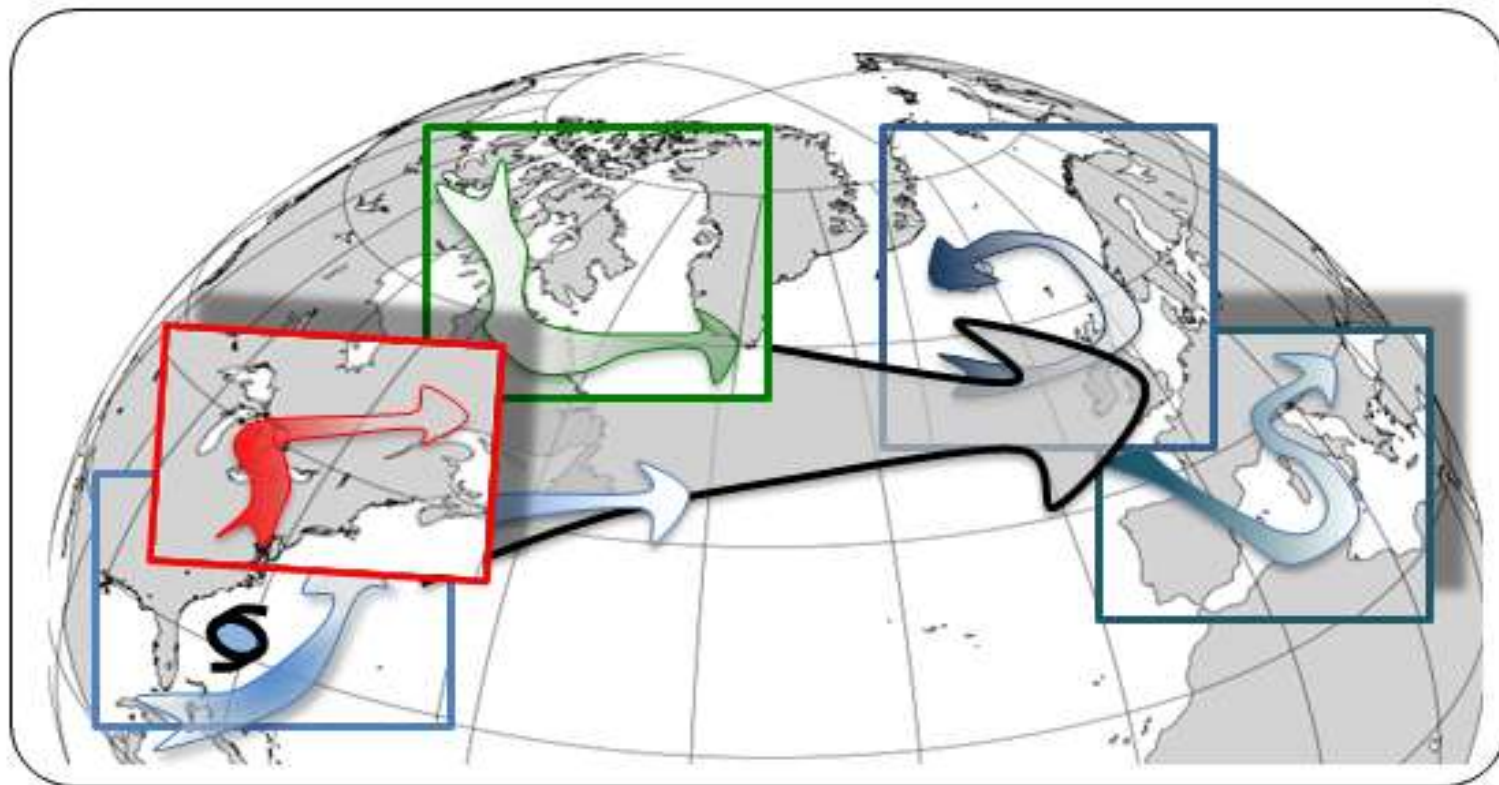


NAWDEX – General Planning Meeting

02 October 2016, Keflavik 11 UTC



NAWDEX – General Planning Meeting

02 October 2016, Keflavik 11 UTC

Key issues today

1. Sunday flights FALCON, SAFIRE
2. Flight options for Tue-Thu (considering down day options)

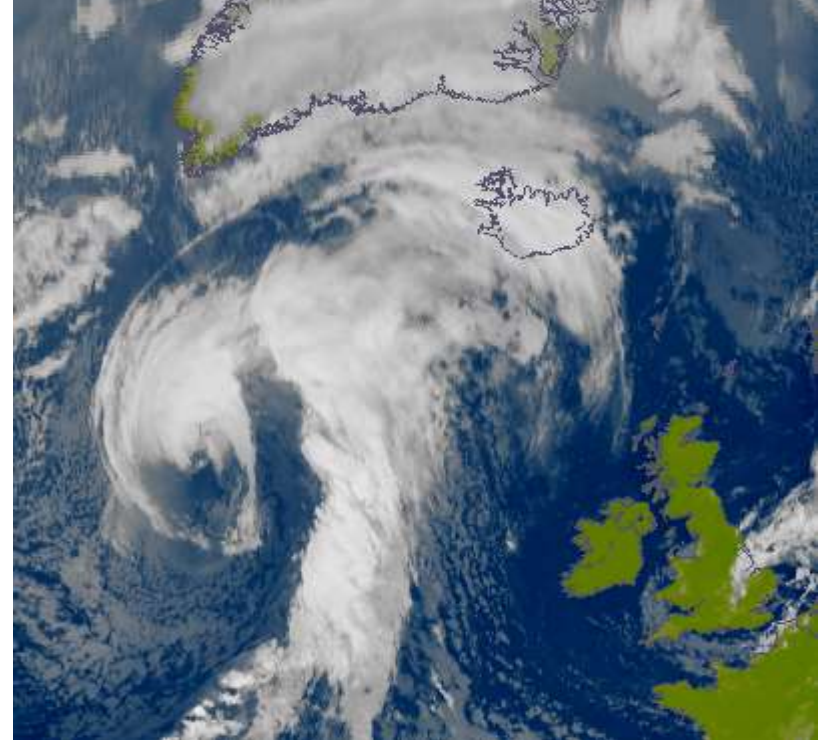
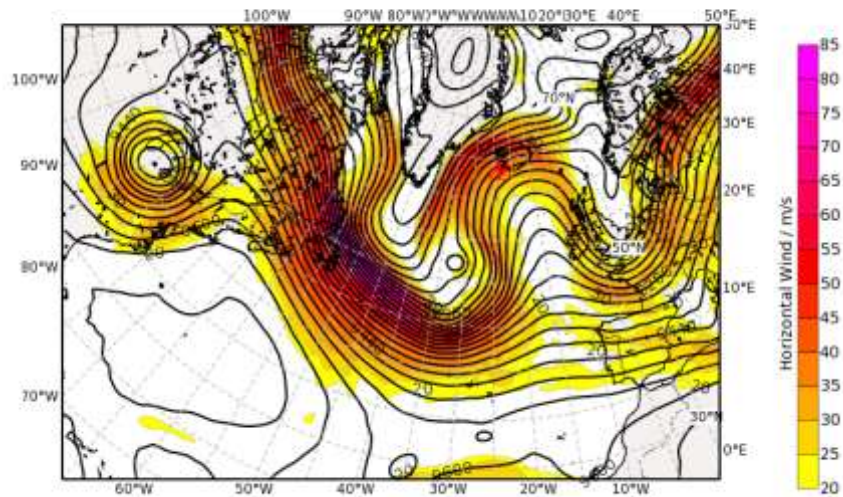
NAWDEX – General Planning Meeting

02 October 2016, Keflavik 11 UTC

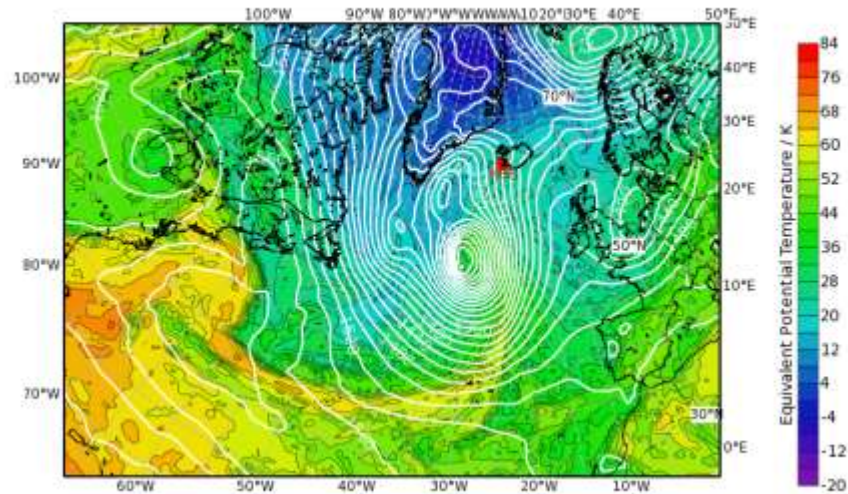
1. Key information from previous flight (2 minutes)
2. Aircraft status report by FX-Operations
3. Instrument status report by Instrument Manager
4. Short weather summary: information about flight options for the next days and update for planning for the next day with the latest forecast
5. Final discussion about flight pattern for next day (in case of 2 options)
6. Report of Ground-Based Observation coordinator
7. Announcement of tentative plans for Day+3
8. Coordination with other aircraft (Input from other groups)

Analysis – 02 Oct 2016, 00 UTC

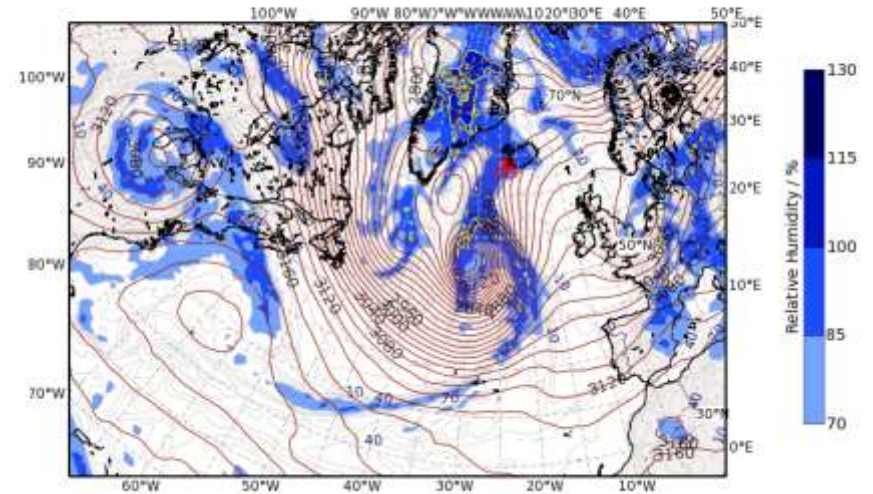
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Sun, 02 Oct 2016, 00 UTC (step 000 h from Sun, 02 Oct 2016, 00 UTC)



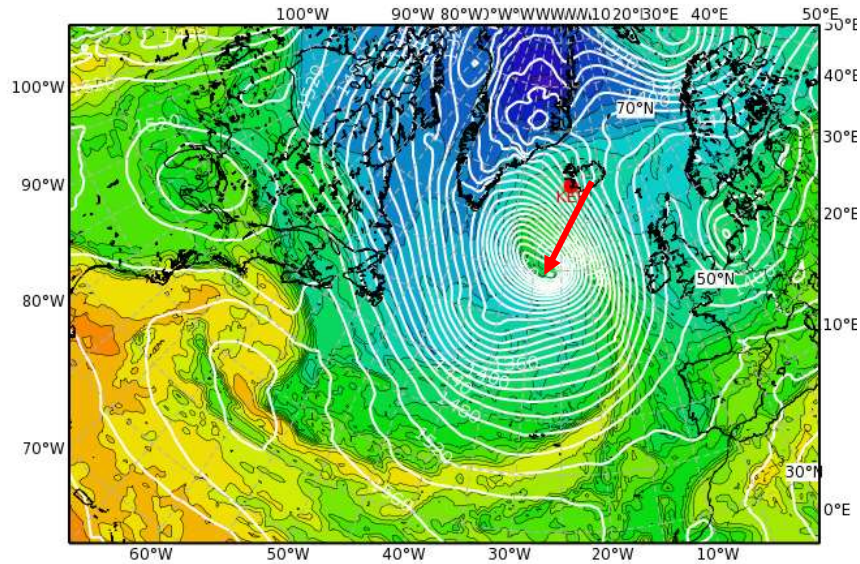
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Sun, 02 Oct 2016, 00 UTC (step 000 h from Sun, 02 Oct 2016, 00 UTC)



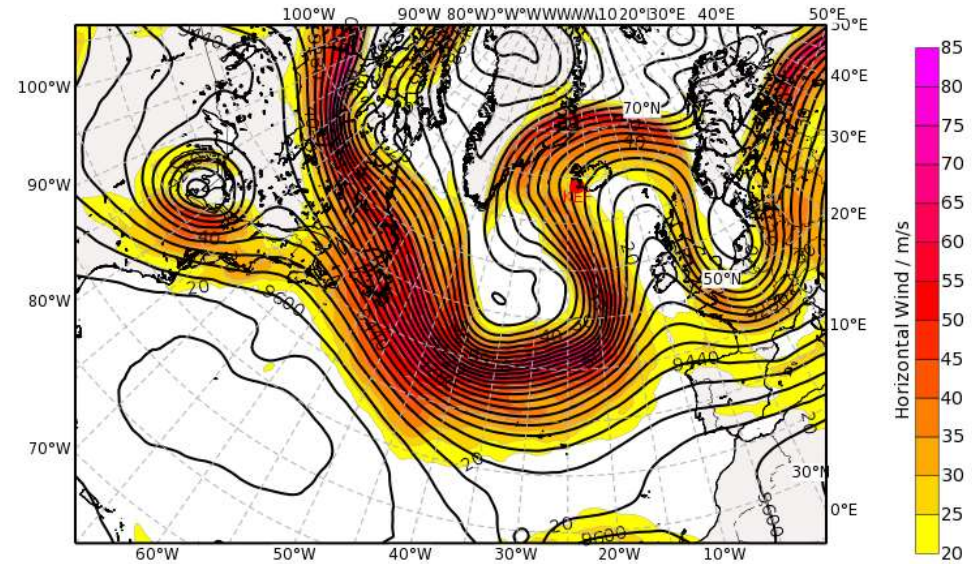
Relative Humidity (%) and Z (m) at 700 hPa
Valid: Sun, 02 Oct 2016, 00 UTC (step 000 h from Sun, 02 Oct 2016, 00 UTC)



Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Sun, 02 Oct 2016, 12 UTC (step 012 h from Sun, 02 Oct 2016, 00 UTC)

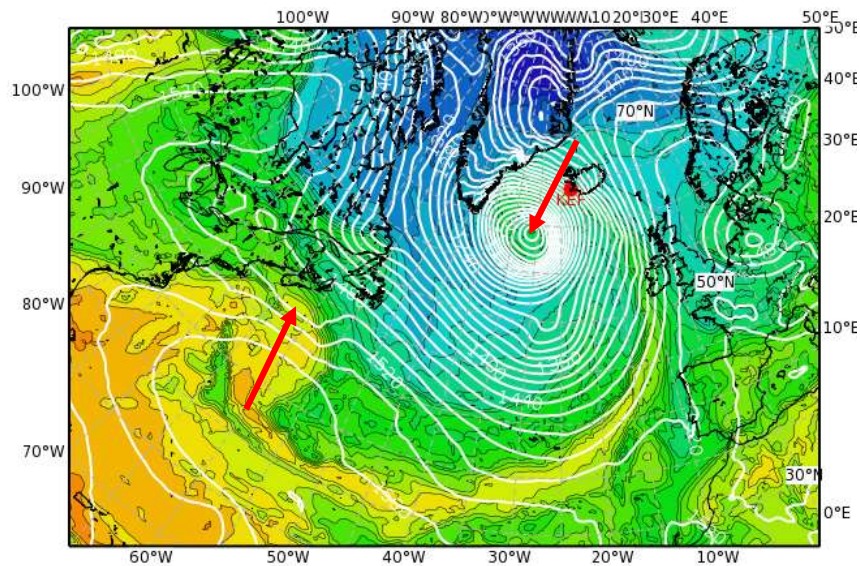


Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Sun, 02 Oct 2016, 12 UTC (step 012 h from Sun, 02 Oct 2016, 00 UTC)

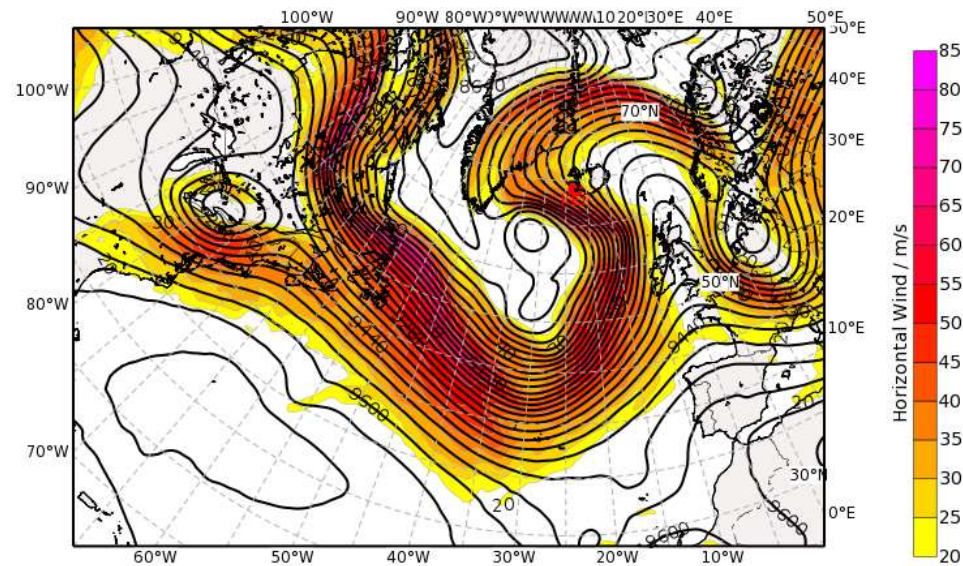


Saturday cyclone

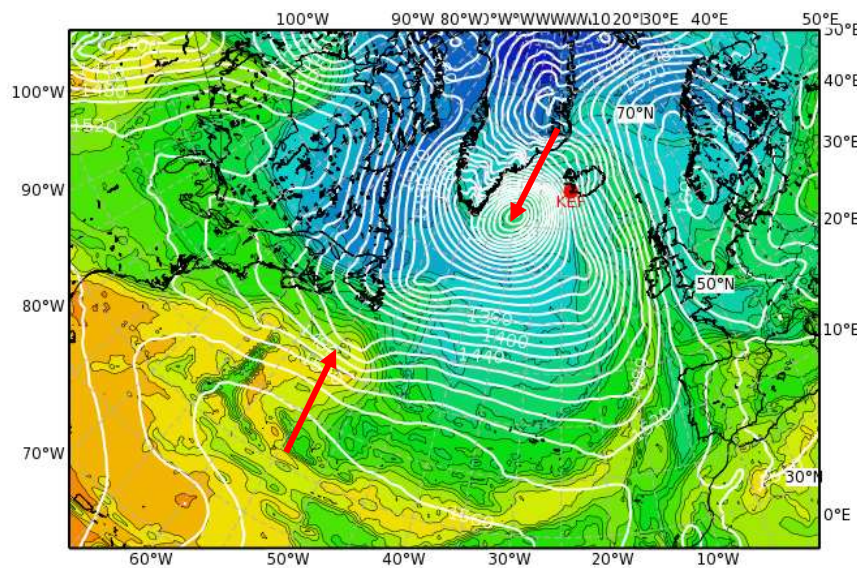
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Mon, 03 Oct 2016, 00 UTC (step 024 h from Sun, 02 Oct 2016, 00 UTC)



