

NAWDEX – General Planning Meeting

19 September 2016, Keflavik 11 UTC

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. Announcement of tentative plans for Day+3
7. Coordination with other aircraft (Input from other groups)
8. Demand of ground-based obs (Ground-Based Observation coordinator)

NAWDEX – General Planning Meeting

WEATHER summary

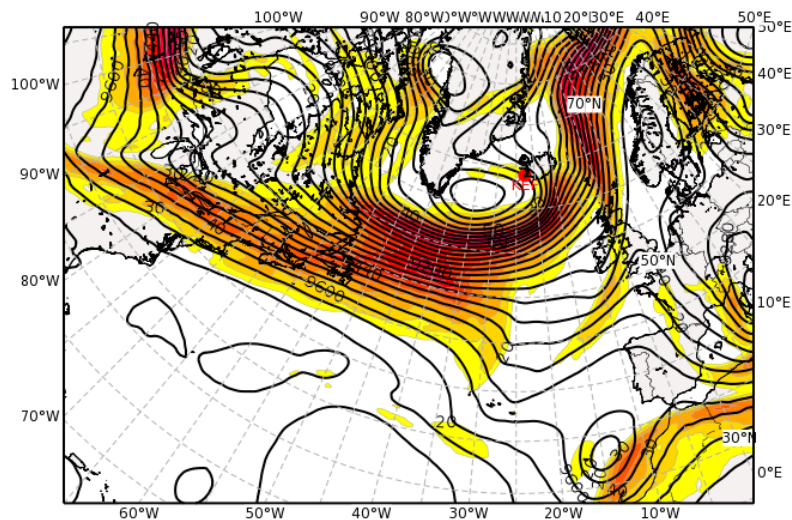
19 September 2016, Keflavik 11 UTC

- Current situation & evolution until Sunday 24 September
- **Next mission Wednesday 21 September**
- **Potential 2nd mission Friday/Saturday 23/24 September**
- Outlook **Sunday - Tuesday**

Analysis – 19 Sep 2016, 00 UTC

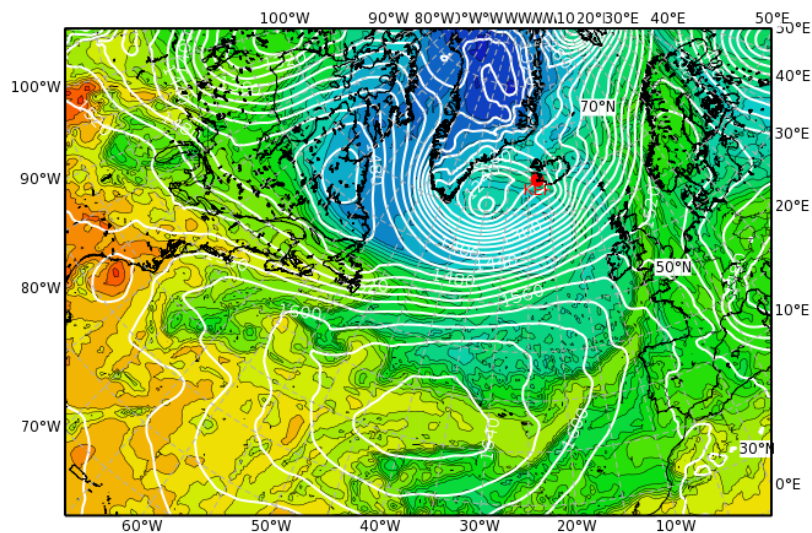
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa

Valid: Mon, 19 Sep 2016, 00 UTC (step 000 h from Mon, 19 Sep 2016, 00 UTC)



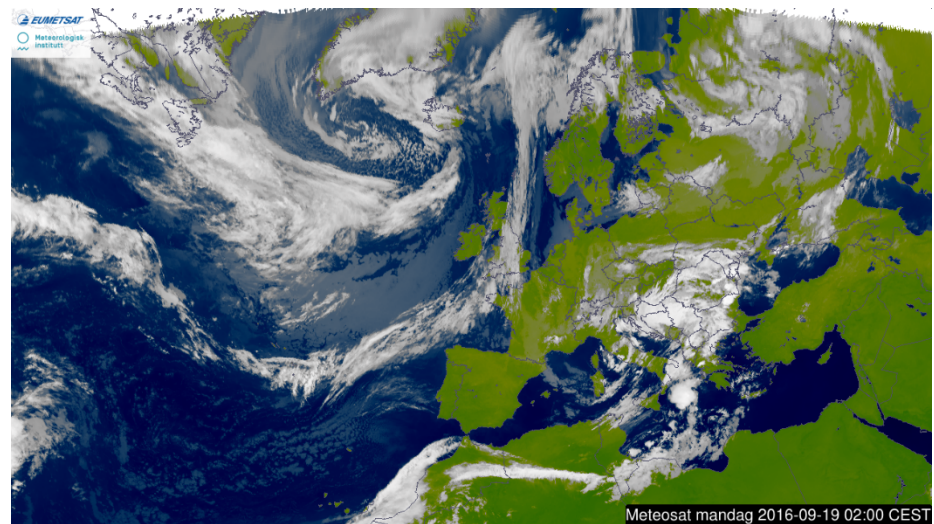
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa

Valid: Mon, 19 Sep 2016, 00 UTC (step 000 h from Mon, 19 Sep 2016, 00 UTC)



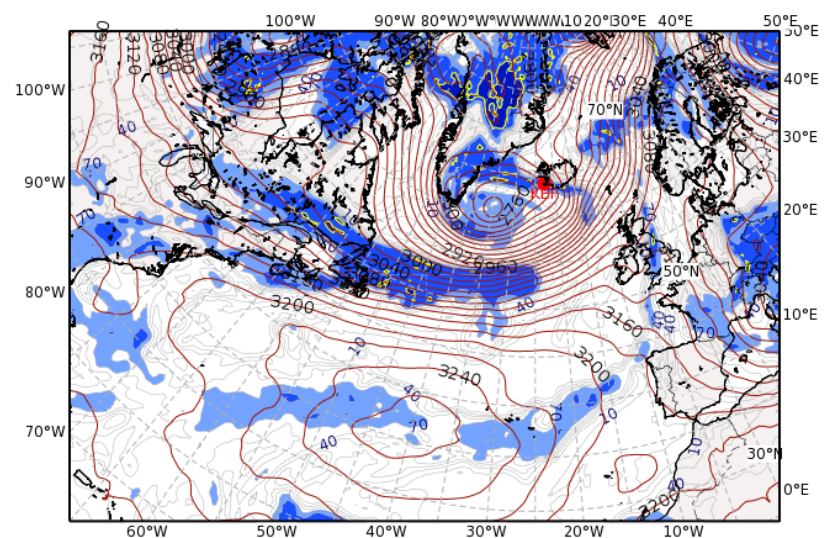
Z300, SAT

THE850, RH700

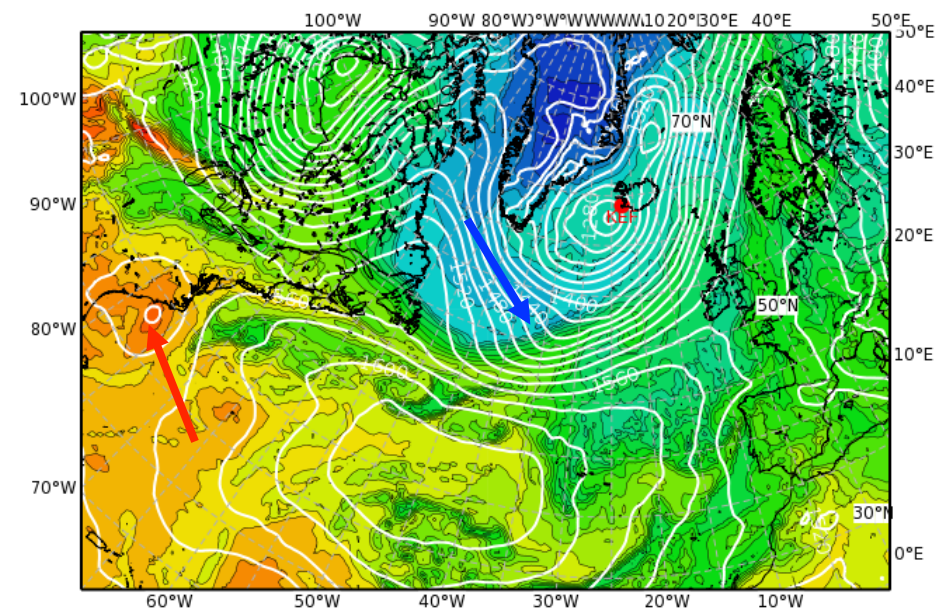


Relative Humidity (%) and Z (m) at 700 hPa

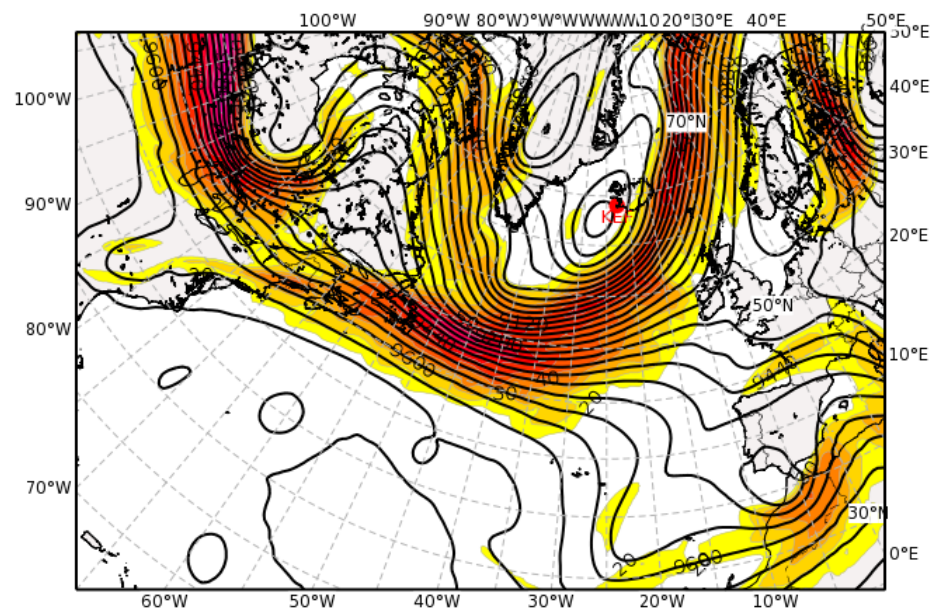
Valid: Mon, 19 Sep 2016, 00 UTC (step 000 h from Mon, 19 Sep 2016, 00 UTC)



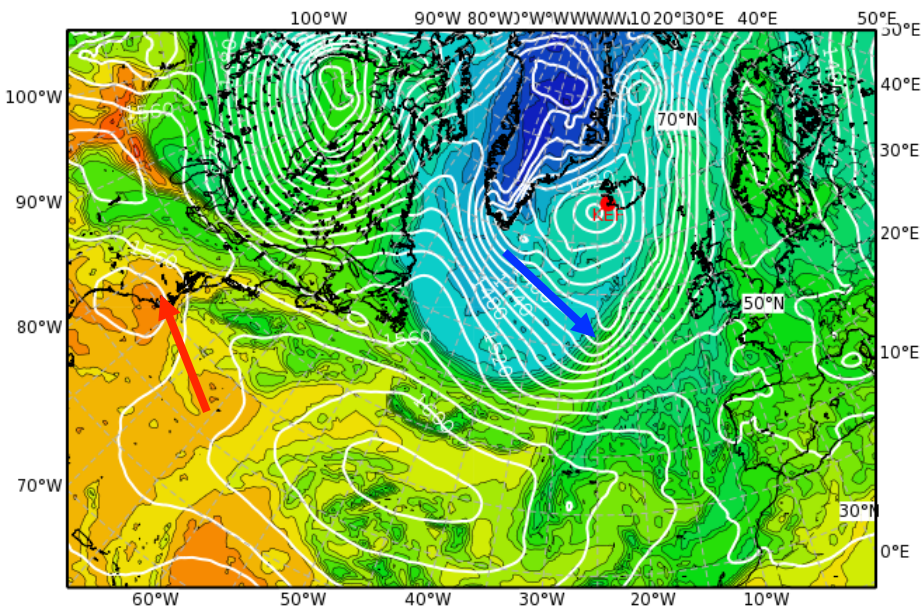
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 20 Sep 2016, 00 UTC (step 024 h from Mon, 19 Sep 2016, 00 UTC)



