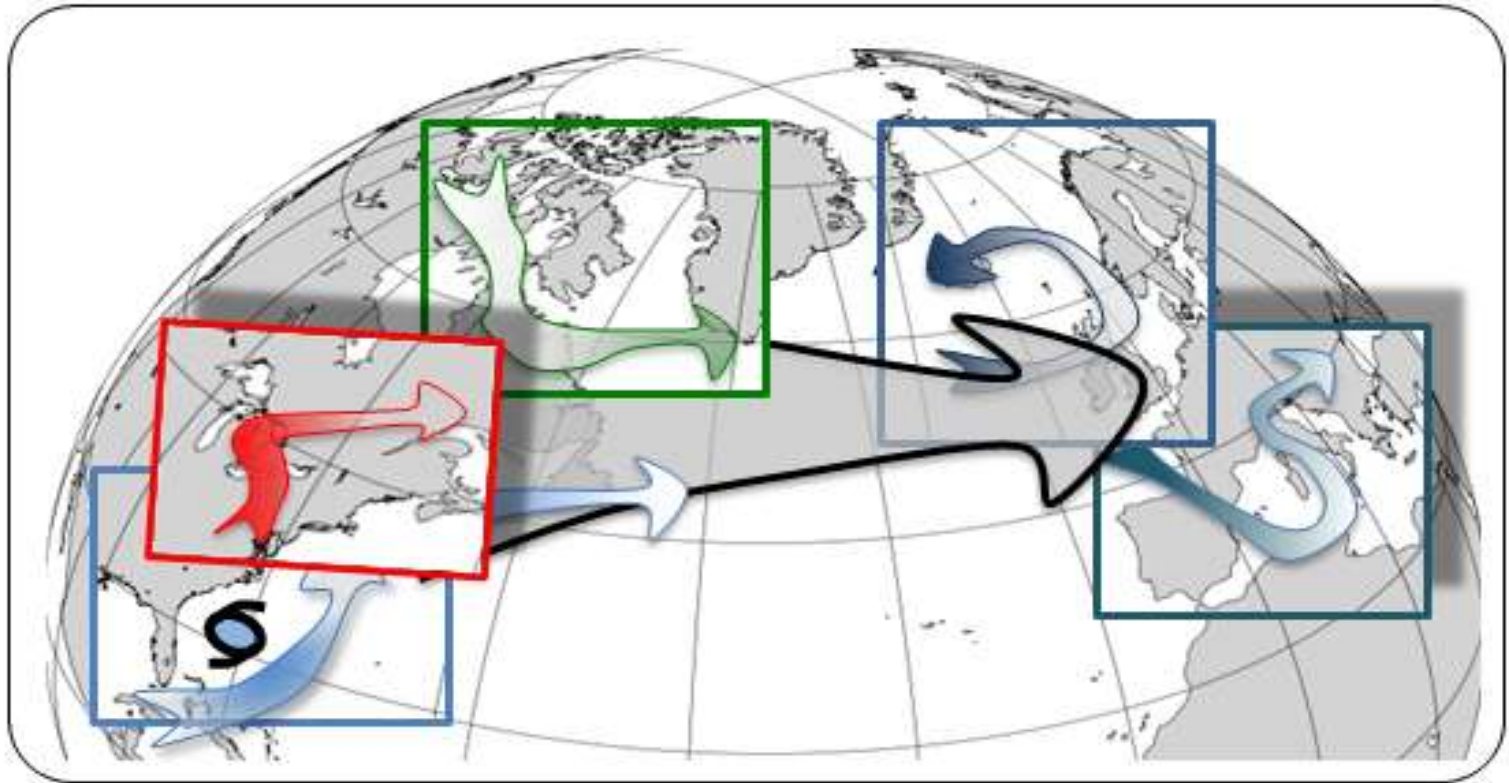


NAWDEX – Weather Discussion

02 October 2016, Keflavik 16 UTC



NAWDEX – Weather Discussion

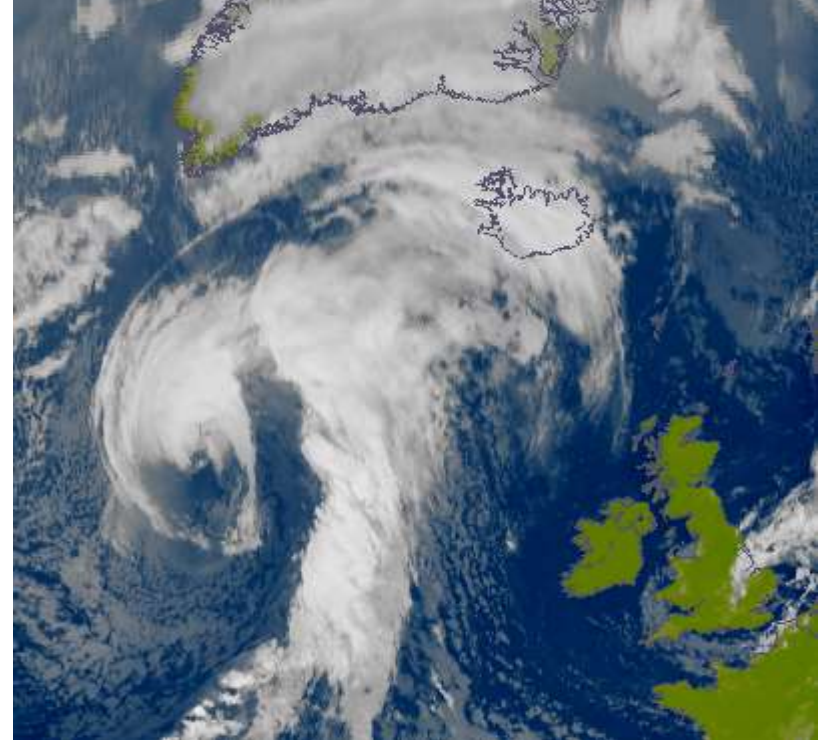
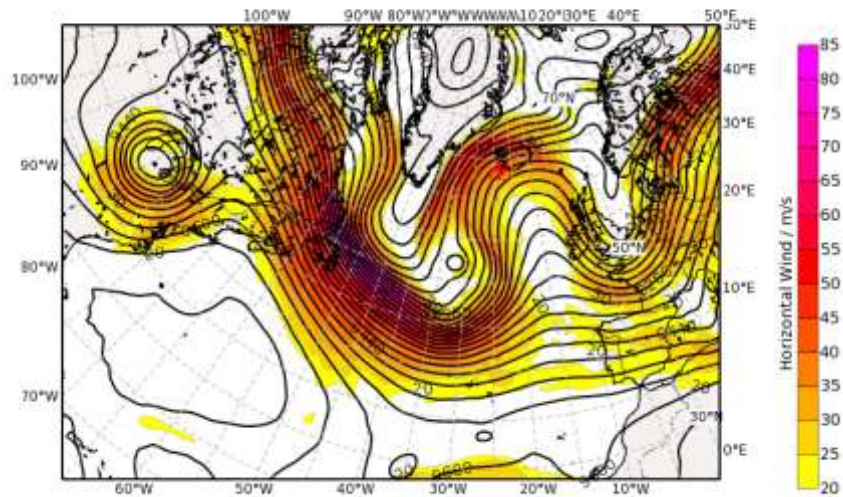
02 October 2016, Keflavik 16 UTC

Topics

