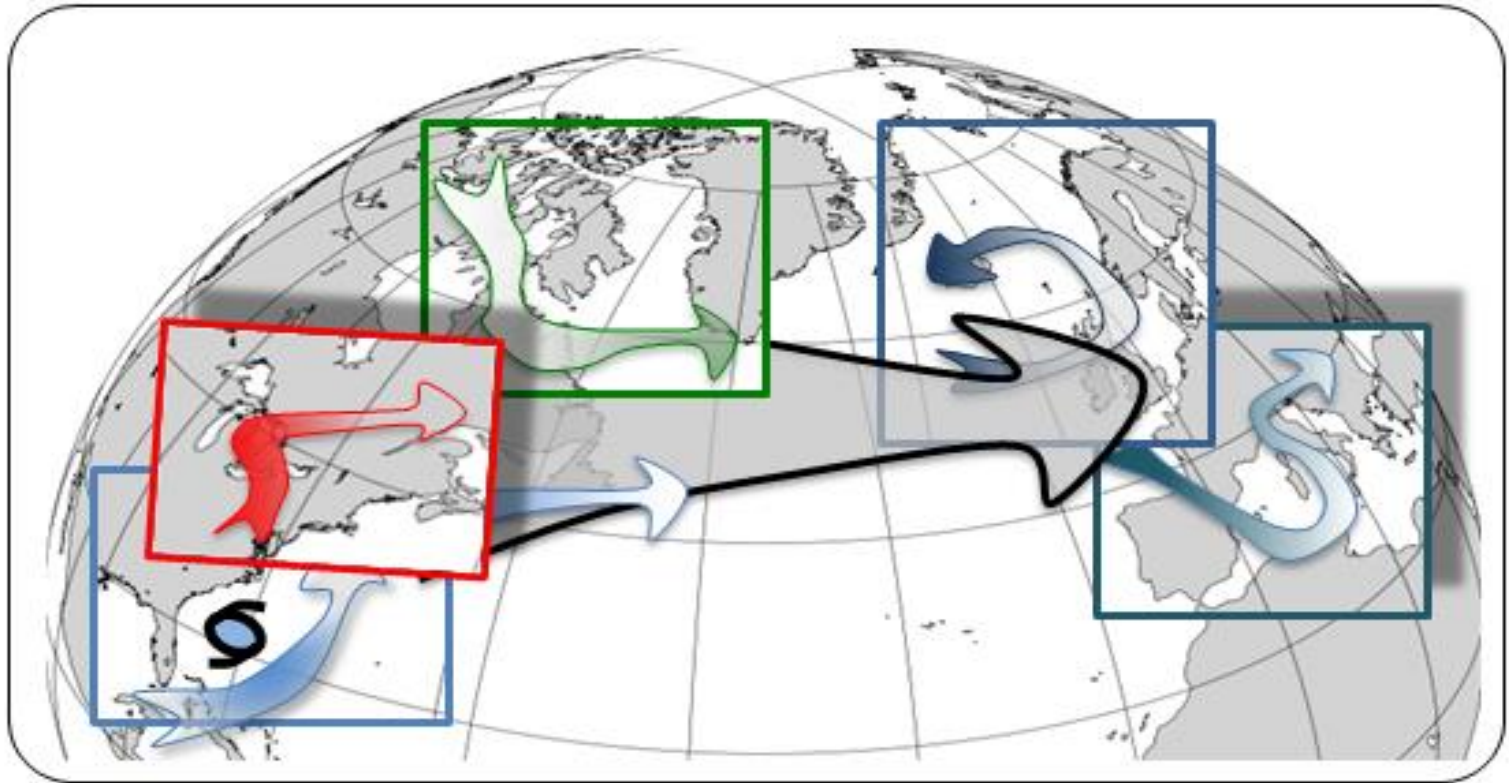


NAWDEX – General Planning Meeting

20 September 2016, Keflavik 11 UTC

NAWDEX Day 2



NAWDEX – General Planning Meeting

20 September 2016, Keflavik 11 UTC

NAWDEX Day 2

Key issues today

1. Refinement of flight plans for Wednesday
2. Concept for coordinated flights UK FAAM BAE 146 and HALO for Friday

NAWDEX – General Planning Meeting

20 September 2016, Keflavik 11 UTC

NAWDEX Day 2

1. Key information from previous flight (2 minutes)
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. Final discussion about flight pattern for next day (in case of 2 options)
6. Report of Ground-Based Observation coordinator
7. Announcement of tentative plans for Day+3
8. Coordination with other aircraft (Input from other groups)

NAWDEX – General Planning Meeting

WEATHER summary

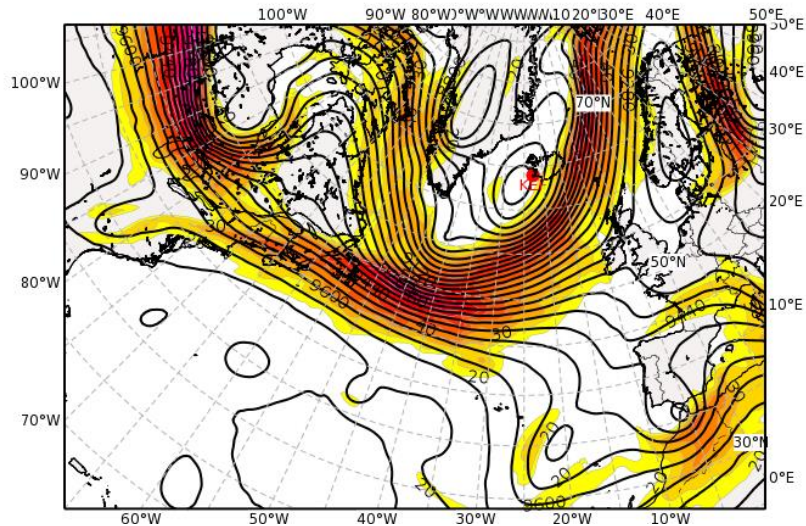
20 September 2016, Keflavik 11 UTC

- Current situation & evolution until Monday 25 September
- **Next mission Wednesday 21 September**
- **Mission Friday/Saturday 23/24 September**
- Outlook **Sunday - Tuesday**

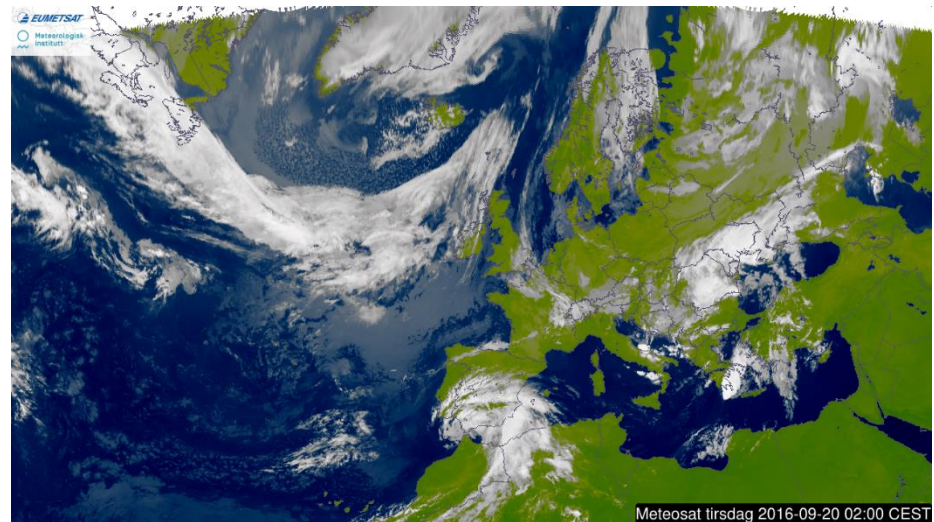
Analysis – 20 Sep 2016, 00 UTC

Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa

Valid: Tue, 20 Sep 2016, 00 UTC (step 000 h from Tue, 20 Sep 2016, 00 UTC)

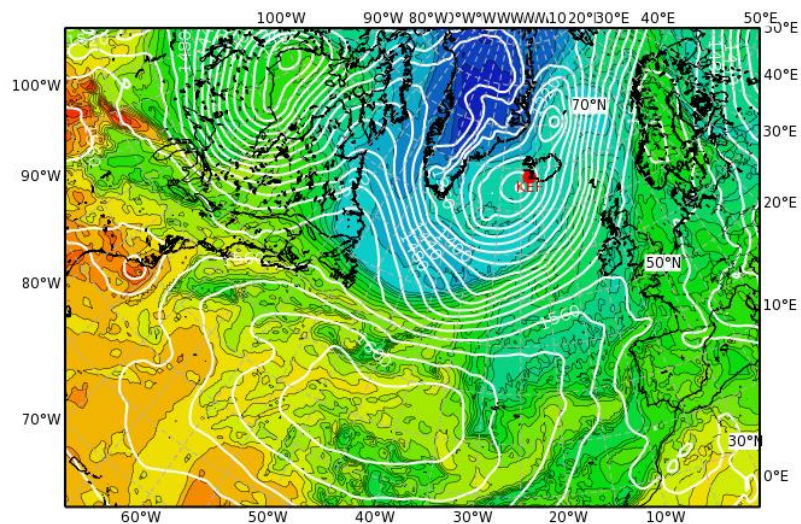


Z300, SAT THE850, RH700



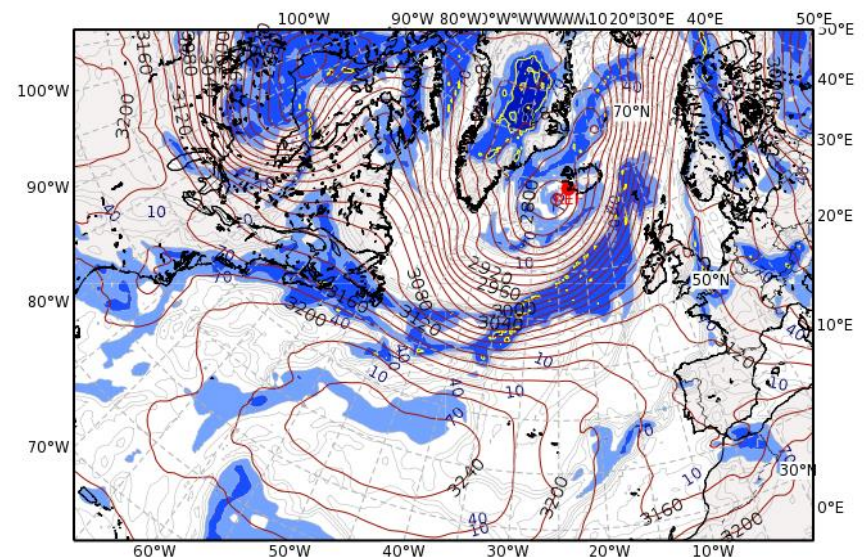
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa

Valid: Tue, 20 Sep 2016, 00 UTC (step 000 h from Tue, 20 Sep 2016, 00 UTC)