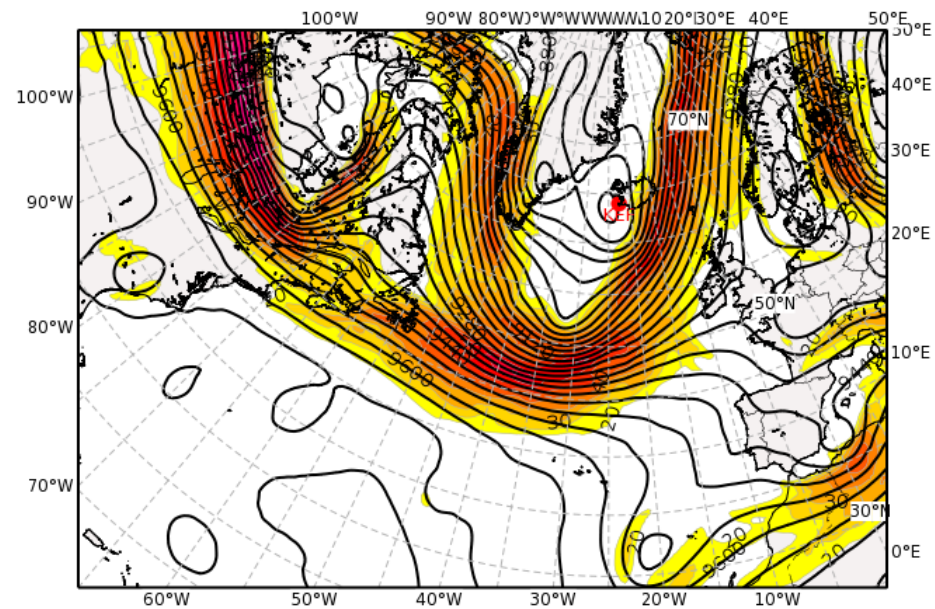
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Tue, 20 Sep 2016, 00 UTC (step 024 h from Mon, 19 Sep 2016, 00 UTC)



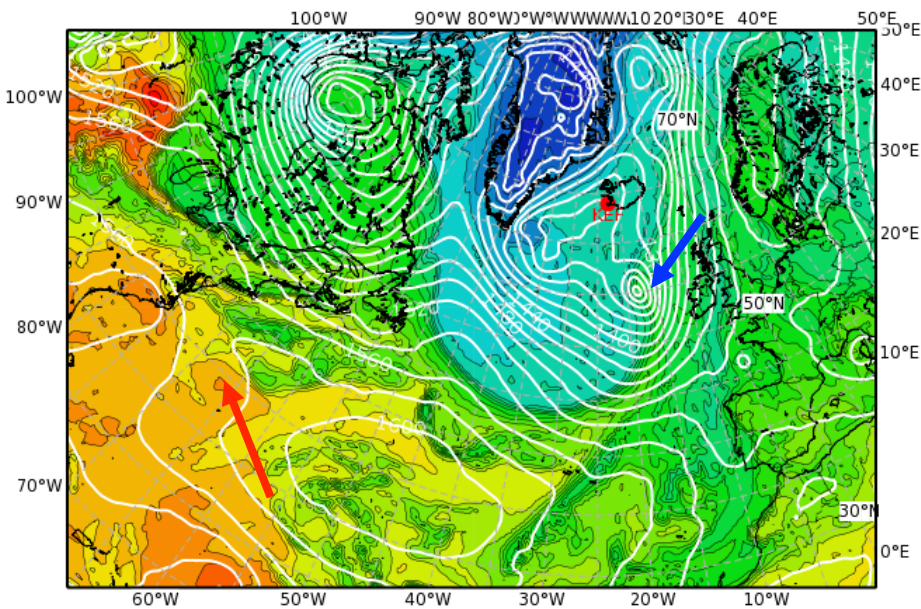
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 20 Sep 2016, 12 UTC (step 036 h from Mon, 19 Sep 2016, 00 UTC)



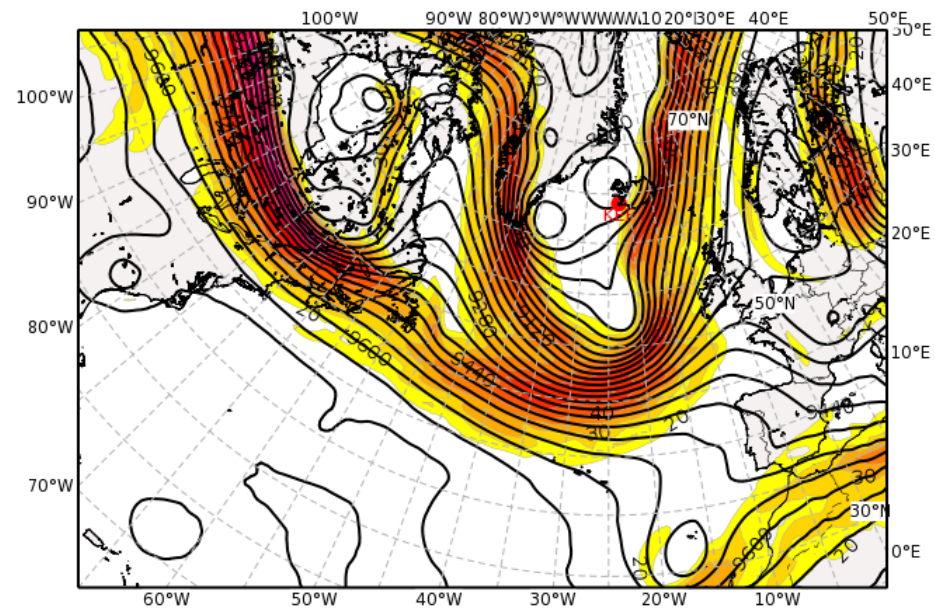
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Tue, 20 Sep 2016, 12 UTC (step 036 h from Mon, 19 Sep 2016, 00 UTC)



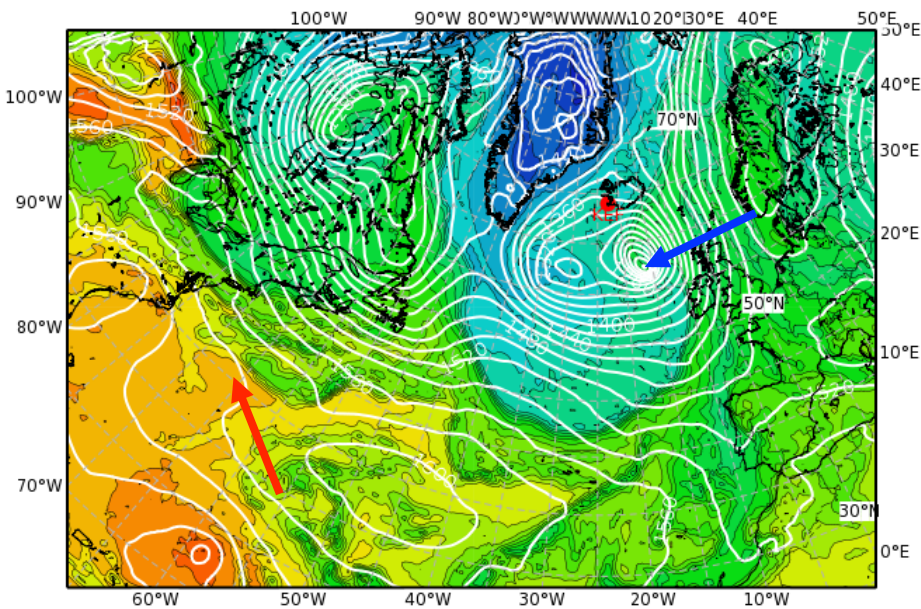
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Wed, 21 Sep 2016, 00 UTC (step 048 h from Mon, 19 Sep 2016, 00 UTC)



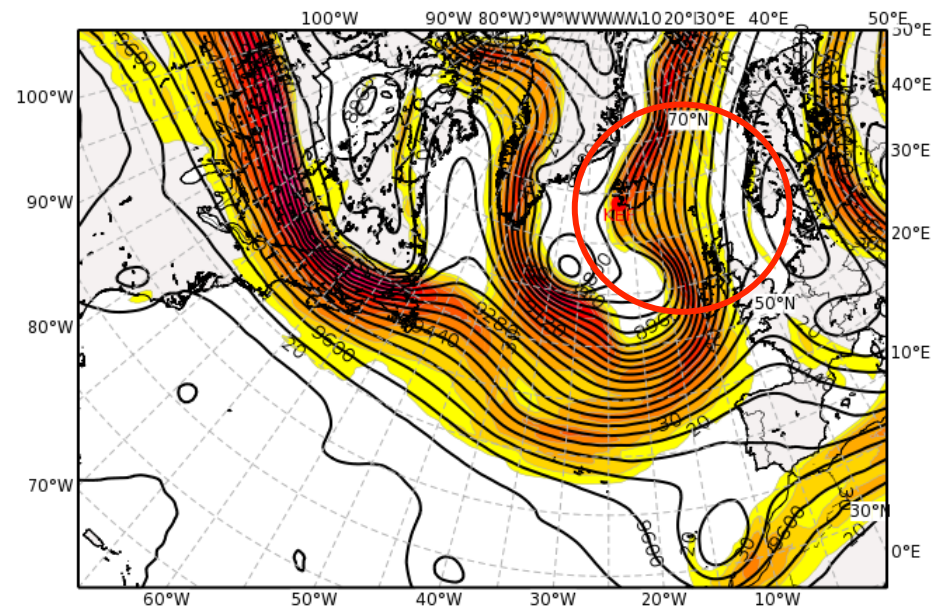
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Wed, 21 Sep 2016, 00 UTC (step 048 h from Mon, 19 Sep 2016, 00 UTC)



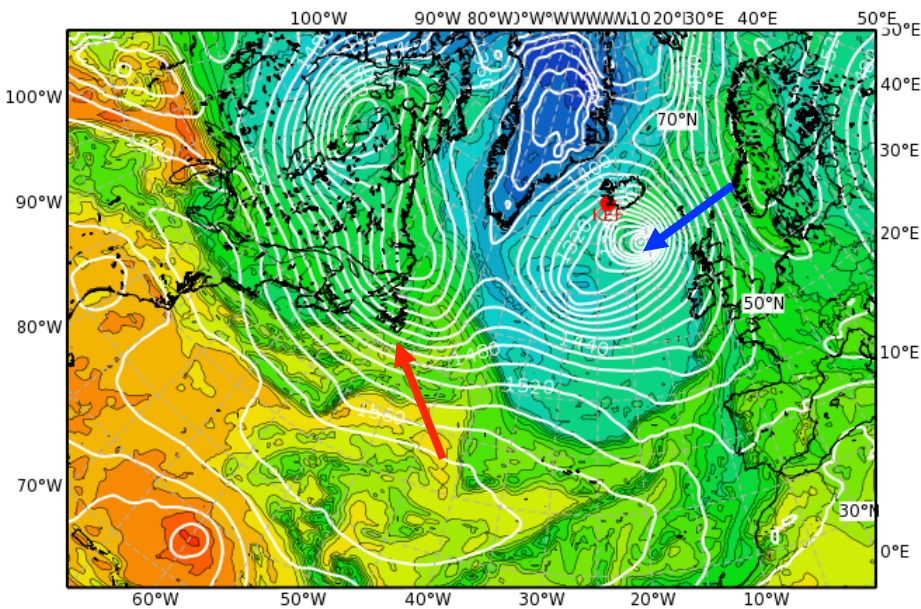
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Wed, 21 Sep 2016, 12 UTC (step 060 h from Mon, 19 Sep 2016, 00 UTC)



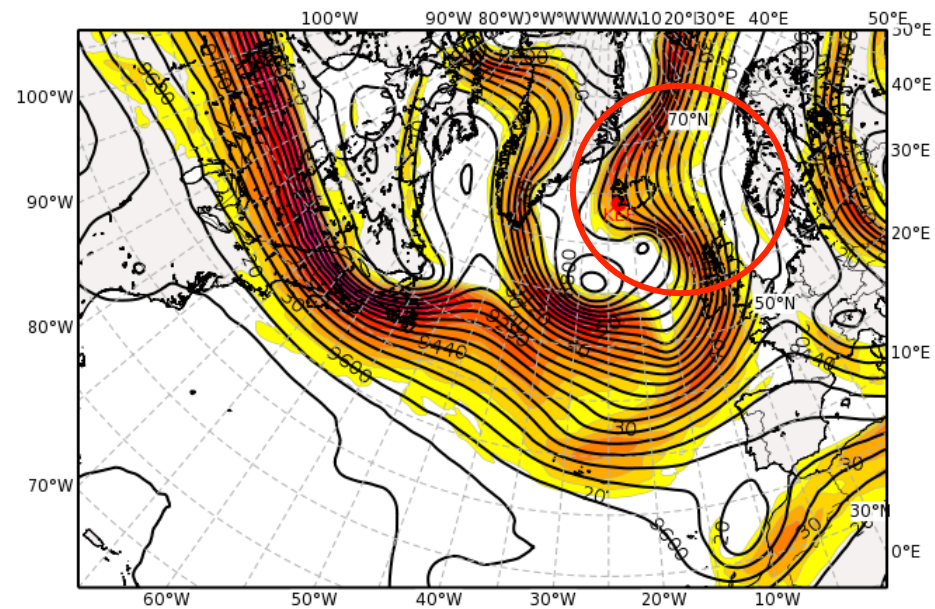
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Wed, 21 Sep 2016, 12 UTC (step 060 h from Mon, 19 Sep 2016, 00 UTC)