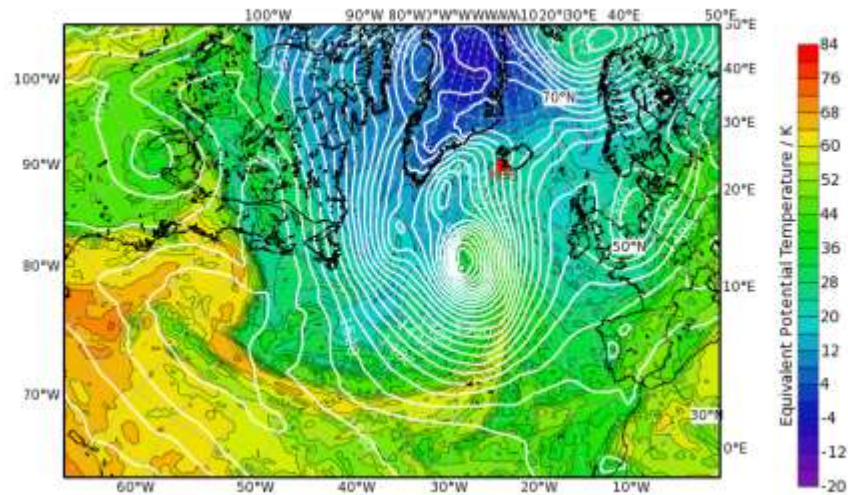
1. Sunday flights FALCON, SAFIRE
2. „frontal wave cyclone“ & associated strong WCB
 - Potential missions next week Tue-Thu
3. Strong poleward moisture transport Thu
4. Cut-off formation over Europe
5. Tropical cyclone activity in western North Atlantic