Relative Humidity (%) and Z (m) at 700 hPa

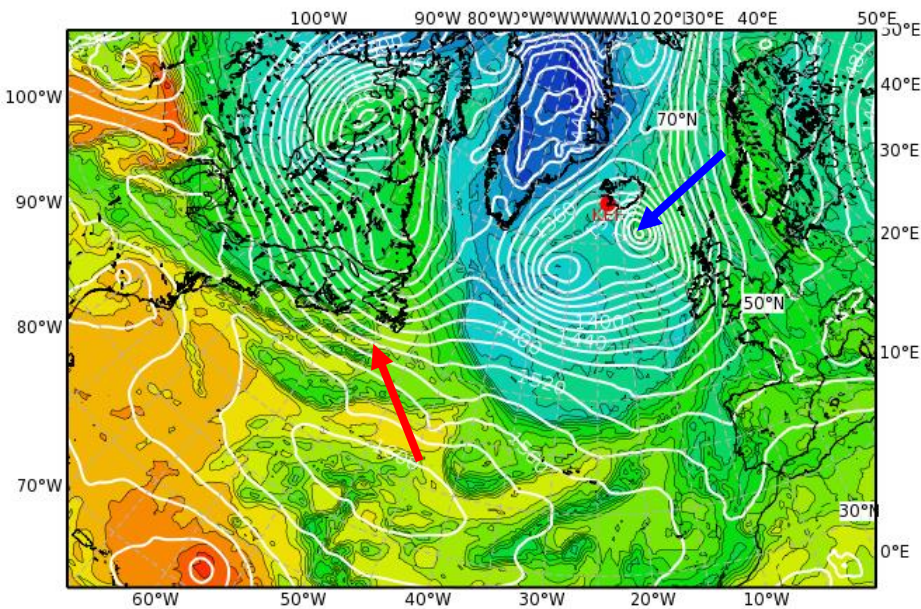
Valid: Tue, 20 Sep 2016, 00 UTC (step 000 h from Tue, 20 Sep 2016, 00 UTC)



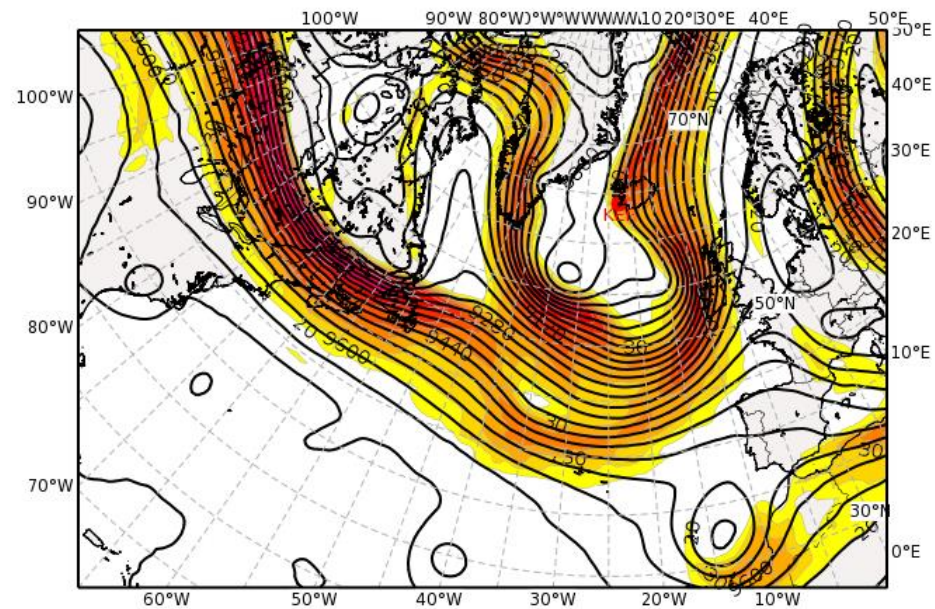
Forecast for Wed, 21 Sep 2016 12 UTC

THE850, Z300 BT20/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Wed, 21 Sep 2016, 12 UTC (step 036 h from Tue, 20 Sep 2016, 00 UTC)



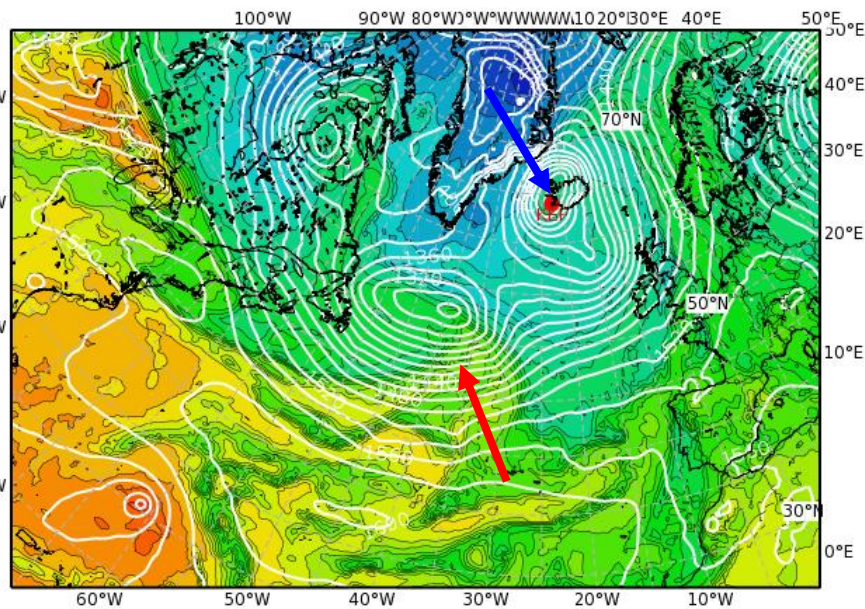
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Wed, 21 Sep 2016, 12 UTC (step 036 h from Tue, 20 Sep 2016, 00 UTC)



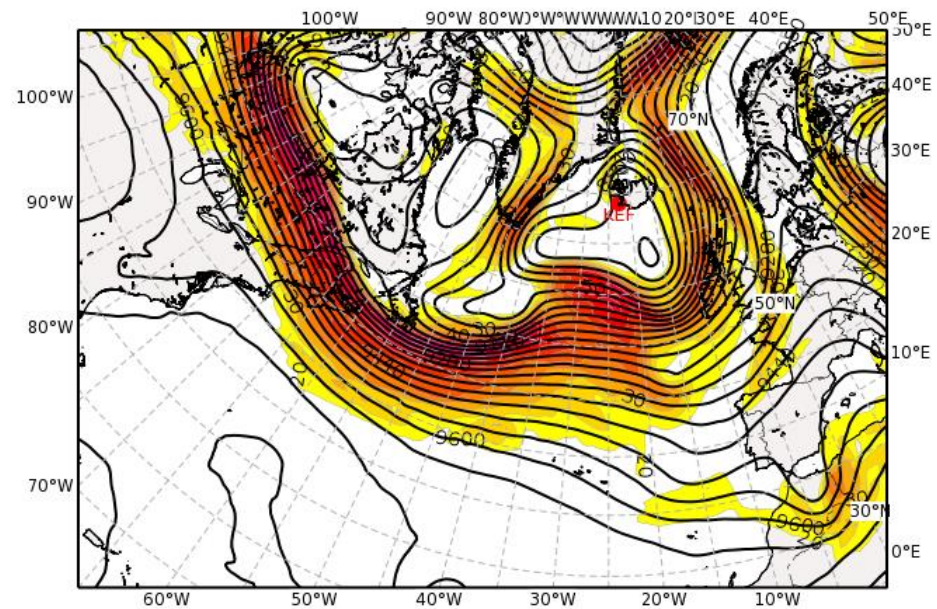
Forecast for Thu, 22 Sep 2016 12 UTC

THE850, Z300 BT20/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Thu, 22 Sep 2016, 12 UTC (step 060 h from Tue, 20 Sep 2016, 00 UTC)



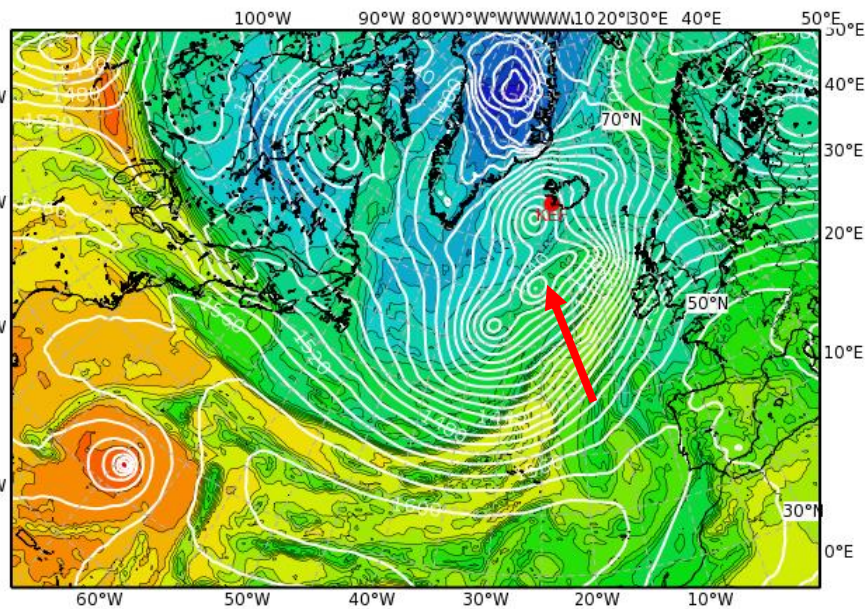
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Thu, 22 Sep 2016, 12 UTC (step 060 h from Tue, 20 Sep 2016, 00 UTC)



Forecast for Fri, 23 Sep 2016 12 UTC

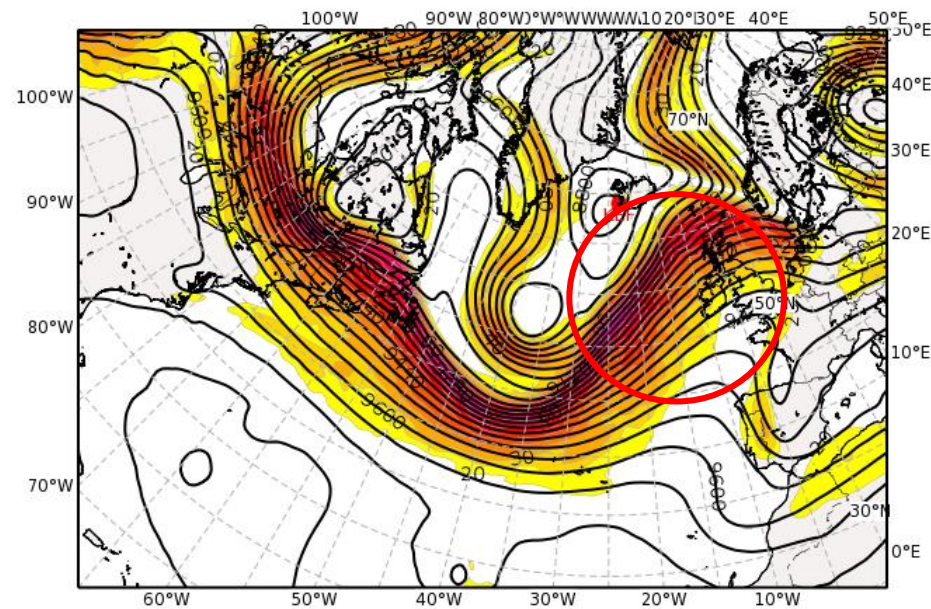
THE850, Z300 BT20/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Fri, 23 Sep 2016, 12 UTC (step 084 h from Tue, 20 Sep 2016, 00 UTC)