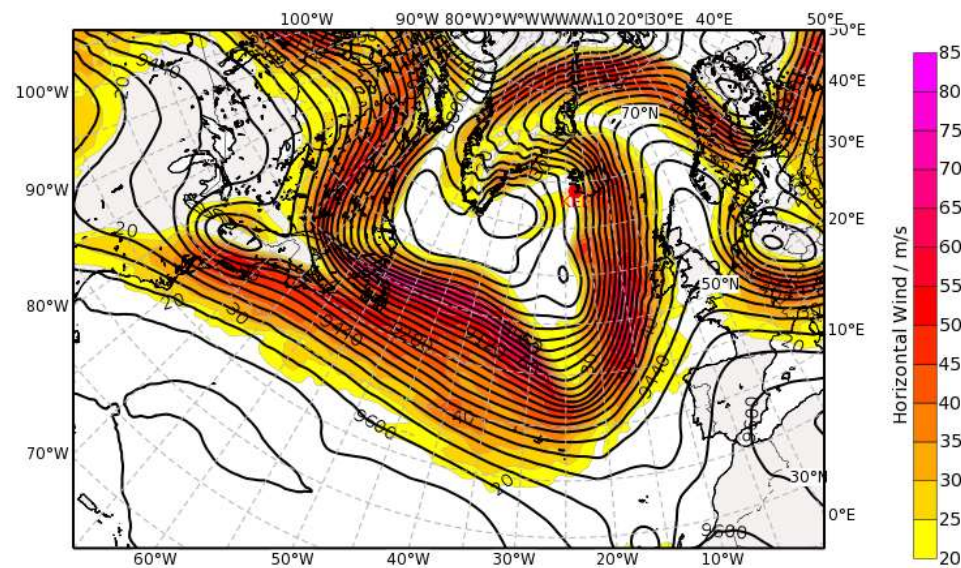
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Mon, 03 Oct 2016, 00 UTC (step 024 h from Sun, 02 Oct 2016, 00 UTC)



Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Mon, 03 Oct 2016, 12 UTC (step 036 h from Sun, 02 Oct 2016, 00 UTC)



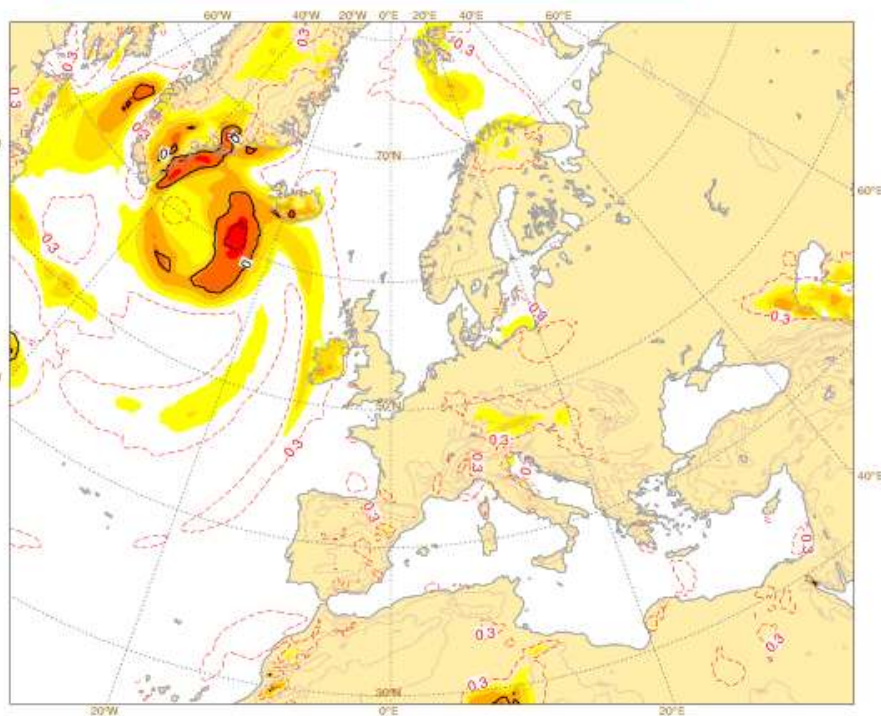
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Mon, 03 Oct 2016, 12 UTC (step 036 h from Sun, 02 Oct 2016, 00 UTC)



New frontal wave Saturday cyclone

EFI gusts for Monday (BT 02/00z)

Sun 02 Oct 2016 00UTC ©ECMWF t+24-48h VT: Mon 03 Oct 2016 00UTC - Tue 04 Oct 2016 00UTC
Extreme forecast index and Shift of Tails (black contours 0,1,2,5,8) for 10m wind gusts



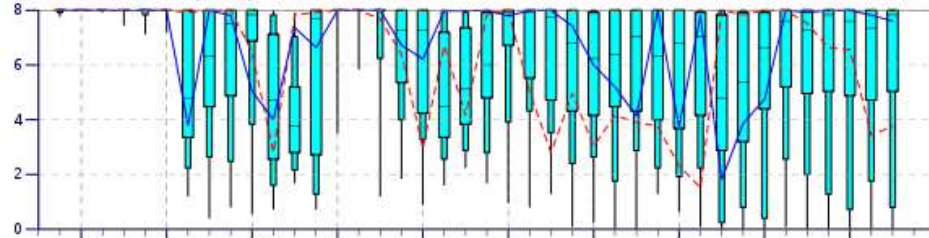
- Strong wind (15-20m/s) in KEF
Sun 18UTC-03UTC, Mon 9UTC-15UTC, Wed 6-18UTC

ENS Meteorogram

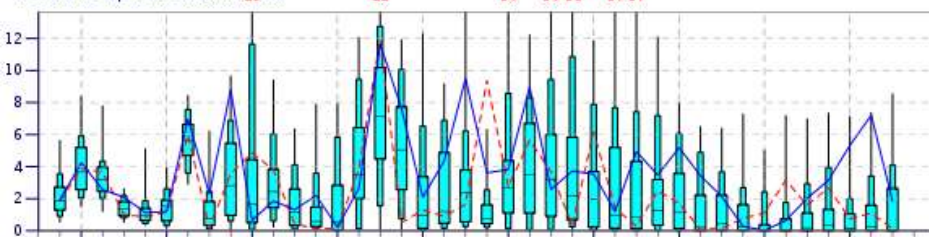
Keflavík, Iceland 63.89°N 22.26°W (ENS land point) 5 m

High Resolution Forecast and ENS Distribution Saturday 1 October 2016 12 UTC

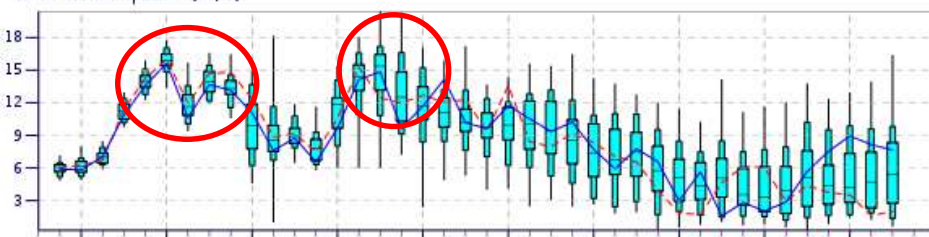
Total Cloud Cover (okta)



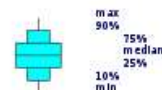
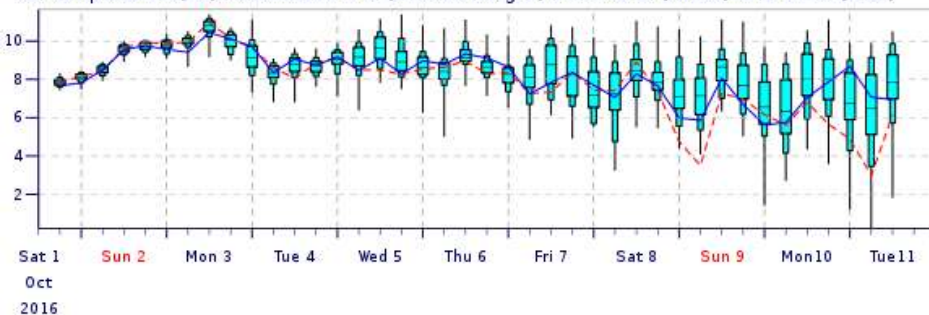
Total Precipitation (mm/6h)



10m Wind Speed (m/s)



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

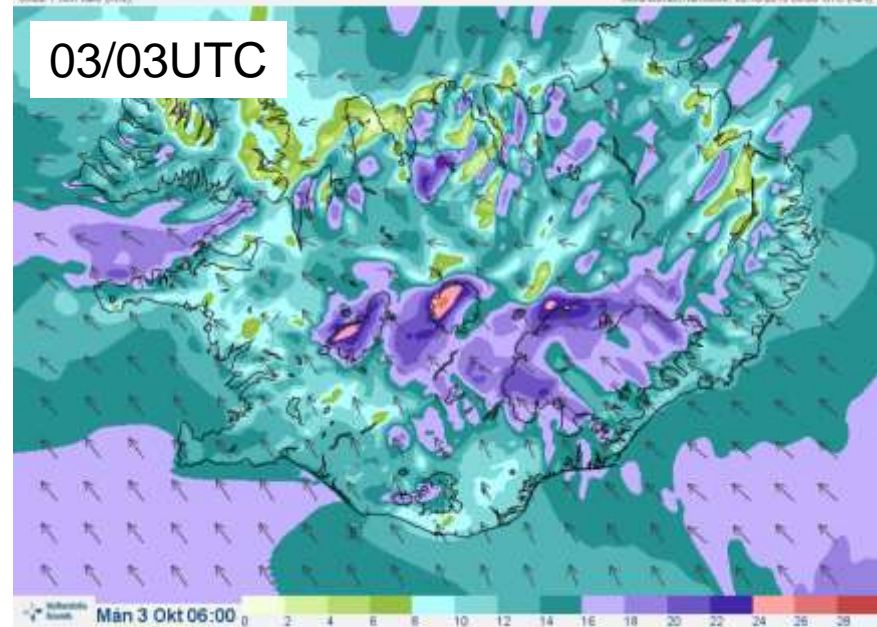
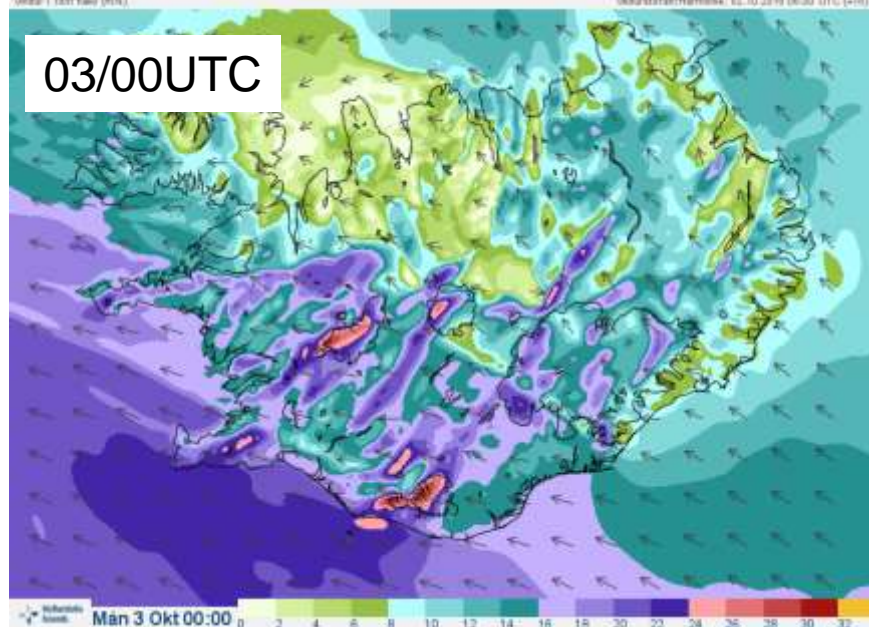
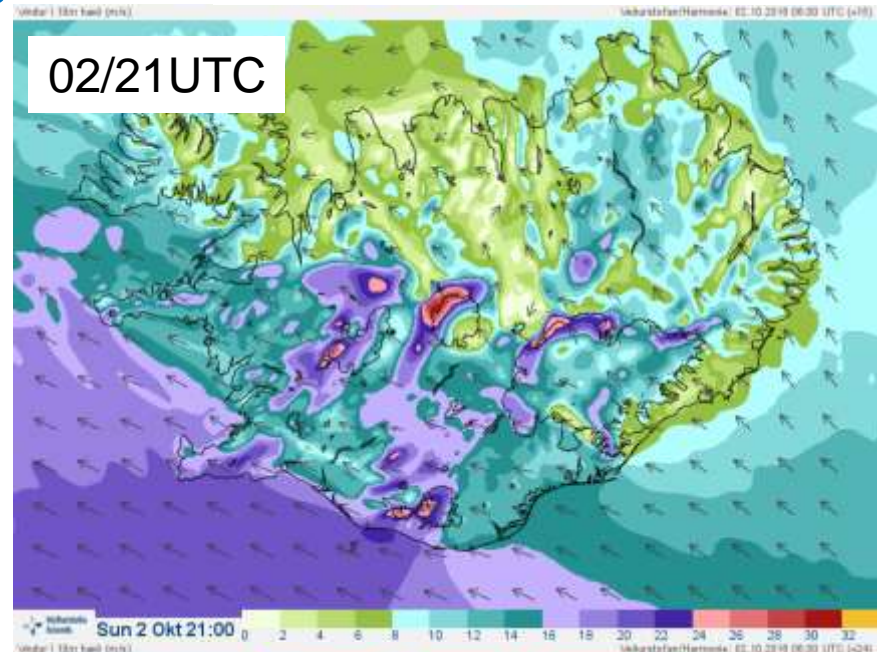
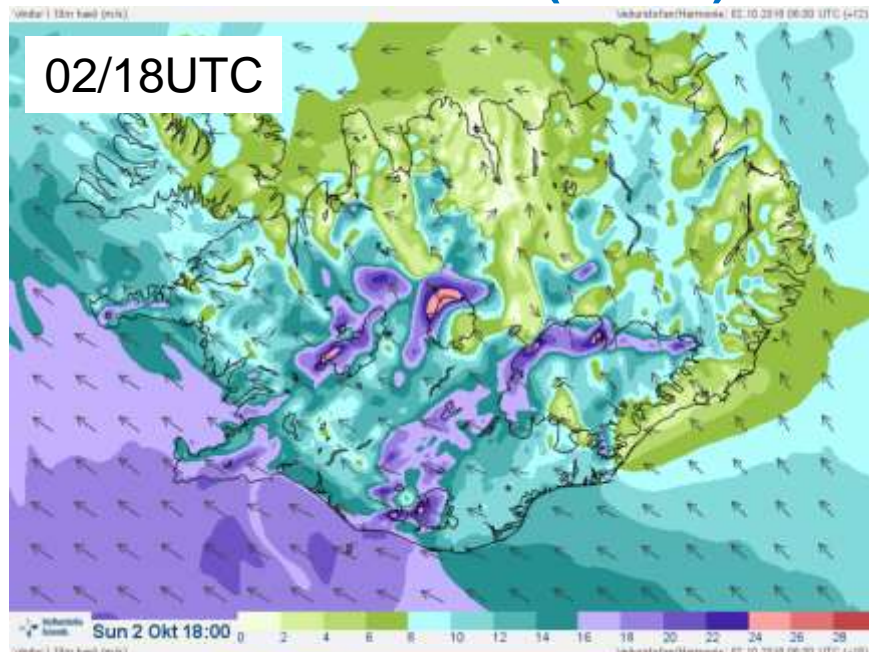


ENS Control(16 km)

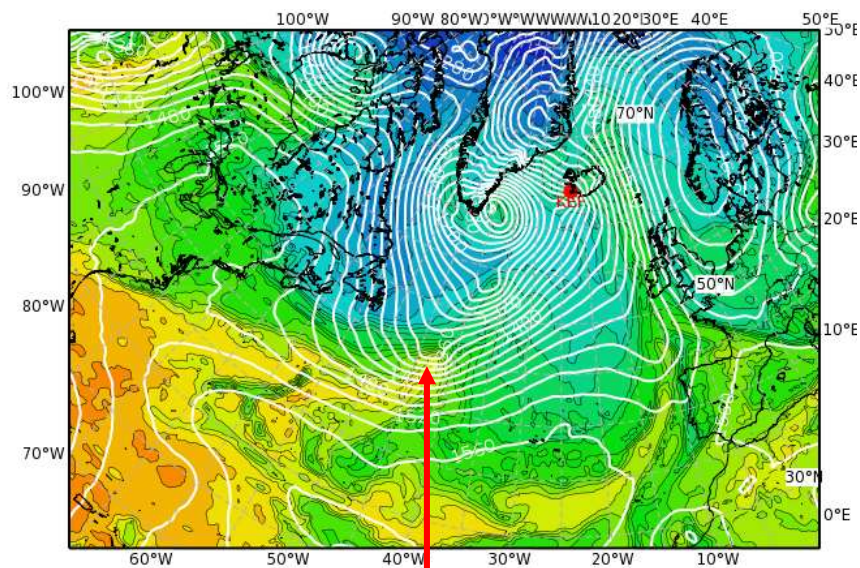
High Resolution (8 km)