Analysis – 02 Oct 2016, 00 UTC

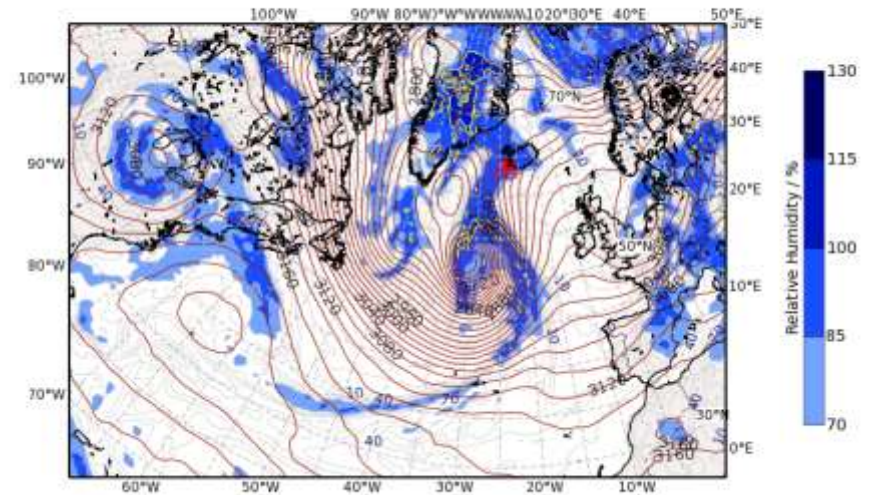
Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Sun, 02 Oct 2016, 00 UTC (step 000 h from Sun, 02 Oct 2016, 00 UTC)



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)

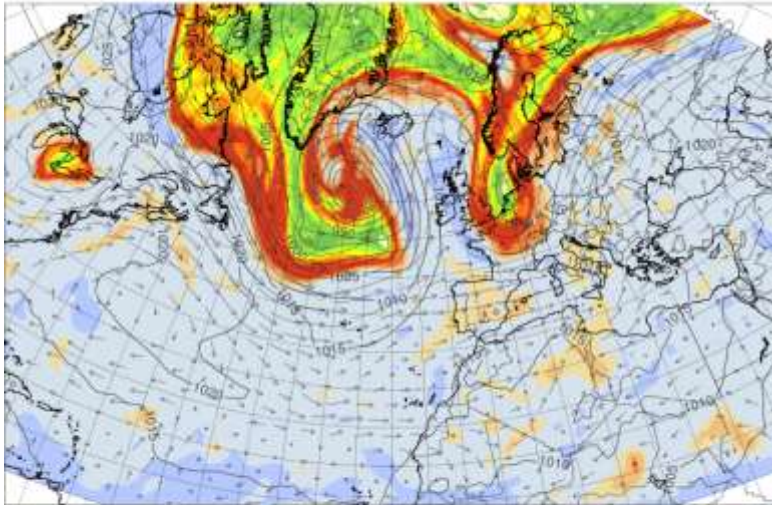


Relative Humidity (%) and Z (m) at 700 hPa
Valid: Sun, 02 Oct 2016, 00 UTC (step 000 h from Sun, 02 Oct 2016, 00 UTC)