TC Karl

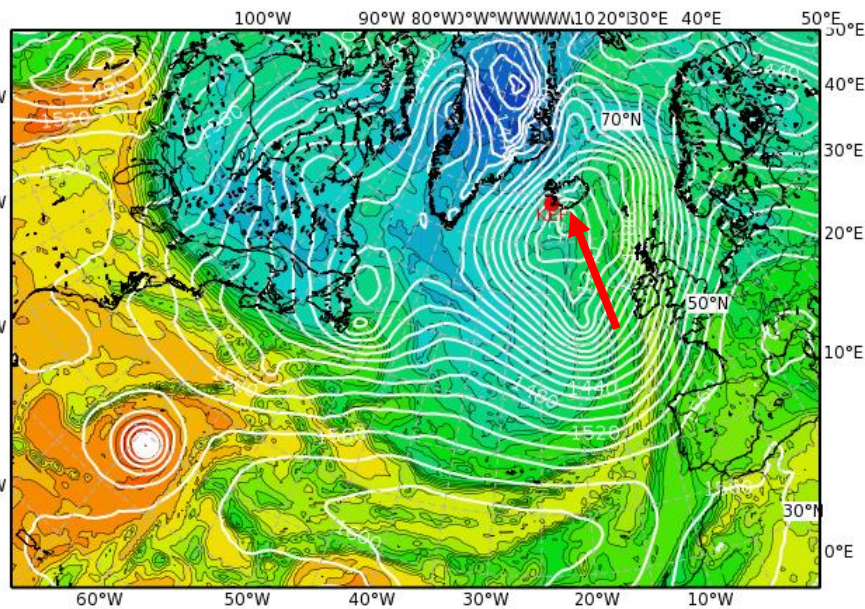
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Fri, 23 Sep 2016, 12 UTC (step 084 h from Tue, 20 Sep 2016, 00 UTC)



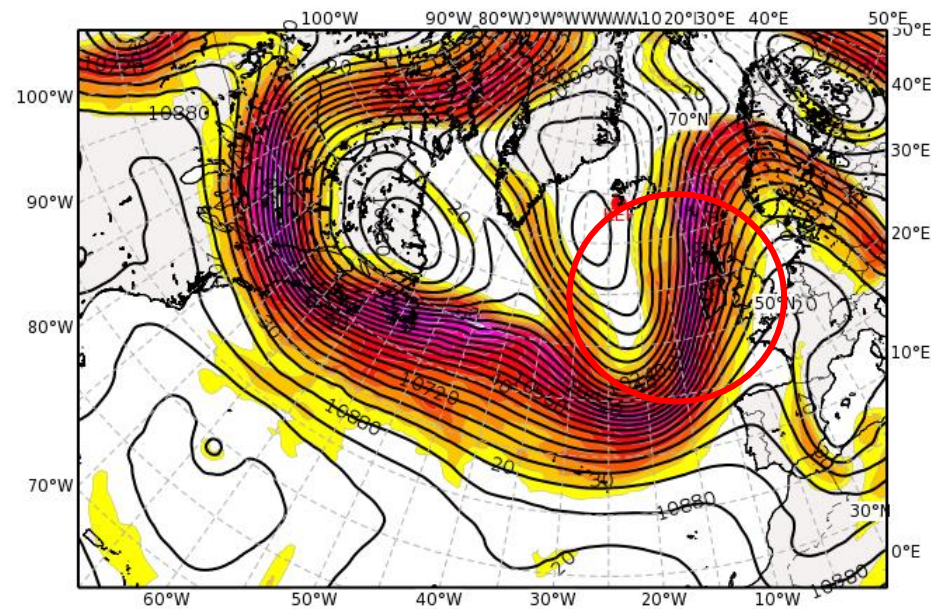
Forecast for Sat, 24 Sep 2016 12 UTC

THE850, Z300 BT20/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Sat, 24 Sep 2016, 12 UTC (step 108 h from Tue, 20 Sep 2016, 00 UTC)



Geopotential Height (m) & Horizontal Wind (m/s) at 250 hPa
Valid: Sat, 24 Sep 2016, 12 UTC (step 108 h from Tue, 20 Sep 2016, 00 UTC)



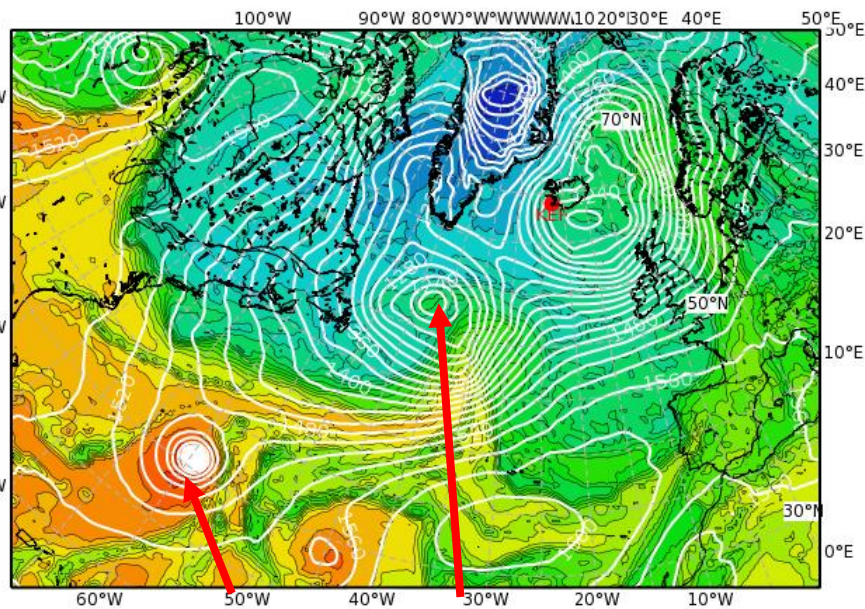
TC Karl

- Heavy precipitation & windy conditions in UK and Ireland

Forecast for Sun, 25 Sep 2016 12 UTC

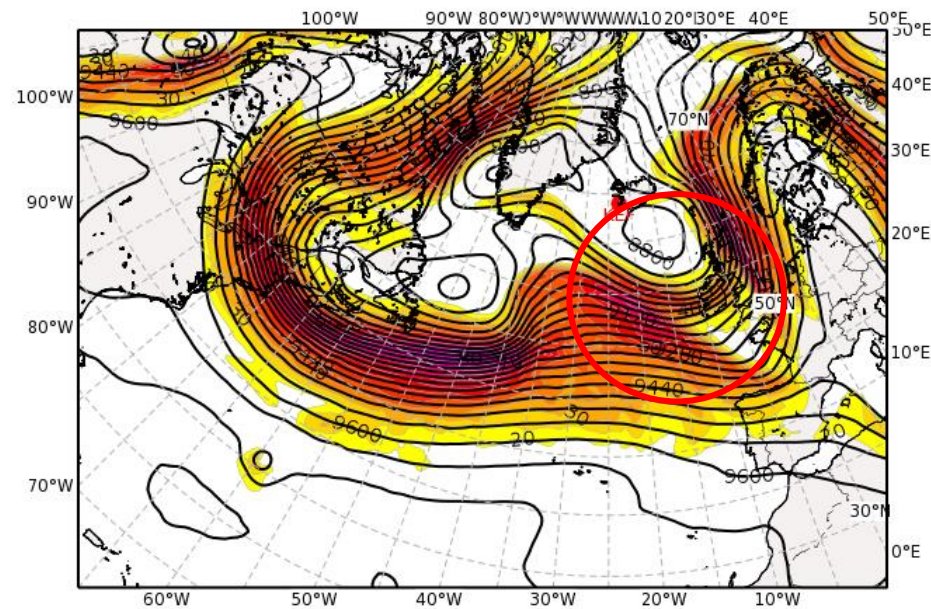
THE850, Z300 BT20/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Sun, 25 Sep 2016, 12 UTC (step 132 h from Tue, 20 Sep 2016, 00 UTC)



TC Karl DS cyclone

Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Sun, 25 Sep 2016, 12 UTC (step 132 h from Tue, 20 Sep 2016, 00 UTC)