10m winds HARMONIE (2.5km) Sunday

HARMONIE vedur.is BT 02/06Z

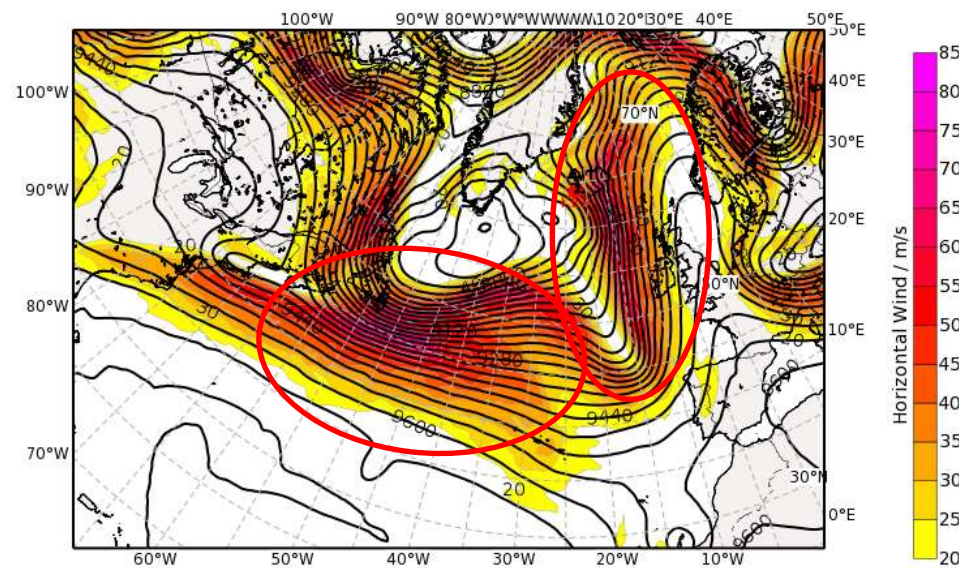


Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 04 Oct 2016, 00 UTC (step 048 h from Sun, 02 Oct 2016, 00 UTC)



New frontal wave

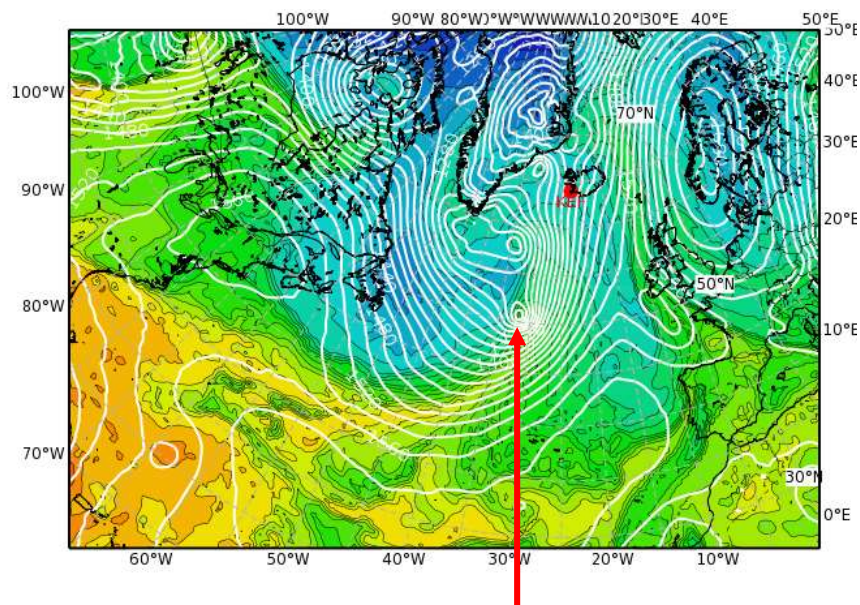
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Tue, 04 Oct 2016, 00 UTC (step 048 h from Sun, 02 Oct 2016, 00 UTC)



jet streak and
incipient ridge-
building with frontal
wave WCB

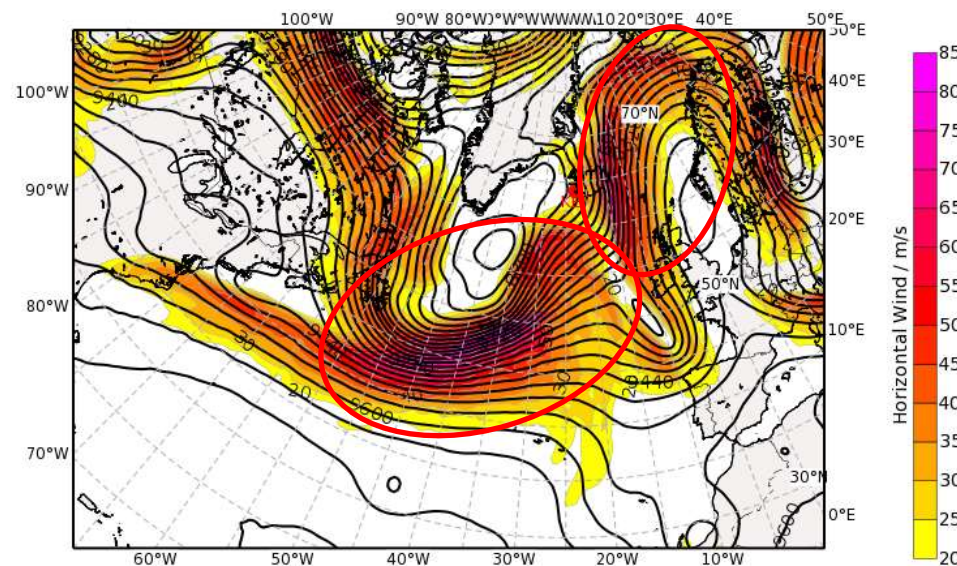
Jet streak & ridge
due to 2nd WCB
of Sat. cyclone

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 04 Oct 2016, 12 UTC (step 060 h from Sun, 02 Oct 2016, 00 UTC)



New frontal wave

Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Tue, 04 Oct 2016, 12 UTC (step 060 h from Sun, 02 Oct 2016, 00 UTC)

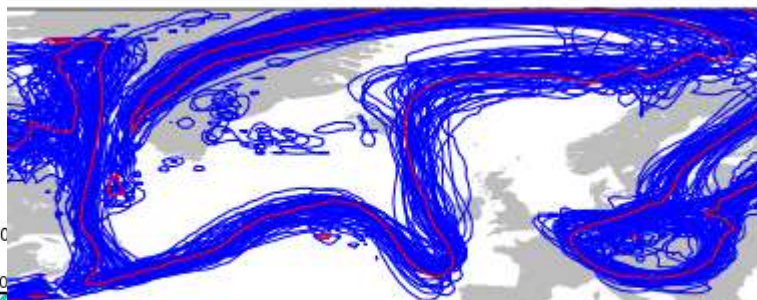


jet streak and
incipient ridge-
building with frontal
wave WCB

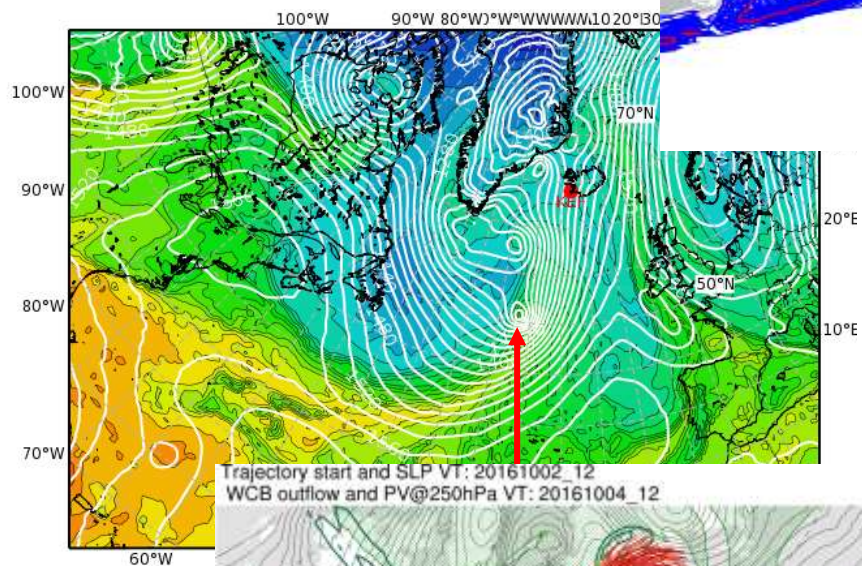
Jet streak & ridge
due to 2nd WCB
of Sat. cyclone

Cut-off forming over Europe

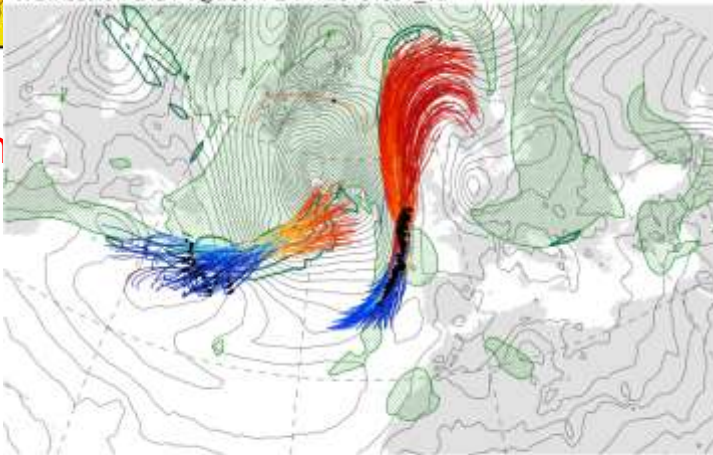
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 04 Oct 2016, 12 UTC (step 060 h from Sun, 02 Oct 2016, 00 UTC)



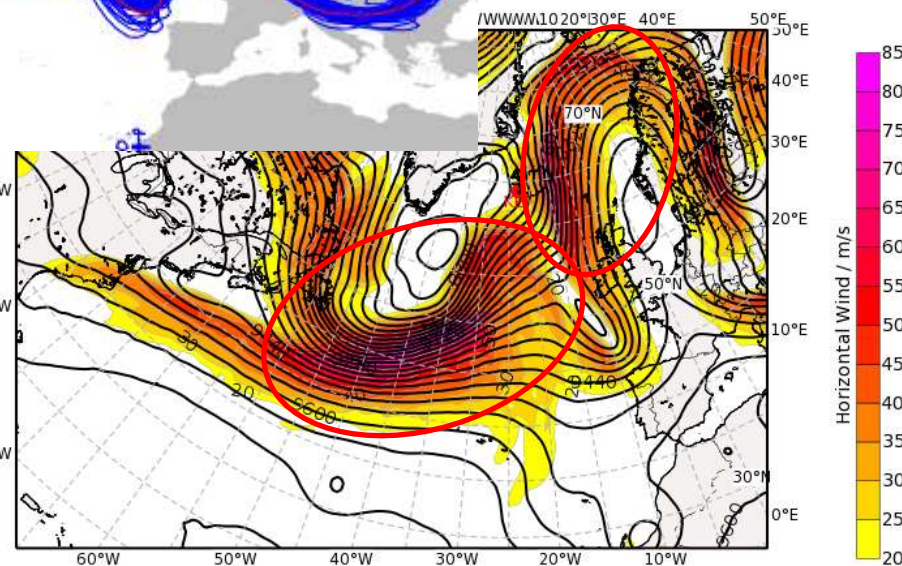
hPa
02 Oct 2016, 00 UTC



Trajectory start and SLP VT: 20161002_12
WCB outflow and PV@250hPa VT: 20161004_12



New from



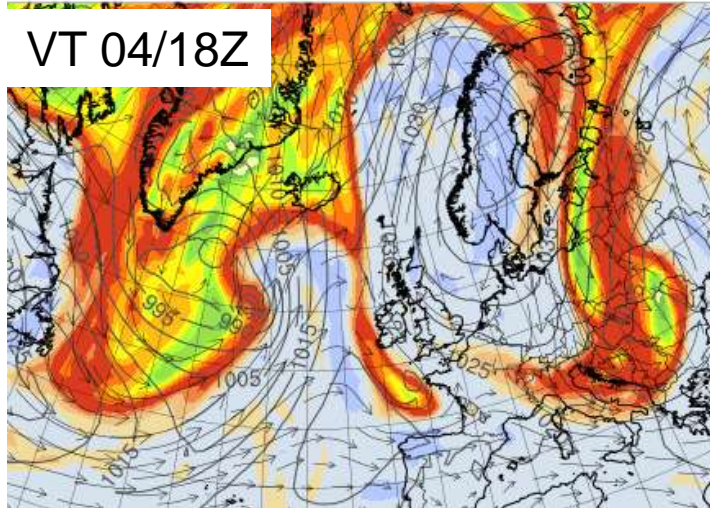
jet streak and incipient ridge-building with frontal wave WCB

Jet streak & ridge due to 2nd WCB of Sat. cyclone

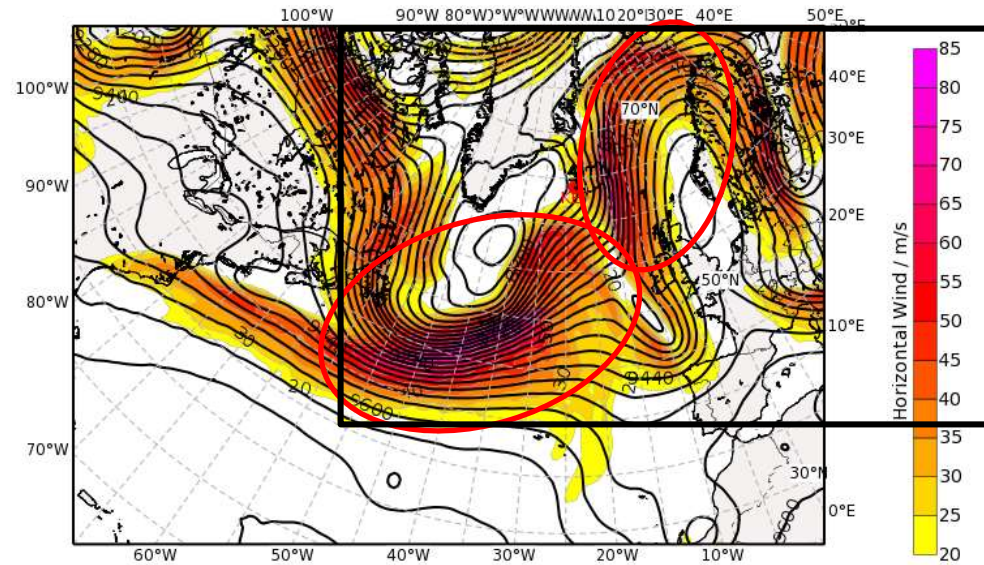
Forecast for Tue 04 Oct 2016 18 UTC

PV320, Z300 BT02/00Z

Traj, moisture flux/irrwind



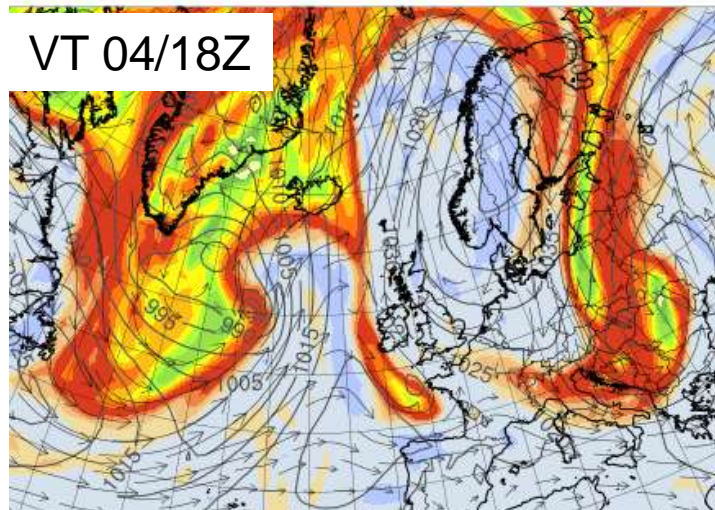
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Tue, 04 Oct 2016, 12 UTC (step 060 h from Sun, 02 Oct 2016, 00 UTC)



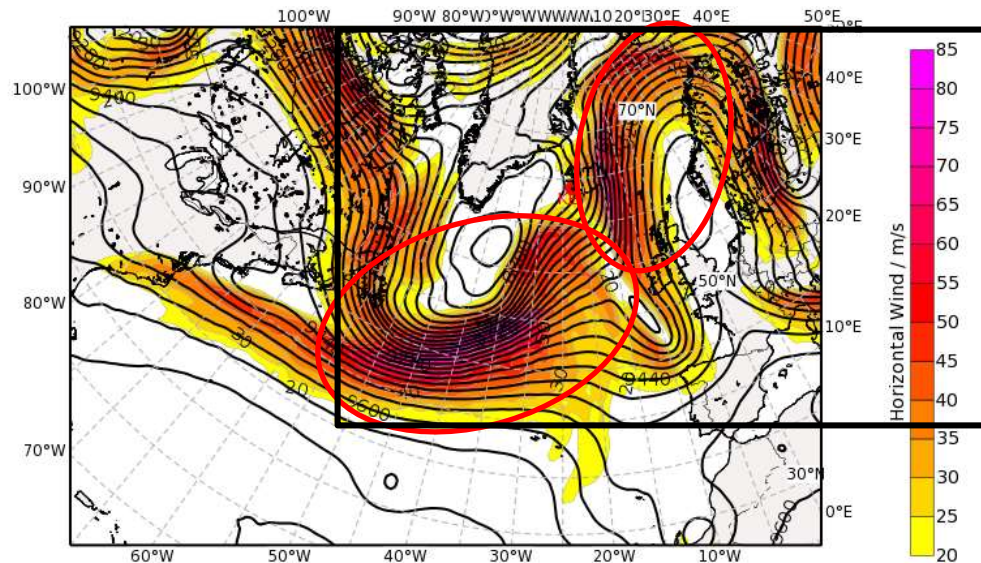
Forecast for Tue 04 Oct 2016 18 UTC

PV320, Z300 BT02/00Z

Traj, moisture flux/irrwind

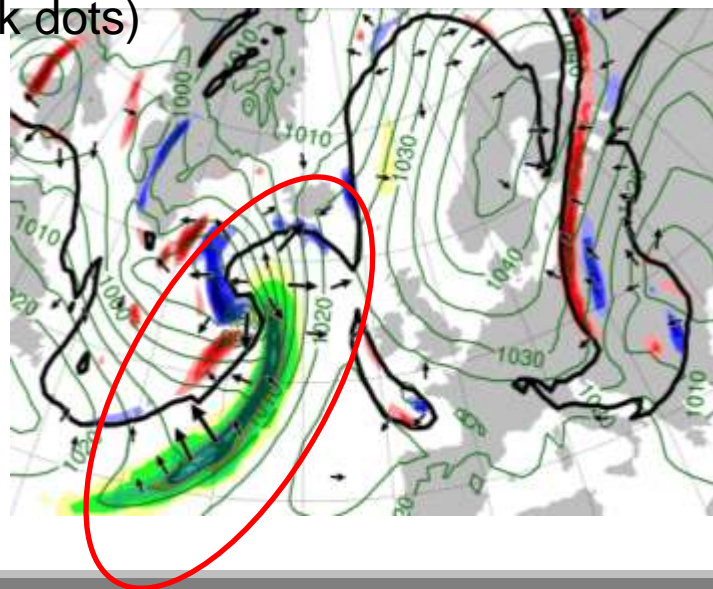
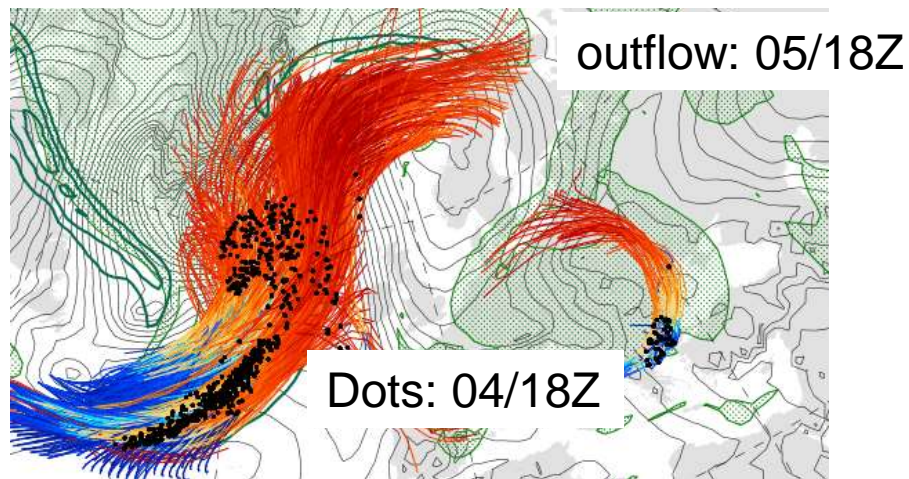


Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Tue, 04 Oct 2016, 12 UTC (step 060 h from Sun, 02 Oct 2016, 00 UTC)



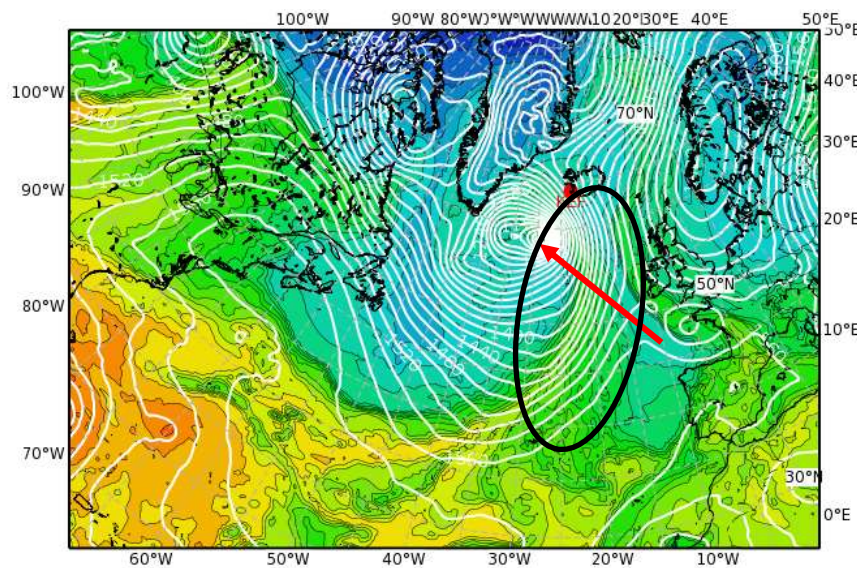
strong moisture flux

Trajectories having their ascent at 04/18Z (black dots)



inflow: 03/18Z

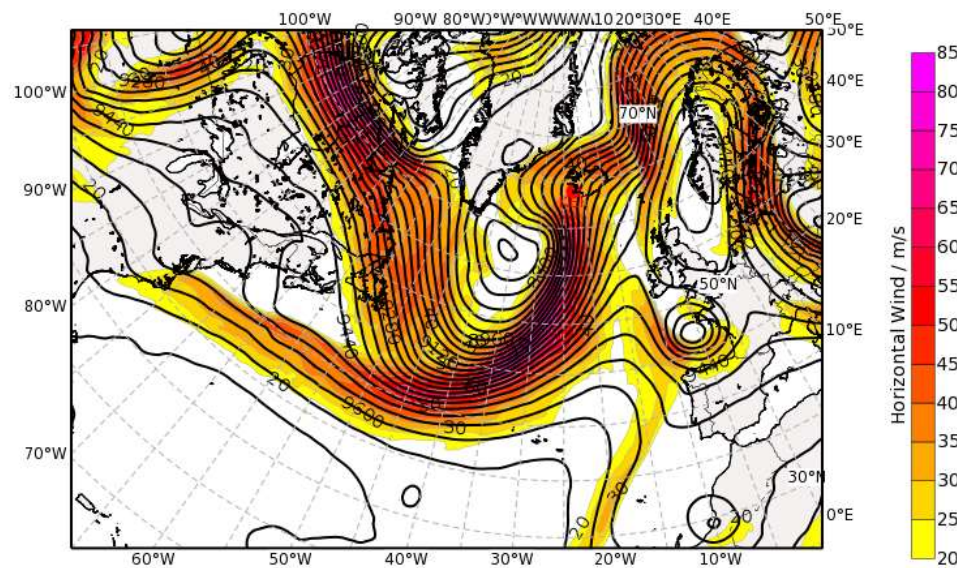
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Wed, 05 Oct 2016, 00 UTC (step 072 h from Sun, 02 Oct 2016, 00 UTC)



frontal wave
deepening

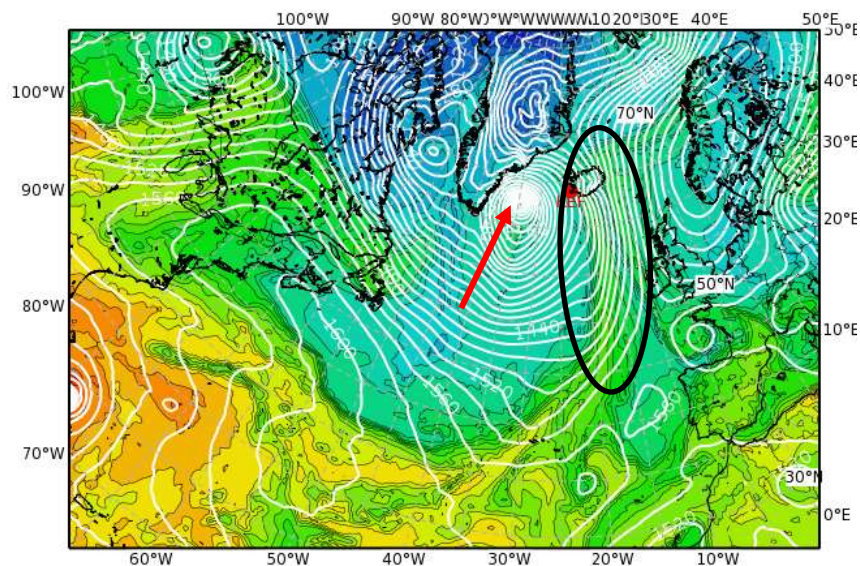
strong
moisture flux

Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Wed, 05 Oct 2016, 00 UTC (step 072 h from Sun, 02 Oct 2016, 00 UTC)

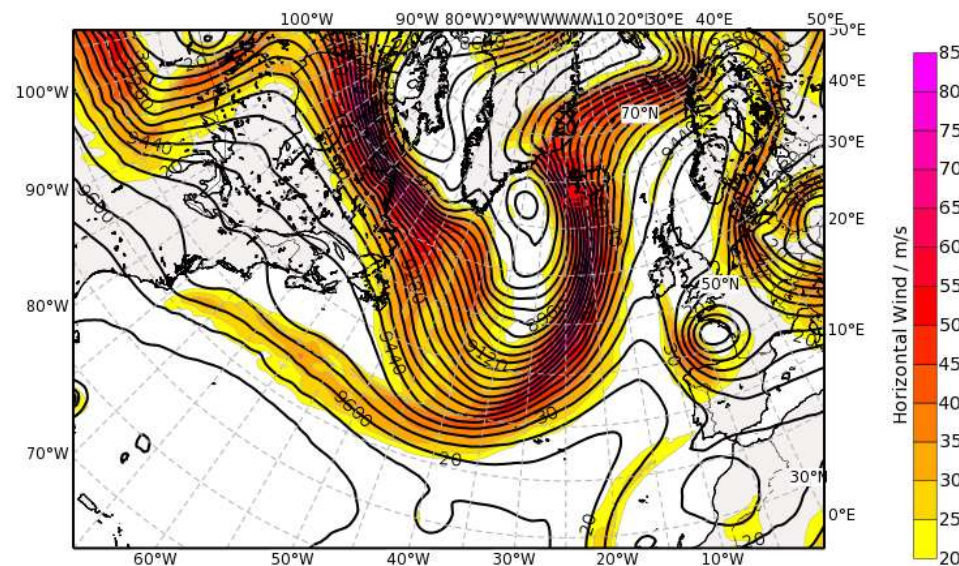


strong moisture flux

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Wed, 05 Oct 2016, 12 UTC (step 084 h from Sun, 02 Oct 2016, 00 UTC)

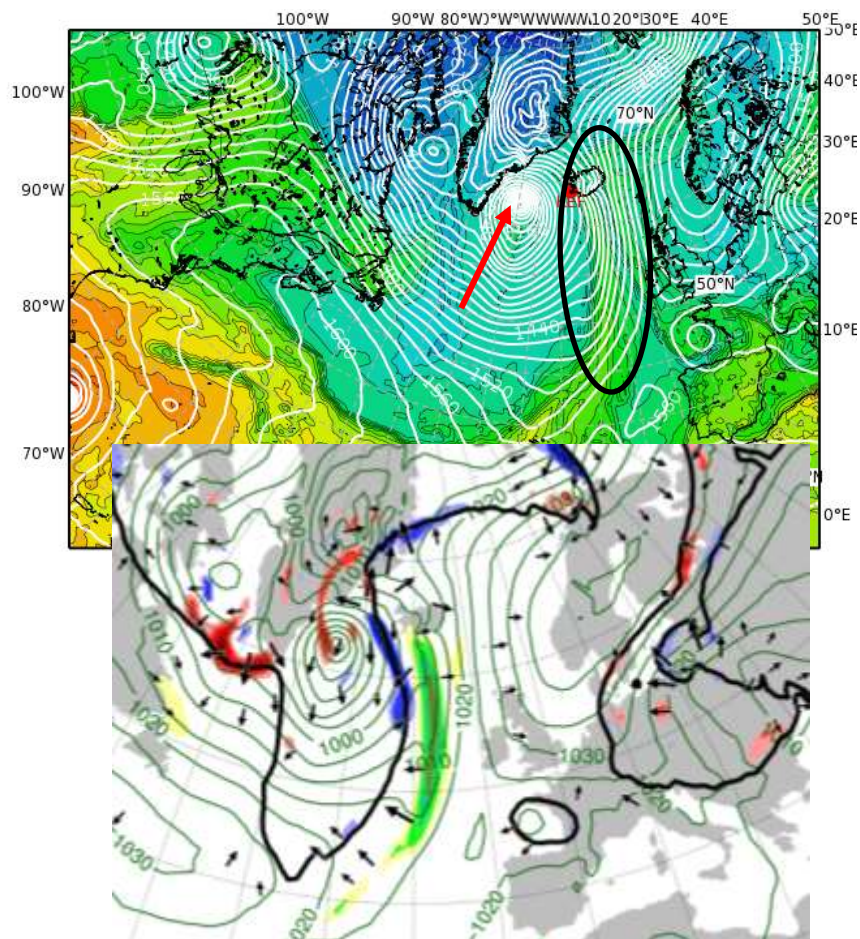


Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Wed, 05 Oct 2016, 12 UTC (step 084 h from Sun, 02 Oct 2016, 00 UTC)

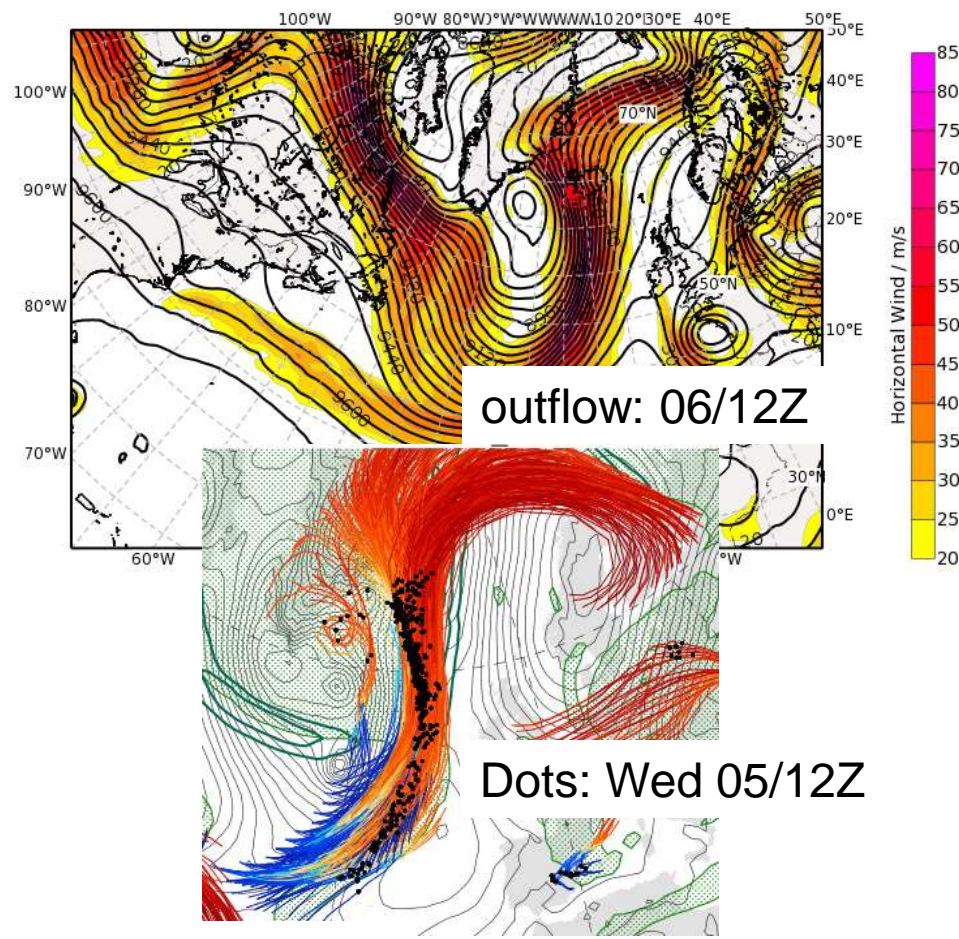


strong moisture flux

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Wed, 05 Oct 2016, 12 UTC (step 084 h from Sun, 02 Oct 2016, 00 UTC)

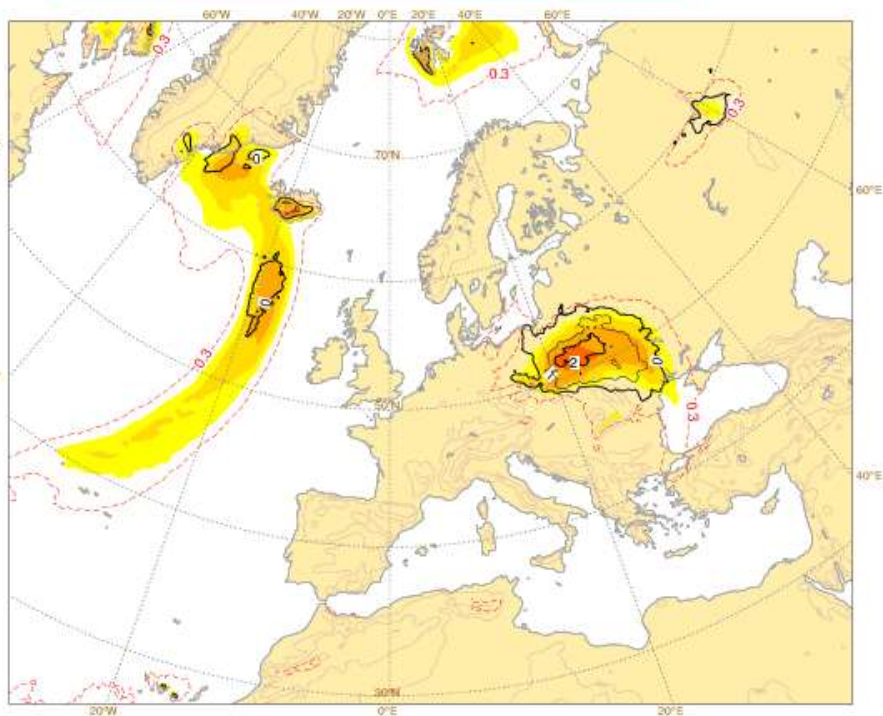


Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Wed, 05 Oct 2016, 12 UTC (step 084 h from Sun, 02 Oct 2016, 00 UTC)



EFI precip for Wednesday(BT 02/00z

Sun 02 Oct 2016 00UTC ©ECMWF t+72-96h VT: Wed 05 Oct 2016 00UTC - Thu 06 Oct 2016 00UTC
Extreme forecast index and Shift of Tails (black contours 0,1,2,5,8) for total precipitation



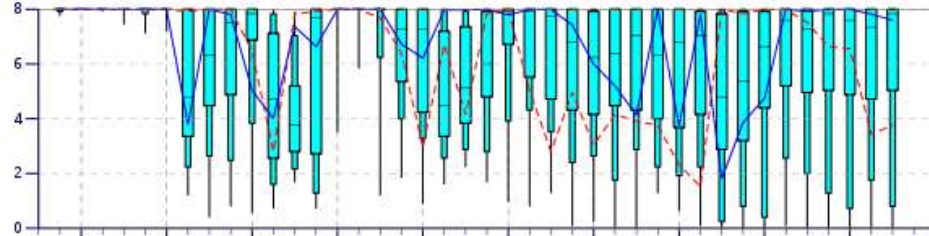
- Strong precipitation expected on Wednesday in southern Iceland

ENS Meteogram

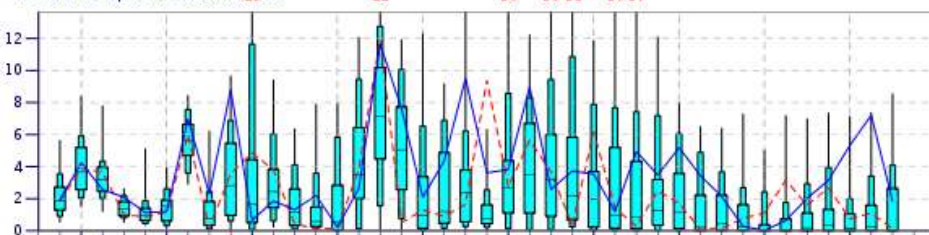
Keflavík, Iceland 63.89°N 22.26°W (ENS land point) 5 m

High Resolution Forecast and ENS Distribution Saturday 1 October 2016 12 UTC

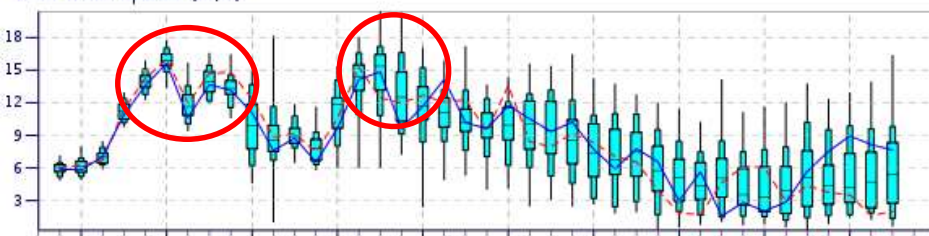
Total Cloud Cover (okta)