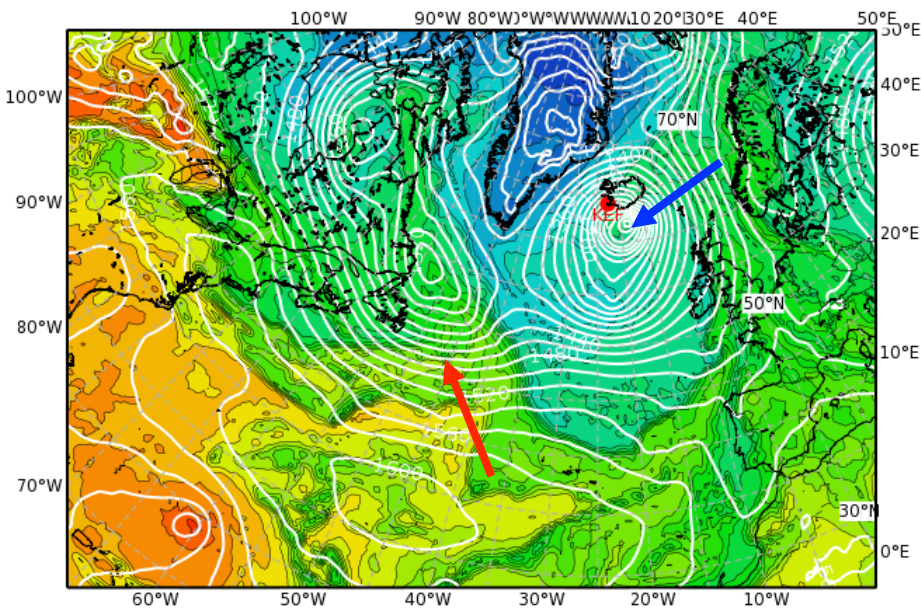
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Wed, 21 Sep 2016, 18 UTC (step 066 h from Mon, 19 Sep 2016, 00 UTC)



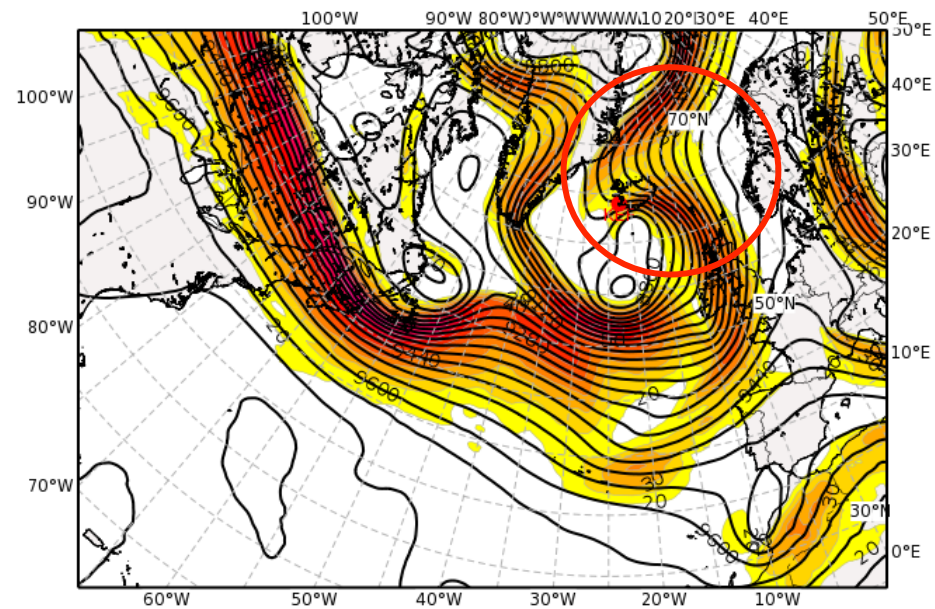
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Wed, 21 Sep 2016, 18 UTC (step 066 h from Mon, 19 Sep 2016, 00 UTC)



Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Thu, 22 Sep 2016, 00 UTC (step 072 h from Mon, 19 Sep 2016, 00 UTC)



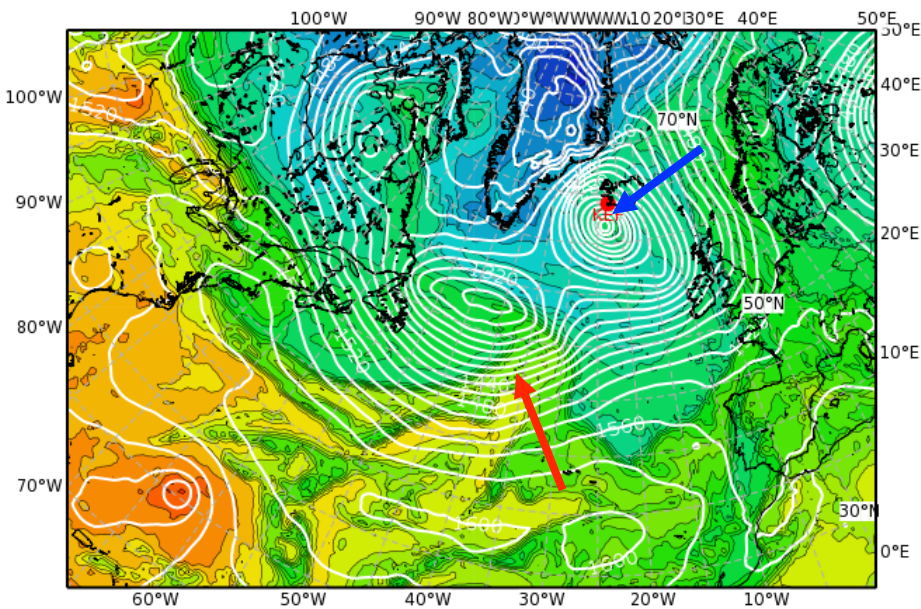
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Thu, 22 Sep 2016, 00 UTC (step 072 h from Mon, 19 Sep 2016, 00 UTC)



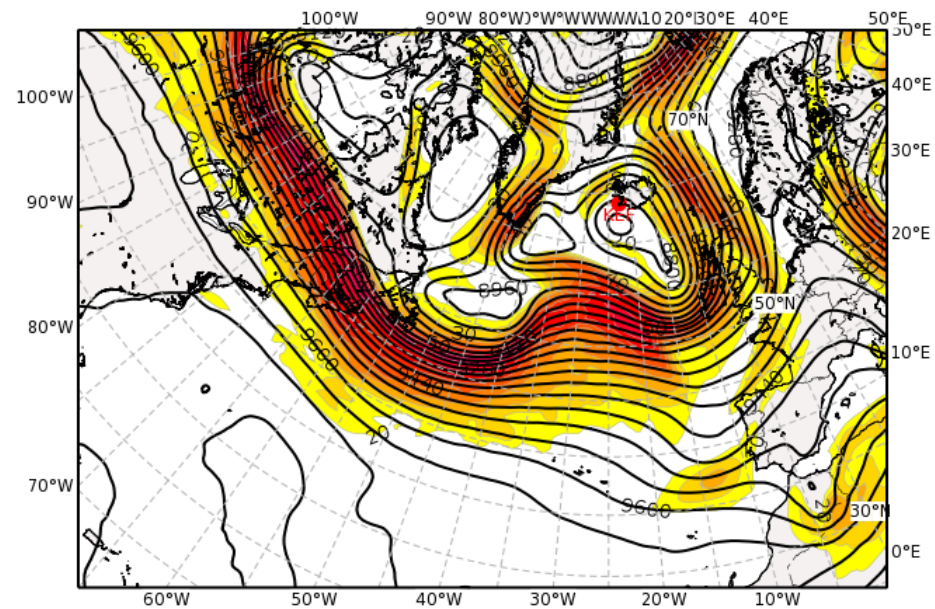
Forecast for Thu, 22 Sep 2016 12 UTC

THE850, Z300 BT19/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Thu, 22 Sep 2016, 12 UTC (step 084 h from Mon, 19 Sep 2016, 00 UTC)



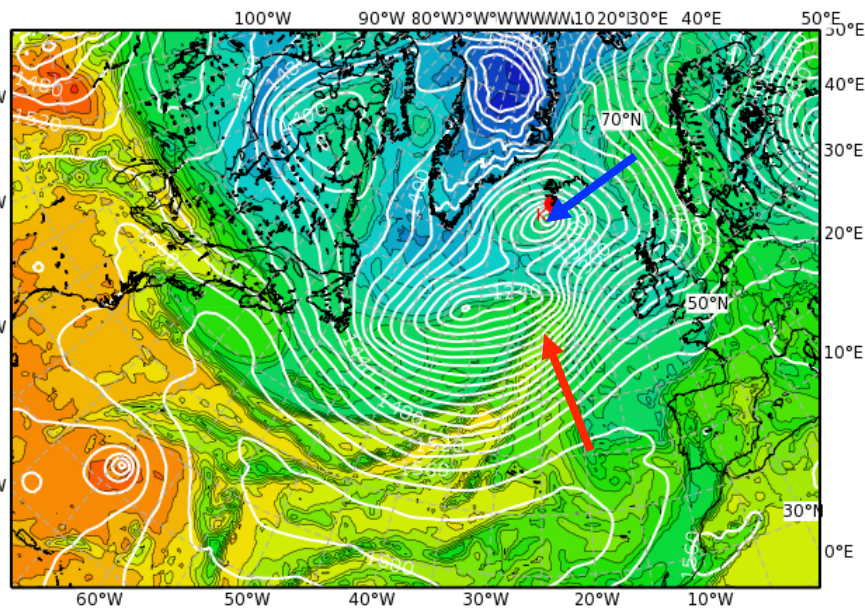
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Thu, 22 Sep 2016, 12 UTC (step 084 h from Mon, 19 Sep 2016, 00 UTC)



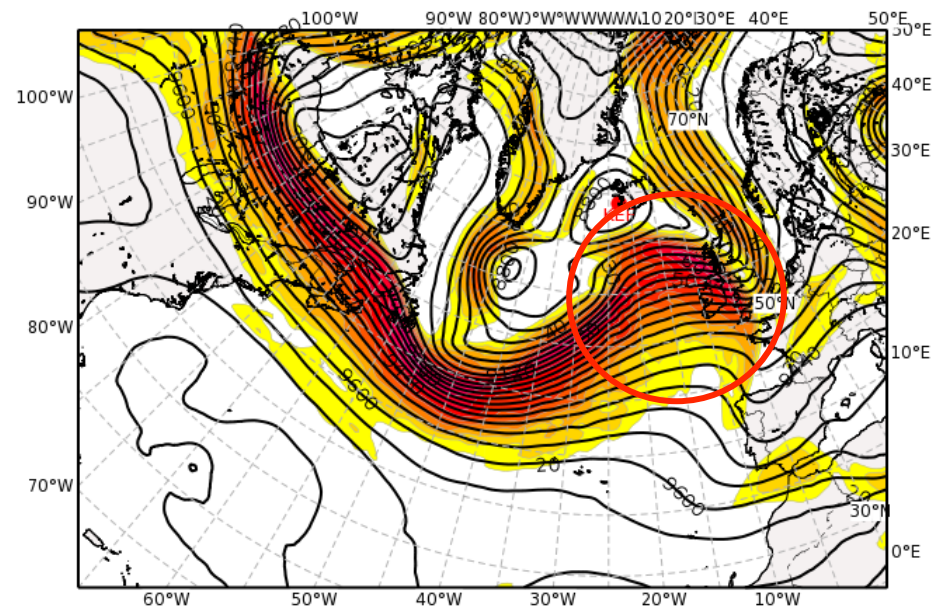
Forecast for Fri, 23 Sep 2016 00 UTC

THE850, Z300 BT19/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Fri, 23 Sep 2016, 00 UTC (step 096 h from Mon, 19 Sep 2016, 00 UTC)



Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Fri, 23 Sep 2016, 00 UTC (step 096 h from Mon, 19 Sep 2016, 00 UTC)