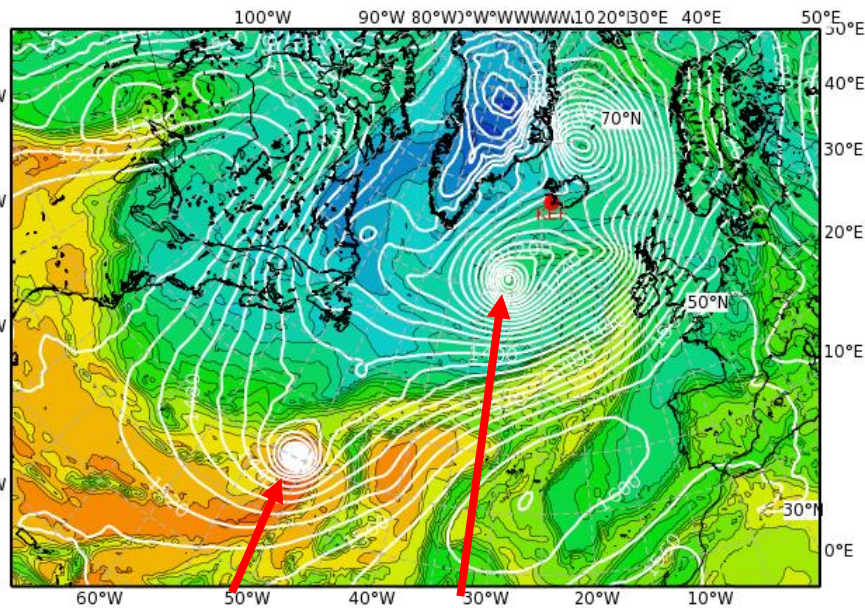


- Heavy precipitation & windy conditions in Norway coastal regions

Forecast for Mon, 26 Sep 2016 12 UTC

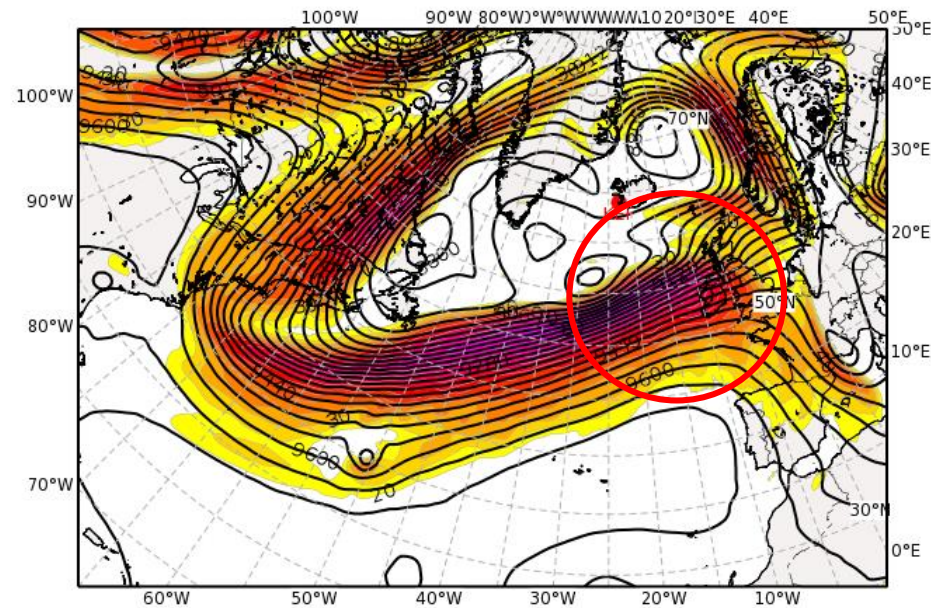
THE850, Z300 BT20/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Mon, 26 Sep 2016, 12 UTC (step 156 h from Tue, 20 Sep 2016, 00 UTC)



TC Karl DS cyclone

Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Mon, 26 Sep 2016, 12 UTC (step 156 h from Tue, 20 Sep 2016, 00 UTC)



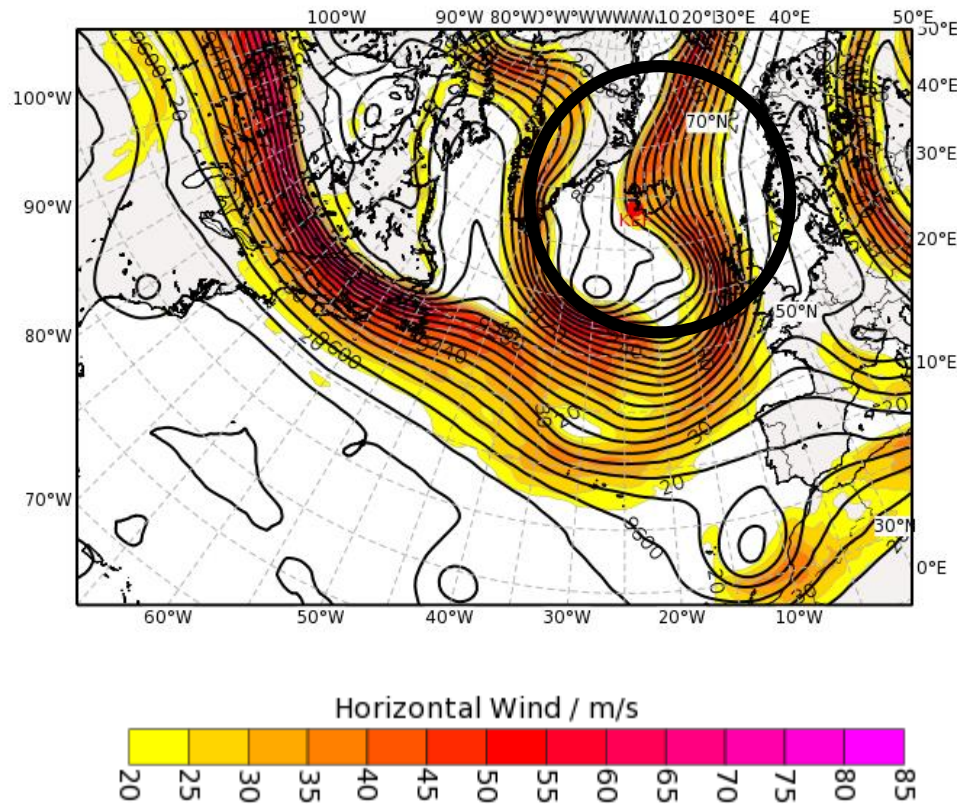
- Heavy precipitation & windy conditions in Northern UK, Ireland, Scotland
- Affecting North Sea region on Tu

Mission on Wednesday, 21 Sep 2016 15 UTC

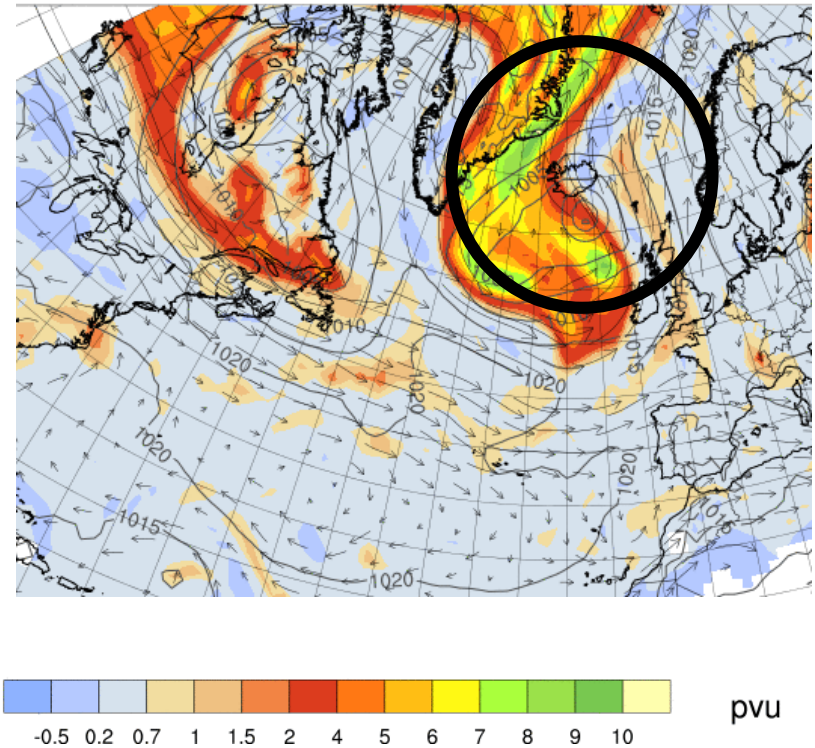
Geopotential height 300hPa and wind speed

BT20/00Z

Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Wed, 21 Sep 2016, 15 UTC (step 039 h from Tue, 20 Sep 2016, 00 UTC)



PV@315K at 20160921_15

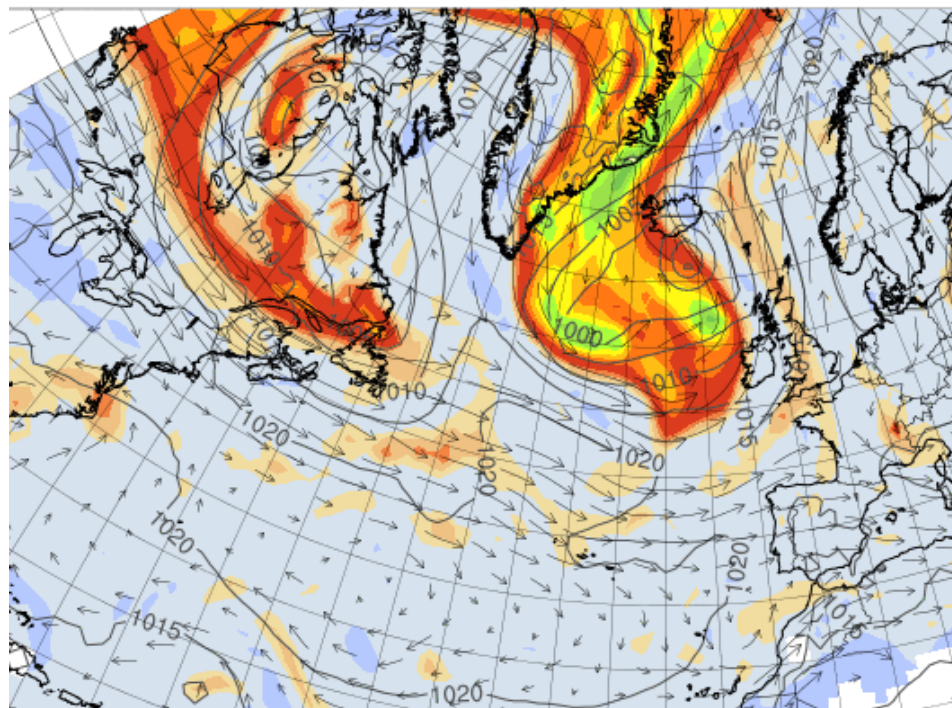


Comes potentially earlier!

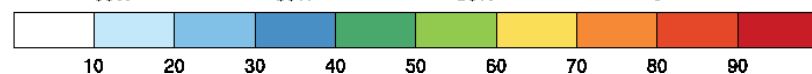
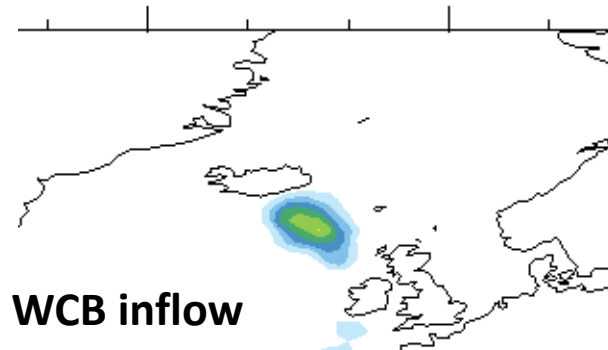
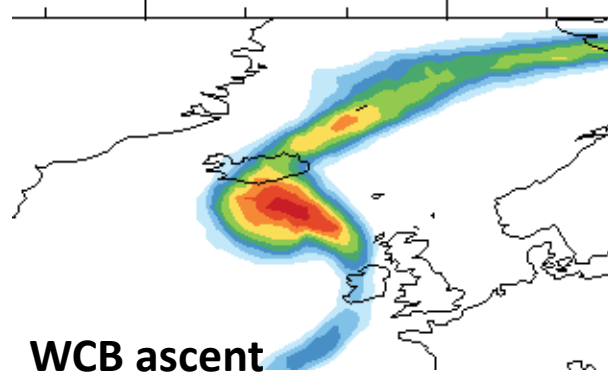
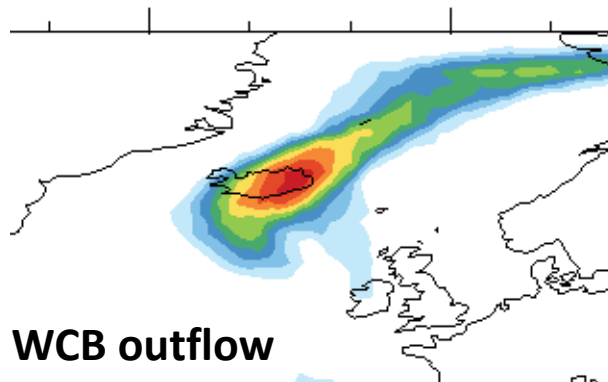
21 Sep 2016 15 UTC