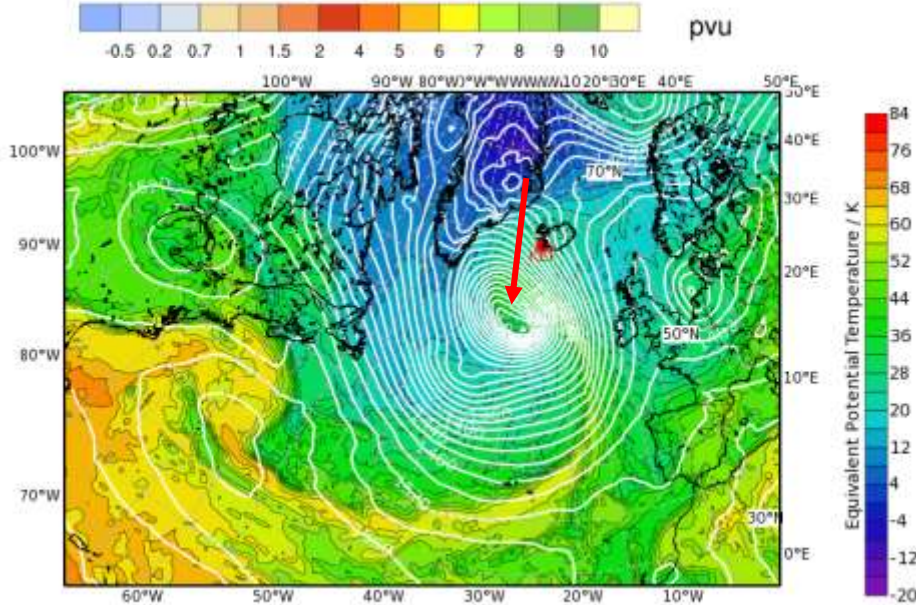
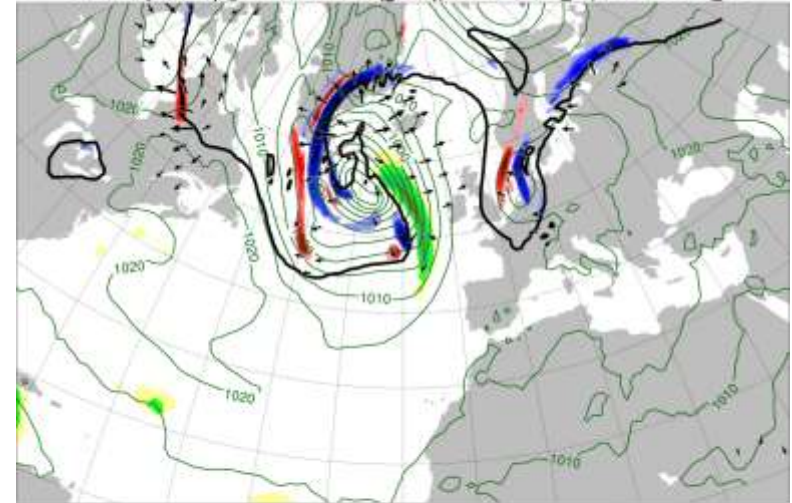


Forecast – Sun 2 Oct 2016, 12UTC PV320K, irrwind320K, THE850K, trajectories

PV@320K at 20161002_12



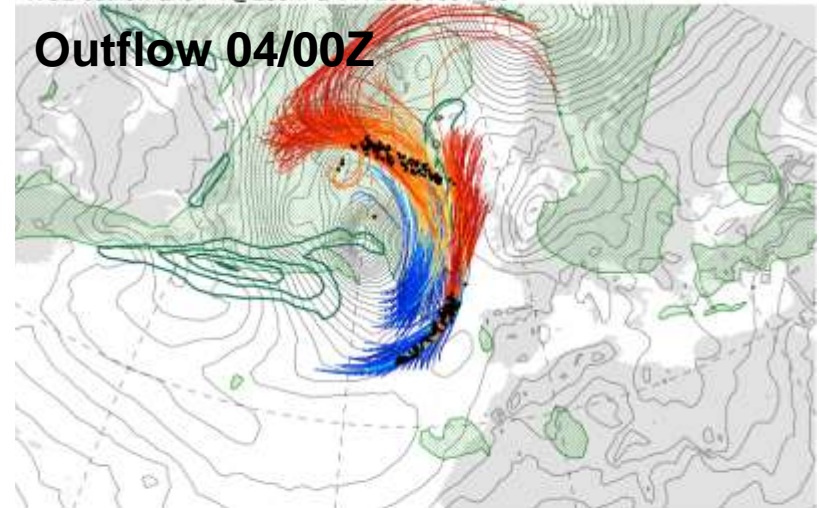
2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002_00, VT: 20161002_12



Saturday cyclone

Trajectory start and SLP VT: 20161002_00
WCB outflow and PV@250hPa VT: 20161004_00

