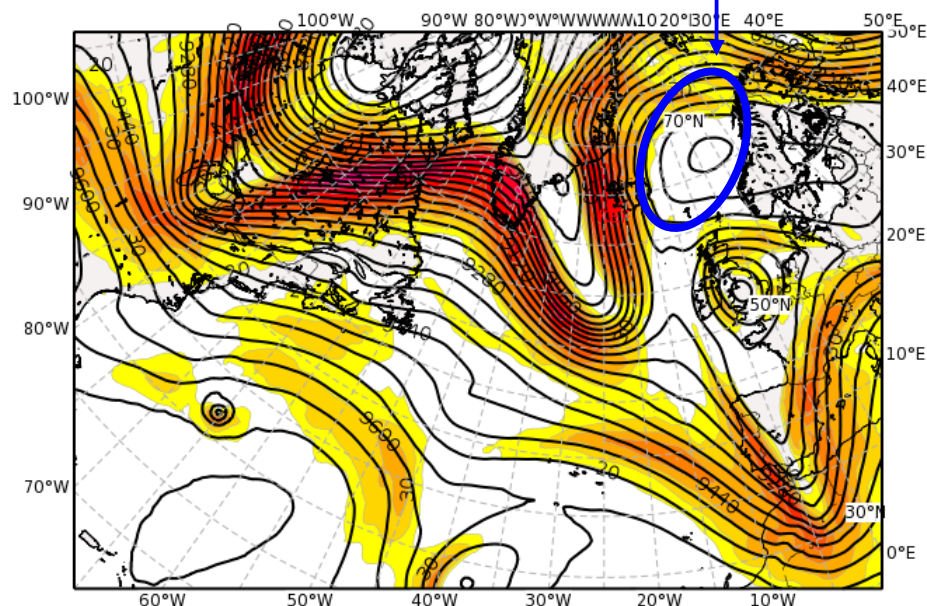
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Thu, 13 Oct 2016, 12 UTC (step 036 h from Wed, 12 Oct 2016, 00 UTC)



TC Nicole

Downstream cyclone

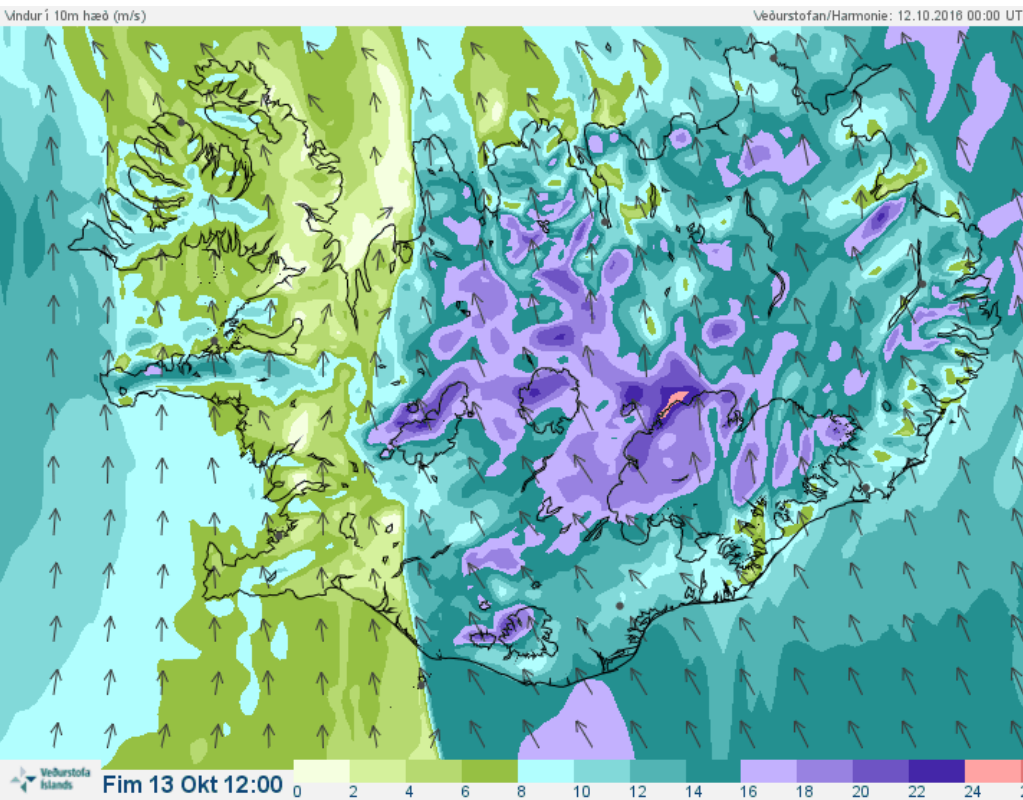
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Thu, 13 Oct 2016, 12 UTC (step 036 h from Wed, 12 Oct 2016, 00 UTC)



WCB outflow, ridge amplification

Forecast for Thu, 13 Oct 2016 12 UTC

BT12/00Z

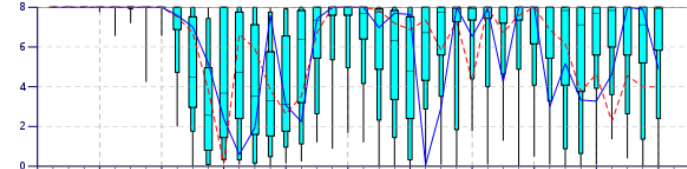


ENS Meteogram

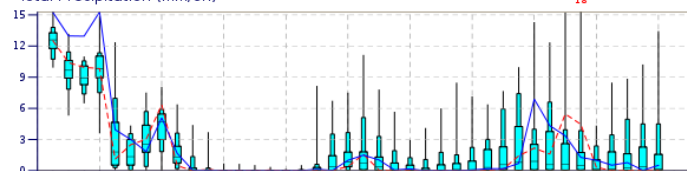
Keflavik, Iceland 63.89°N 22.26°W (ENS land point) 5 m

High Resolution Forecast and ENS Distribution Wednesday 12 October 2016 00 UTC

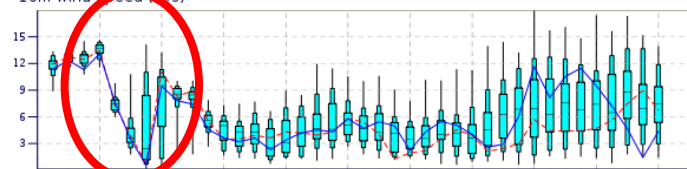
Total Cloud Cover (okta)



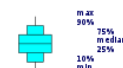
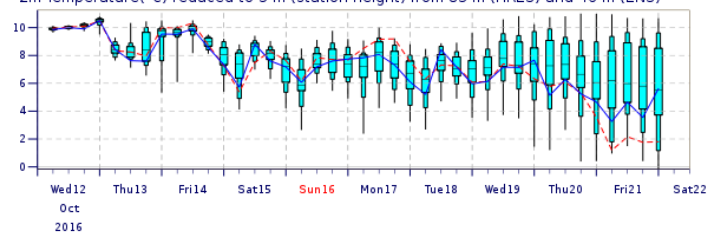
Total Precipitation (mm/6h)



10m Wind Speed (m/s)



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



ENS Central 16 km

High Resolution (8 km)

THU: large uncertainty regarding wind speeds @KEF, but now weaker than in yesterdays forecast

High precipitation Wed-Thu

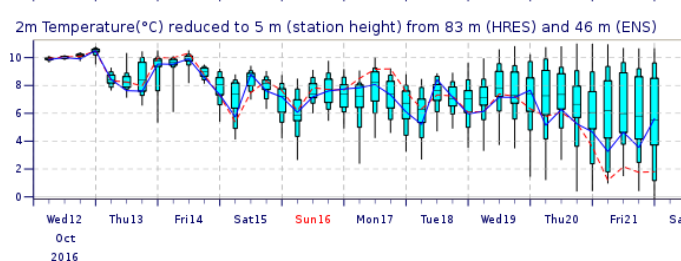
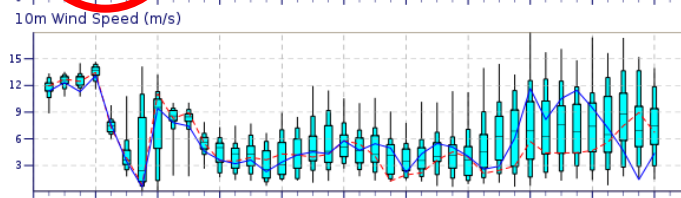
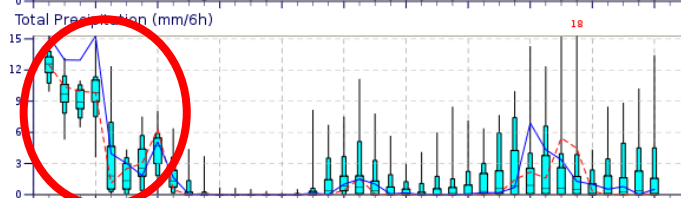
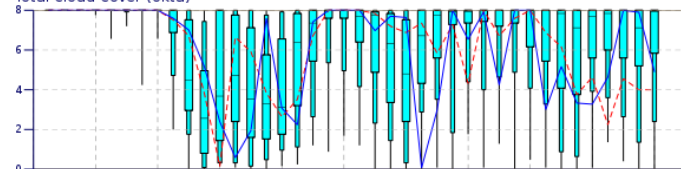
BT12/00Z

Harmonie: Uppsafnað afrennsli (mm)
Fljótandi úrkoma + leysing (snjórís)
T: þri 11. 10. 2016 06Z
VI: Fos 14.10.2016 00Z (+66 h)

Very strong precipitation in Iceland
Wed-Thu

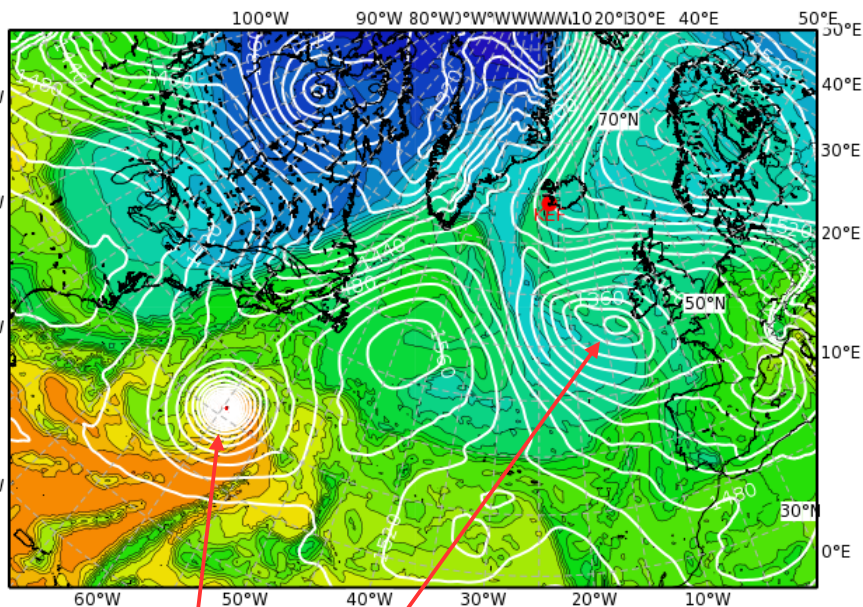


ENS Meteogram
Keflavik, Iceland 63.89°N 22.26°W (ENS land point) 5 m
High Resolution Forecast and ENS Distribution Wednesday 12 October 2016 00 UTC
Total Cloud Cover (okta)