BT19/12Z

PV@315K at 20160921_15



WCB probabilities 21/12UTC

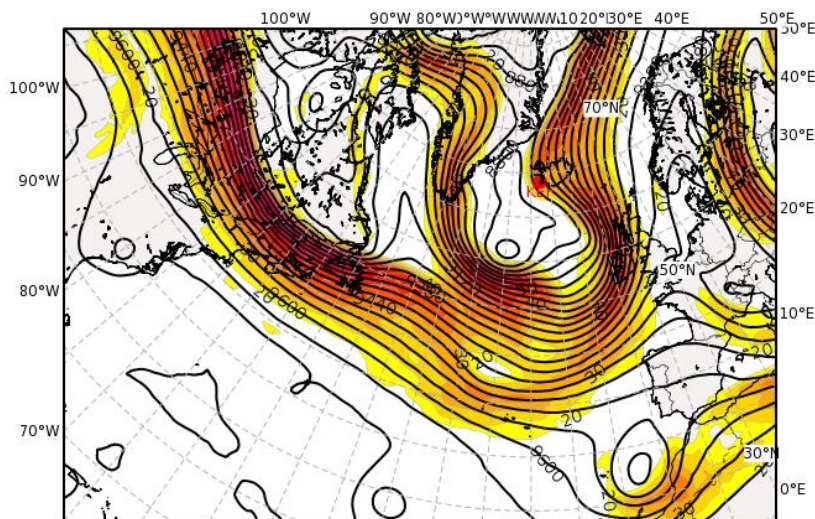


Forecast for Wed, 21 Sep 2016 15 UTC

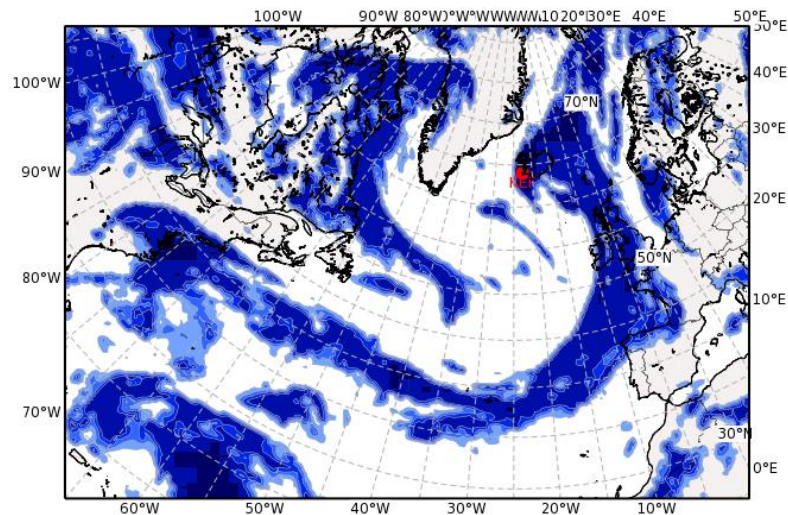
Z300, high
mid, low clouds

BT20/00Z

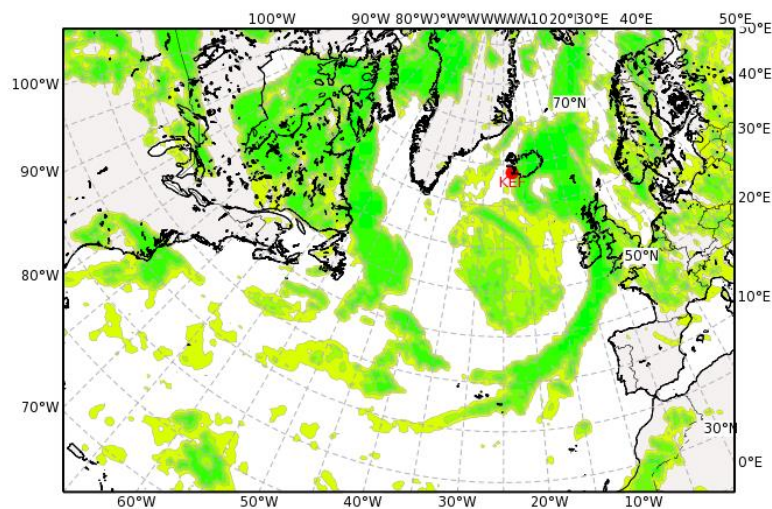
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Wed, 21 Sep 2016, 15 UTC (step 039 h from Tue, 20 Sep 2016, 00 UTC)



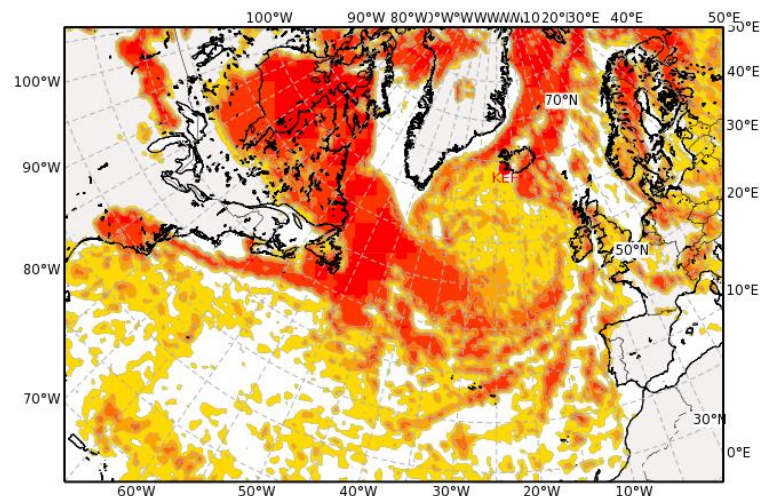
High Cloud Cover
Valid: Wed, 21 Sep 2016, 15 UTC (step 039 h from Tue, 20 Sep 2016, 00 UTC)



Medium Cloud Cover
Valid: Wed, 21 Sep 2016, 15 UTC (step 039 h from Tue, 20 Sep 2016, 00 UTC)

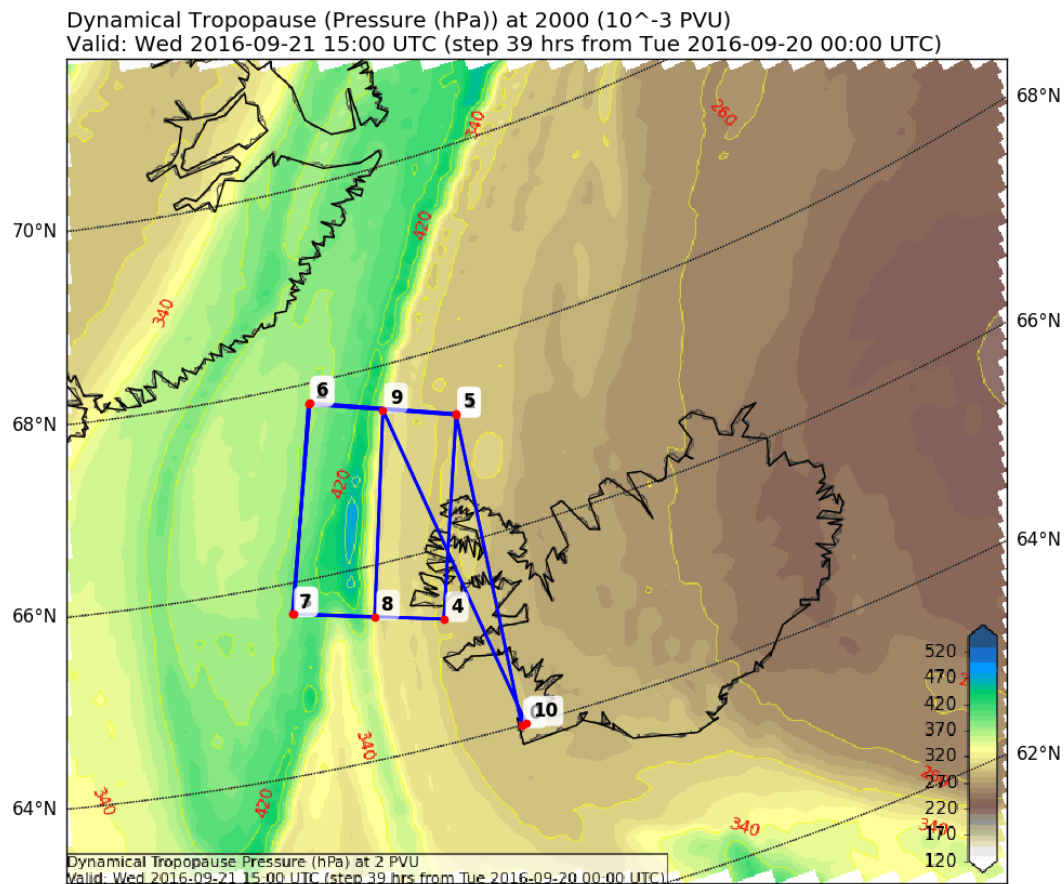


Low Cloud Cover
Valid: Wed, 21 Sep 2016, 15 UTC (step 039 h from Tue, 20 Sep 2016, 00 UTC)



Flight pattern for Wednesday 21 September, 15UTC

FALCON



- Box pattern to sample tropopause structure and across tropopause flow.
- 45min-60min “warming up” for Lidars → climb, potentially short upper-level vertical profiles
- Sampling at FL360 / FL380