Outflow 04/00Z



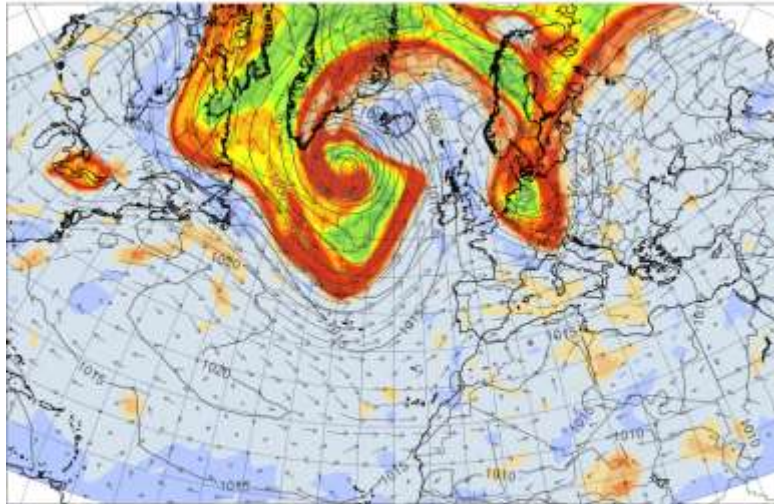
200 300 400 500 600 700 800 900 1000 hPa

BT02/00Z

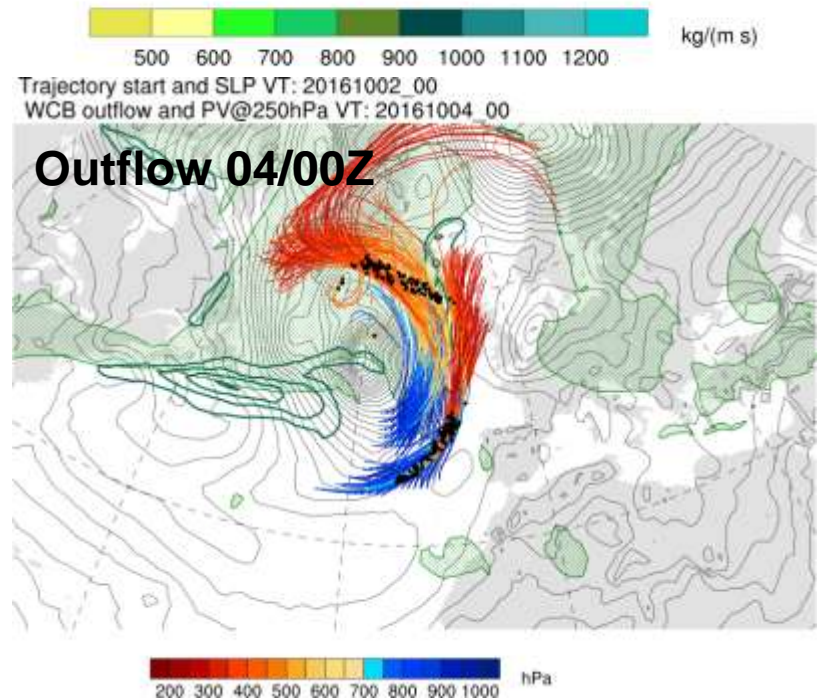
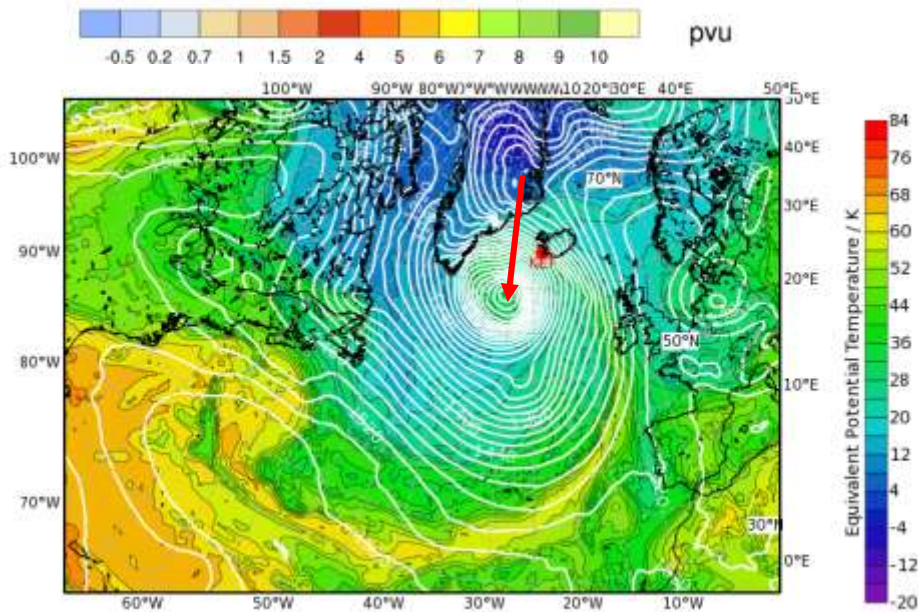
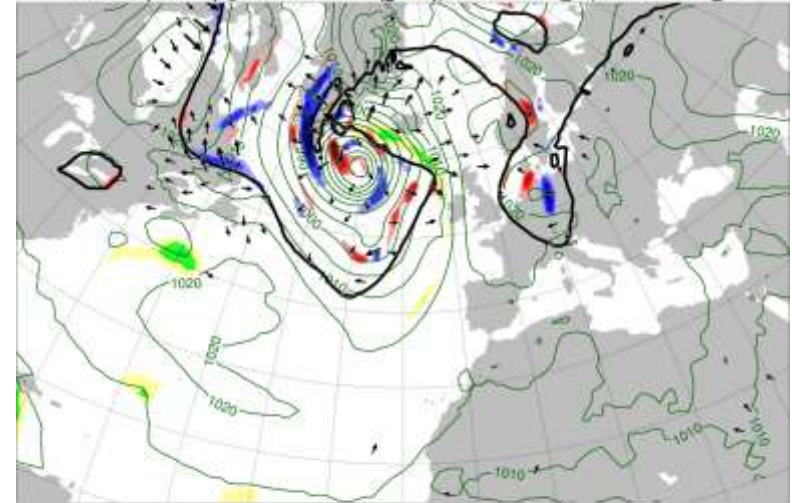
Keflavik, 02 October 2016