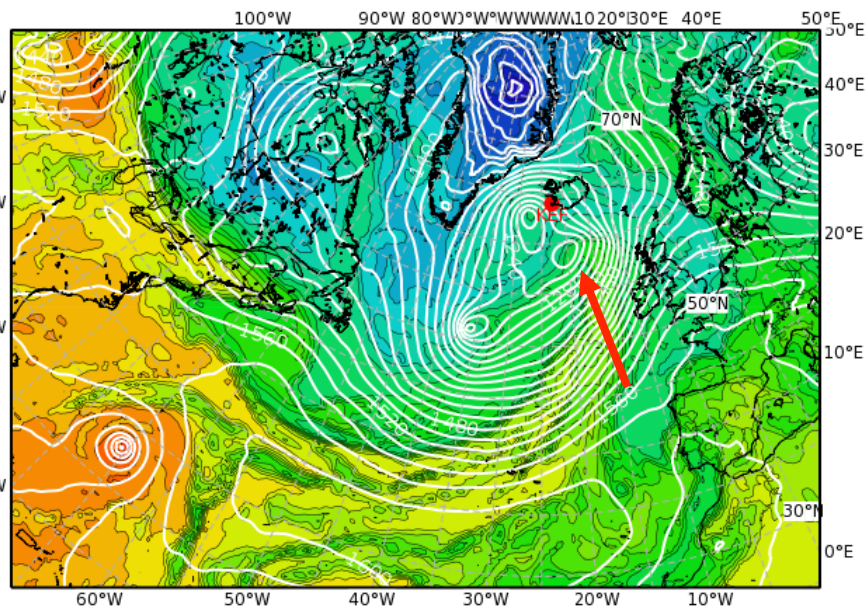


TC Karl

Forecast for Fri, 23 Sep 2016 12 UTC

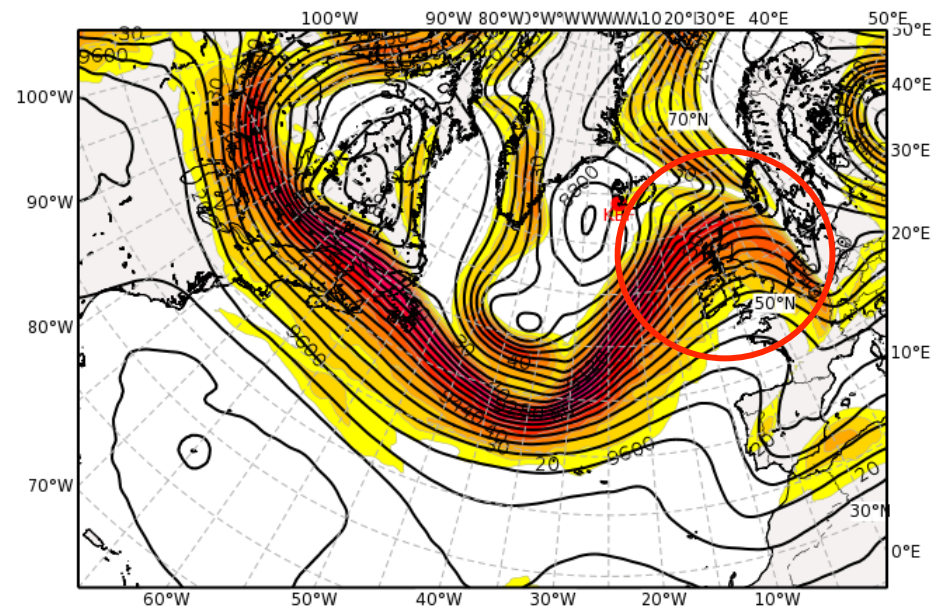
THE850, Z300 BT19/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Fri, 23 Sep 2016, 12 UTC (step 108 h from Mon, 19 Sep 2016, 00 UTC)



TC Karl

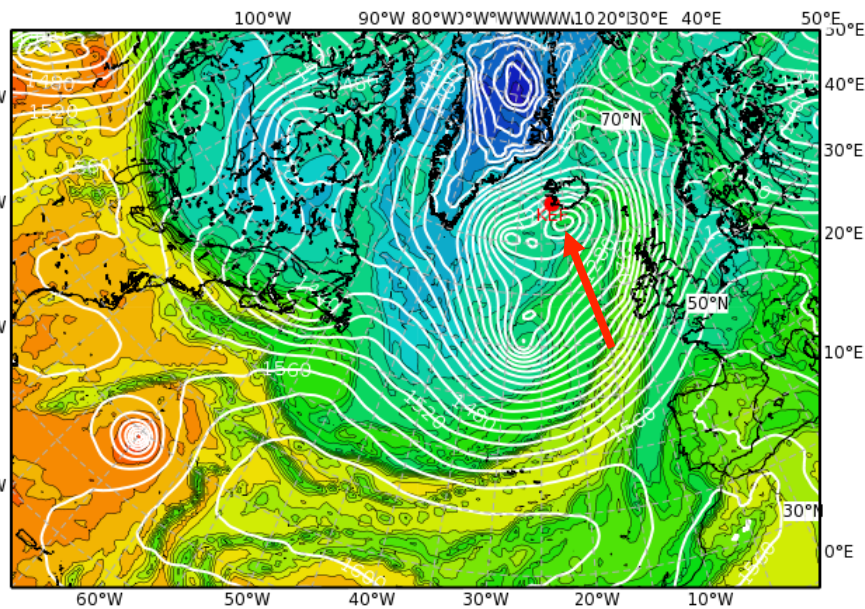
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Fri, 23 Sep 2016, 12 UTC (step 108 h from Mon, 19 Sep 2016, 00 UTC)



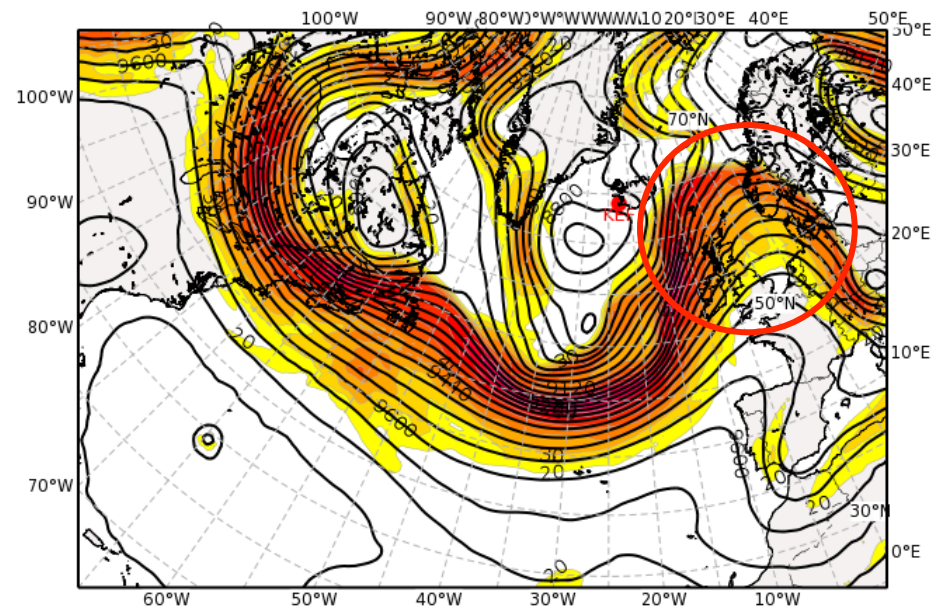
Forecast for Sat, 24 Sep 2016 00 UTC

THE850, Z300 BT19/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Sat, 24 Sep 2016, 00 UTC (step 120 h from Mon, 19 Sep 2016, 00 UTC)



Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Sat, 24 Sep 2016, 00 UTC (step 120 h from Mon, 19 Sep 2016, 00 UTC)

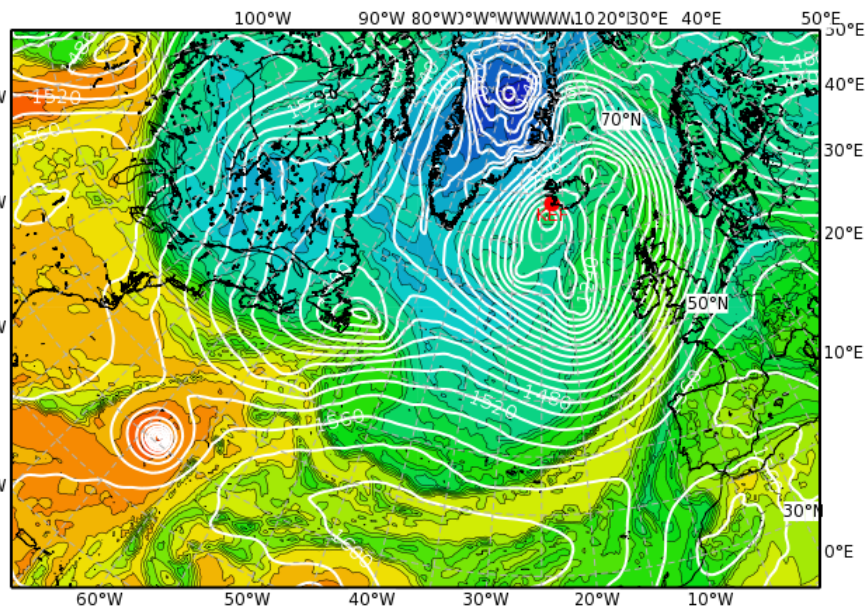


TC Karl

Forecast for Sat, 24 Sep 2016 12UTC

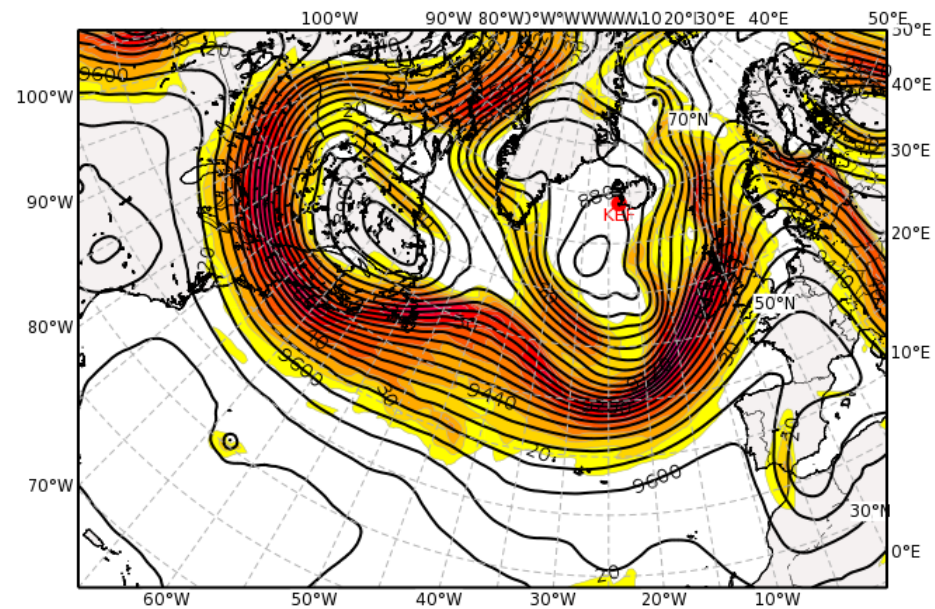
THE850, Z300 BT19/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Sat, 24 Sep 2016, 12 UTC (step 132 h from Mon, 19 Sep 2016, 00 UTC)

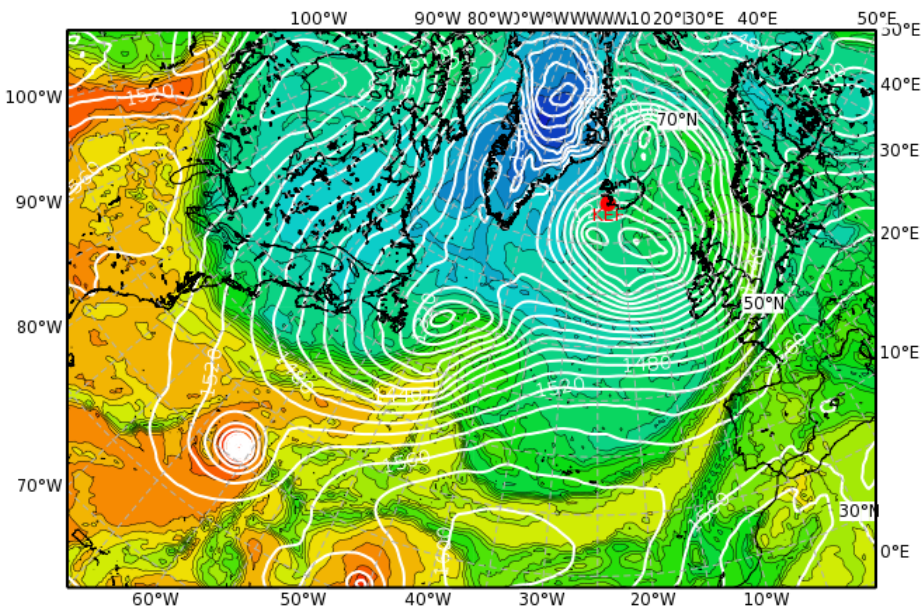


TC Karl

Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Sat, 24 Sep 2016, 12 UTC (step 132 h from Mon, 19 Sep 2016, 00 UTC)