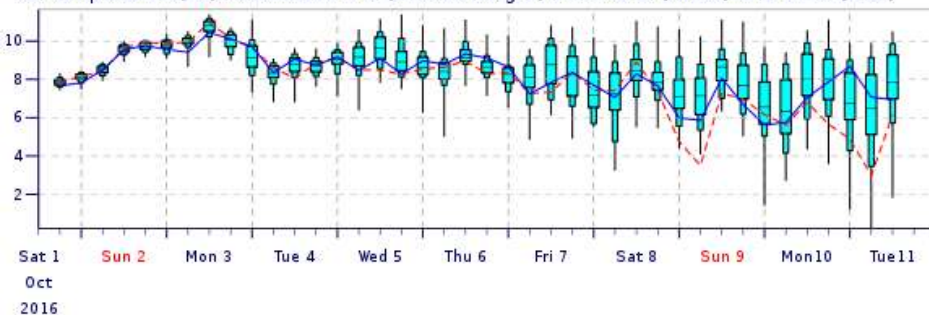
Total Precipitation (mm/6h)



10m Wind Speed (m/s)



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

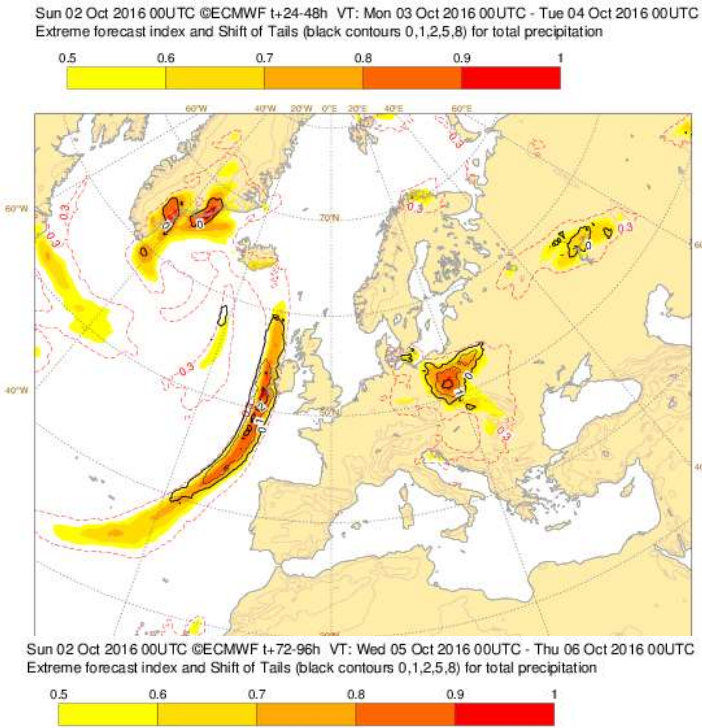


ENS Control (16 km)

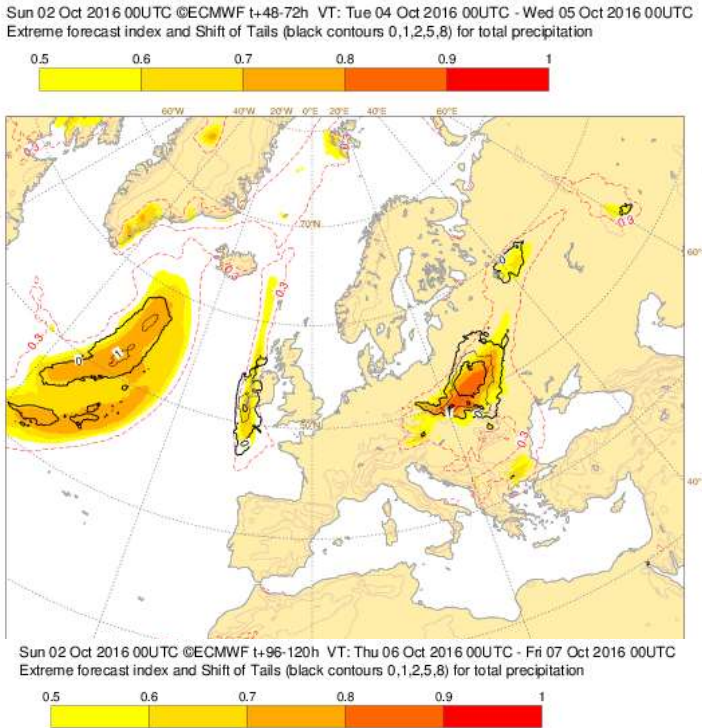
High Resolution (8 km)

ECMWF EFI Precipitation

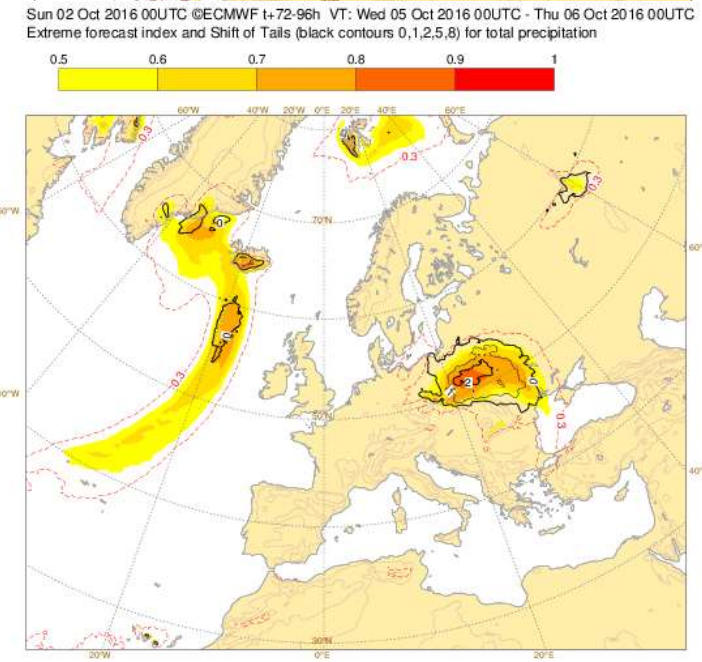
Mon 03



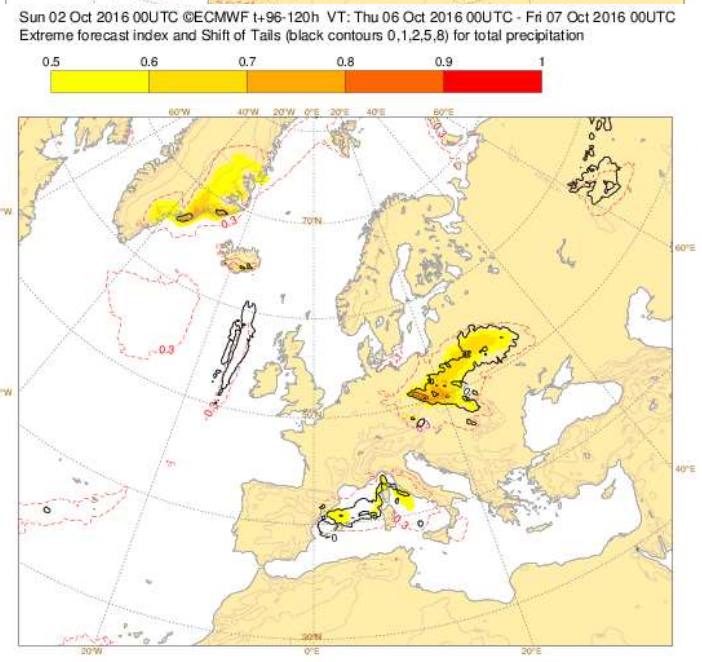
Tue 04



Wed 05

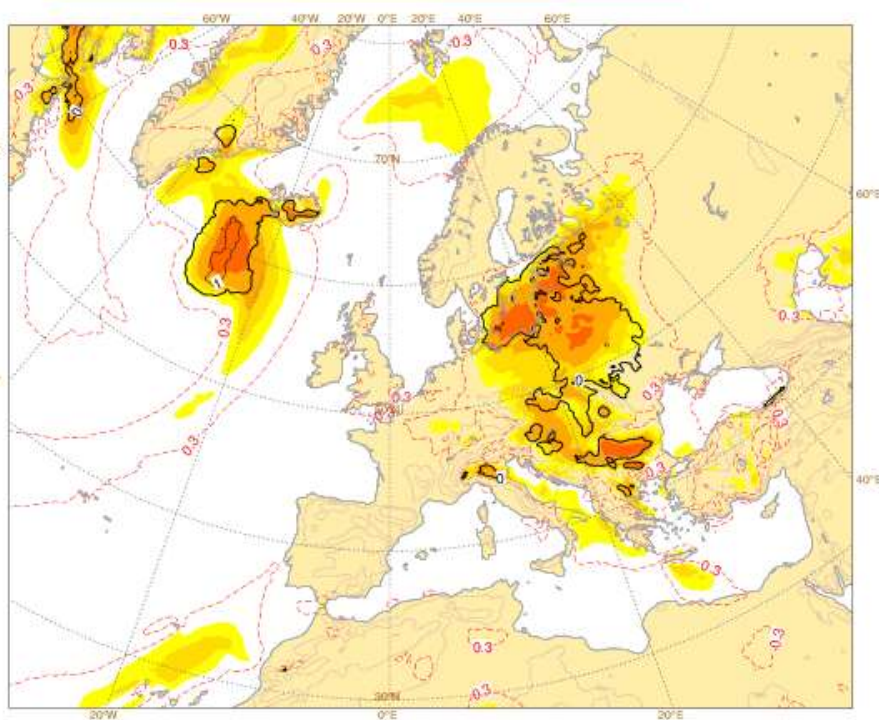


Thu 06



EFI gusts for Wednesday(BT 02/00z)

Sun 02 Oct 2016 00UTC ©ECMWF t+72-96h VT: Wed 05 Oct 2016 00UTC - Thu 06 Oct 2016 00UTC
Extreme forecast index and Shift of Tails (black contours 0,1,2,5,8) for 10m wind gusts



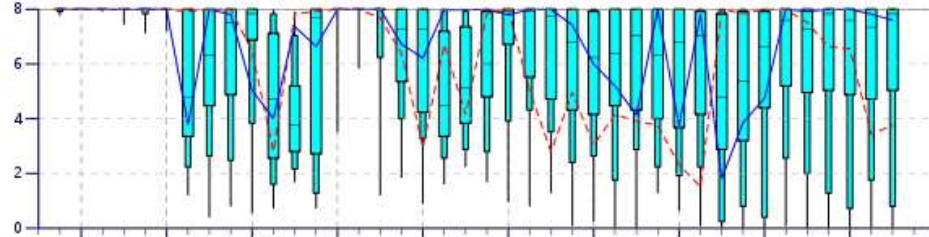
- Strong winds (mean 15-20m/s) in KEF Sun 18UTC-03UTC, Mon 9UTC-15UTC, Wed 6-18UTC

ENS Meteogram

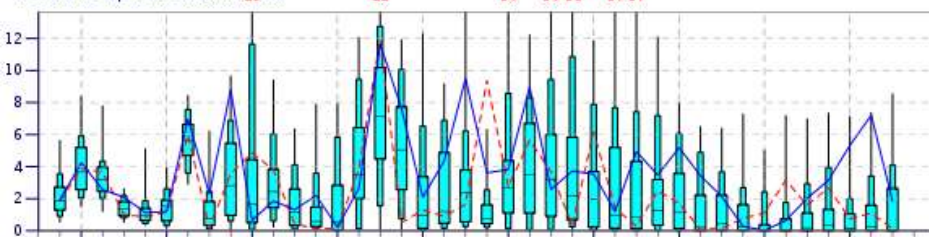
Keflavík, Iceland 63.89°N 22.26°W (ENS land point) 5 m

High Resolution Forecast and ENS Distribution Saturday 1 October 2016 12 UTC

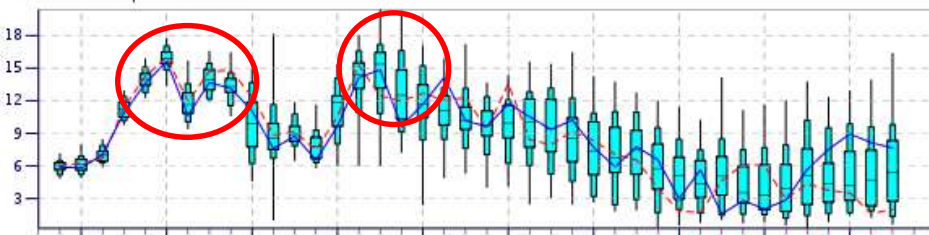
Total Cloud Cover (okta)



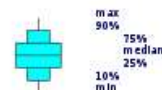
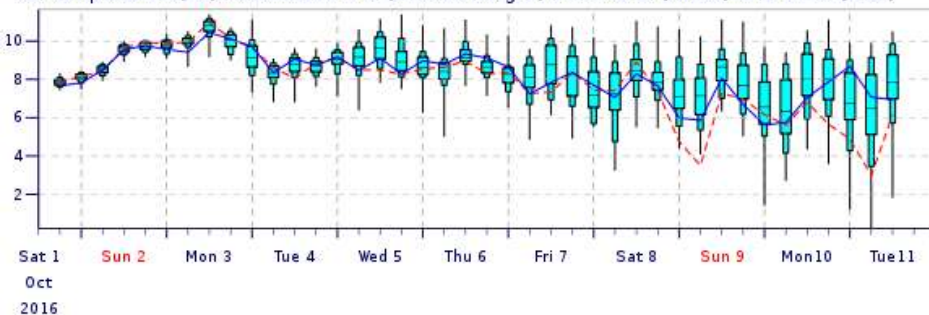
Total Precipitation (mm/6h)



10m Wind Speed (m/s)



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

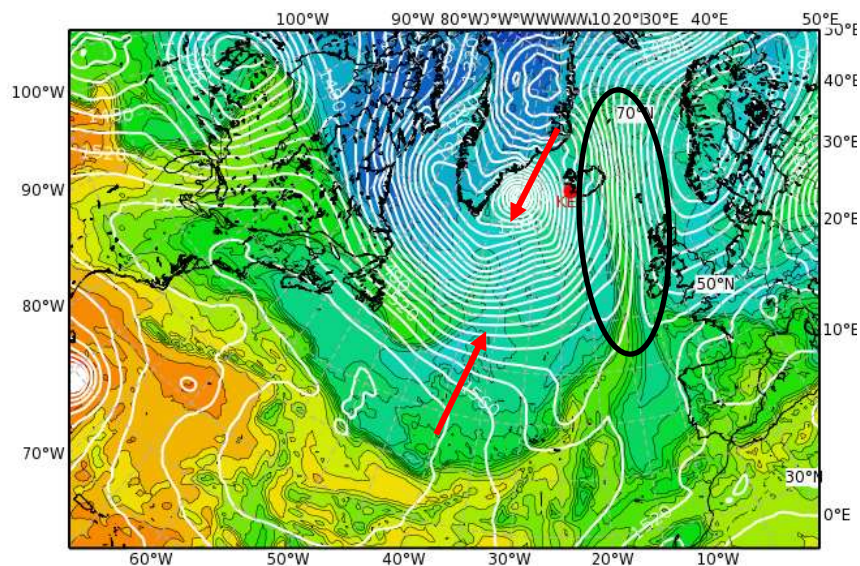


ENS Control(16 km)

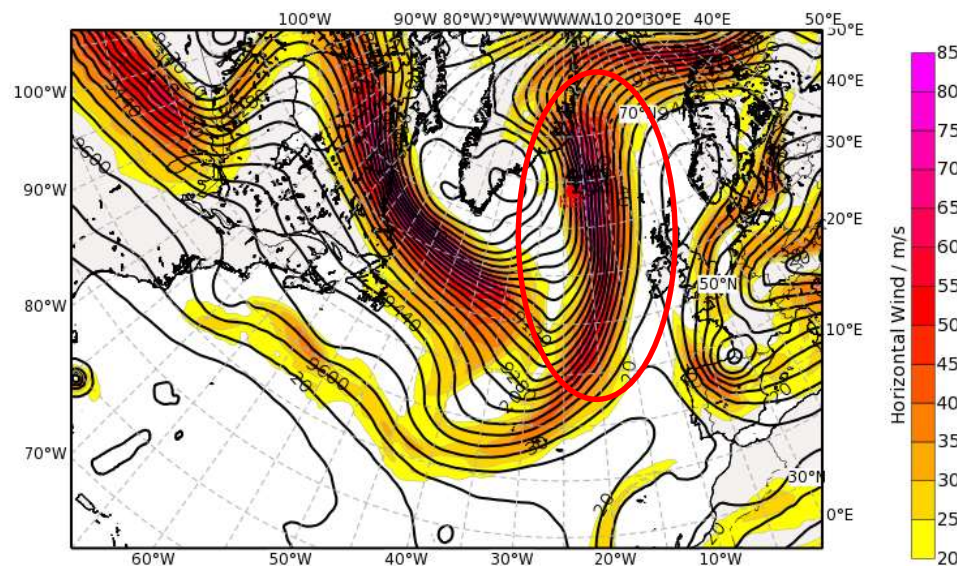
High Resolution (8 km)

**strong
moisture flux**

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Thu, 06 Oct 2016, 00 UTC (step 096 h from Sun, 02 Oct 2016, 00 UTC)



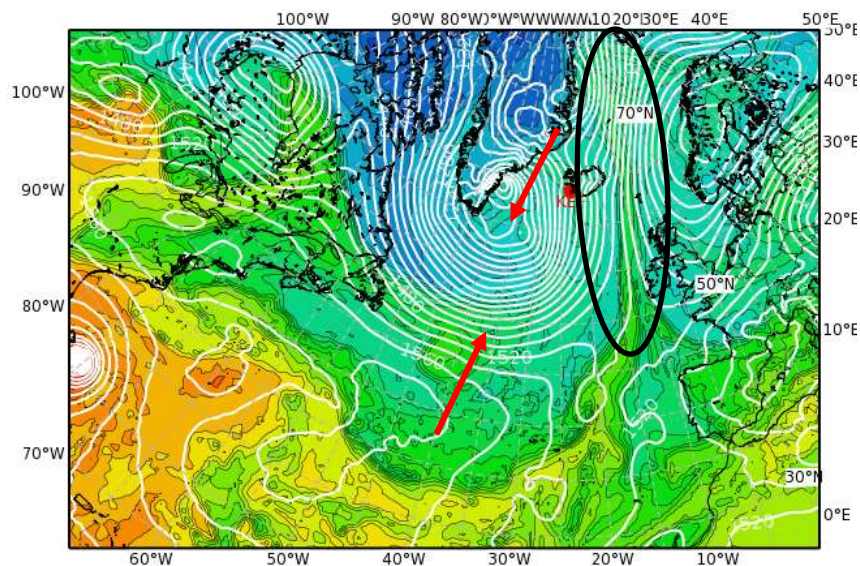
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Thu, 06 Oct 2016, 00 UTC (step 096 h from Sun, 02 Oct 2016, 00 UTC)