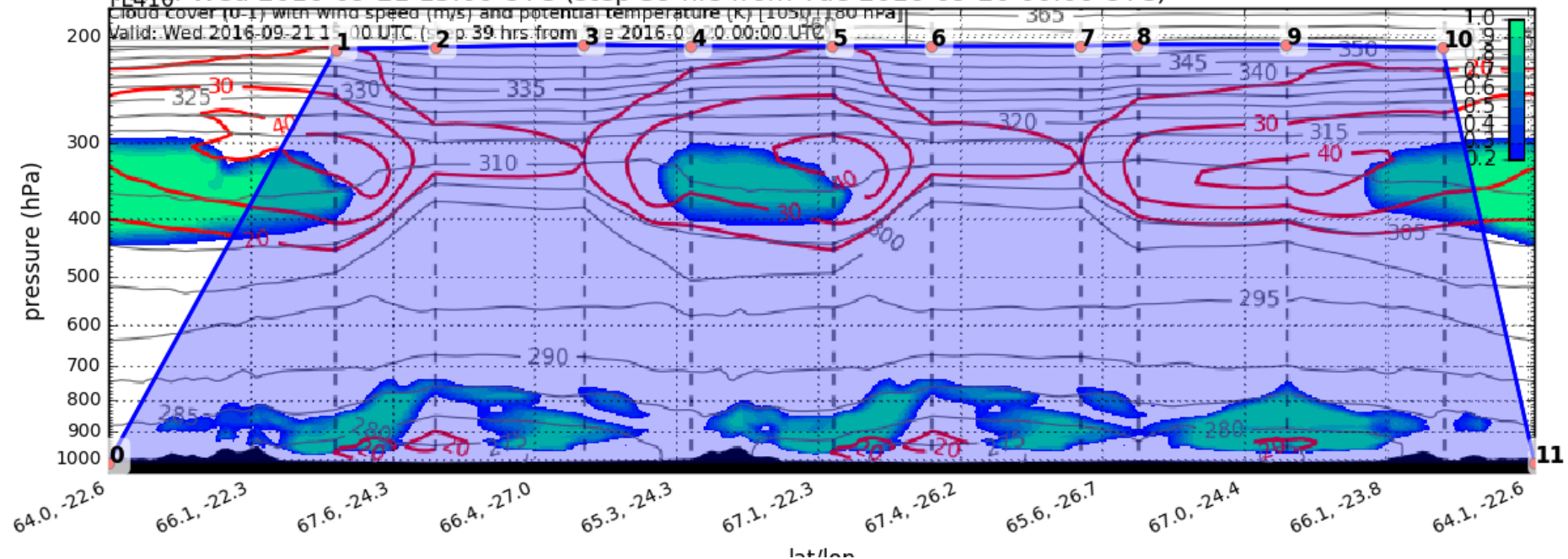
BT20/00Z

Flight pattern for Wednesday 21 September, 15UTC

FALCON

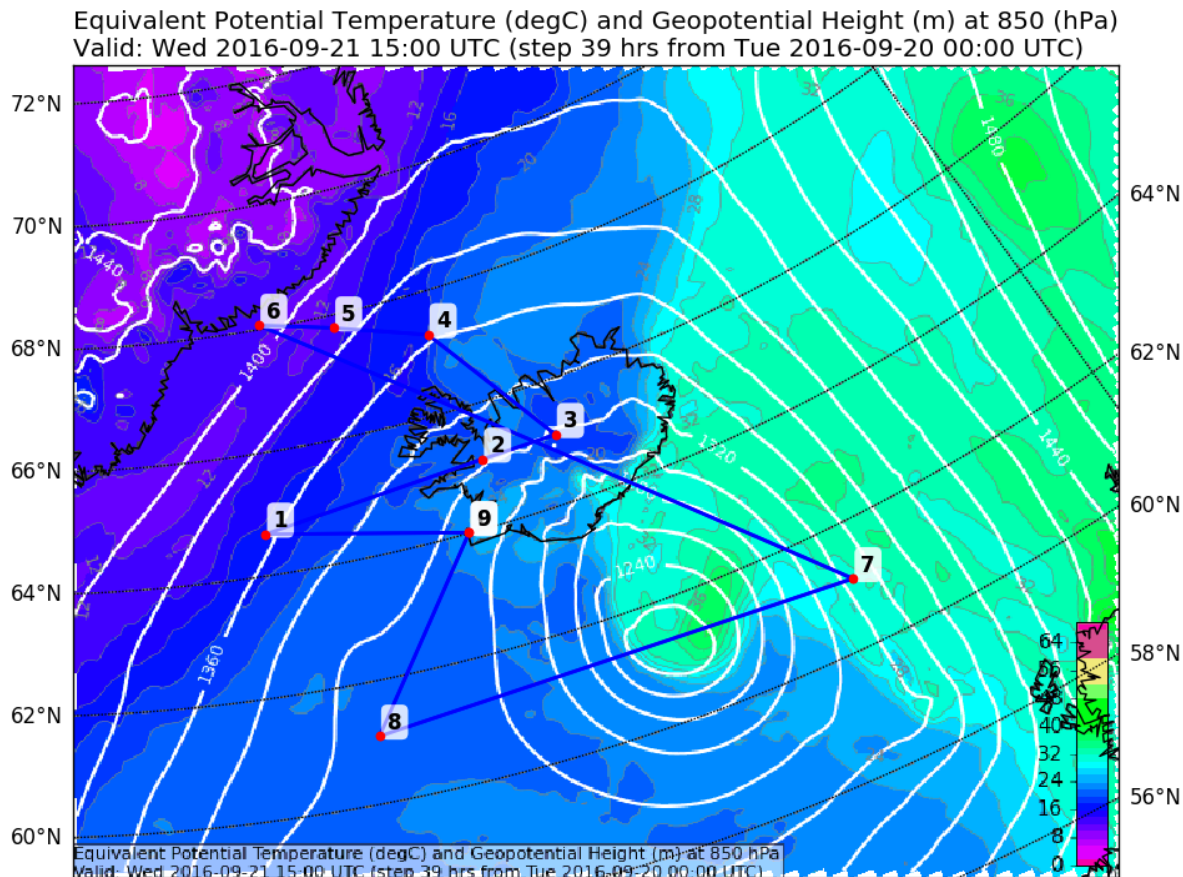
Cloud Cover (0-1) and Wind Speed (m/s) Vertical Section

Valid: Wed 2016-09-21 15:00 UTC (step 39 hrs from Tue 2016-09-20 00:00 UTC)



Flight pattern for Wednesday 21 September, 18UTC

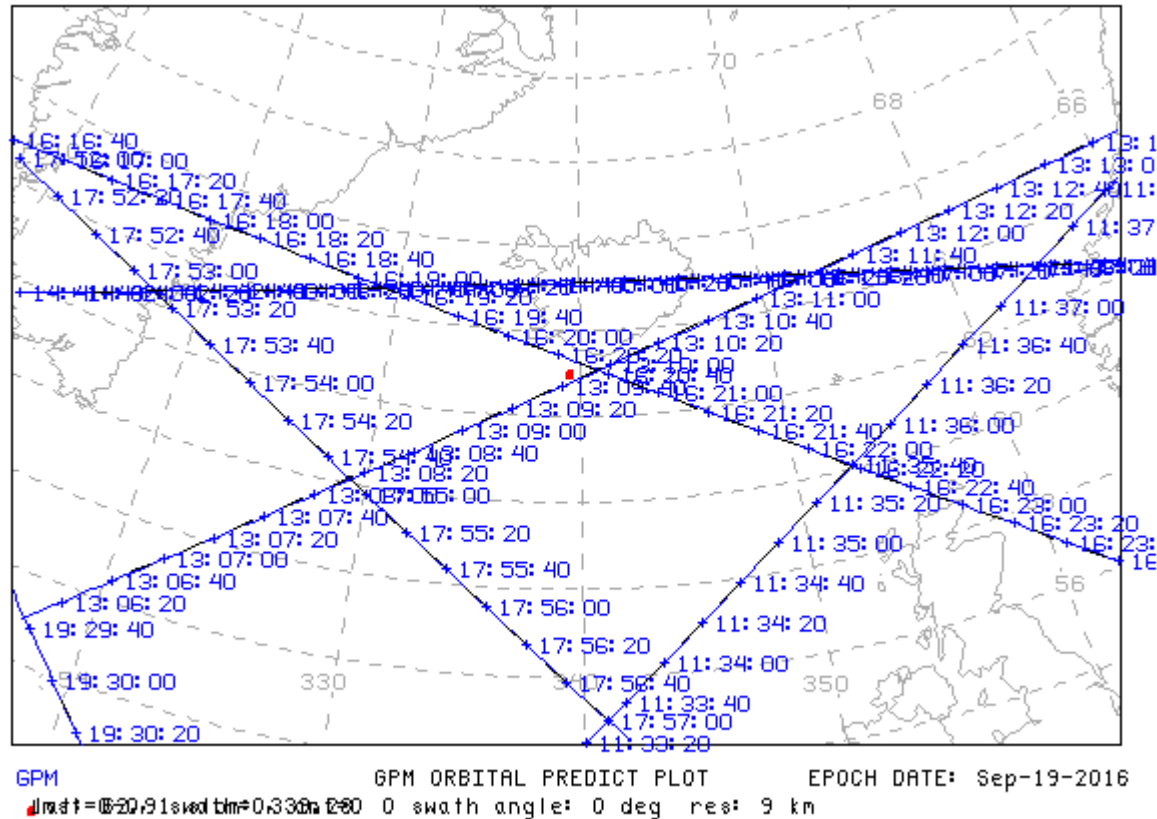
HALO



BT20/00Z

- Coordinated leg with Falcon, 5 dropsondes, sampling TP structure
- Triangle south of Iceland to sample WCB ascent region / warm sector 8 sondes

GPM overpass: planned to coordinate with HALO on Wed 21 Sep 14:44



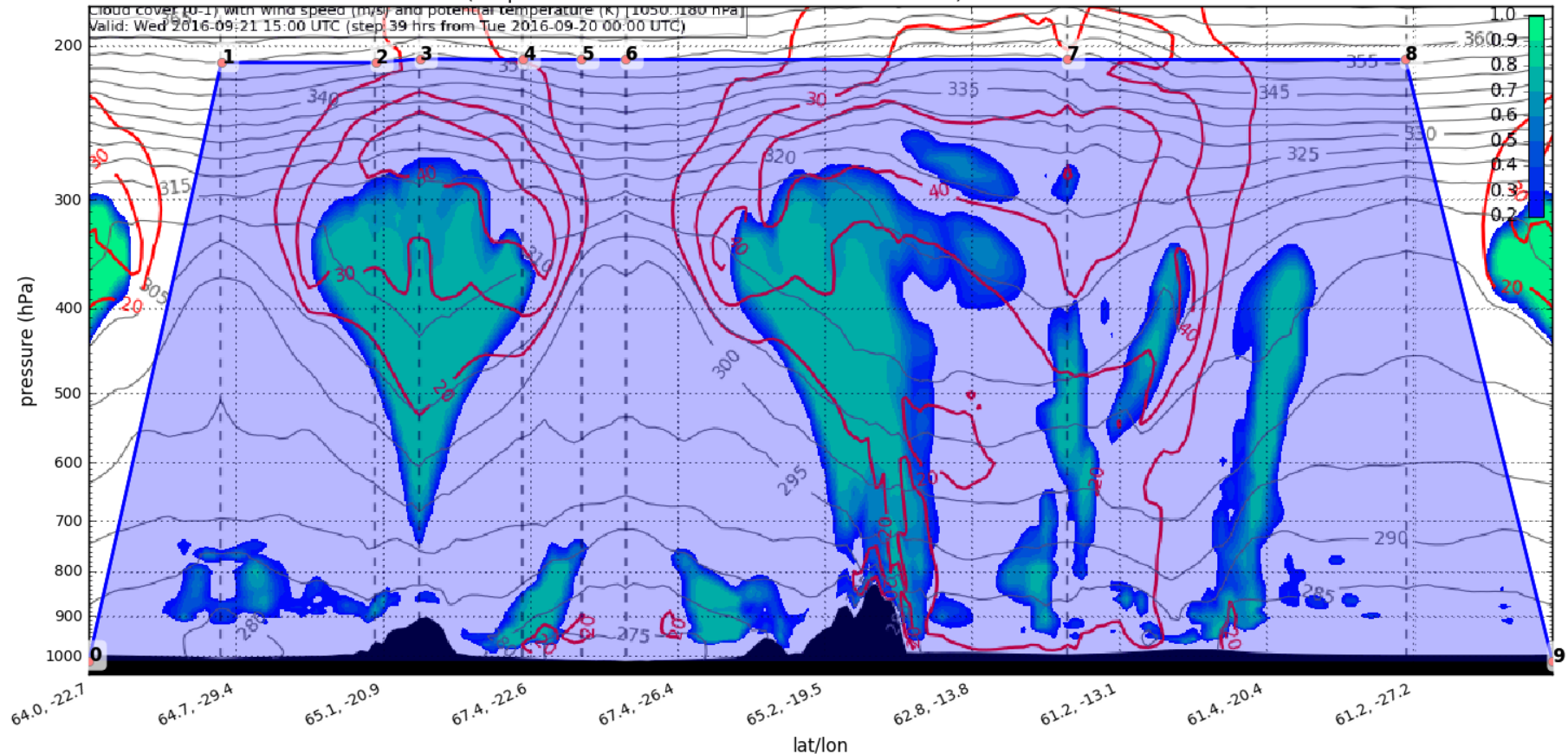
- 20 min leg coordination with GPM overpass centred 14:44 UTC