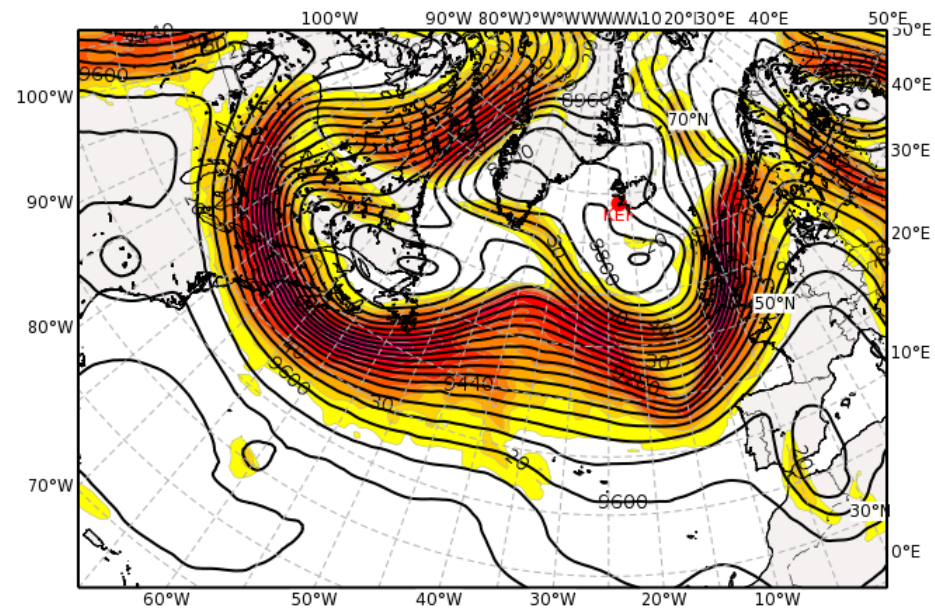


Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Sun, 25 Sep 2016, 00 UTC (step 144 h from Mon, 19 Sep 2016, 00 UTC)



TC Karl

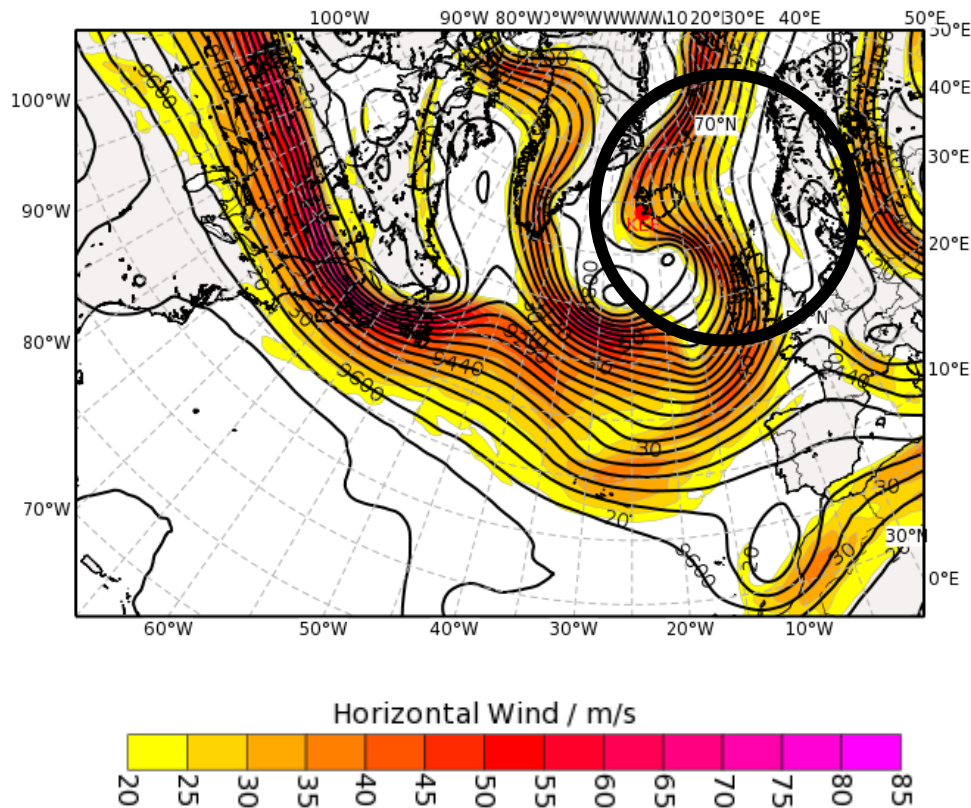
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Sun, 25 Sep 2016, 00 UTC (step 144 h from Mon, 19 Sep 2016, 00 UTC)



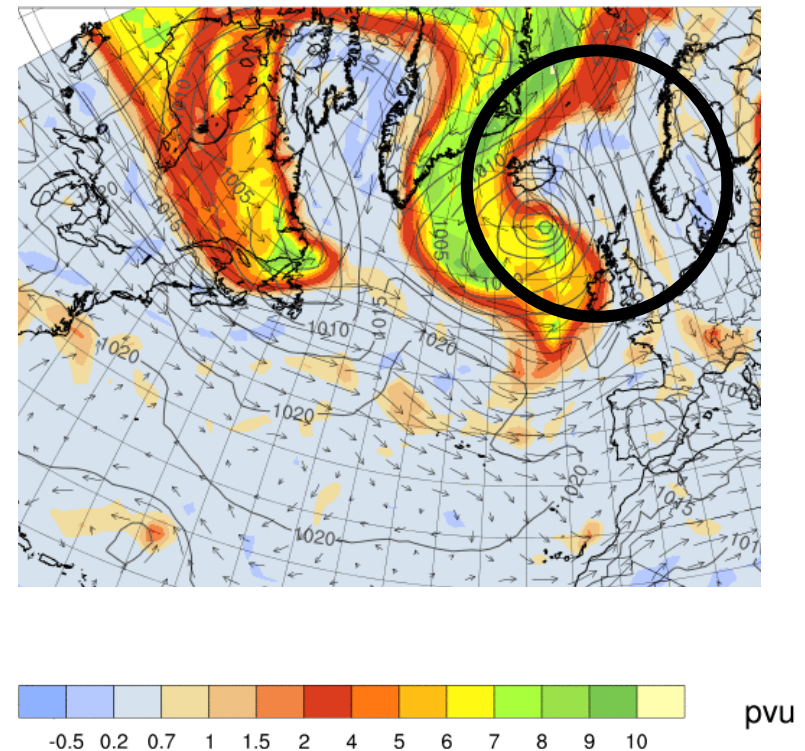
Geopotential height 300hPa and wind speed

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

Valid: Wed, 21 Sep 2016, 18 UTC (step 066 h from Mon, 19 Sep 2016, 00 UTC)



PV@320K at 20160921_18



Comes potentially earlier!

Forecast for Wed, 21 Sep 2016 18 UTC

BT19/00Z

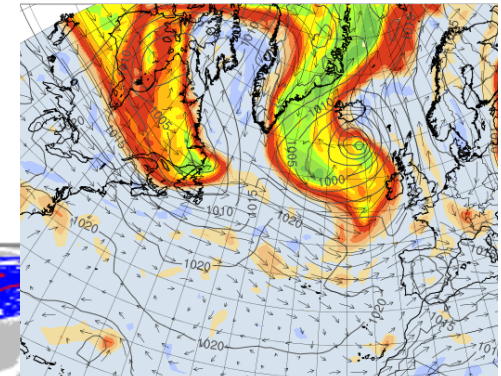
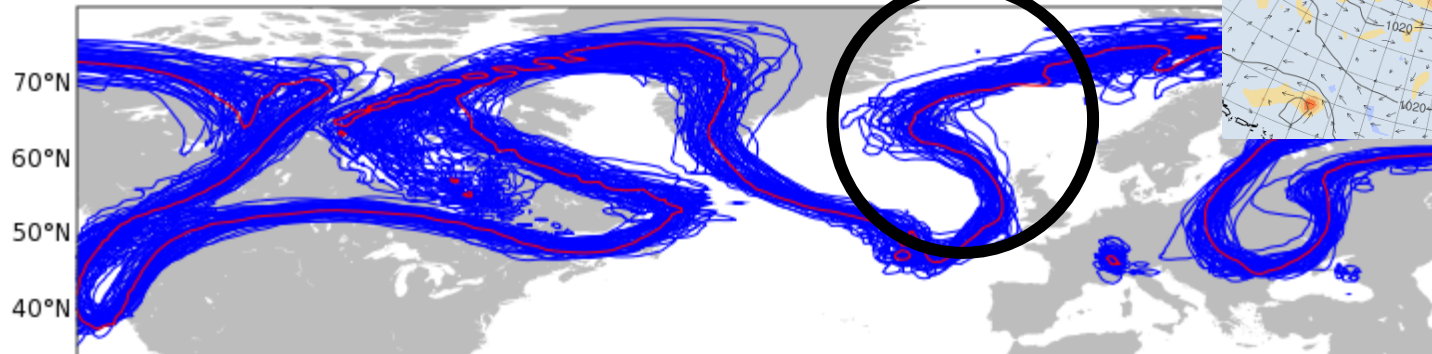
BT18/12Z