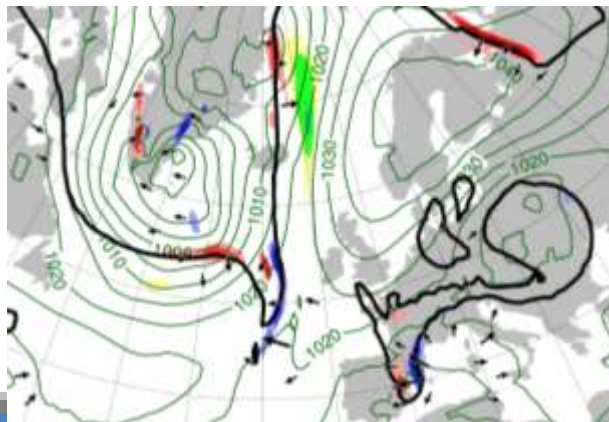
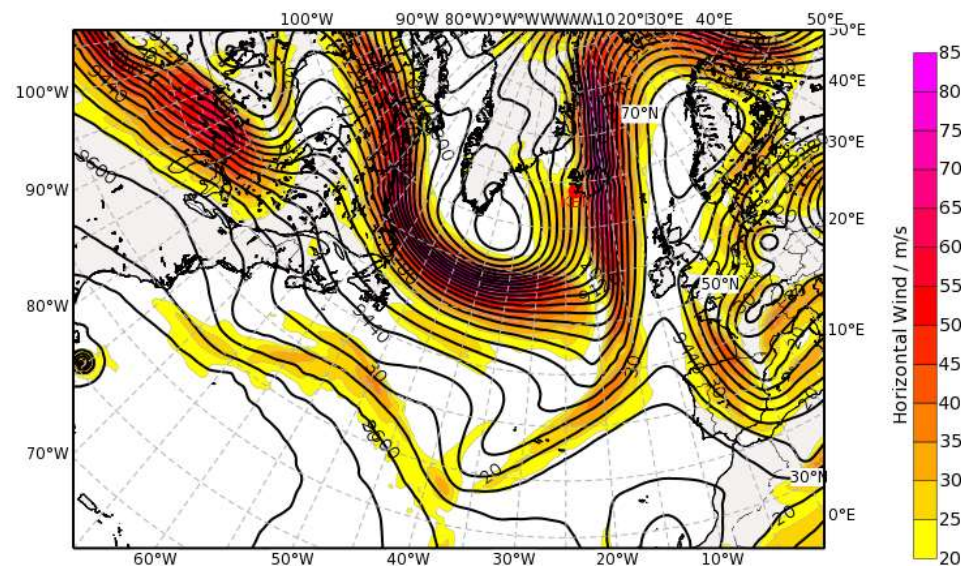
**jet streak and
strong downstream
ridge with frontal
wave WCB**

strong moisture flux

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Thu, 06 Oct 2016, 12 UTC (step 108 h from Sun, 02 Oct 2016, 00 UTC)



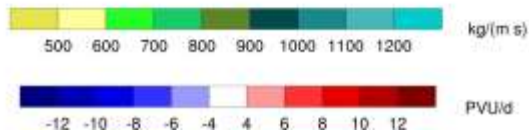
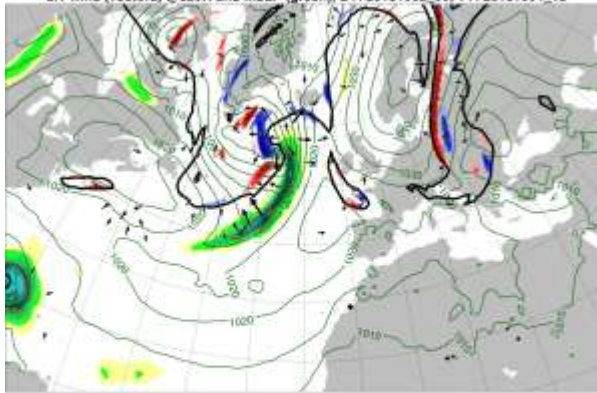
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Thu, 06 Oct 2016, 12 UTC (step 108 h from Sun, 02 Oct 2016, 00 UTC)



Summary opportunities Tue-Thu

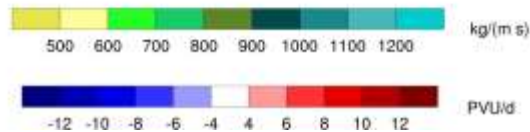
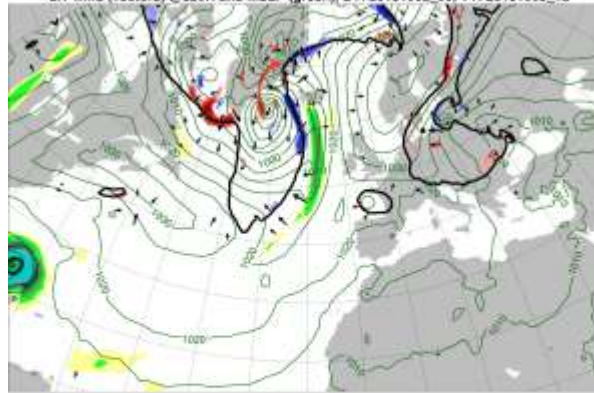
Divwind and 2PVU@320K

2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002_00, VT: 20161004_18



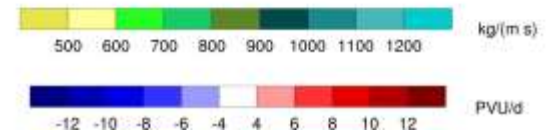
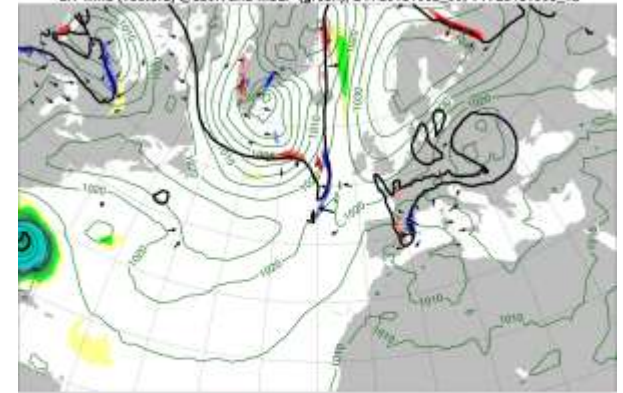
Tue, 4 Oct 18UTC

2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002_00, VT: 20161005_12

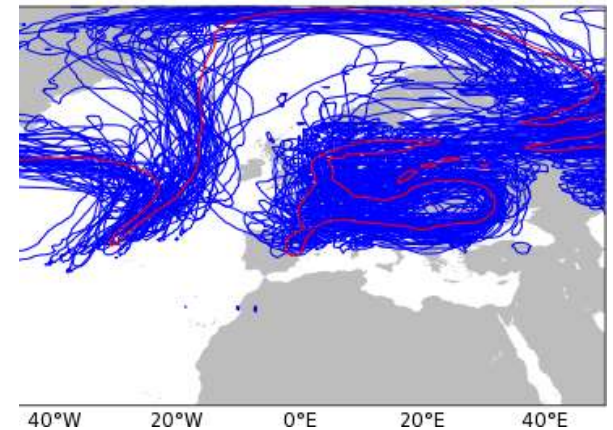
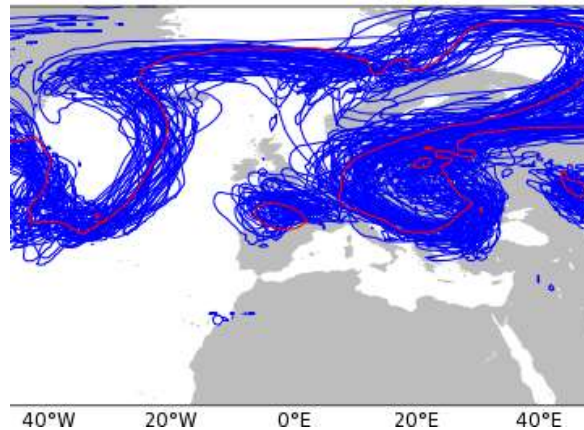
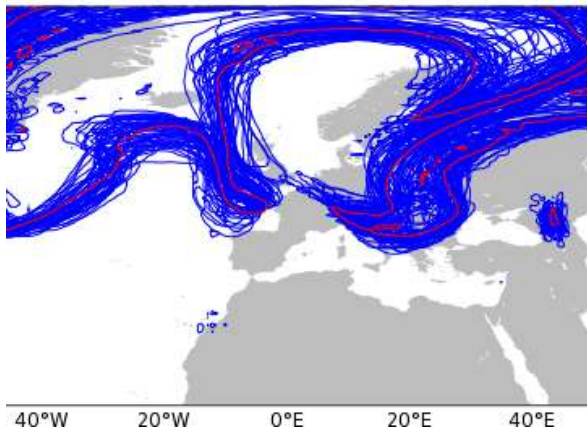


Wed, 5 Oct 12UTC

2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002_00, VT: 20161005_12



Thu, 6 Oct 12UTC



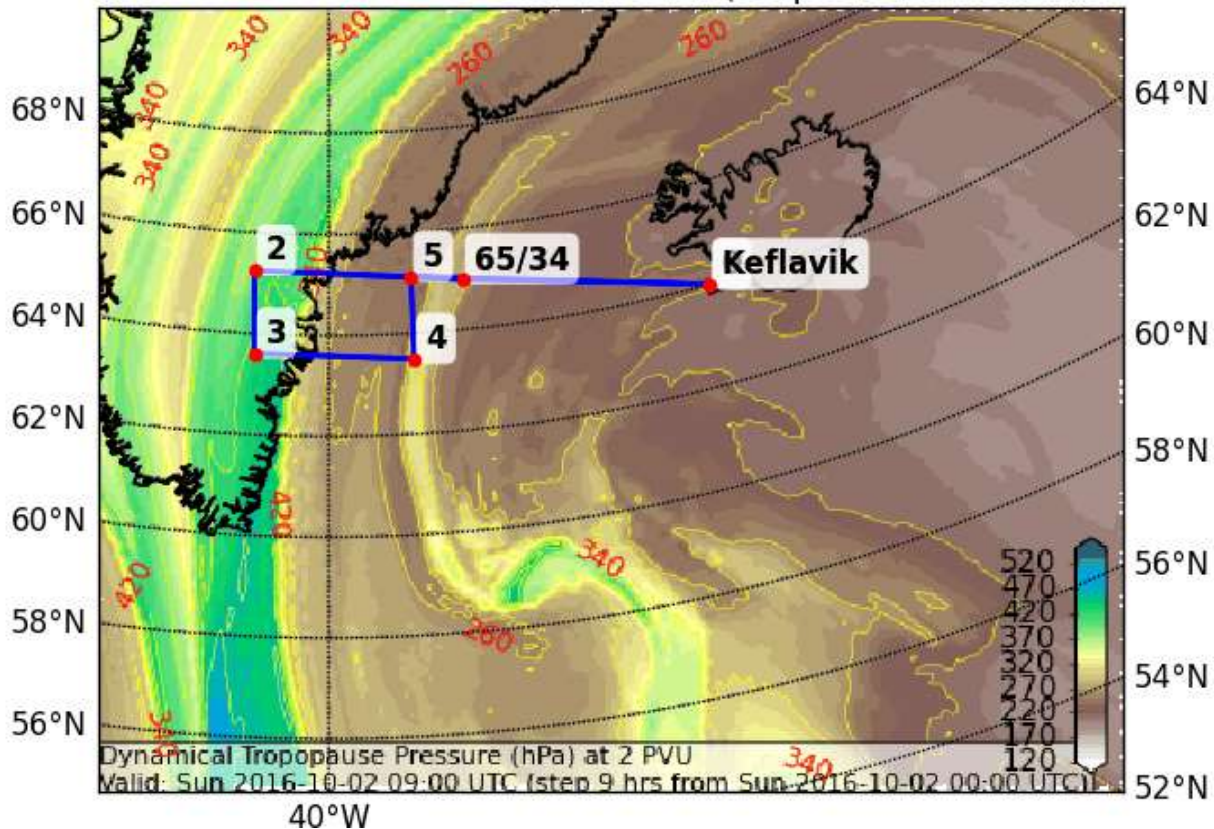
Sunday 2 October

FALCON, SAFIRE flights

Sunday Falcons flight

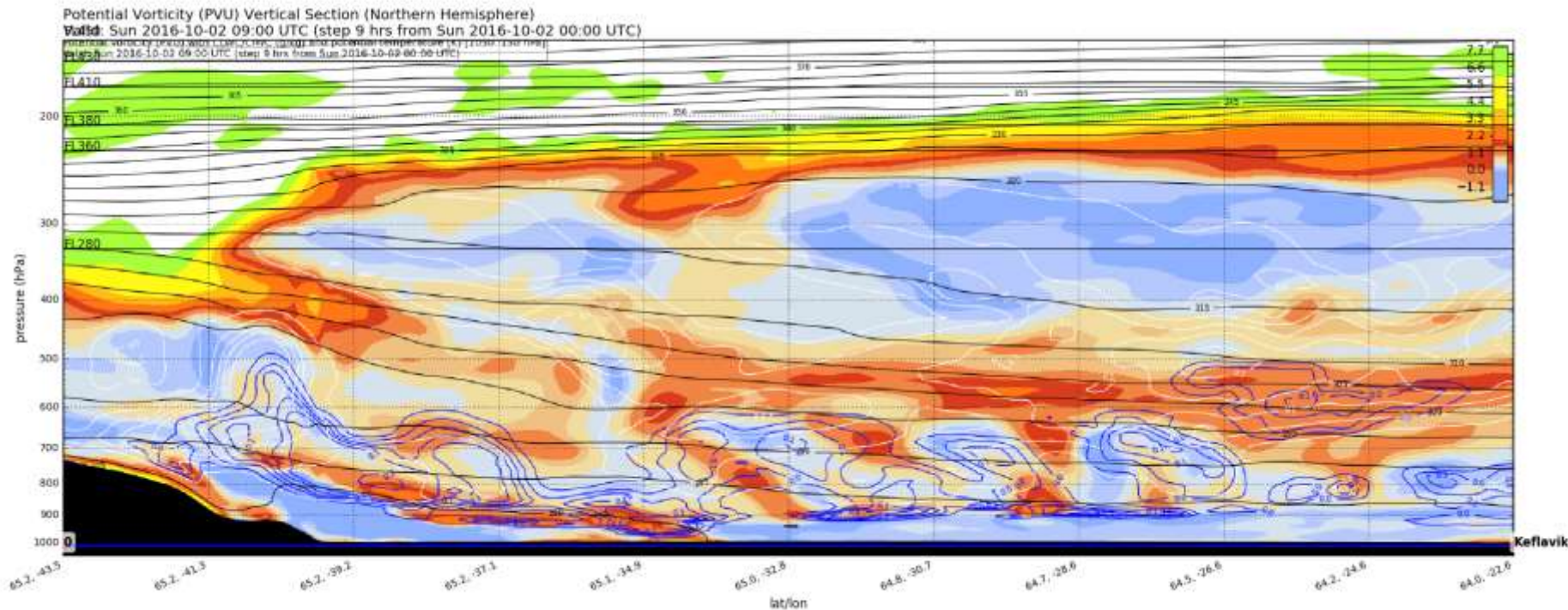
Dynamical Tropopause (Pressure (hPa)) at 2000 (10^{-3} PVU)

Valid: Sun 2016-10-02 09:00 UTC (step 9 hrs from Sun 2016-10-02 00:00 UTC)



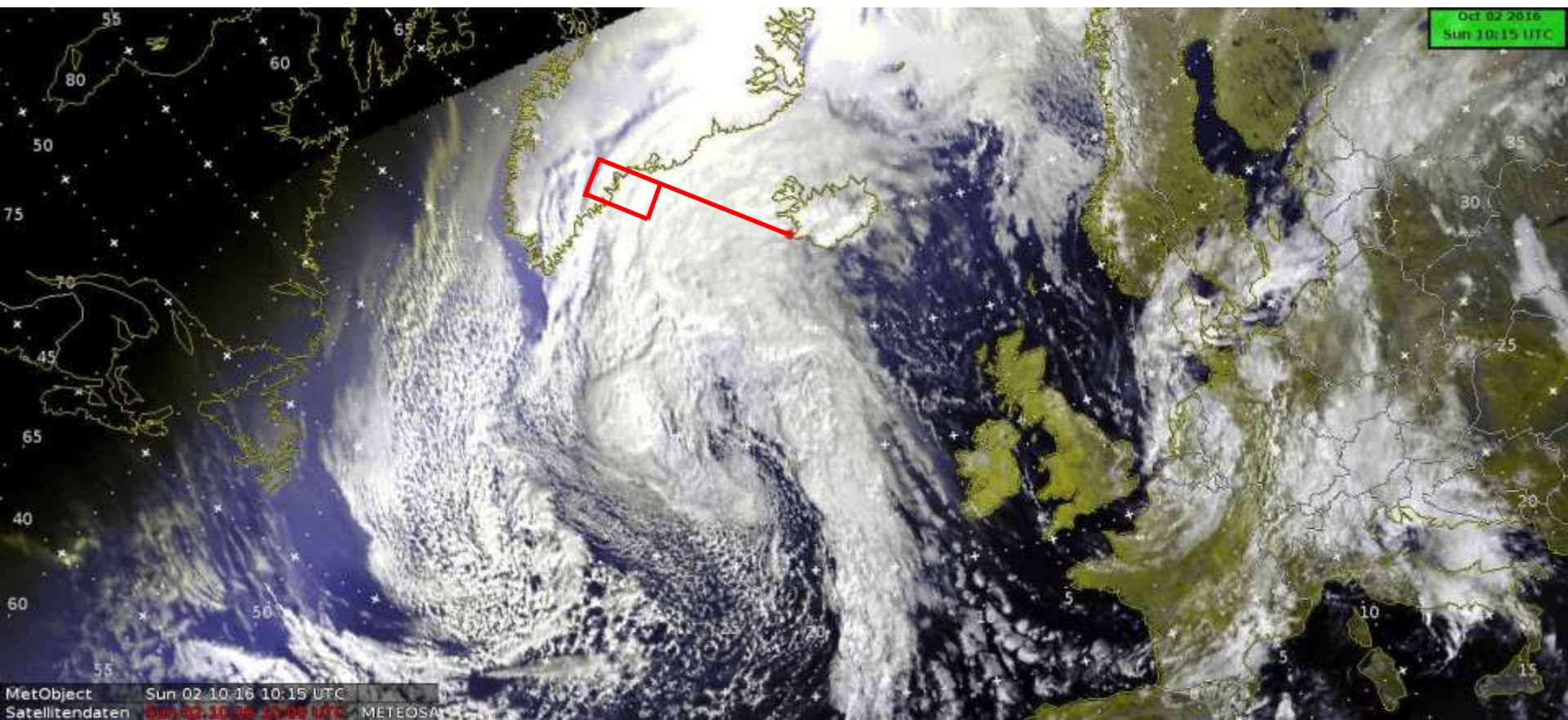
- SAFIRE dropsondes: 5 sondes on leg 5-2, 3 sondes from point 3 across the TP step.
- SAFIRE heading directly back from point 3 to KEF