Forecast for Fri, 14 Oct 2016 12 UTC

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Fri, 14 Oct 2016, 12 UTC (step 060 h from Wed, 12 Oct 2016, 00 UTC)



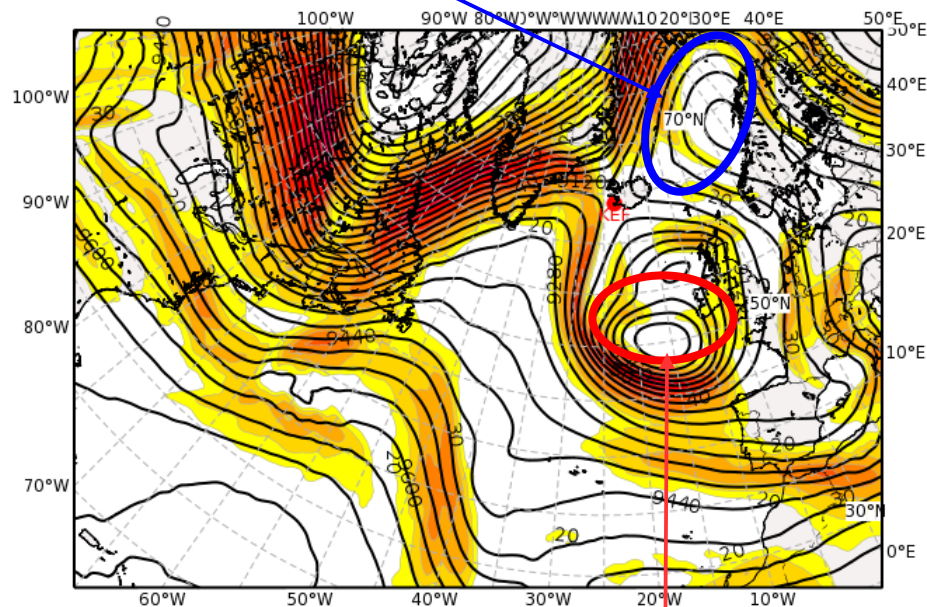
TC Nicole

New
Cyclone

THE850, Z300 BT12/00Z

Iceland ridge

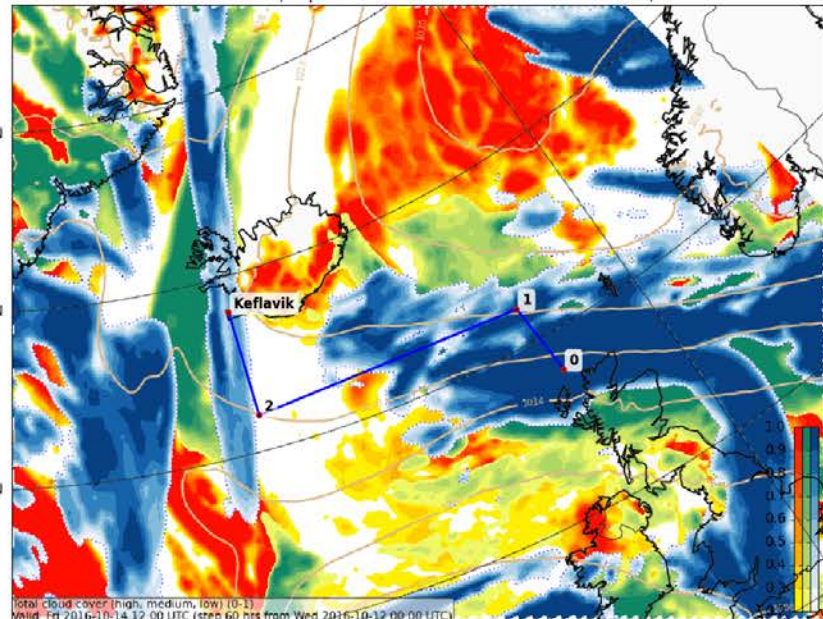
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Fri, 14 Oct 2016, 12 UTC (step 060 h from Wed, 12 Oct 2016, 00 UTC)



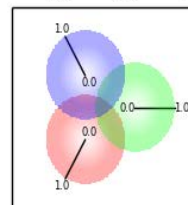
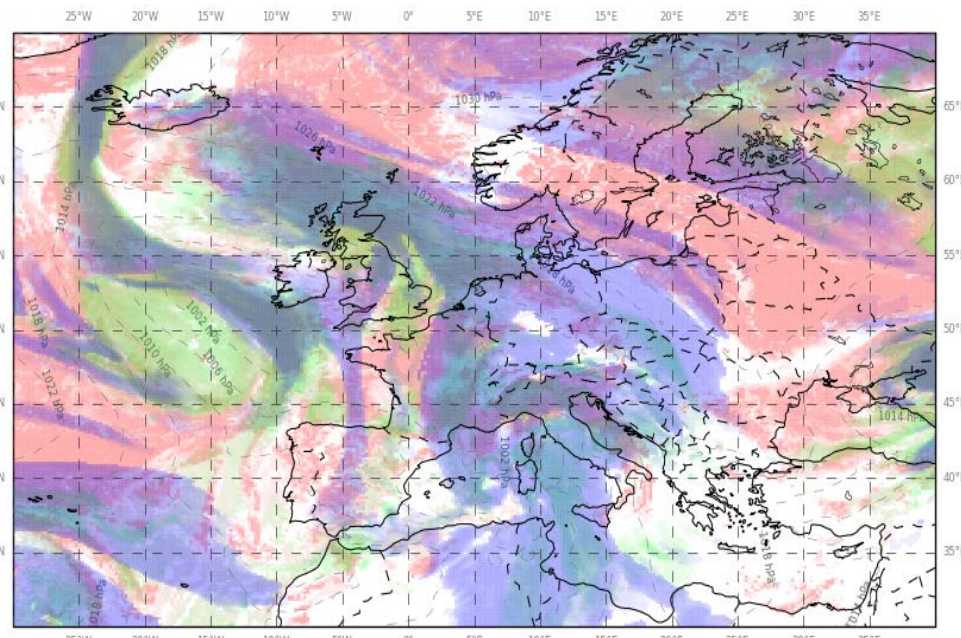
New Cut-off

Cloud Forecast for Fri, 14 Oct 2016 12 UTC

Cloud Cover (0-1) (Total Cloud Cover)
Valid: Fri 2016-10-14 12:00 UTC (step 60 hrs from Wed 2016-10-12 00:00 UTC)

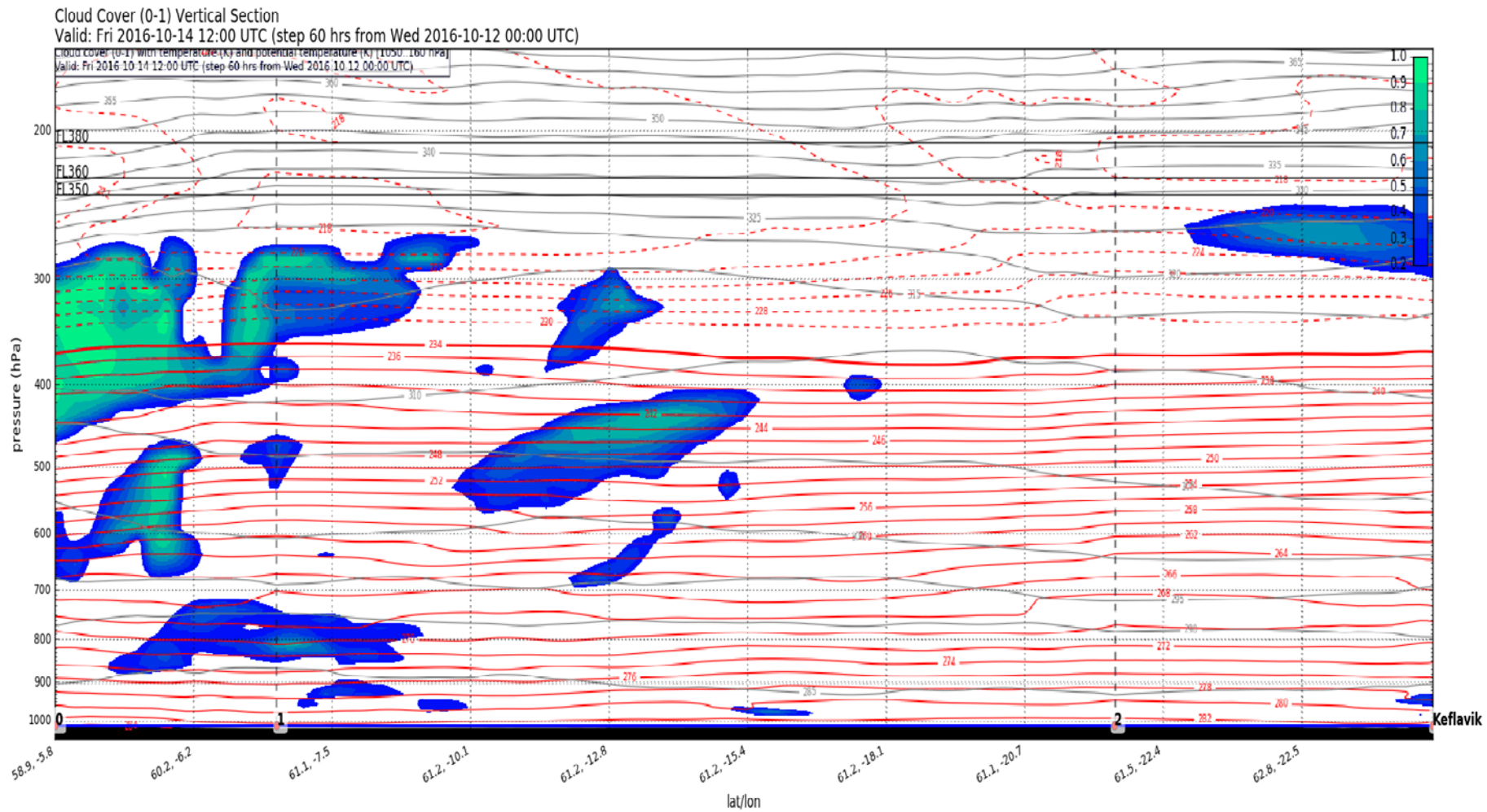


Met Office Oper. Global: Cloud: Low, Medium, High
2016/10/14 09Z T+57 from 2016/10/12 00Z