PV@320K at 20160921_18

ECMWF ENSEMBLE FC

BT: 20160919 00UTC, VT: 20160921 18UTC

blue: perturbed, red: control

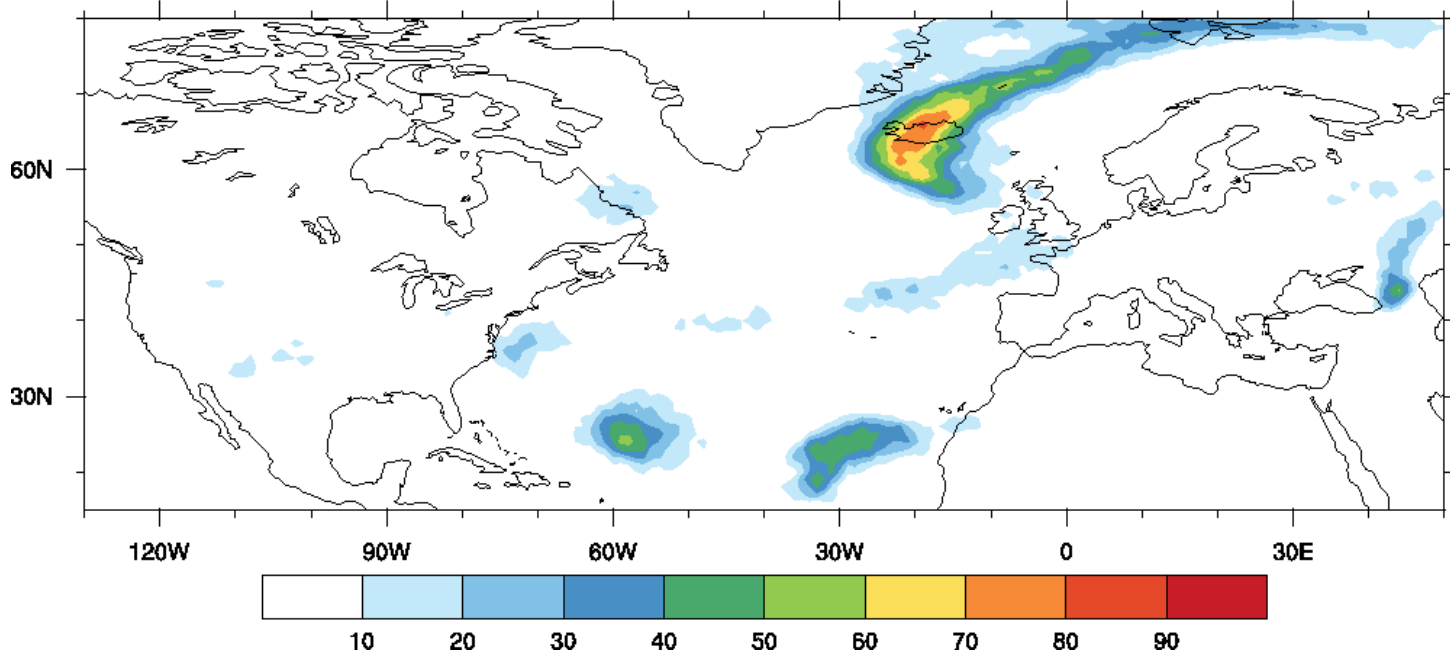


lt400hPa: Probability [%] of traj. occurrence in ENS

ECMWF ensemble forecast

BT 20160918_12UTC

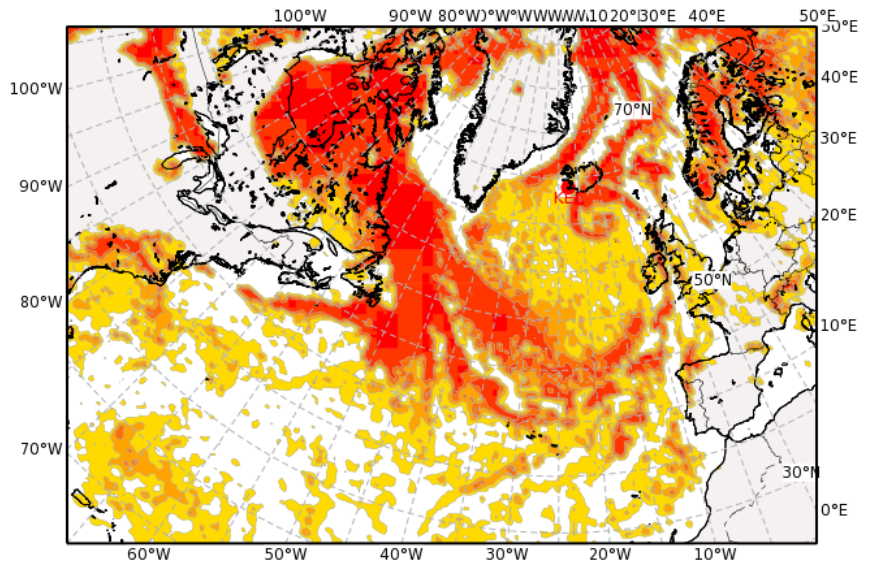
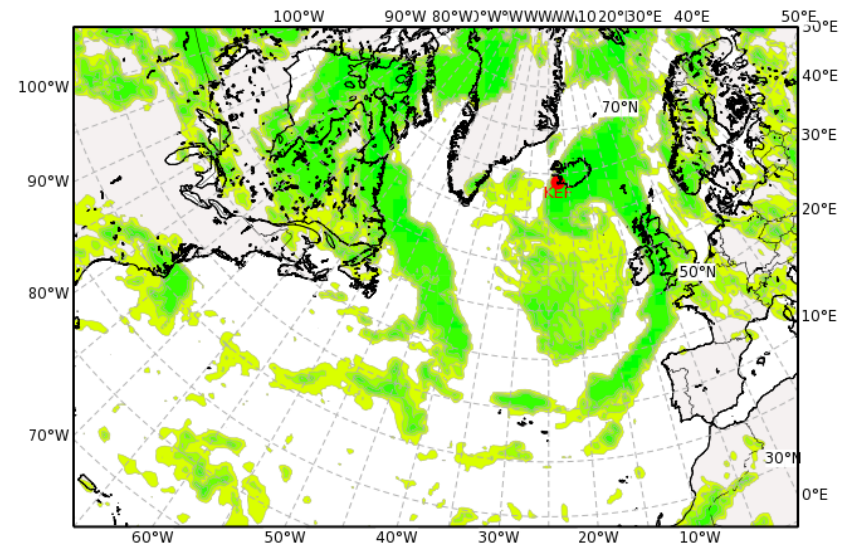
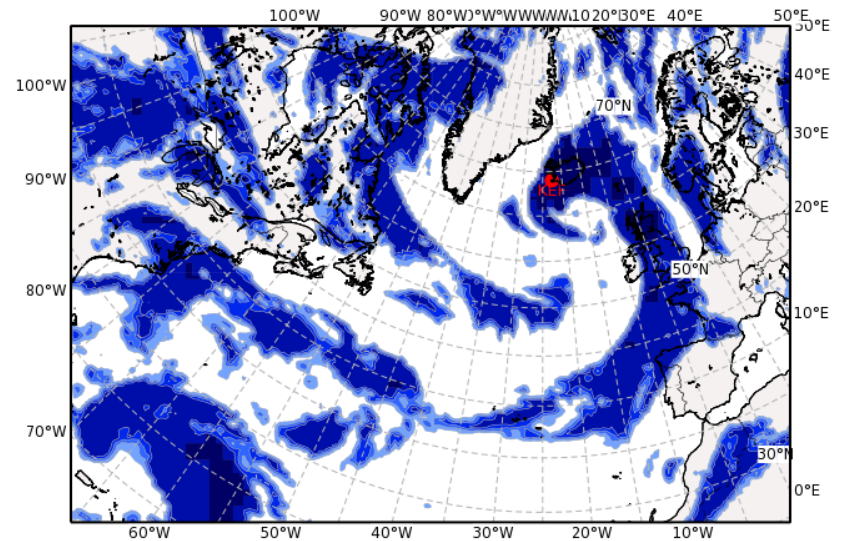
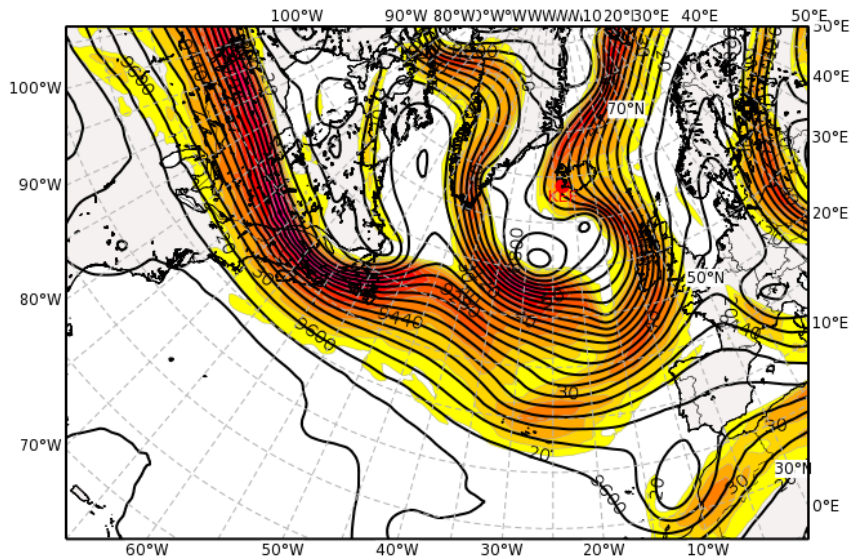
VT 20160921_18UTC



Forecast for Wed, 21 Sep 2016 18 UTC

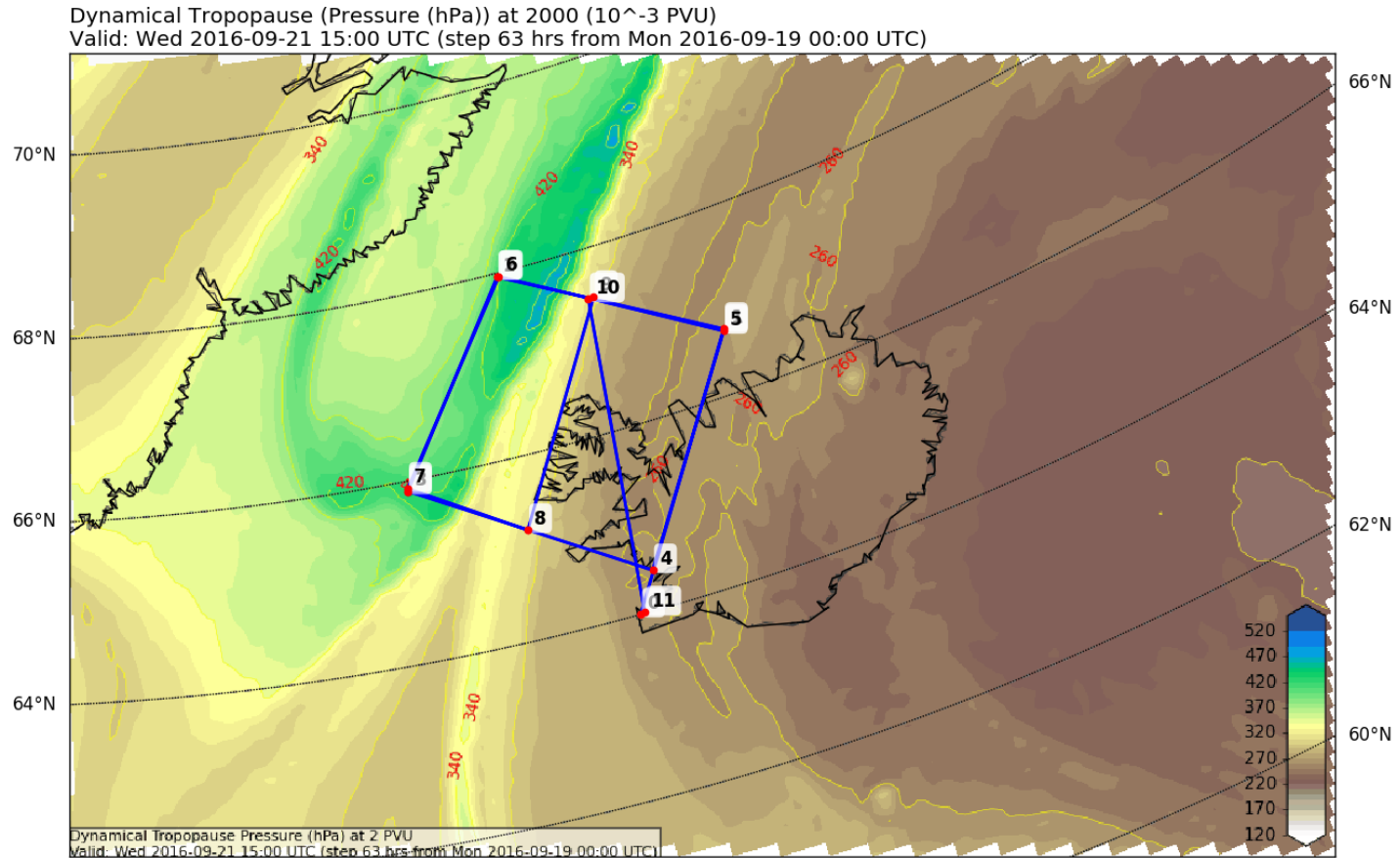
Z300, high
mid, low clouds

BT19/00Z



Potential flight pattern for Wednesday 21 September, 18UTC

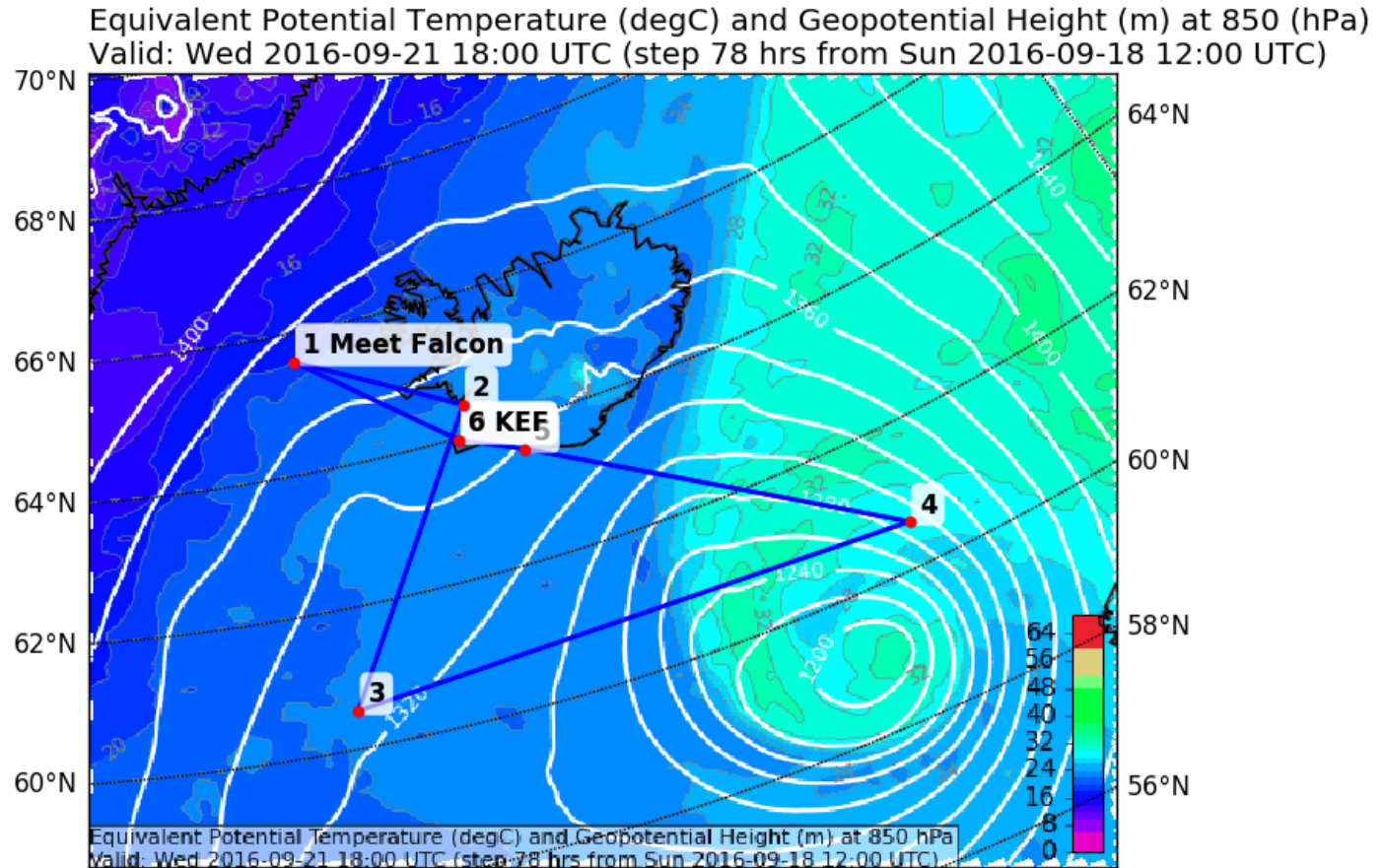
FALCON



- 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
- BT19/00Z
- shift of box very likely