Forecast – Mon 3 Oct 2016, 00UTC PV320K, irrwind320K, THE850K, trajectories

PV@320K at 20161003_00

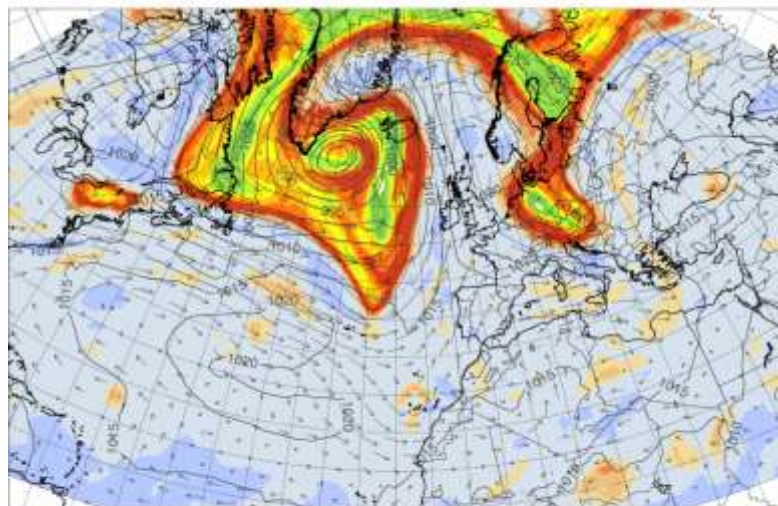


2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002_00, VT: 20161003_00

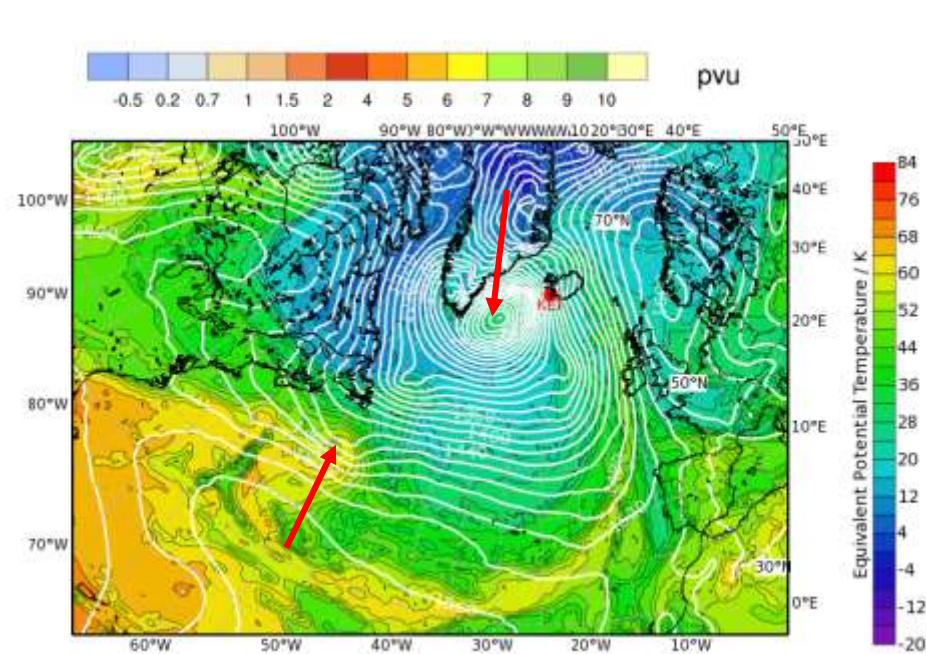
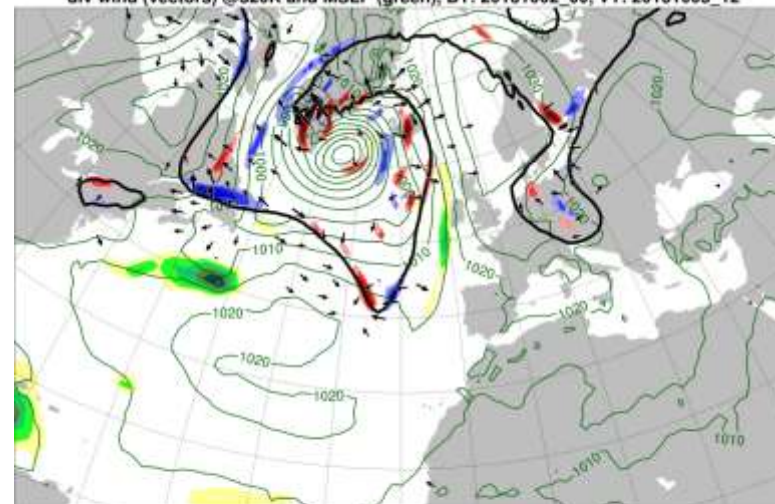


Forecast – Mon 3 Oct 2016, 12UTC

PV@320K at 20161003_12