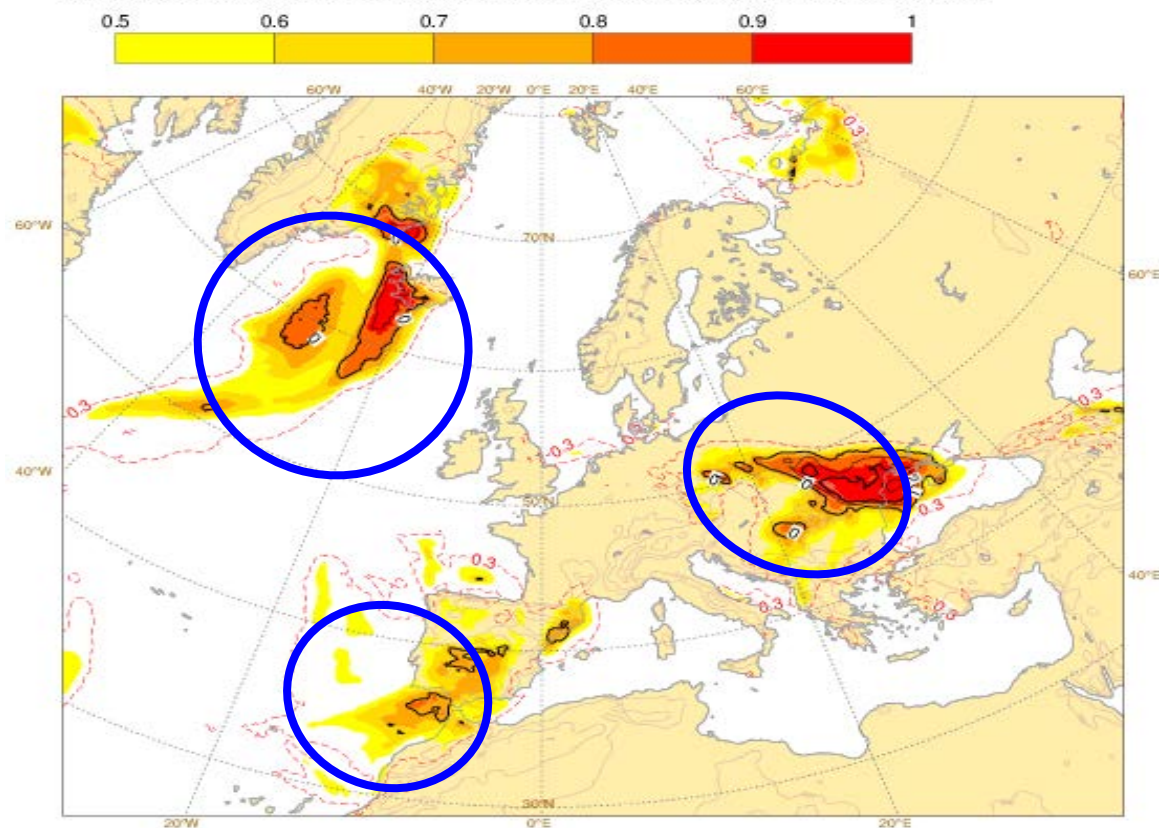
High cloud (~18000ft to ~45000ft) is blue,
mid-level cloud (~6000ft to ~18000ft) is green,
low cloud (surface to ~6000ft) is red
and the cloud types are combined as shown.

Cloud Forecast for Fri, 14 Oct 2016 12 UTC - Cross section

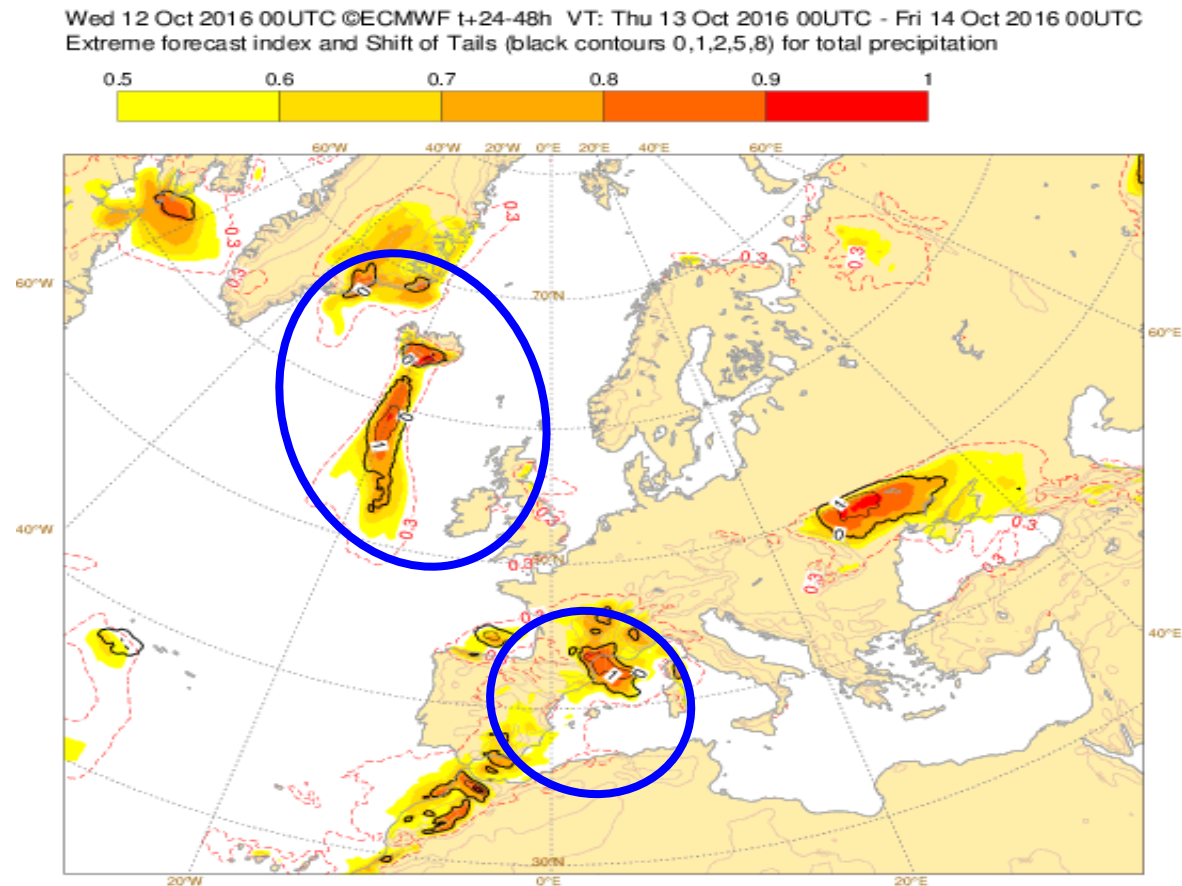


Extreme precipitation index for Wed, 12 Oct 2016 12 UTC

Wed 12 Oct 2016 00UTC ©ECMWF t+0-24h VT: Wed 12 Oct 2016 00UTC - Thu 13 Oct 2016 00UTC
Extreme forecast index and Shift of Tails (black contours 0,1,2,5,8) for total precipitation



Extreme precipitation index for Thu, 13 Oct 2016 12 UTC





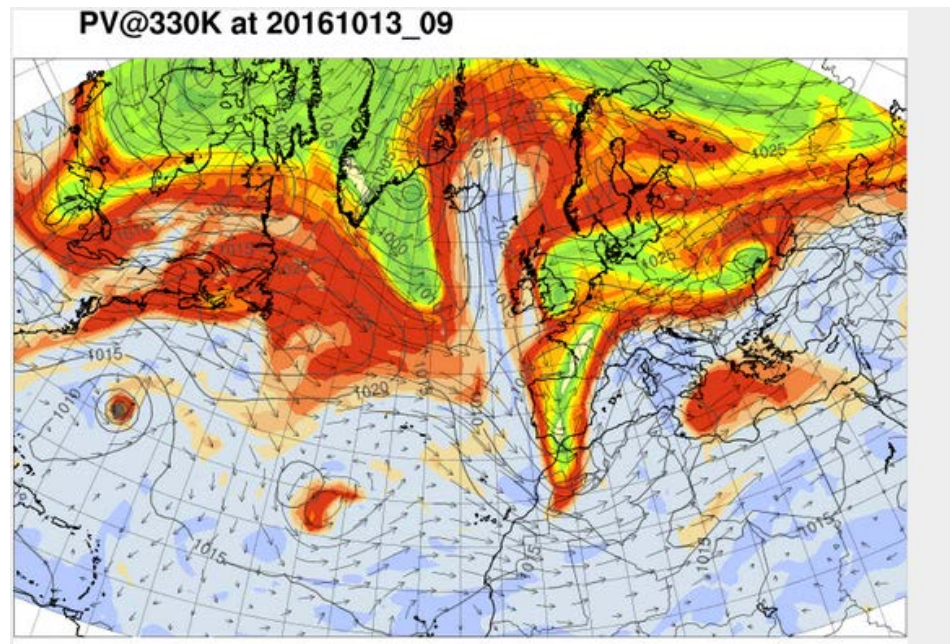
Report from ground based
observations

Thursday flights

HALO Flight on Thursday 13.10.16: “Iceland-ridge”