Potential flight pattern for Wednesday 21 September, 18UTC

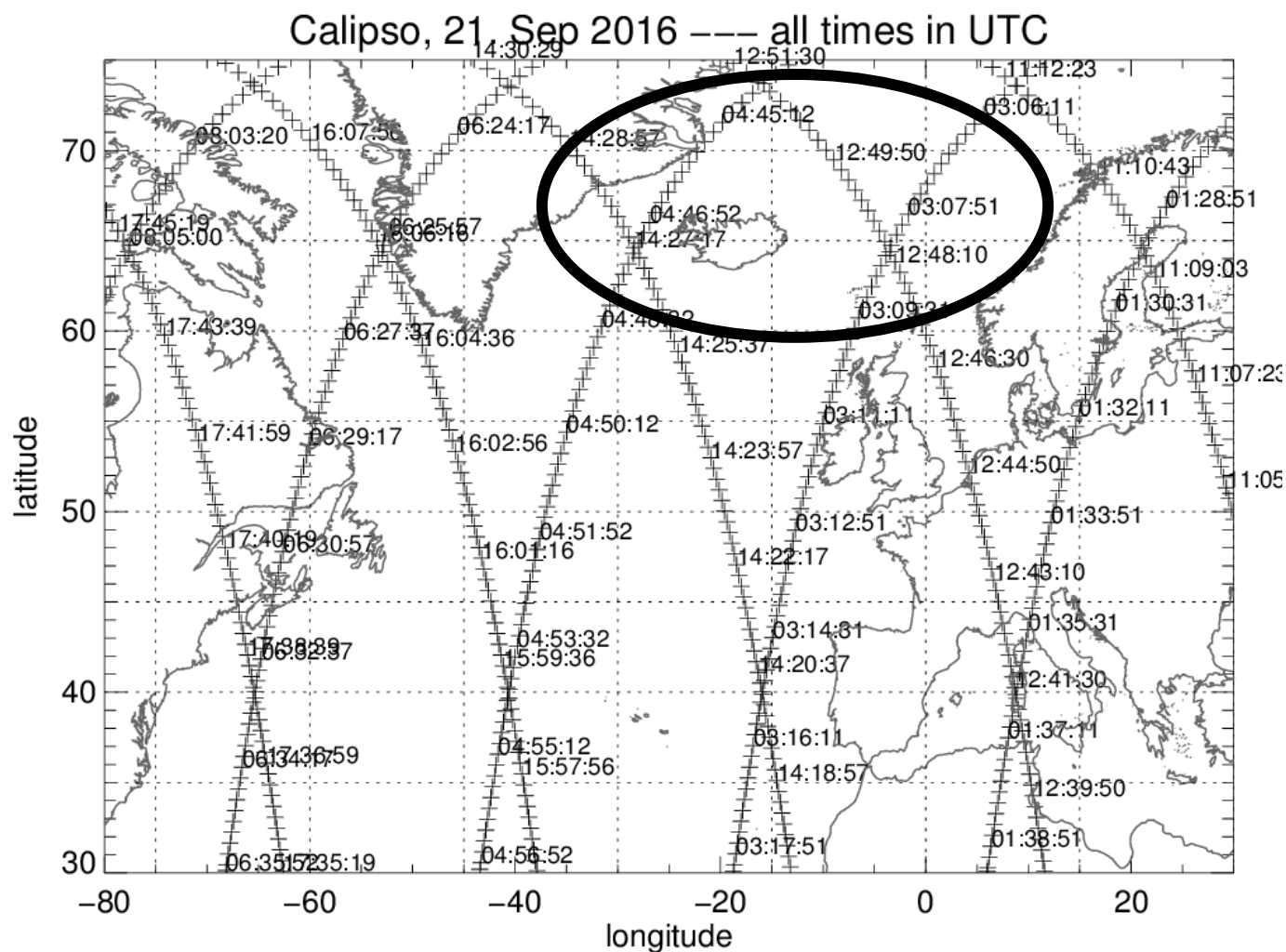
HALO



BT18/12Z

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

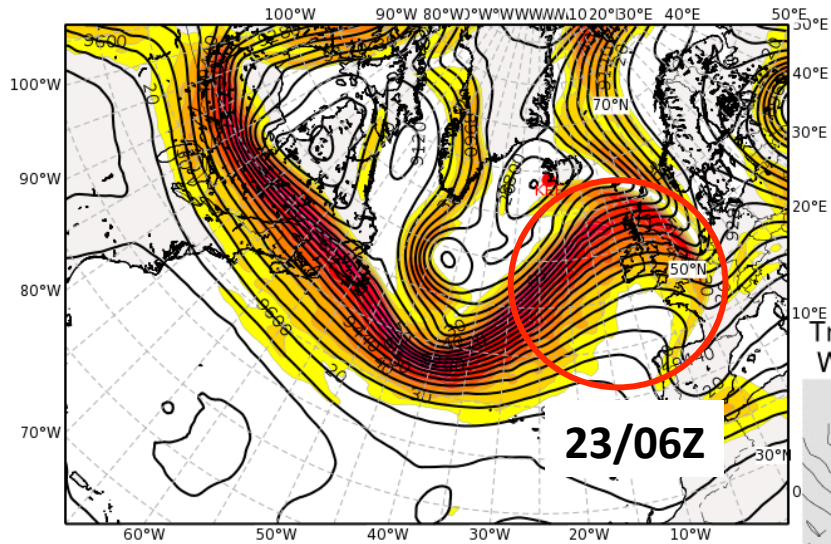
A-Train overpass: not at right time and place



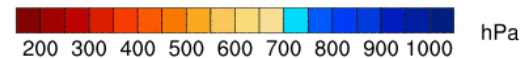
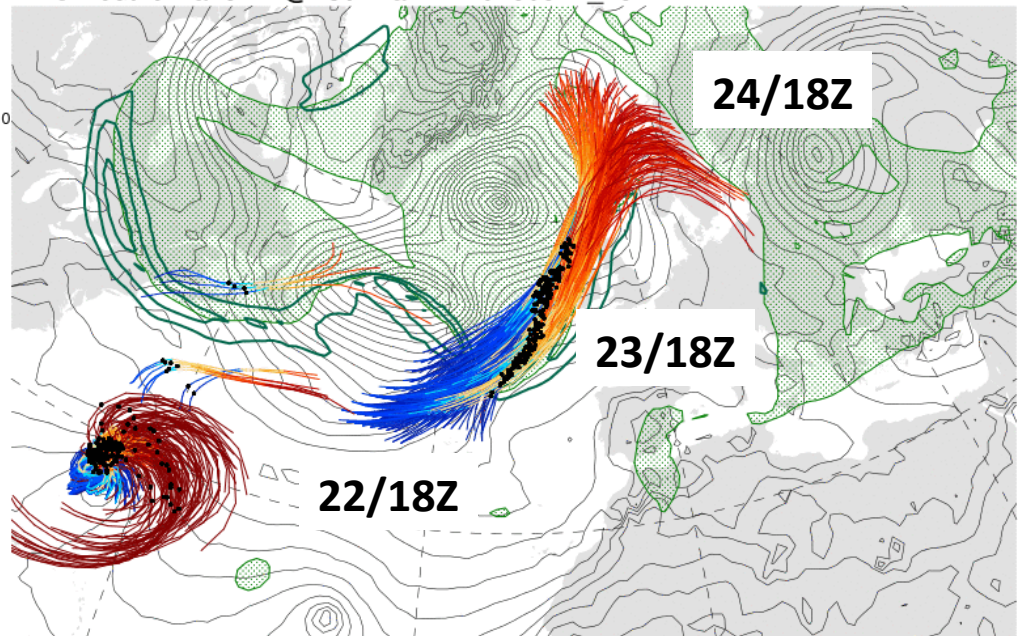
14.27 west
of Iceland

2nd Mission for Friday/Saturday 23/24 September: WCB Southeast of Iceland

Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Fri, 23 Sep 2016, 06 UTC (step 102 h from Mon, 19 Sep 2016, 00 UTC)



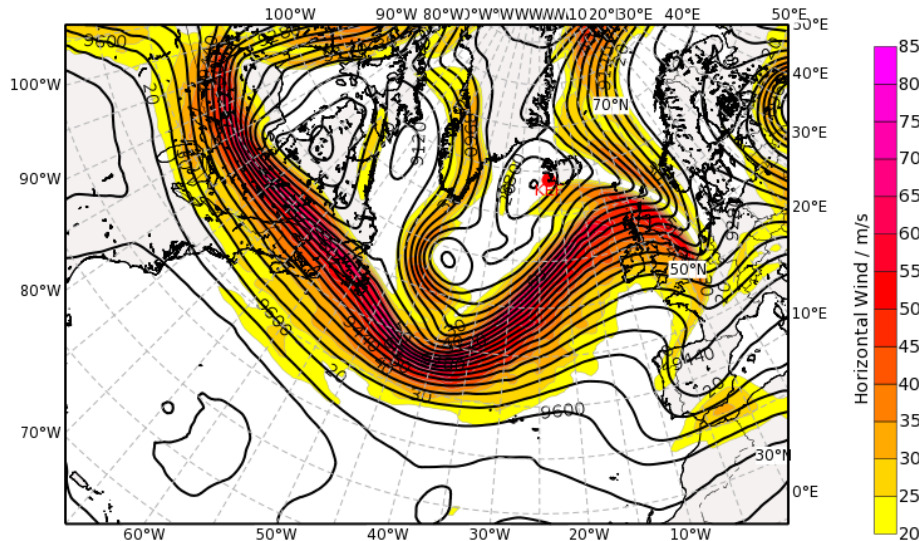
Trajectory start and SLP VT: 20160922_18
WCB outflow and PV@250hPa VT: 20160924_18



2nd Mission for Friday/Saturday 23/24 September

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

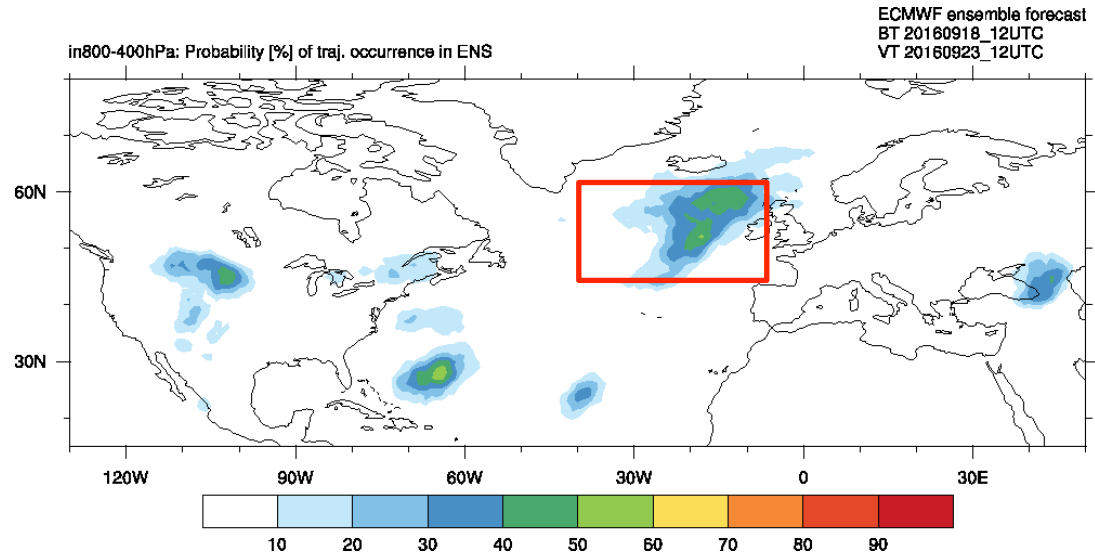
Valid: Fri, 23 Sep 2016, 06 UTC (step 102 h from Mon, 19 Sep 2016, 00 UTC)



- Flight in WCB inflow and ascent south of 61°N (in NAT region)
- FL280 with dropsondes HALO
- activation of a NOTAM region ?