Flight pattern for Wednesday 21 September, 15UTC

HALO

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

Valid: Wed 2016-09-21 15:00 UTC (step 39 hrs from Tue 2016-09-20 00:00 UTC)

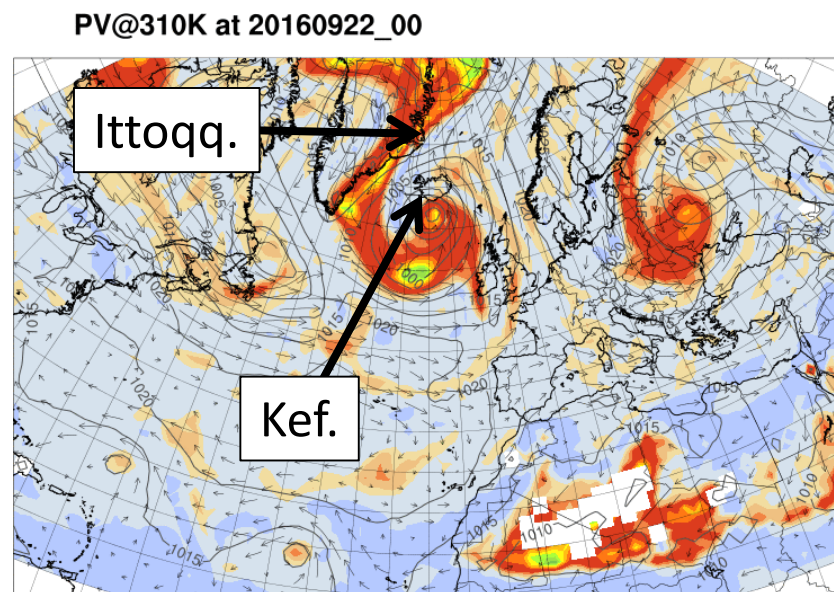


Radiosonde launches: Sat 17 Sep

- Iceland: Keflavik (7)
- Denmark: Torshavn (7)
- UK: Lerwick (5), Castor Bay (5)

Requests for Wed 21 Sep

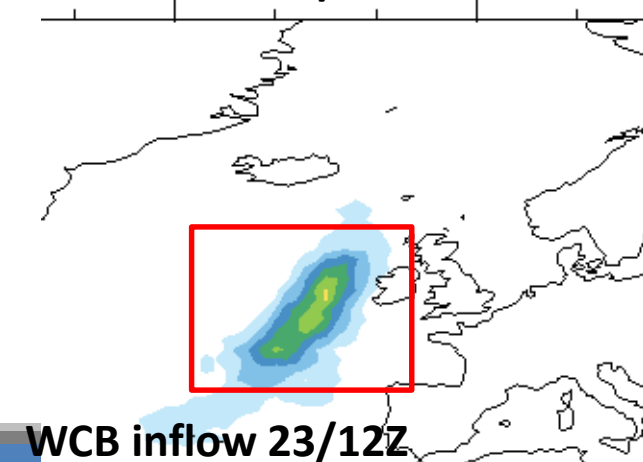
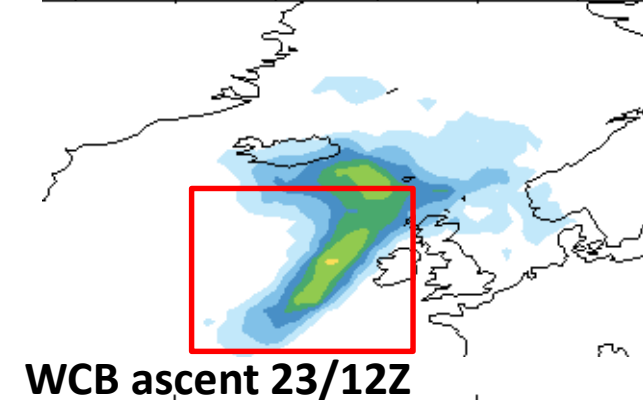
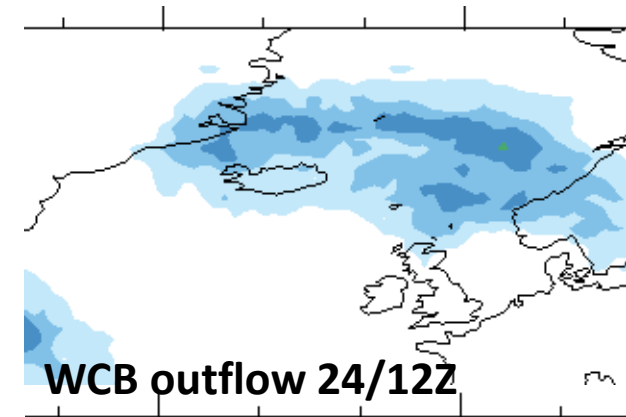
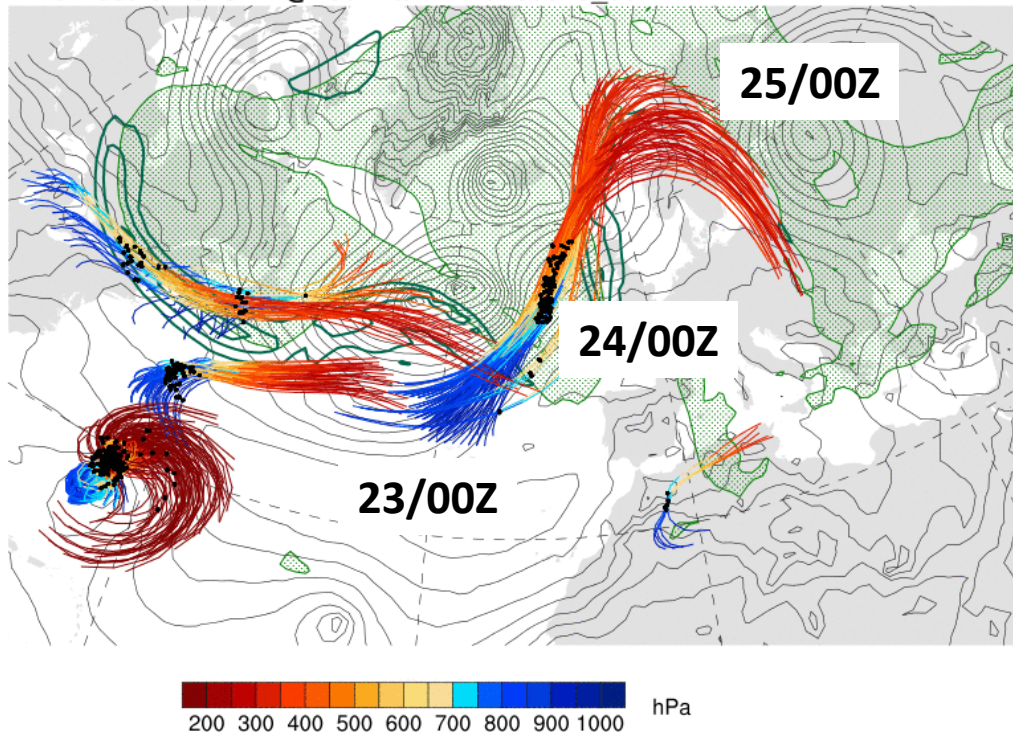
- Iceland:
 - Keflavik 00,12,**15,18,21**,00/22
 - Egilsstadir 00,12,00/22
- Greenland East coast:
 - Ittoqqortoormiit 00,12,**15,18,21**,00/22,**03/22**