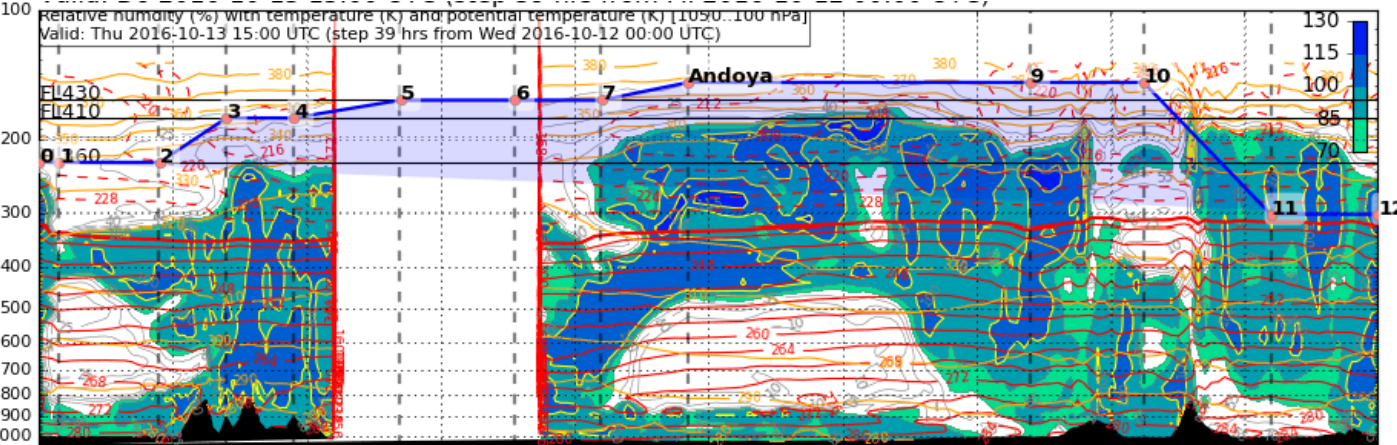
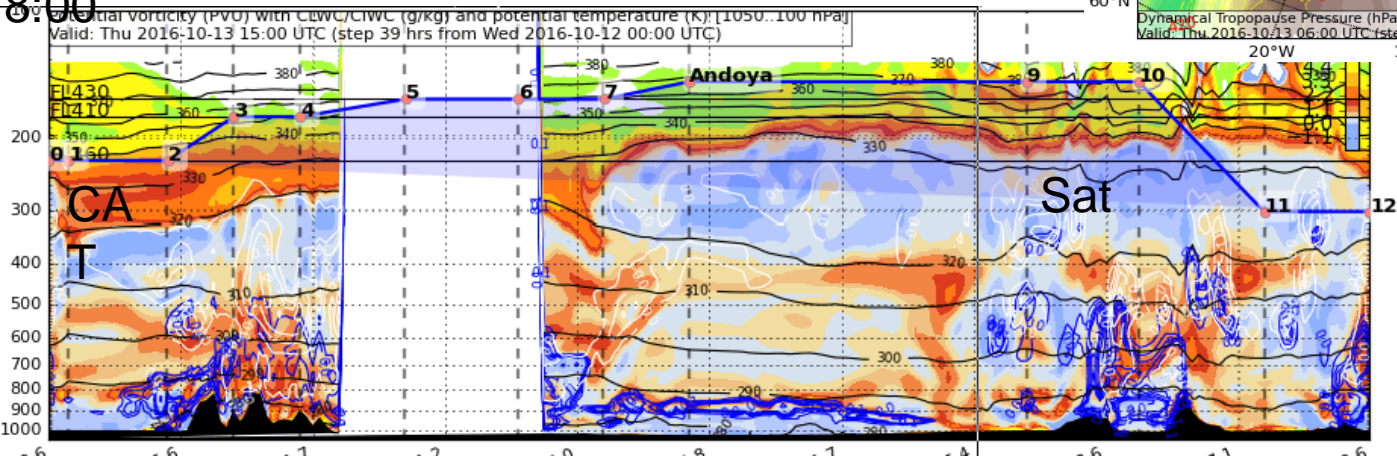
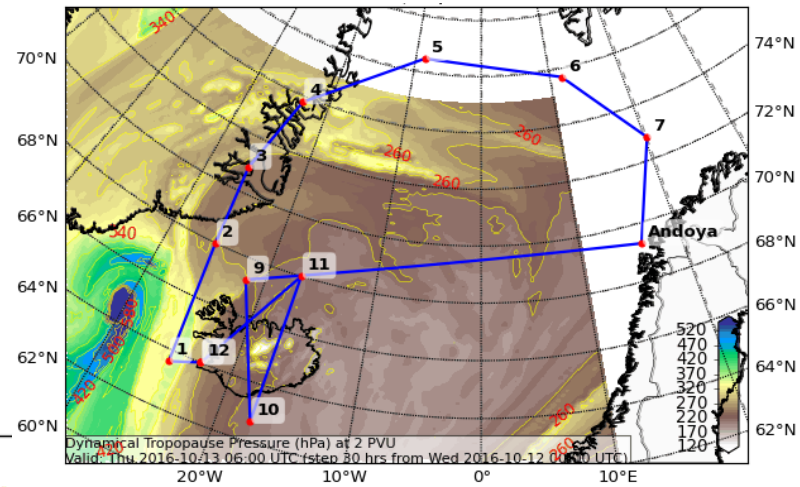
Objectives / features:

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

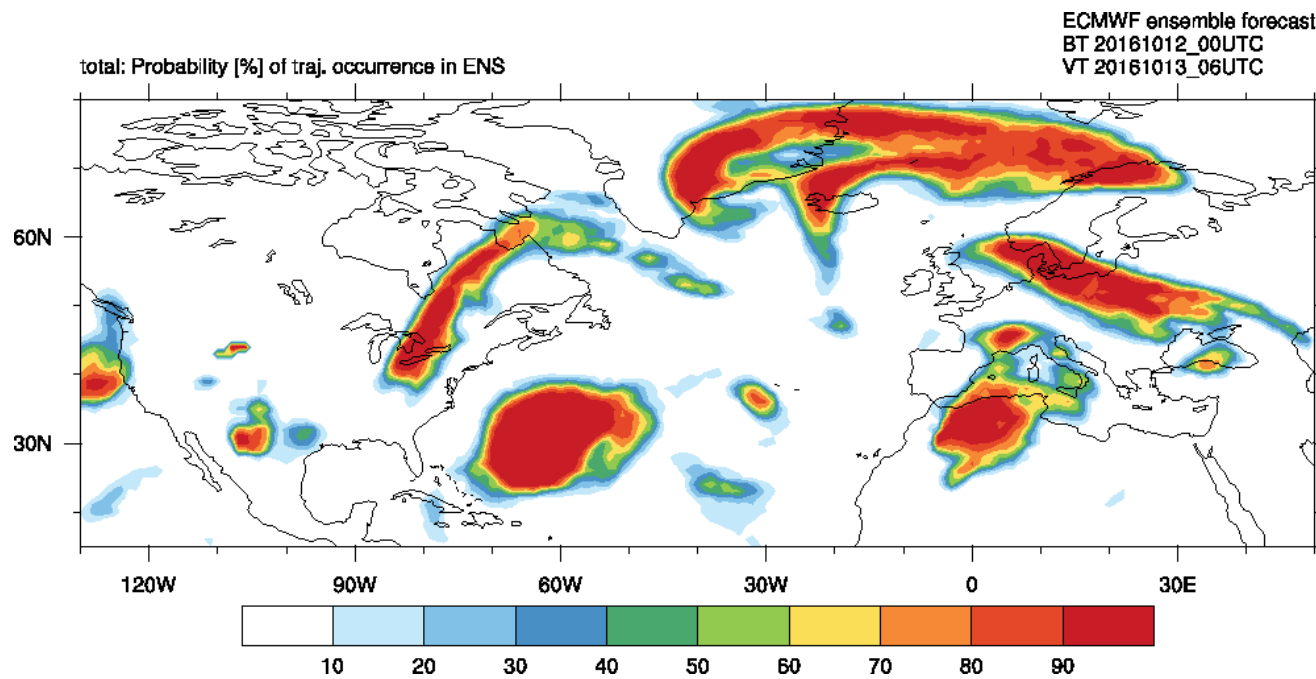


HALO Flight on Thursday 13.10.16: “Iceland-ridge”

ca.
8:00



HALO Flight on Thursday 13.10.16: “Island-ridge”



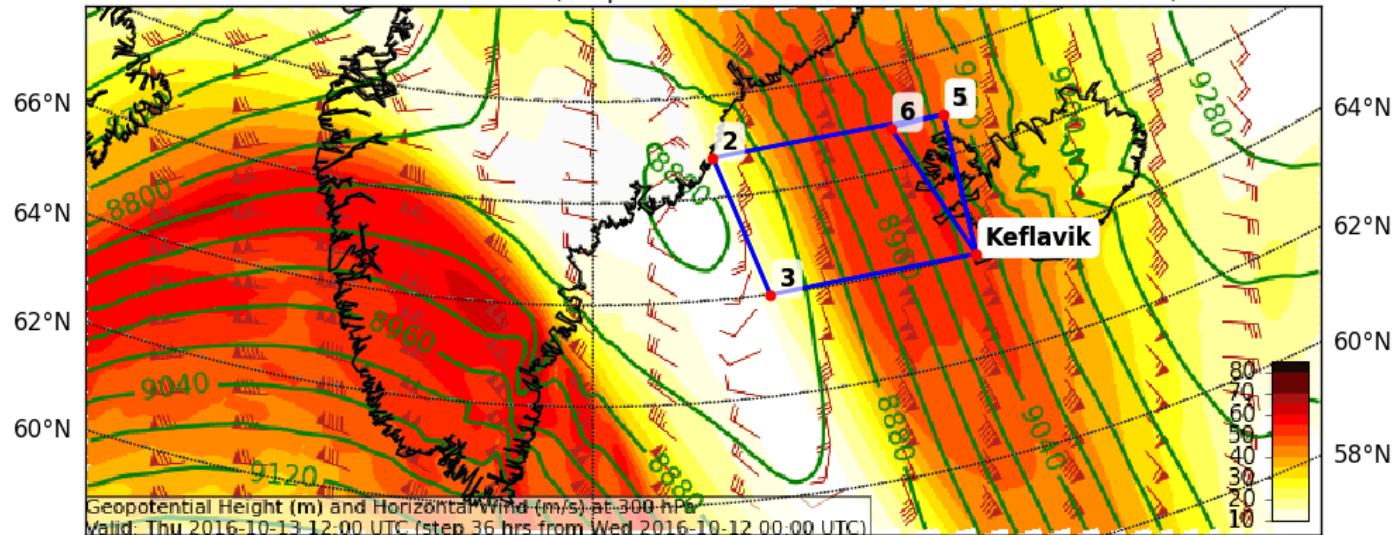
Thursday First Falcon Flight

Objectives:

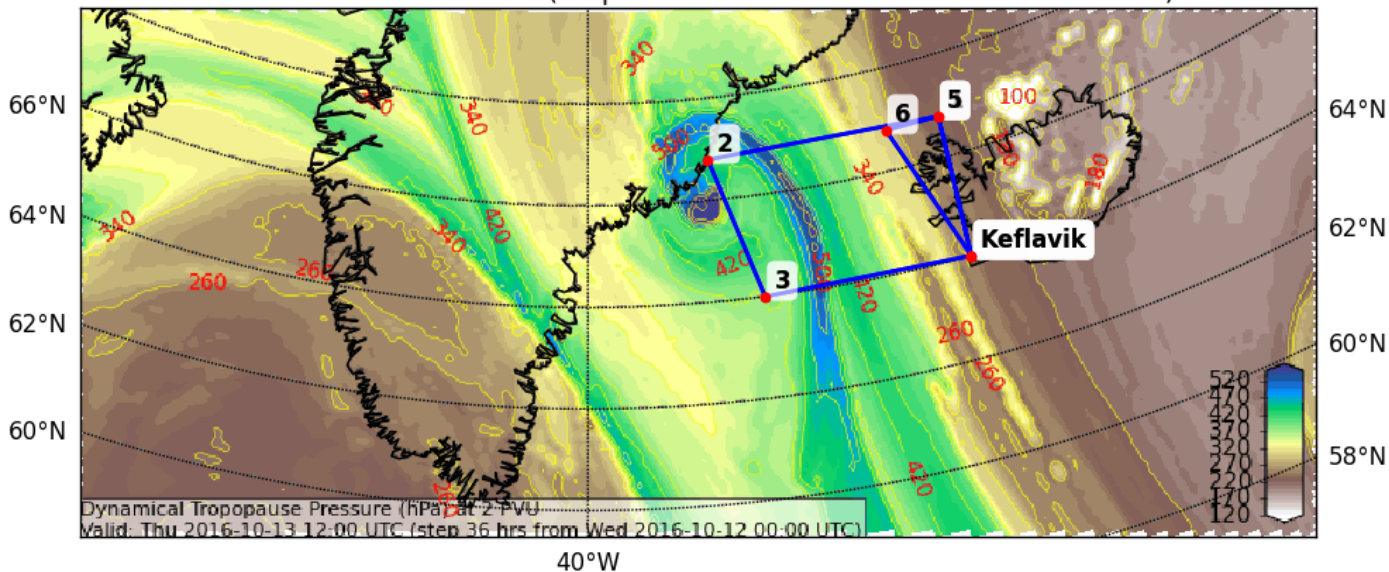
- cross jet stream on eastern flank of PV streamer
- Box-flight
- In-situ wind measurements while ascending (along jet)
- Earliest take off 10UTC, latest return 1500UTC