2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002_00, VT: 20161003_12



New frontal wave

500 600 700 800 900 1000 1100 1200 kg/(m s)

Trajectory start and SLP VT: 20161002_00
WCB outflow and PV@250hPa VT: 20161004_00

Outflow 04/00Z

200 300 400 500 600 700 800 900 1000 hPa

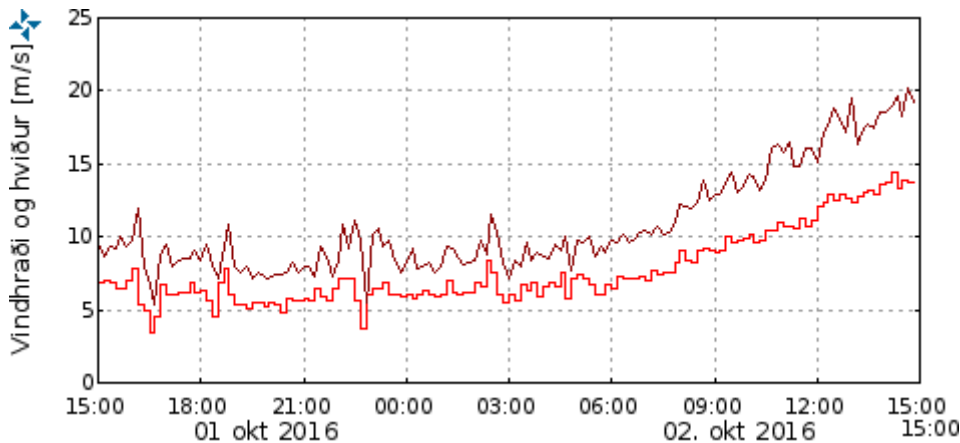
Outflow 04/00Z

BT02/00Z

Keflavik, 02 October 2016

Wind in KEF (BT 02/00z)