Sunday Falcons flight



- SAFIRE dropsondes: 5 sondes on leg 5-2, 3 sondes from point 3 across the TP step.
- SAFIRE heading directly back from point 3 to KEF





Tuesday 4 October IOP8

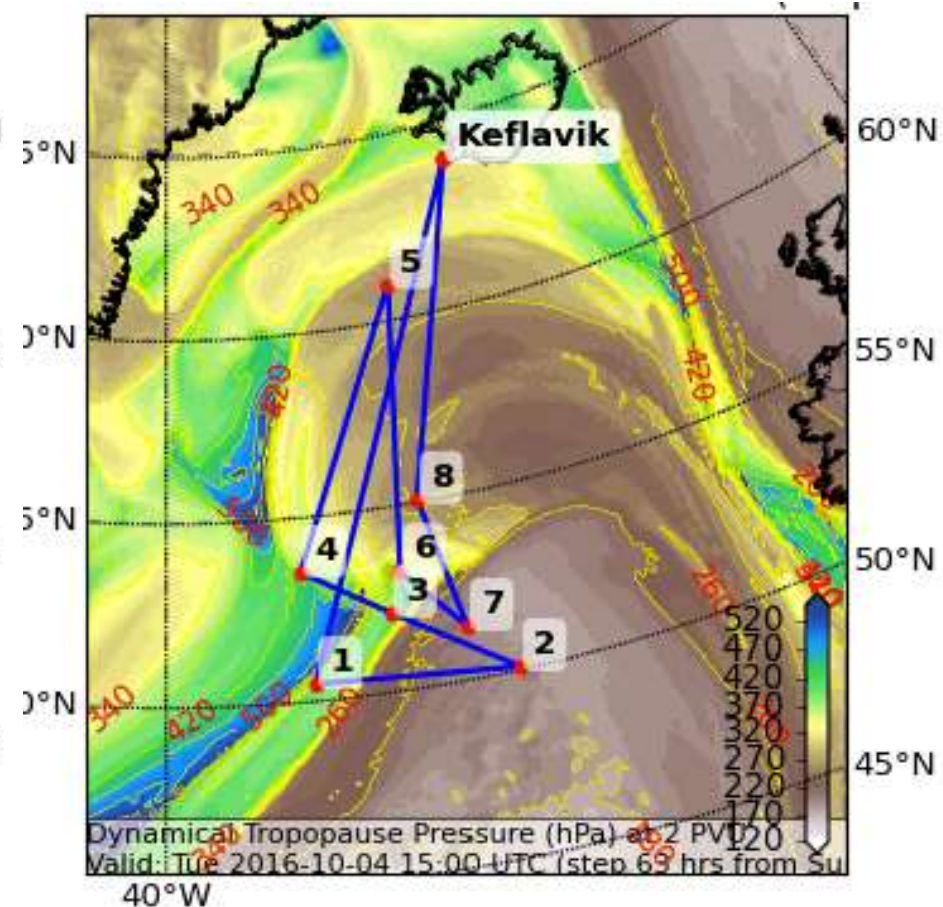
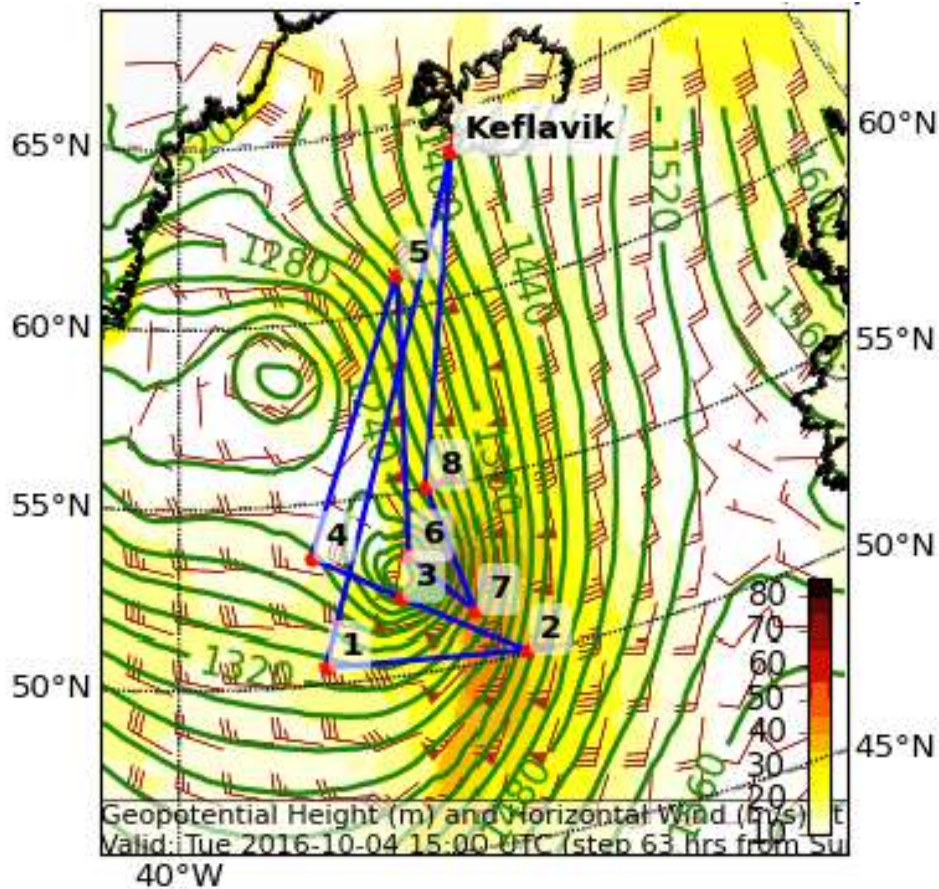
HALO flight

Tuesday 4 October HALO flight

15 UTC

Z850

P at TP

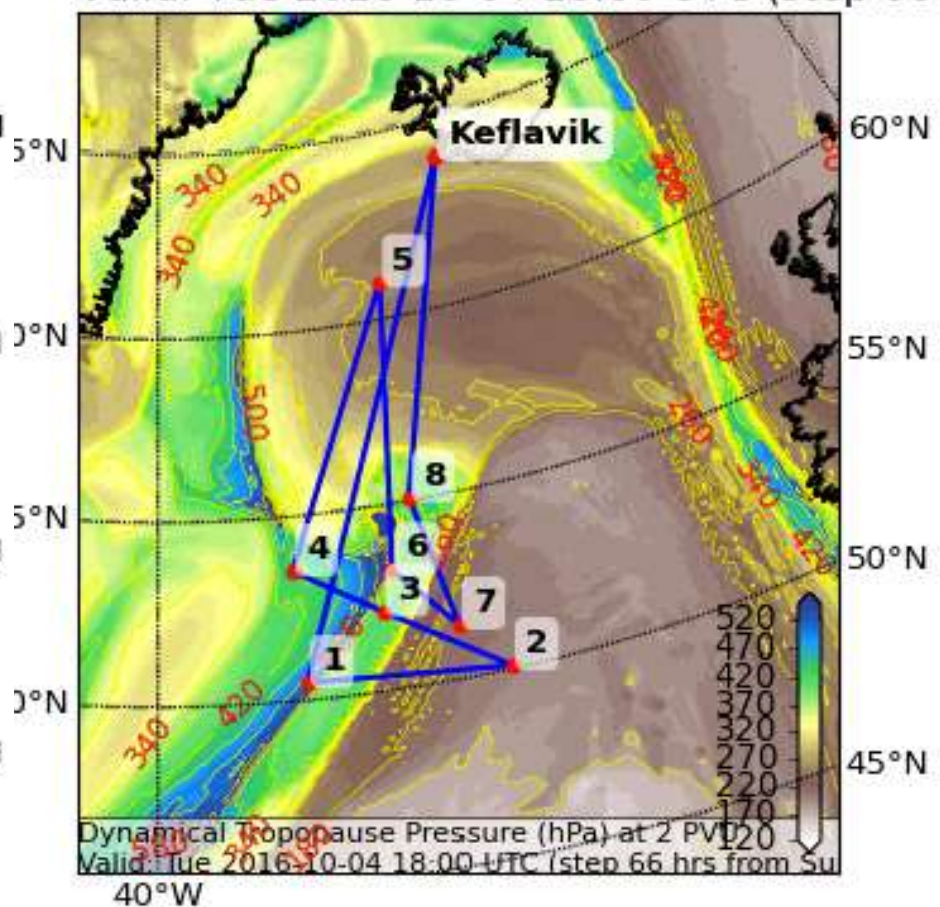
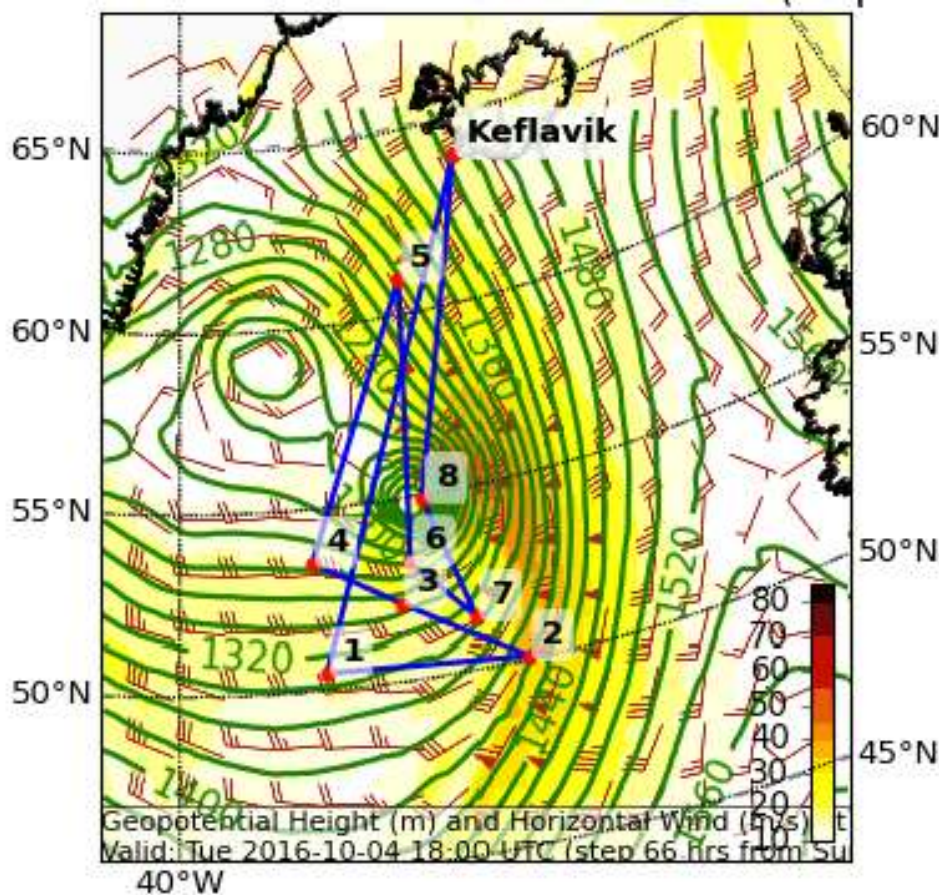


Tuesday 4 October HALO flight

18 UTC

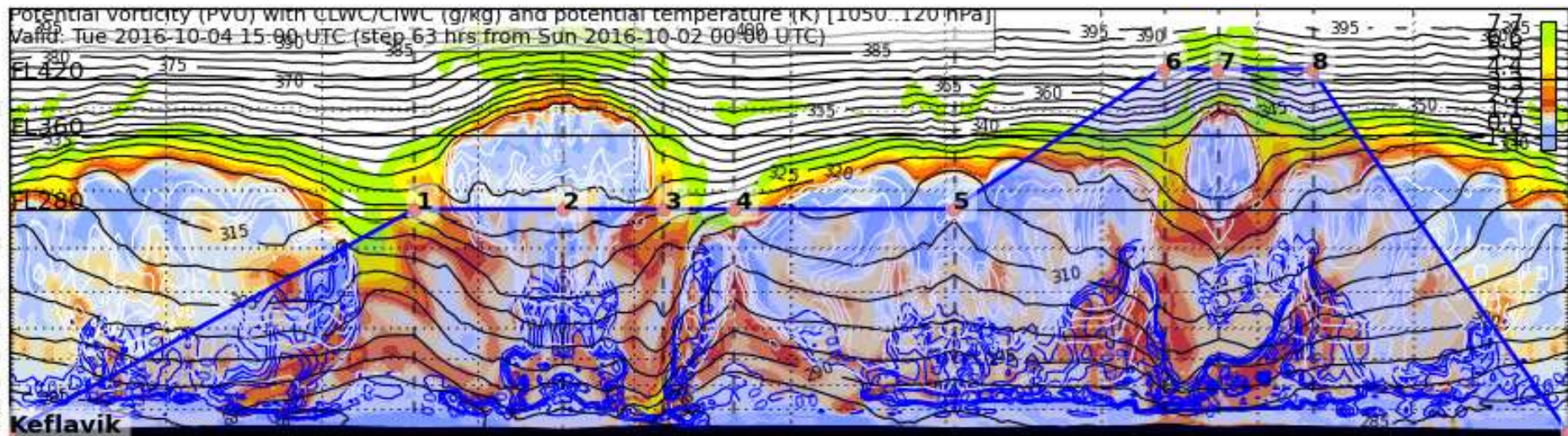
Z850

P at TP

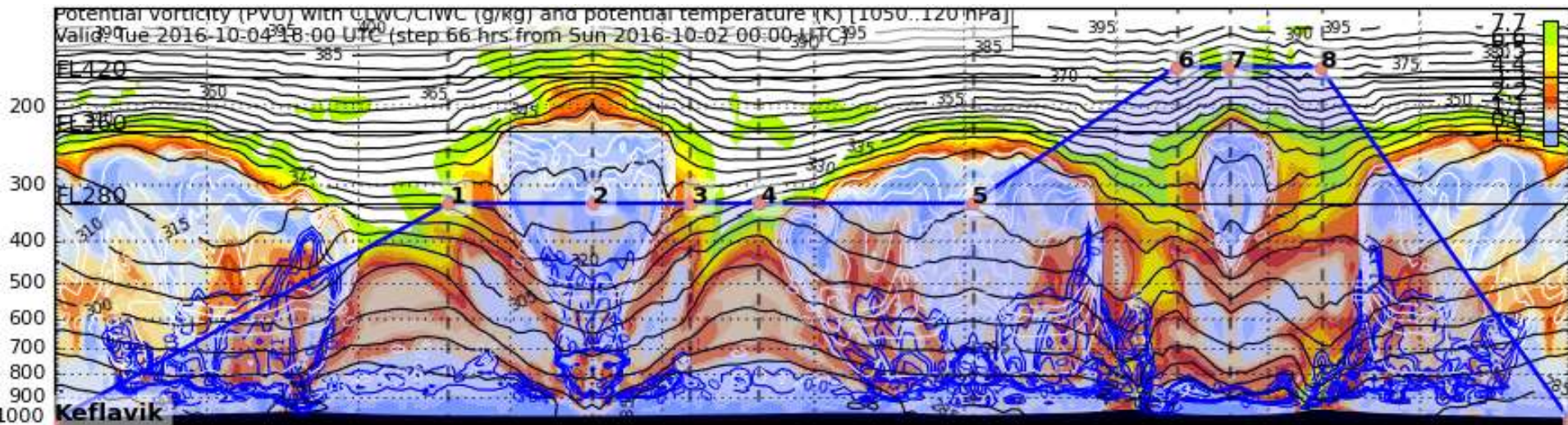


Tuesday 4 October HALO flight

15 UTC



18 UTC



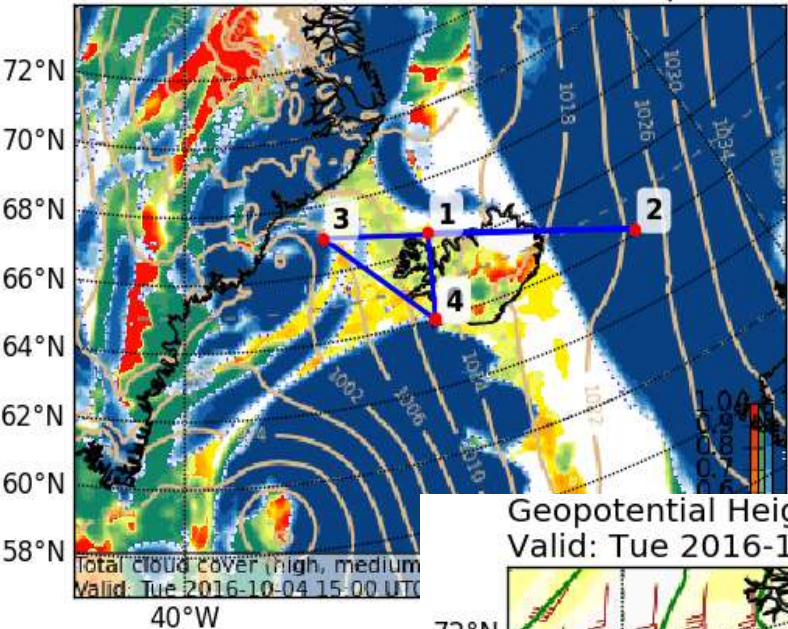
Tuesday 4 October

FALCON

Overview of flight planning DLR-Falcon Tuesday 4 October 2016 - 15 UTC

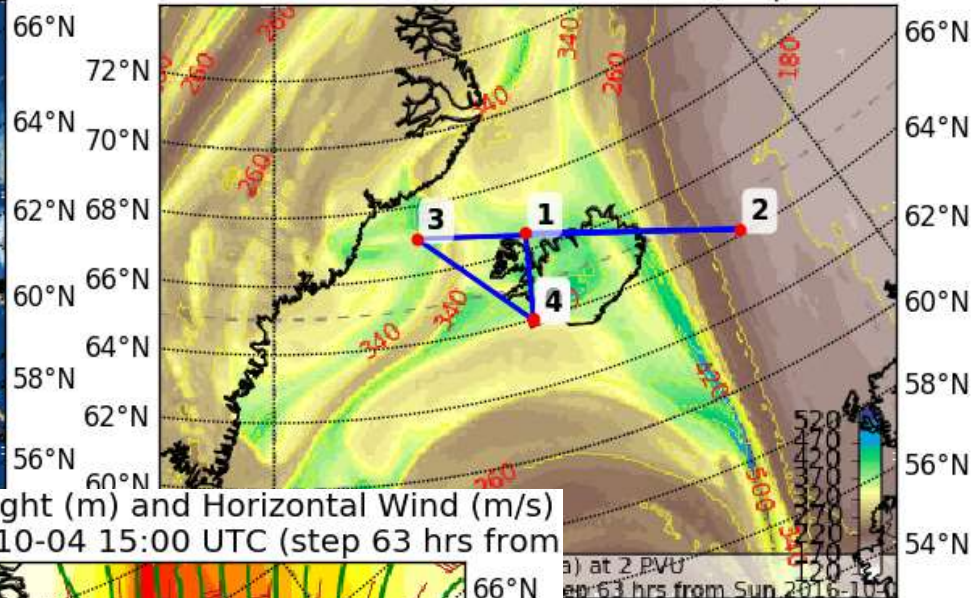
Cloud Cover (0-1) (Total Cloud Cover)