Thursday first Falcon flight

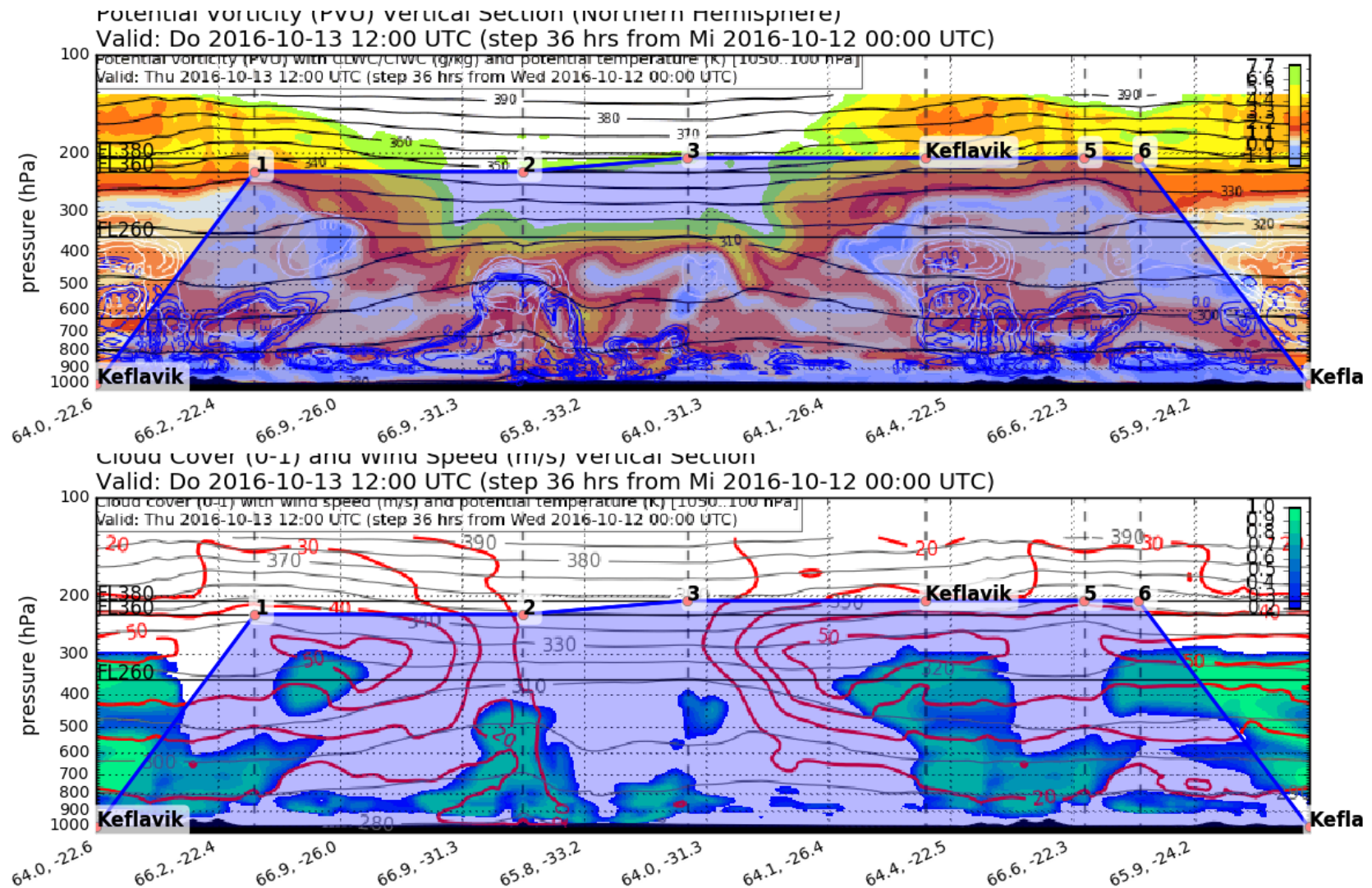
Geopotential Height (m) and Horizontal Wind (m/s) (Wind Speed 10-85 m/s) at 300 (hPa)
Valid: Do 2016-10-13 12:00 UTC (step 36 hrs from Mi 2016-10-12 00:00 UTC)



Dynamical Tropopause (Pressure (hPa)) at 2000 (10^{-3} PVU)
Valid: Do 2016-10-13 12:00 UTC (step 36 hrs from Mi 2016-10-12 00:00 UTC)



Thursday first Falcon flight



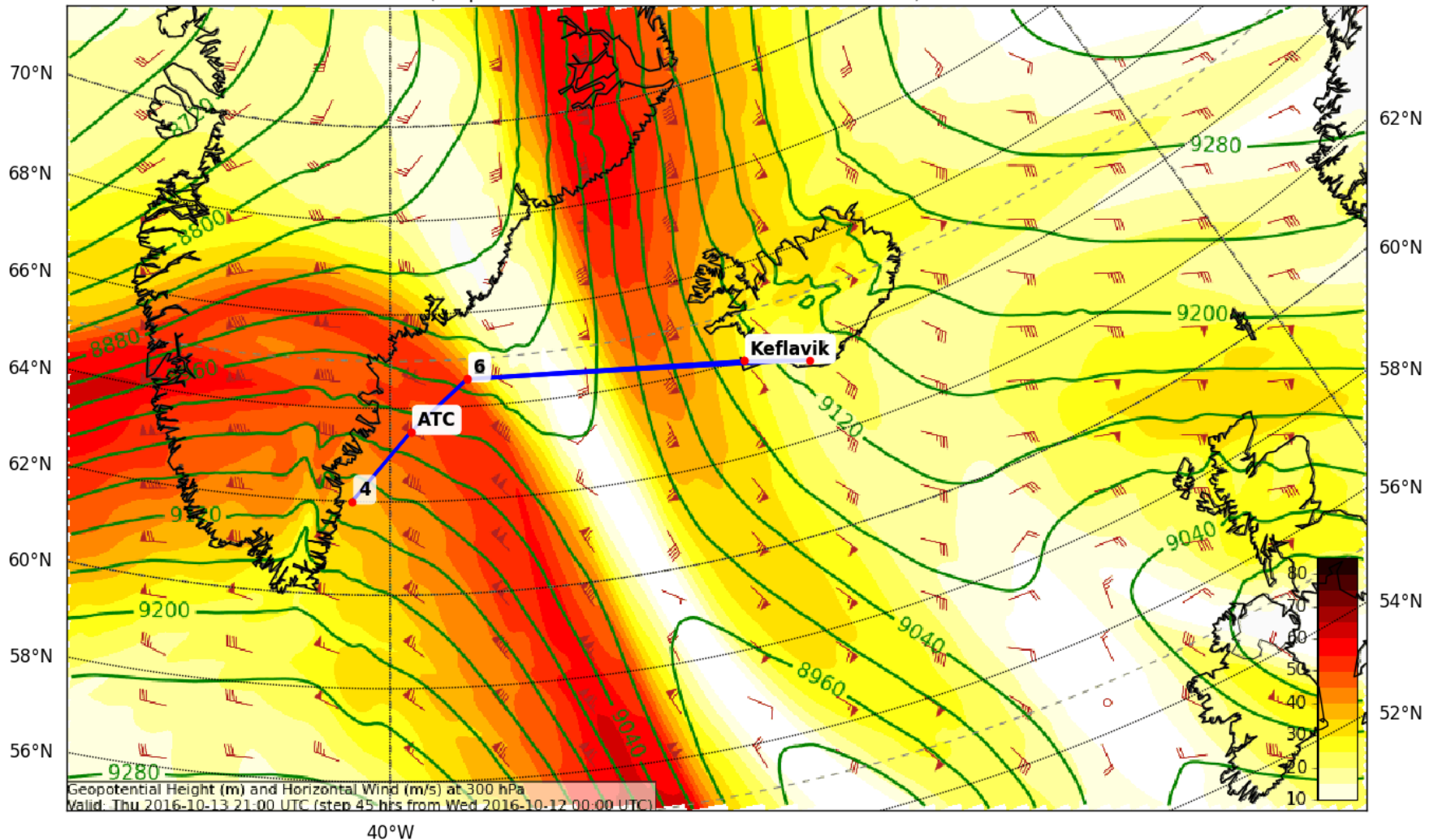
Thursday Second Falcon Flight

Objectives:

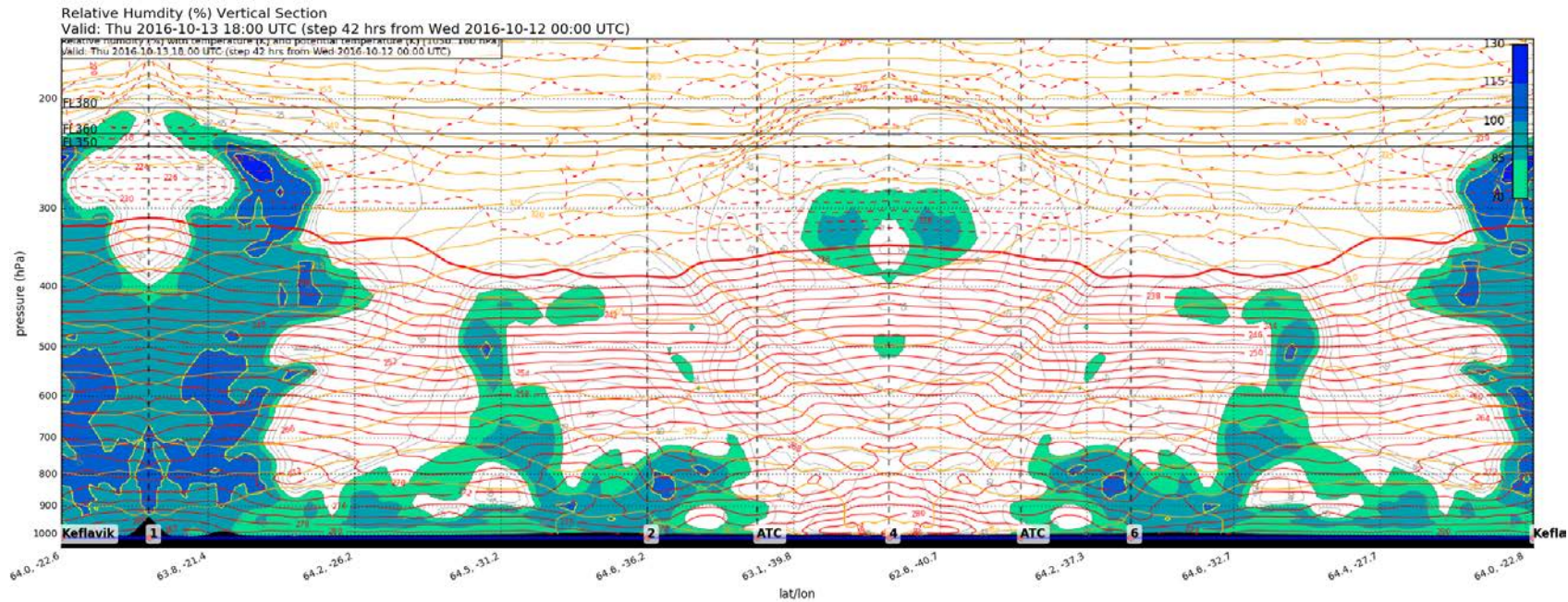
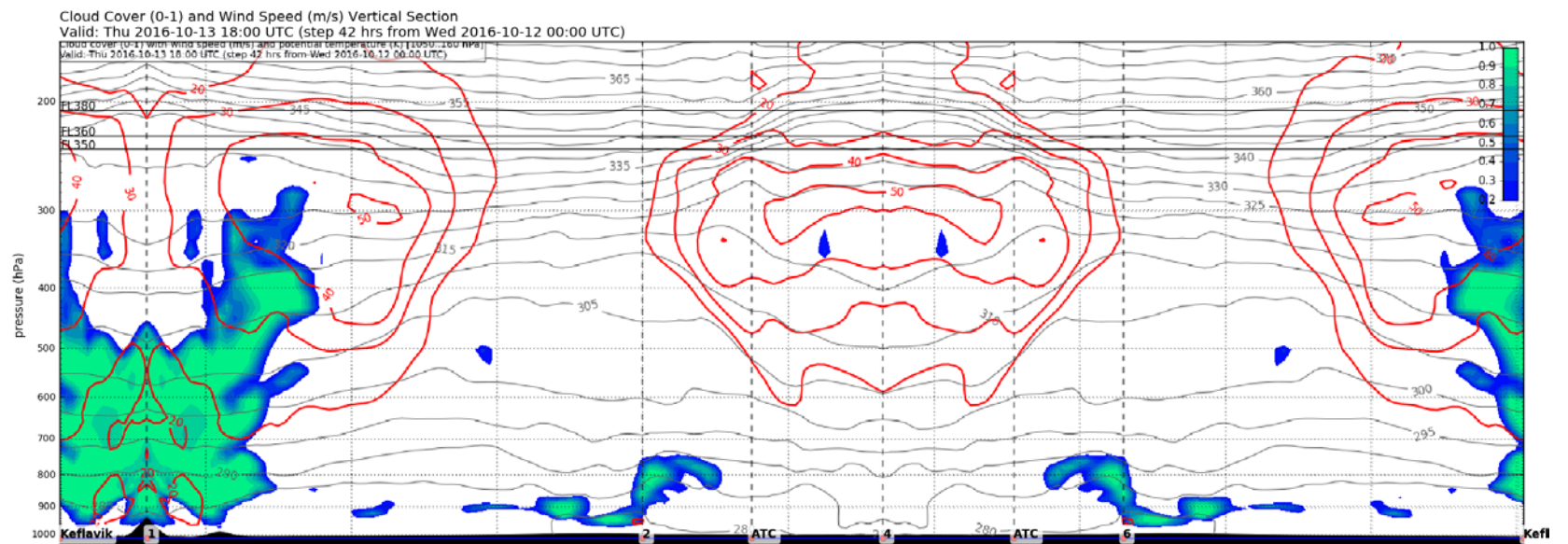
- cross jet stream on western flank of PV streamer
- Centered around 20 UTC

Thu 13 18Z – DLR Falcon Plan

Geopotential Height (m) and Horizontal Wind (m/s) (Wind Speed 10-85 m/s) at 300 (hPa)
Valid: Thu 2016-10-13 21:00 UTC (step 45 hrs from Wed 2016-10-12 00:00 UTC)



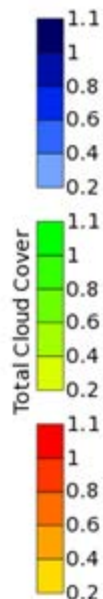
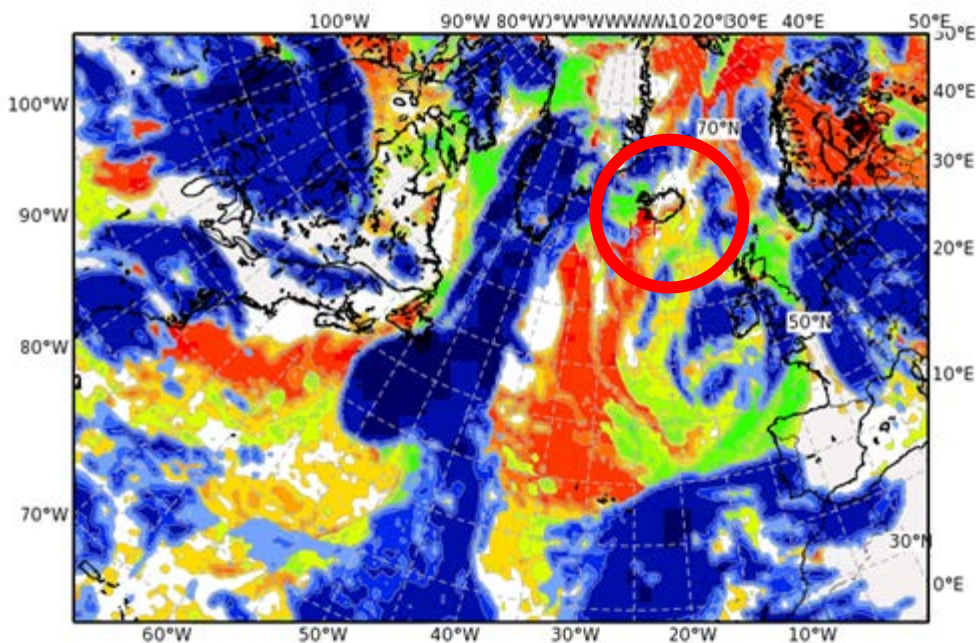
Thu 13 18Z – DLR Falcon Plan



Outlook FALCON: calibration + aerosol intercomparison on Sat 15

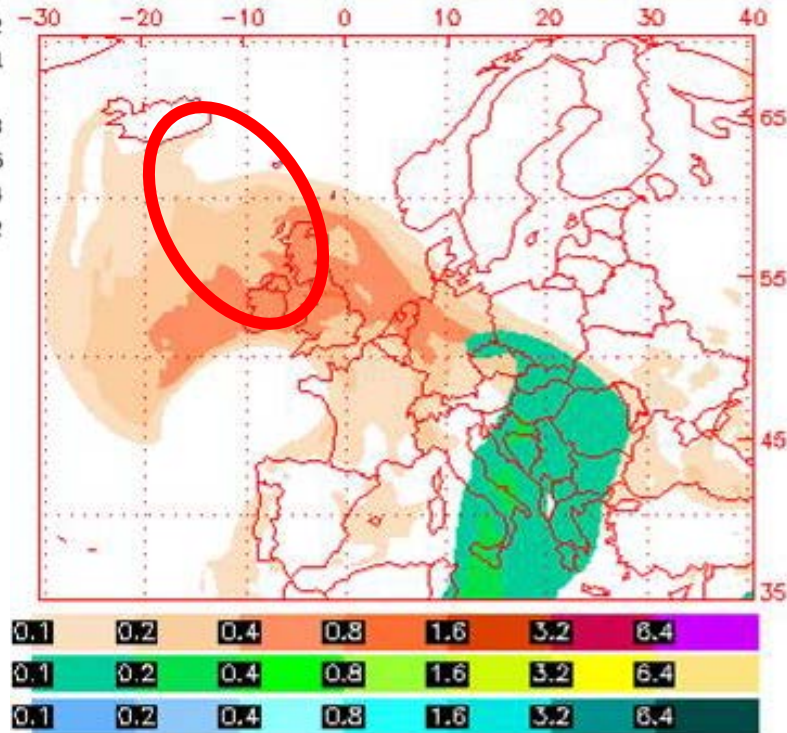
Total Cloud Cover

Valid: Sat, 15 Oct 2016, 06 UTC (step 078 h from Wed, 12 Oct 2016, 00 UTC)



Possibility of intercomparison flight with FF20 for aerosols measurement (supported by ESA).

NAAPS Total Optical Depth for 12:00Z 15 Oct 2016
Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue

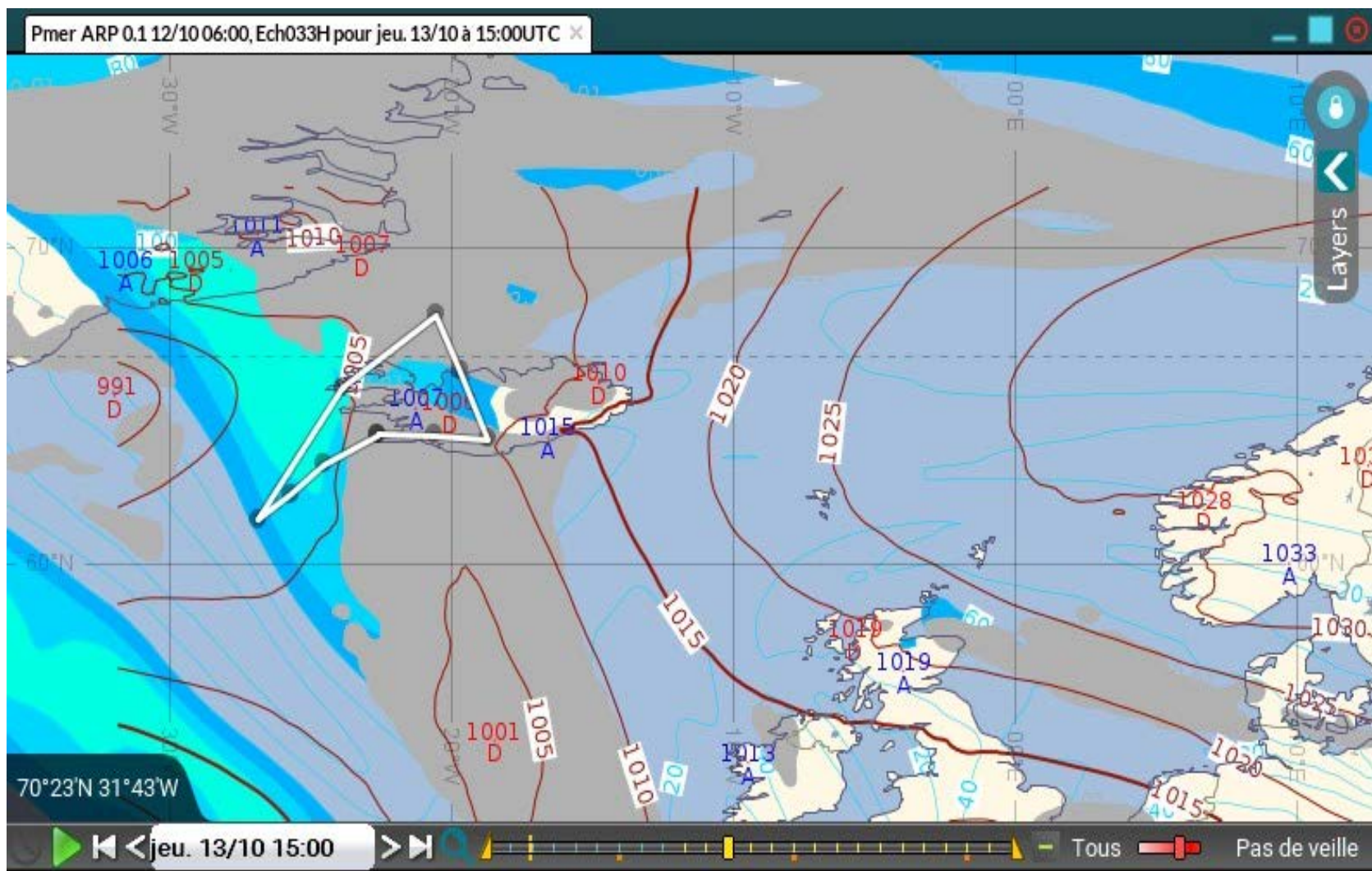


- > Not so exciting weather situation around Iceland.
- > Presence of cloud-free areas on Fri/Sat.
- > Antrop. sulfate aerosols between Iceland and UK.