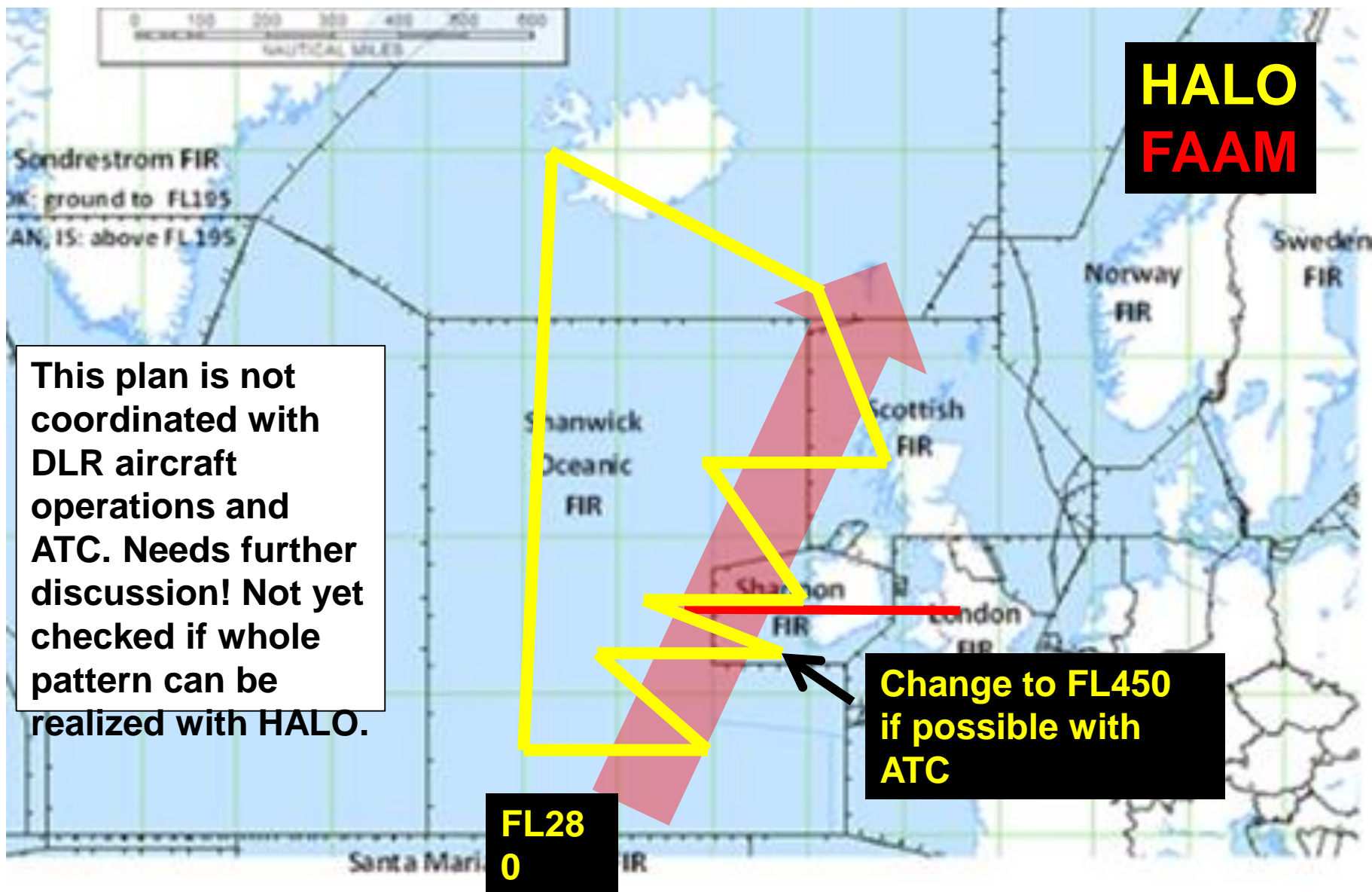
Friday/Saturday 23/24 September: Lagrangian measurement of WCB

WCB probabilities BT19/12Z

Trajectory start and SLP VT: 20160923_00
WCB outflow and PV@250hPa VT: 20160925_00

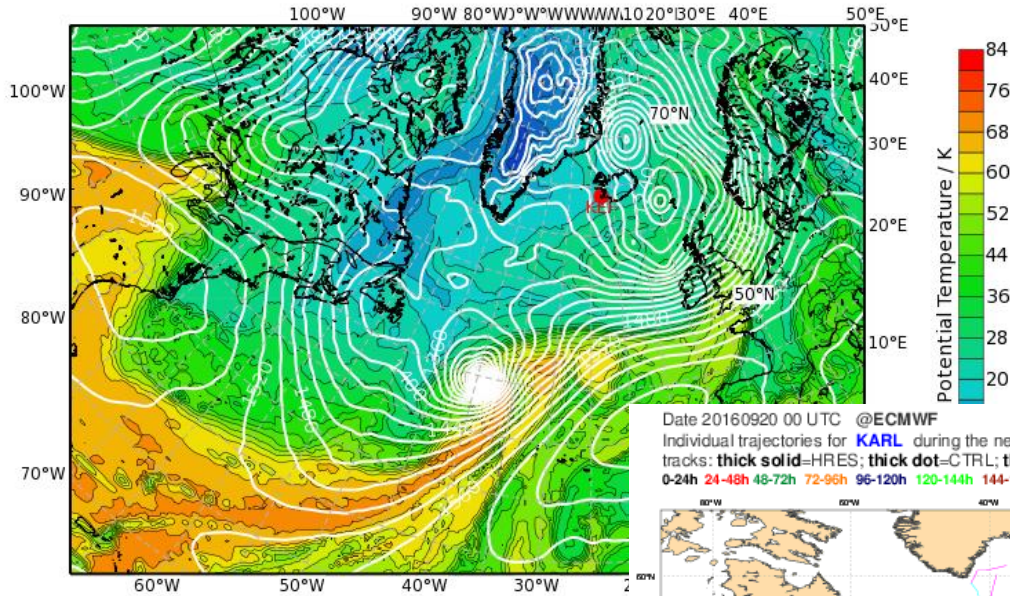


First idea for a rough flight plan for Friday 23 Sep 2016



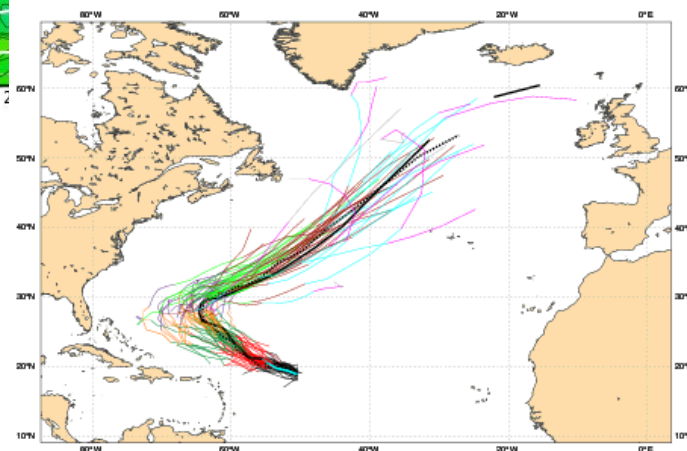
Outlook Sunday – Wednesday: extratropical transition of TC Karl

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 27 Sep 2016, 06 UTC (step 174 h from Tue, 20 Sep 2016, 00 UTC)



Sunday – Wednesday 25-27.9.2016
Coordination with **SHOUT**?

Date 20160920 00 UTC @ECMWF
Individual trajectories for **KARL** during the next 240 hours
tracks: **thick solid**=HRES; **thick dot**=CTRL; **thin solid**=EPS members [coloured]
0-24h 24-48h 48-72h 72-96h 96-120h 120-144h 144-168h 168-192h 192-216h 216-240h



List of ensemble members numbers forecast Tropical Cyclone
Intensity category in colours: **TD**[up to 33] **TS**[34-63] **HR1**[64-82] **HR2**[83-95] **HR3**[> 95 kt]

+0004 h	hr	01	03	04	05	06	08	09	10	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	30	31	32	34	37	38	39	40	41	42	43	45	46	47	48	49	50
+0004 h	hr	01	03	04	05	06	08	09	10	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	30	31	32	34	37	38	39	40	41	42	43	45	46	47	48	49	50
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+0004 h	hr	01	03	04	05	06	08	09	10	12																															

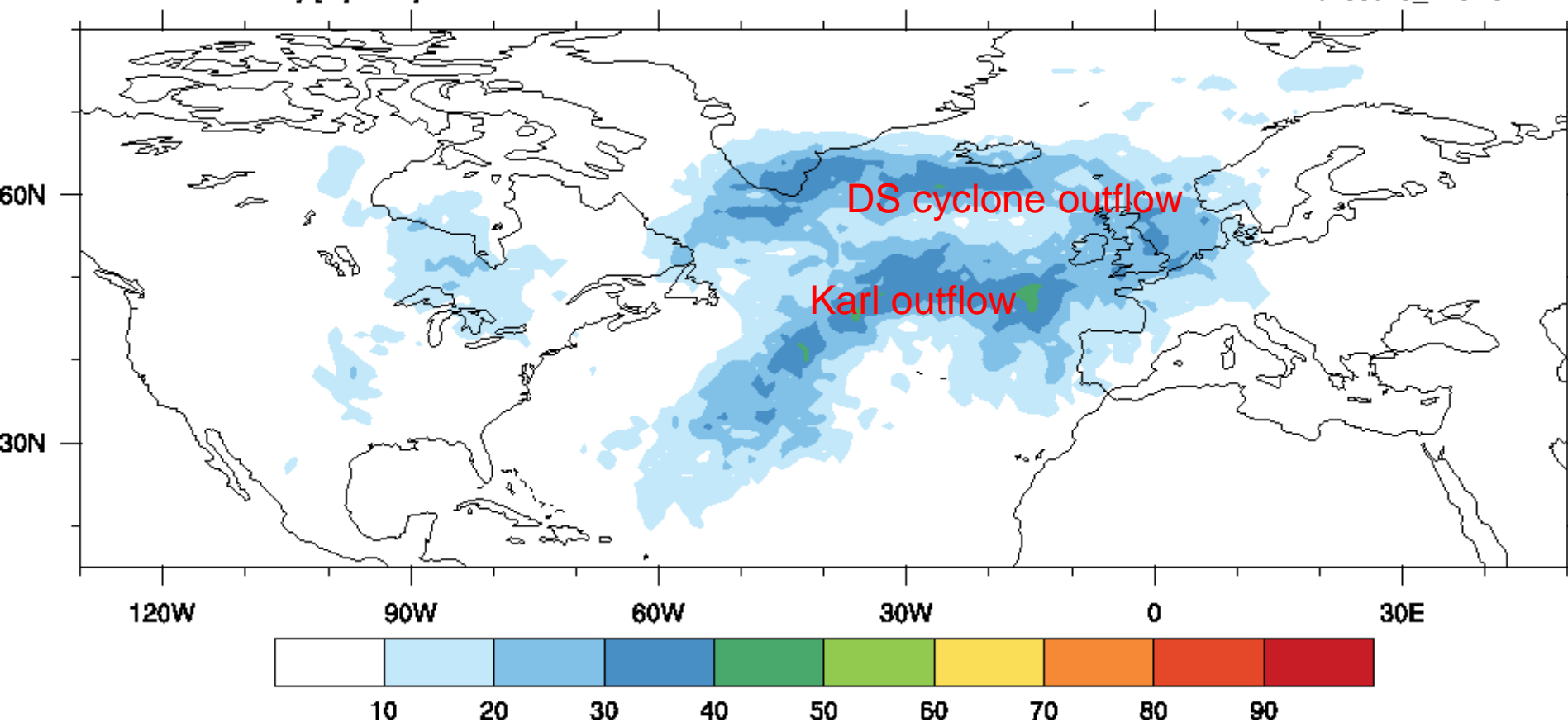
Outlook Sunday – Wednesday: extratropical transition of TC Karl

BT 19/12Z

VT Monday 26/12Z

ECMWF ensemble forecast
BT 20160919_12UTC
VT 20160926_12UTC

lt400hPa: Probability [%] of traj. occurrence in ENS



Summary plans

- **Next mission Wednesday 21 September**
 - **FALCON** box pattern with box parallel to jet stream, box needs adaptation to actual weather situation
 - **HALO** WCB ascent, 13 dropsondes
- **Lagrangian WCB measurements Friday/Sat. 23/24 September**
 - **HALO** on Friday in NOTAM region, dropsondes, **meet** UK **FAAM BAE 146** west of Ireland
 - **HALO and FALCON** Saturday outflow Iceland/North of UK
- **Outlook Sunday – Wednesday :**
 - Extratropical transition of TC Karl -> **SHOUT**