Valid: Tue 2016-10-04 15:00 UTC (step 63 hrs from



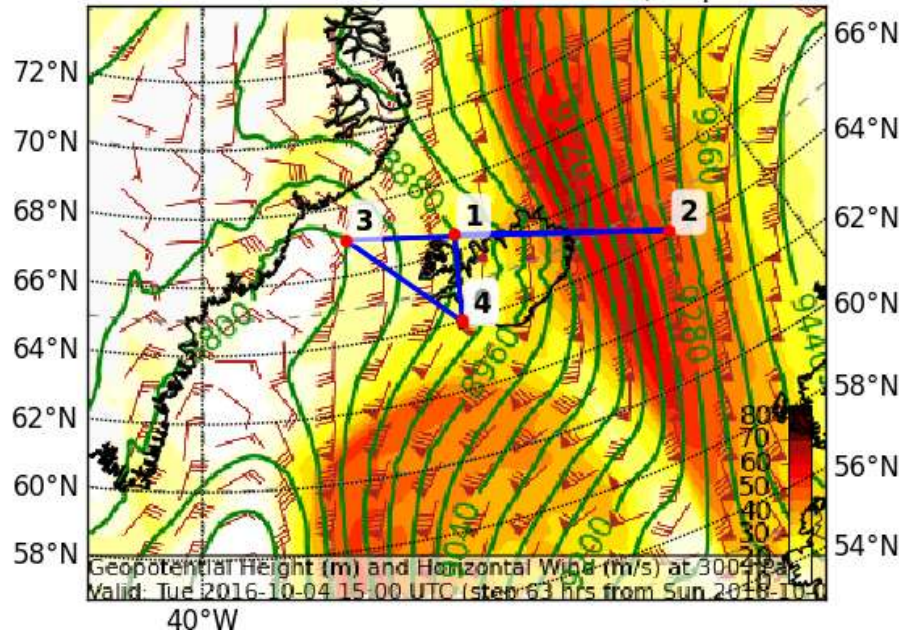
Dynamical Tropopause (Pressure (hPa)) at 2000 (1

Valid: Tue 2016-10-04 15:00 UTC (step 63 hrs from



Geopotential Height (m) and Horizontal Wind (m/s)

Valid: Tue 2016-10-04 15:00 UTC (step 63 hrs from



Geopotential Height (m) and Horizontal Wind (m/s) at 3004 (2

Valid: Tue 2016-10-04 15:00 UTC (step 63 hrs from Sun 2016-10-0

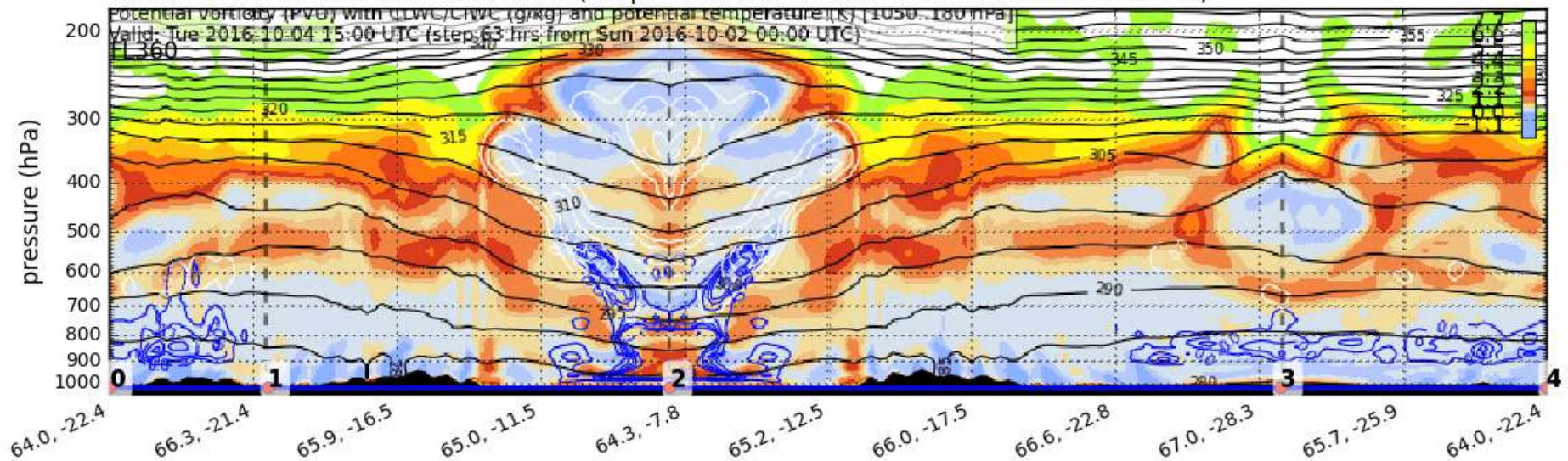
40°W

a) at 2 PVU
Valid: Tue 2016-10-04 15:00 UTC (step 63 hrs from Sun 2016-10-0

Overview of flight planning DLR-Falcon Tuesday 4 October 2016 - 15 UTC

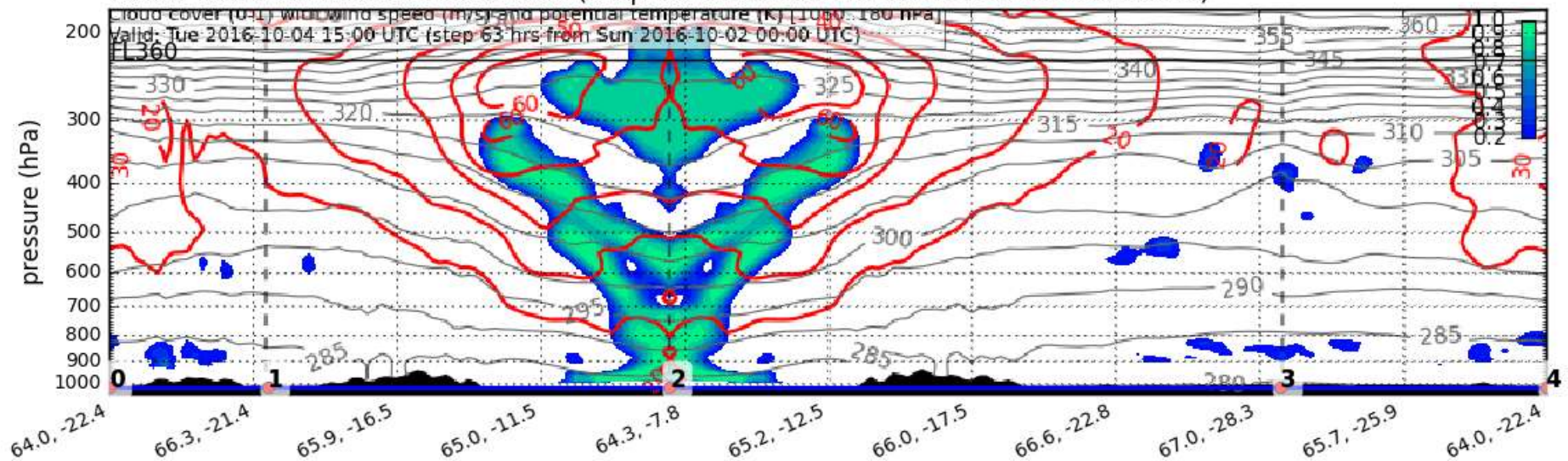
potential vorticity (PVO) vertical section (northern hemisphere)

Valid: Tue 2016-10-04 15:00 UTC (step 63 hrs from Sun 2016-10-02 00:00 UTC)

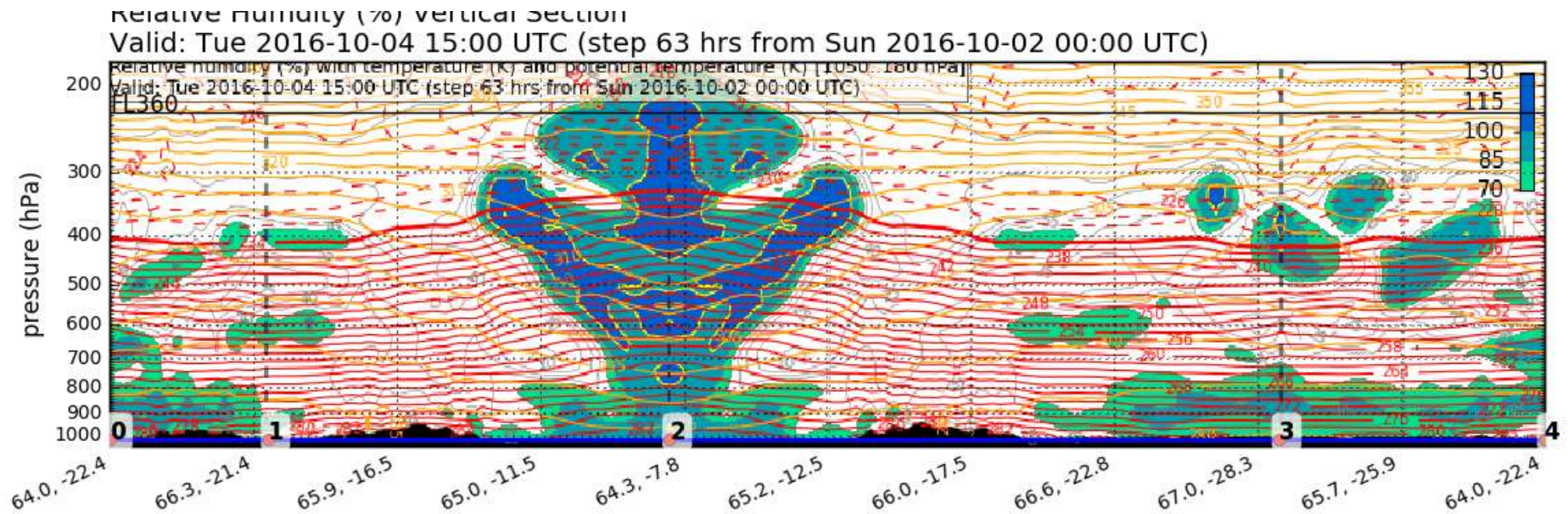


cloud cover (0-1) and wind speed (m/s) vertical section

Valid: Tue 2016-10-04 15:00 UTC (step 63 hrs from Sun 2016-10-02 00:00 UTC)



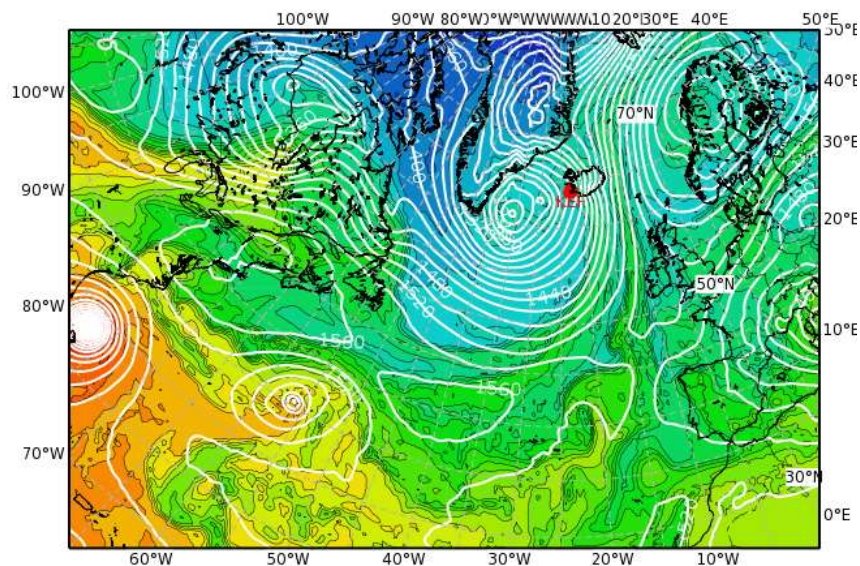
Overview of flight planning DLR-Falcon Tuesday 4 October 2016 - 15 UTC



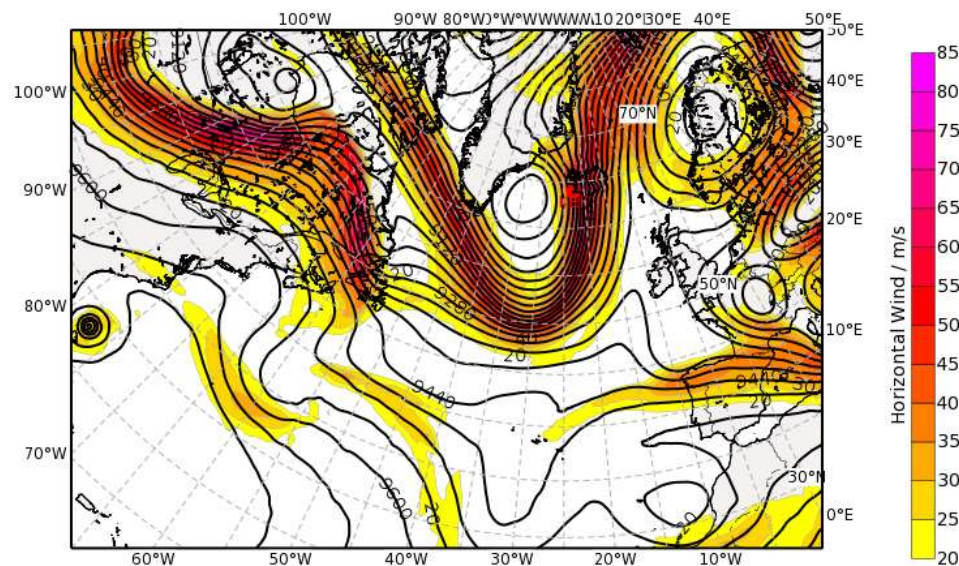
Radiosoundings

Outlook

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Fri, 07 Oct 2016, 12 UTC (step 132 h from Sun, 02 Oct 2016, 00 UTC)



Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Fri, 07 Oct 2016, 12 UTC (step 132 h from Sun, 02 Oct 2016, 00 UTC)



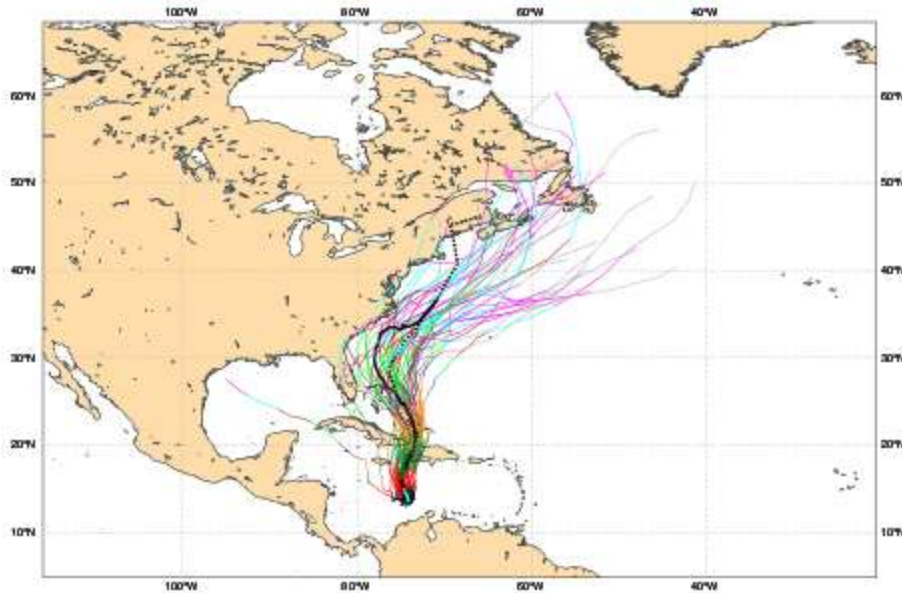
Potential extratropical transition of Hurricane Matthew (now cat. 5!)

Date 20161002 00 UTC @ECMWF

Individual trajectories for **MATTHEW** 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



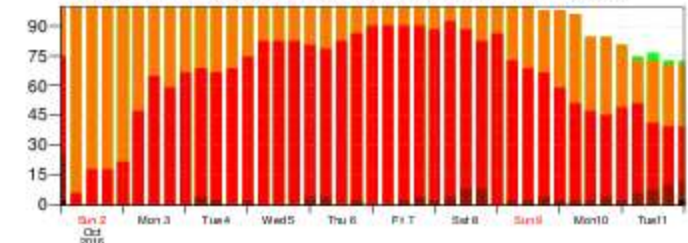
List of ensemble members numbers forecast Tropical Cyclone

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

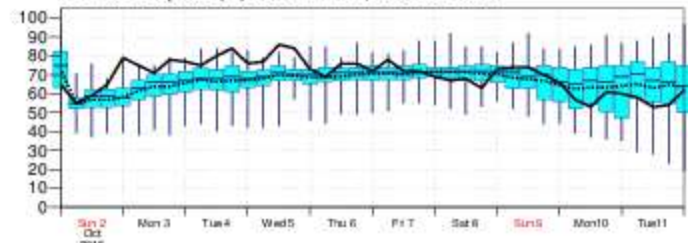
0124	1	fe	d	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
0125	1	fe	d	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
0126	1	fe	d	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
0127	1	fe	d	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
0128	1	fe	d	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
0129	1	fe	d	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
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0132	1	fe	d	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
0210	1	fe	d	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
0209	1	fe	d	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	3															

Probability (%) of Tropical Cyclone Intensity falling in each category

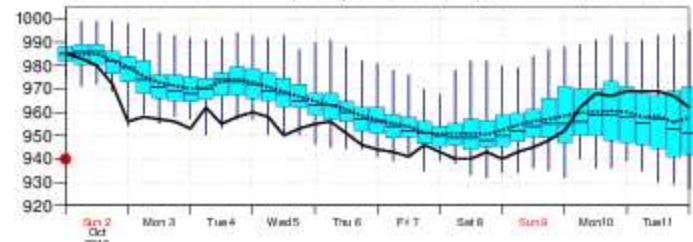
TD [up to 33] TS [34-63] HR1 [64-82] HR2 [83-95] HR3 [≥ 95 k]



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



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



Summary plans

- **Sunday 2 October**

- **FALCON** and **SAFIRE** Tropopause structure, WCB outflow; dropsondes on SAFIRE
- **SAFIRE** afternoon A-Train overpass
- **HALO** repair work (maybe continuing into Monday)

- **Monday 3 October**

- Strong winds, no flights

- **Outlook Tuesday – Thursday 4-6 October:**

- New frontal wave cyclone and strong jets within reach Tue-Thu
- Flight plans are developed for HALO and FALCON for all days
- Windy conditions in KEF on Wednesday
- Down day at the latest on Thu (HALO) and Fri (FALCON)