Thursday SAFIRE Flight

Objectives:

- Sample the atmospheric river impacting Iceland

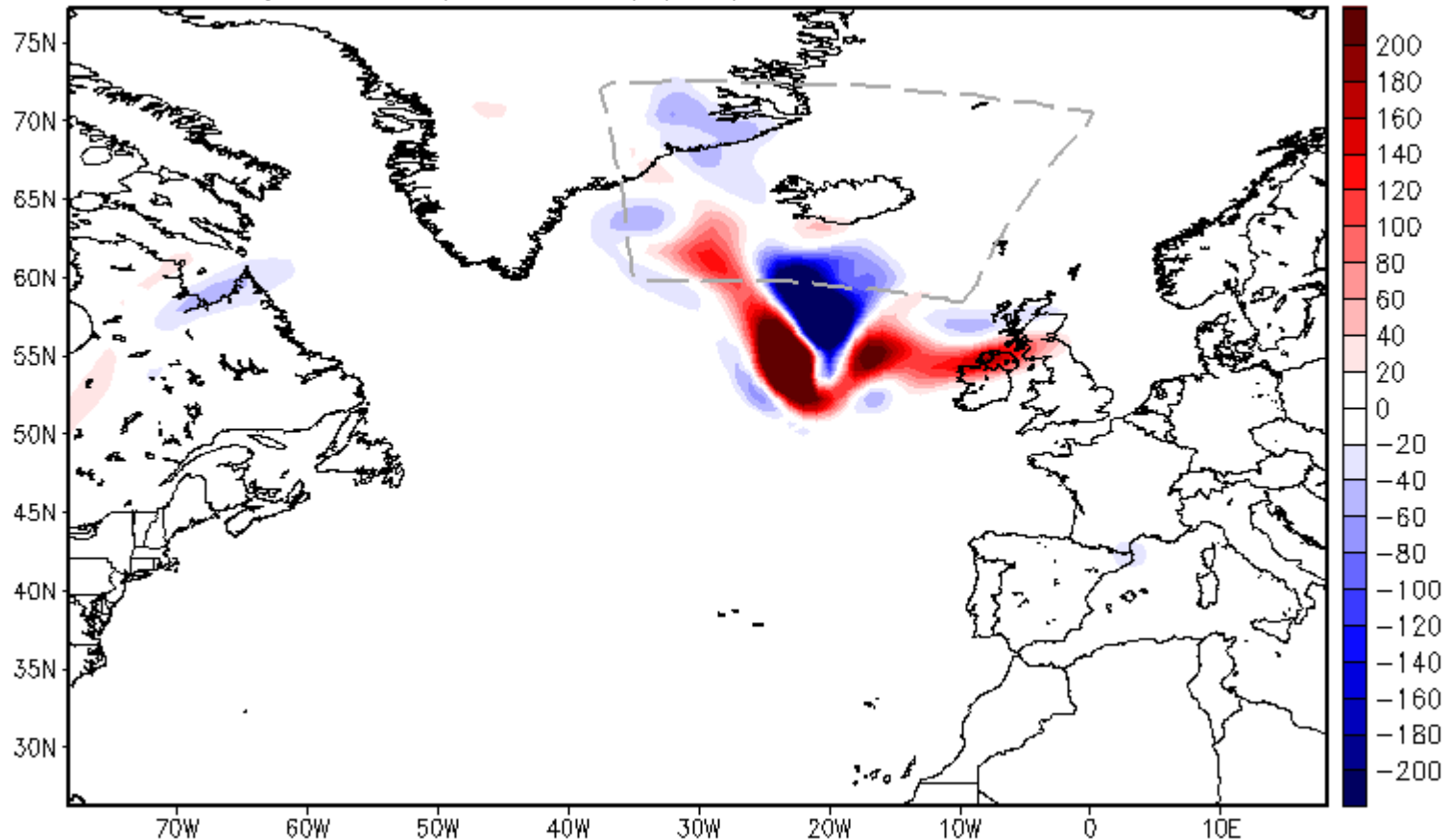


COAMPS Sensitivity (24h) Valid 06Z 13 Oct (Thursday)

Box centered on Iceland (precipitation)

700-hPa q sensitivity (color)

COAMPS Adjoint 700mb q 36h Sensitivity ($\times 10^{-2}$) from 2016101118, valid at 2016101306



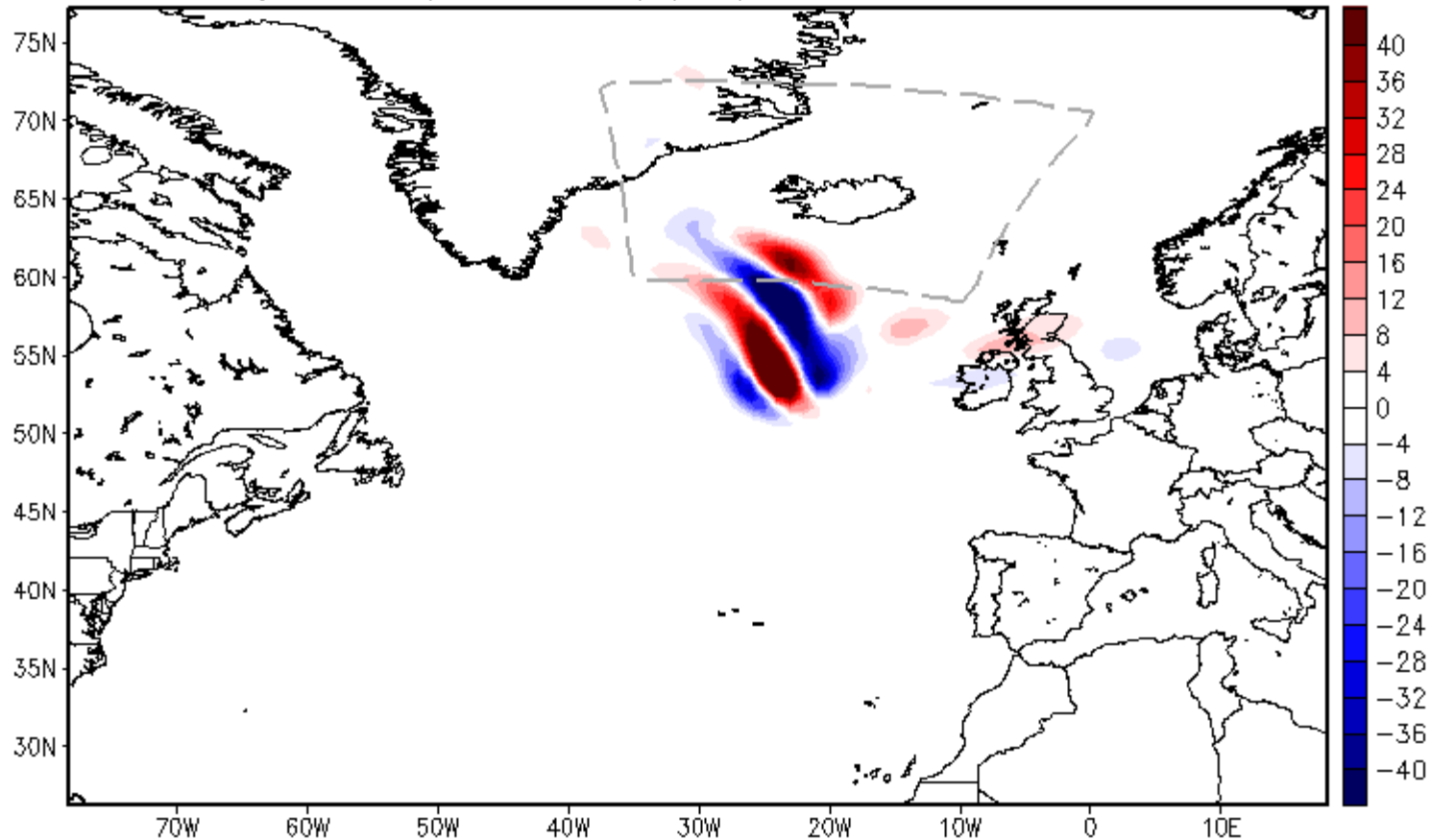
- **Box is located over Iceland and the metric is rainfall at the 24 h time (06Z on 14 Oct)**
- **Maximum moisture sensitivity along ascending moist plume to the south of Iceland**

COAMPS Sensitivity (24h) Valid 06Z 13 Oct (Thursday)

Box centered on Iceland (precipitation)

700-hPa PV sensitivity (color)

COAMPS Adjoint 700mb pv 36h Sensitivity ($\times 10^{-8}$) from 2016101118, valid at 2016101306