HALO
~Friday
06-18UTC

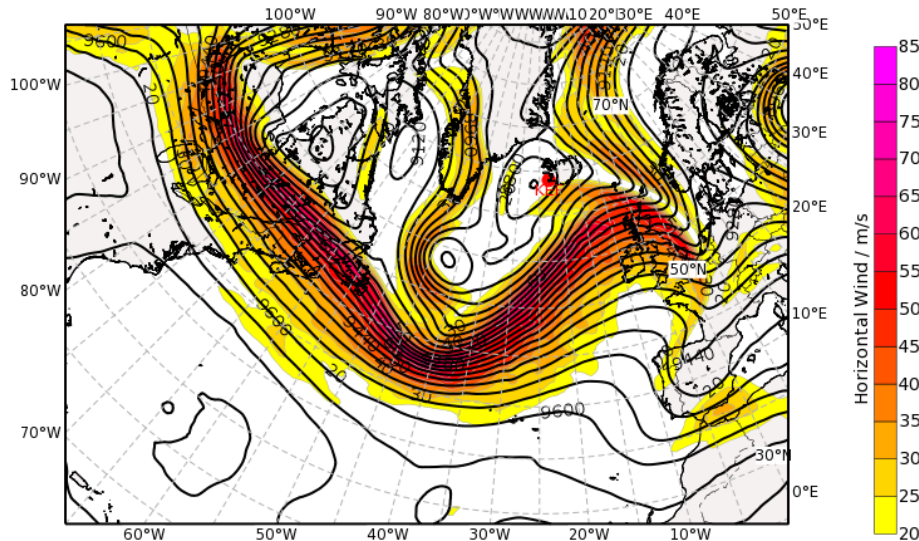
in800-400hPa: Probability [%] of traj. occurrence in ENS



2nd Mission for Friday/Saturday 23/24 September

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

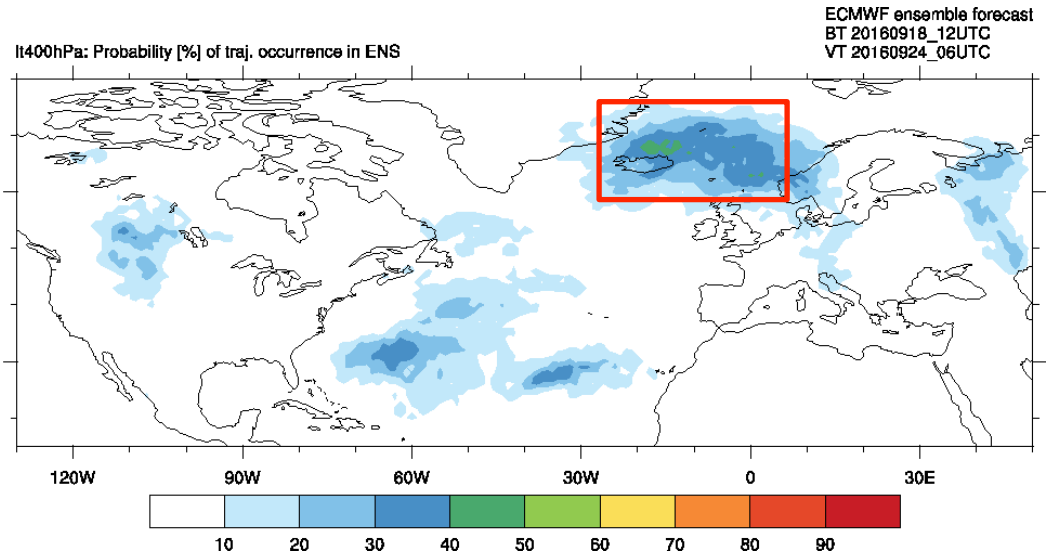
Valid: Fri, 23 Sep 2016, 06 UTC (step 102 h from Mon, 19 Sep 2016, 00 UTC)



- Sampling of WCB outflow North and East of Iceland with both aircraft

HALO & Falcon

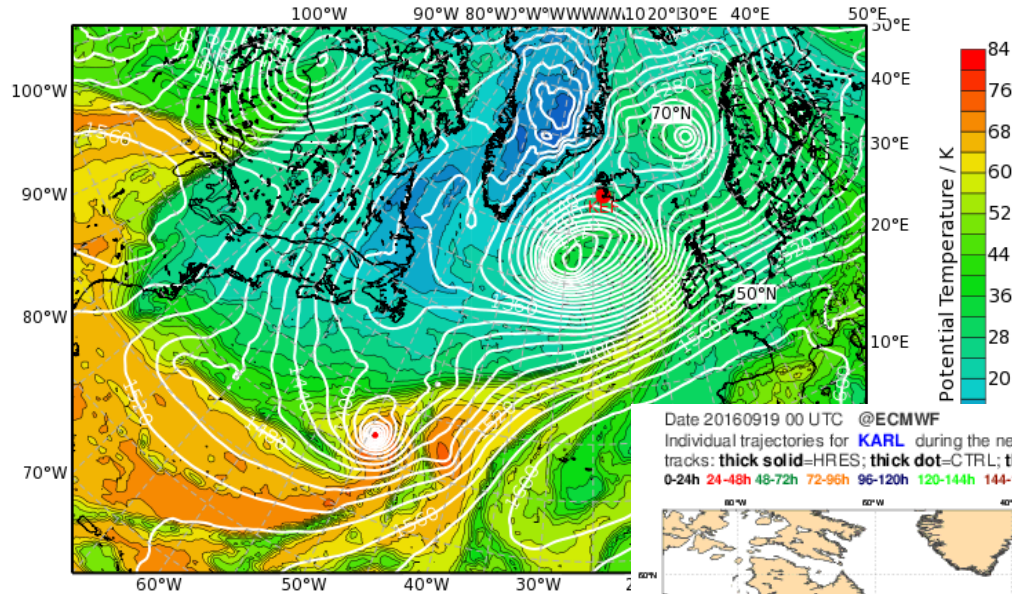
~Saturday 06-18UTC



Outlook Sunday – Tuesday: extratropical transition of TC Karl

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa

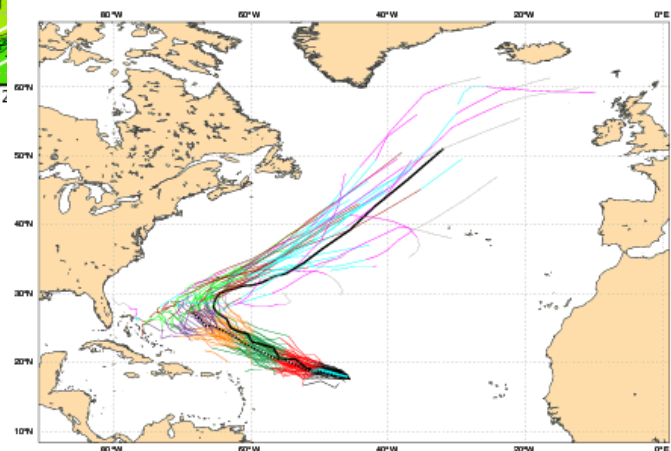
Valid: Mon, 26 Sep 2016, 12 UTC (step 180 h from Mon, 19 Sep 2016, 00 UTC)



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

Date 20160919 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

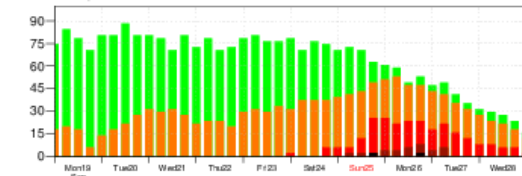


List of ensemble members numbers forecast Tropical Cyclone

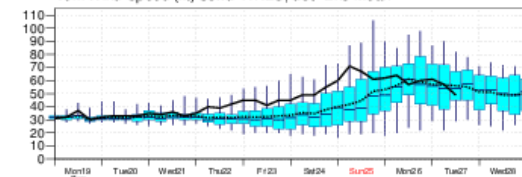
Intensity category in colours: **TD**[up to 33] **TS**[34-63] **HR1**[64-82] **HR2**[83-95] **HR3**[> 95 k]

*004 h - h	03 03 04 05	07 08	11 12 13 14	17 18 19 20 21 22 23 24	26 27 28 29 30	32 33 34 35 36	38 39 40 41	44 45 46 47	49
*005 h - h	03 03 04 05	08 09	11 12 13 14 15 16	17 18 19 20 21 22 23 24	26 27 28 29 30	32 33 34 35 36 37	38 39 40 41	44 45 46 47	49
*007 h - h	03 04 05	08	11 12 13 14 15 16	17 18 19 20 21 22 23 24	26 27 28 29 30 31	32 33 34 35 36 37	38 39 40 41	44 45 46 47	49
*008 h - h	03 03 04 05 06 07 08		12 13 14 15	17 18 19 20 21 22 23 24 25	26 27 28 29 30	32 33 34 35 36 37	38 39 40 41	44 45 46 47	49
*009 h - h	03 03 04 05		12 13 14 15	17 18 19 20 21 22 23 24	26 27 28 29 30 31	32 33 34 35 36 37	38 39 40 41	44 45 46 47	49
*010 h - h	03 03 04 05 06 07		12 13 14	17 18 19 20 21 22 23 24	26 27 28 29 30 31 32	33 34 35 36 37	38 39 40 41	44 45 46 47	49
*011 h - h	03 03 04 05 06 07		12 13 14	17 18 19 20 21 22 23 24	26 27 28 29 30 31 32	33 34 35 36 37	38 39 40 41	44 45 46 47	49
*012 h - h	03 04 05 06 07		12 13 15	17 18 19 20 21 22 23	26 27 28 29 30 31 32	33 34 35 36 37	38 39 40 41	44 45 46 47	49
*013 h - h	03 05 06 07		11 12 13	17 18 19 20 21 22 23	26 27 28 30 31 32	33 34 35 36 37	38 39 40 41	44 45 46 47	49
*014 h - h	03 05 06 07		11 12 13	18	26 27 28 29 30 31 32	33 34 35 36 37	38 39 40 41	44 45 46 47	49
*015 h - h	03 05 06 07		11 12 13	18	26 27 28 29 30 31 32	33 34 35 36 37	38 39 40 41	44 45 46 47	49
*016 h - h	03 05 06 07		11 12 13	18	26 27 28 29 30 31 32	33 34 35 36 37	38 39 40 41	44 45 46 47	49

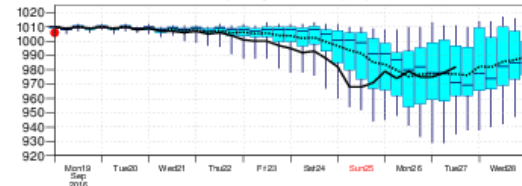
Probability (%) of Tropical Cyclone Intensity falling in each category
TD[up to 33] **TS** [34-63] **HR1**[64-82] **HR2** [83-95] **HR3** [≥ 95 kt]



10m Wind Speed (kt) **solid**=HRES; **dot**=Ens Mean



Mean Sea Level Pressure in Tropical Cyclone Centre (hPa) **solid**=HRES; **dot**=Ens Mean



Summary plans

- **Next mission Wednesday 21 September**
 - **FALCON** box pattern with box parallel to jet stream, box needs adaptation to actual weather situation
 - **HALO** one leg coordinated with Falcon & triangular pattern, south of Iceland, 13 dropsondes
- **Potential 2nd mission Friday/Saturday 23/24 September**
 - **HALO** on Friday in NOTAM region, dropsondes
 - **HALO and FALCON** Saturday outflow Iceland/North of UK
- **Outlook Sunday – Tuesday :**
 - Next system of interest on TC Karl -> **SHOUT**