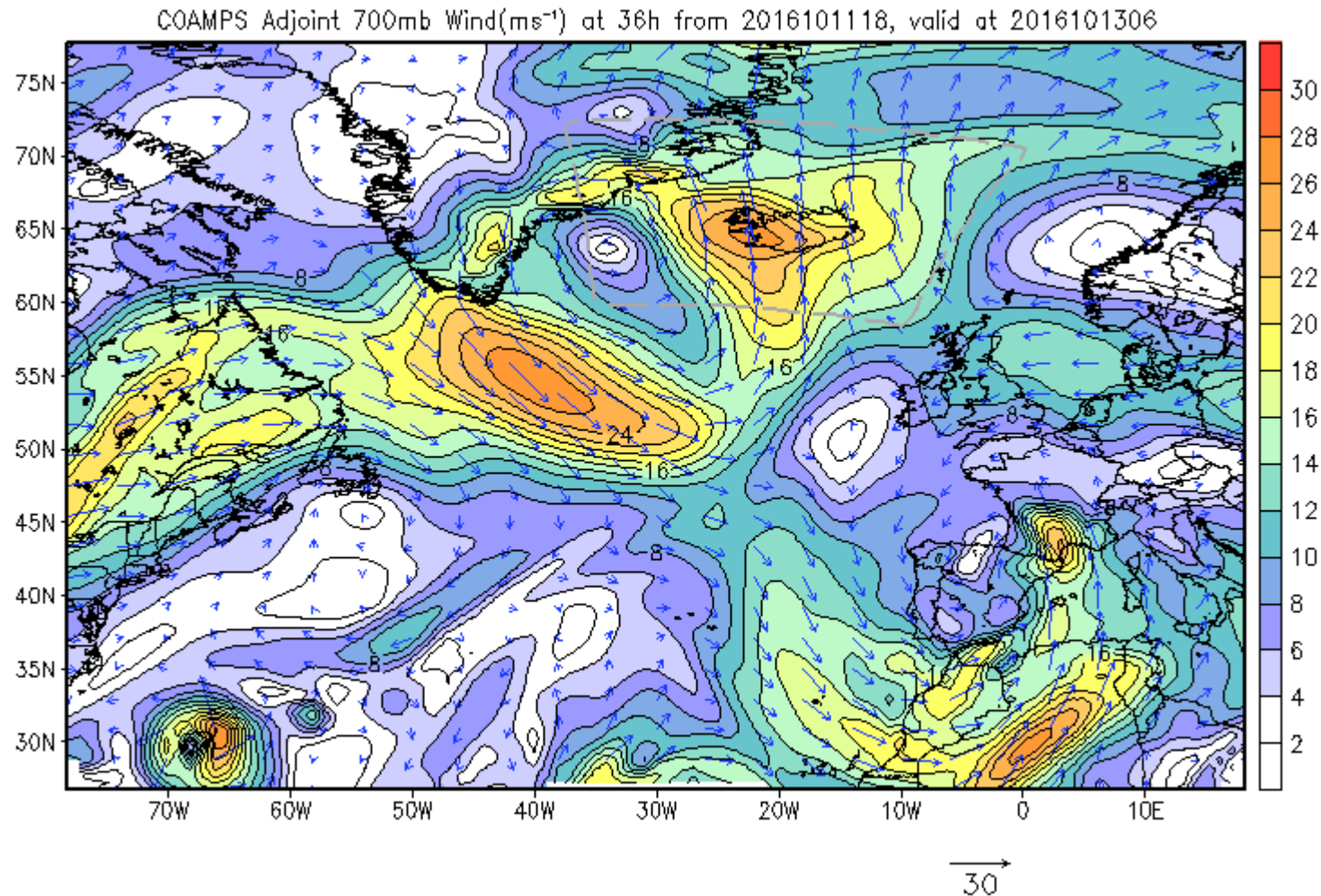


- **Box is located over Iceland and the metric is rainfall at the 24 h time (06Z on 14 Oct)**
- **Maximum PV sensitivity near shortwave trough to the south of Iceland**

COAMPS Sensitivity (24h) Valid 06Z 13 Oct (Thursday)

Box centered on Iceland (precipitation)

700-hPa Winds (color)



- **Strong low-level jet at 850 and 700 hPa**
- **Sensitivity appears to be strongest in the ascent region and near the shortwave (PV)**

Friday flights

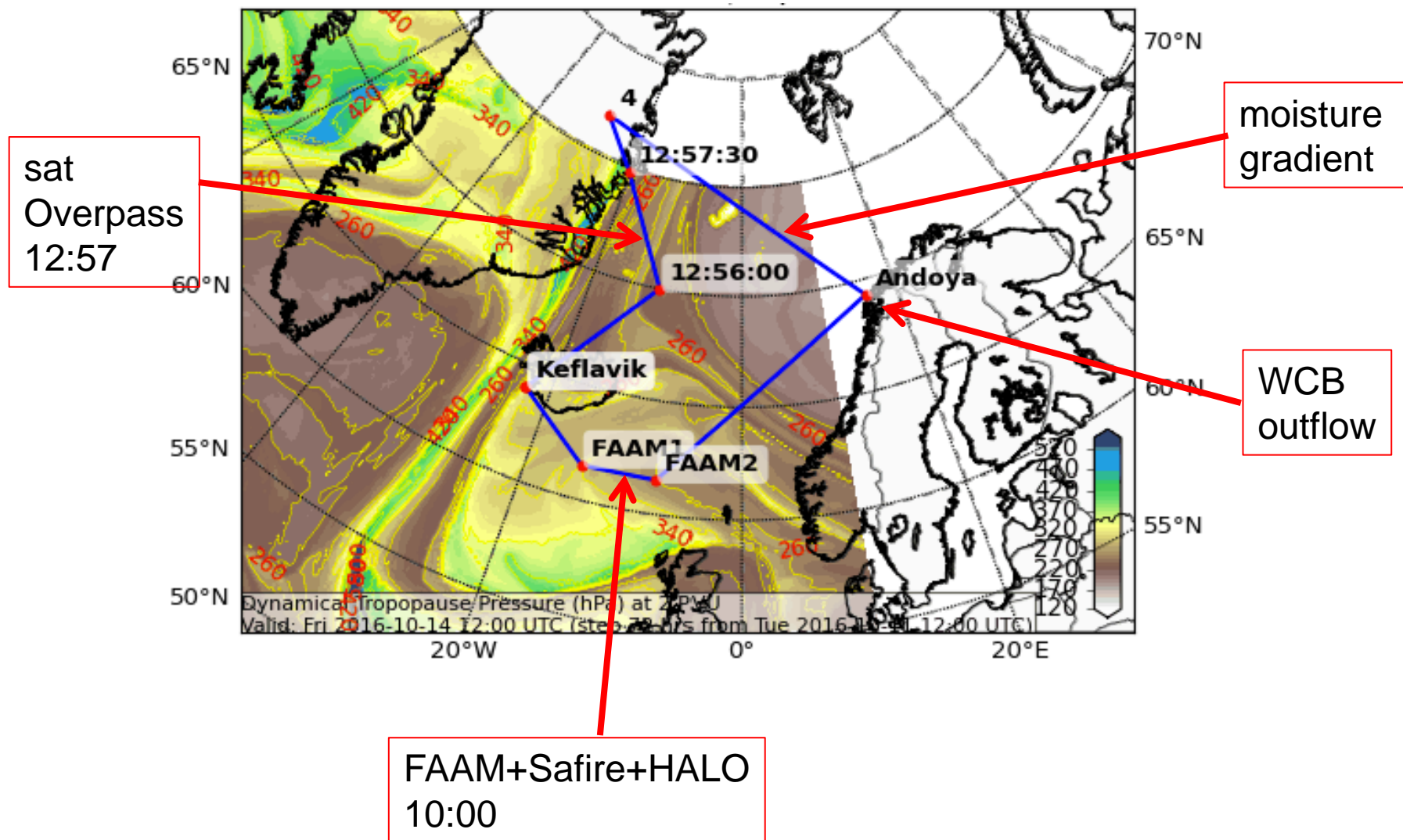
HALO flight Fri 14 Oct

System under investigation:
„Scandinavian blocking “

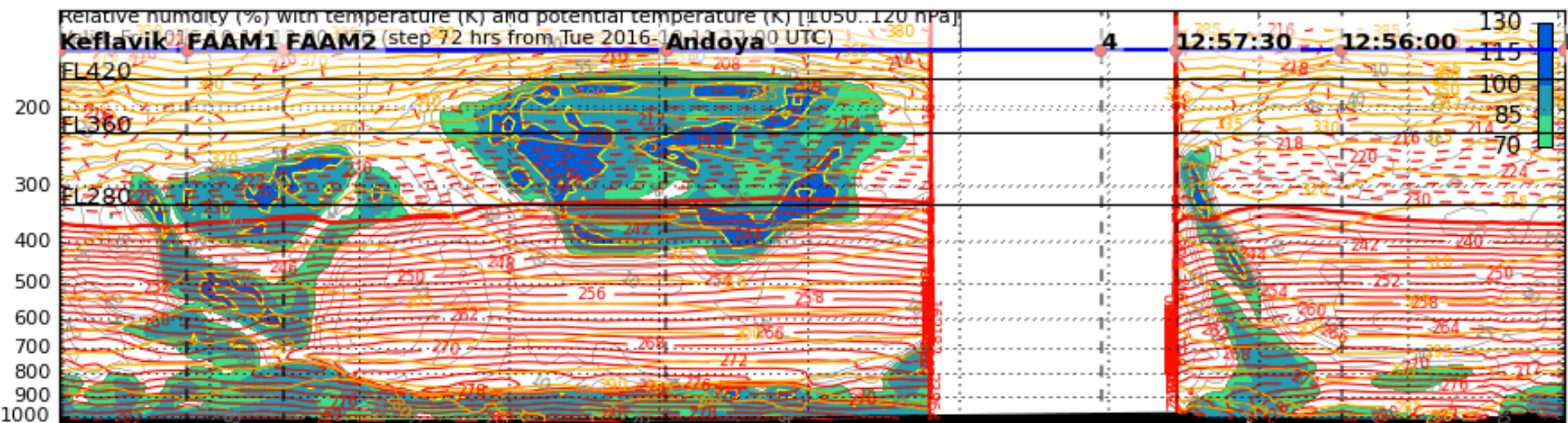
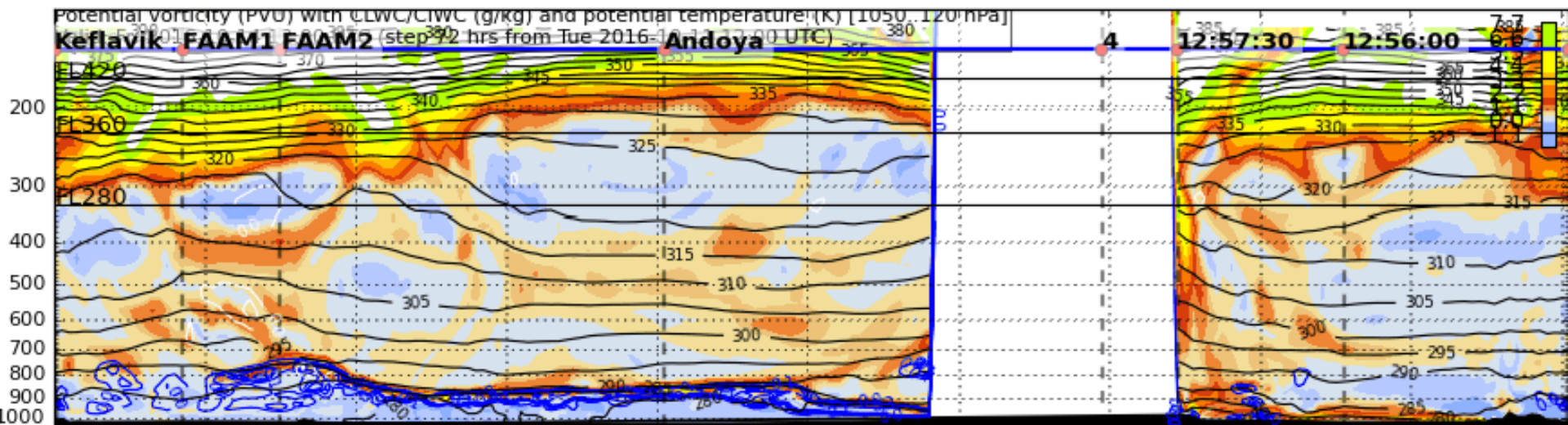
Main objectives:

- Instrument comparison (FAAM 10:00)
- Sat overpass (12:53)
- Moisture structure of the blocking ridge
- WCB outflow

HALO flight Fri 14 Oct



HALO flight Fri 14 Oct



NAWDEX – General Planning Meeting

12 October 2016, Keflavik 12 UTC

Today's summary:

1. Wednesday

- NO FLIGHTS HALO & FALCON, SAFIRE flight planned

2. Thursday flights: HALO, FALCON (double flight), SAFIRE

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