Wind speed in KEF on Sunday 2 October



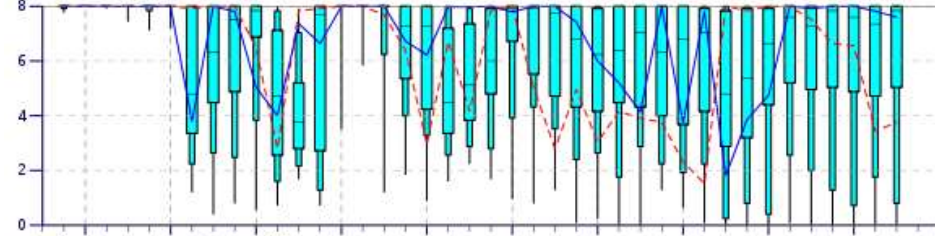
- Strong wind (15-20m/s) in KEF Sun 18UTC-03UTC, Mon 9UTC-15UTC, Wed 6-18UTC

ENS Meteogram

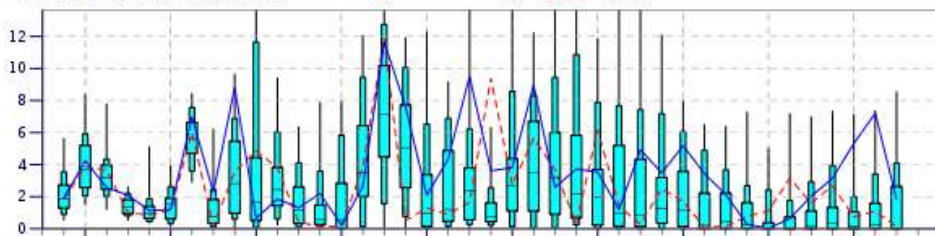
Keflavík, Iceland 63.89°N 22.26°W (ENS land point) 5 m

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

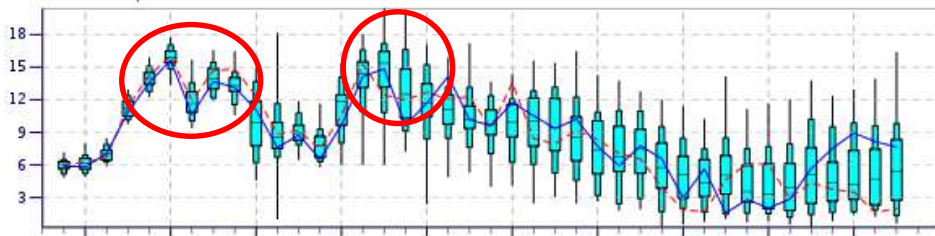
Total Cloud Cover (okta)



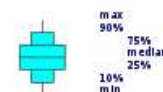
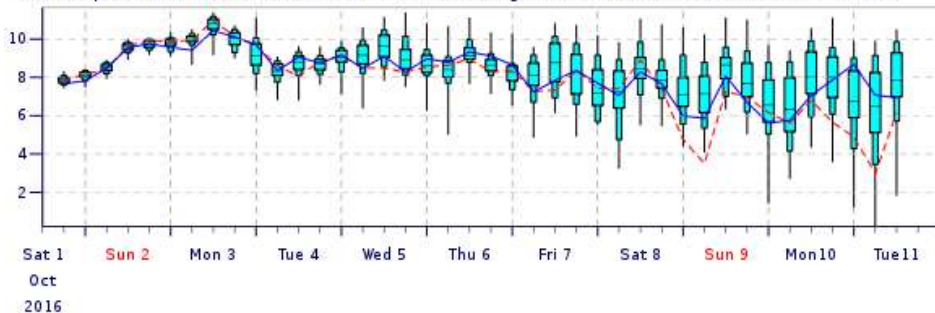
Total Precipitation (mm/6h)



10m Wind Speed (m/s)



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

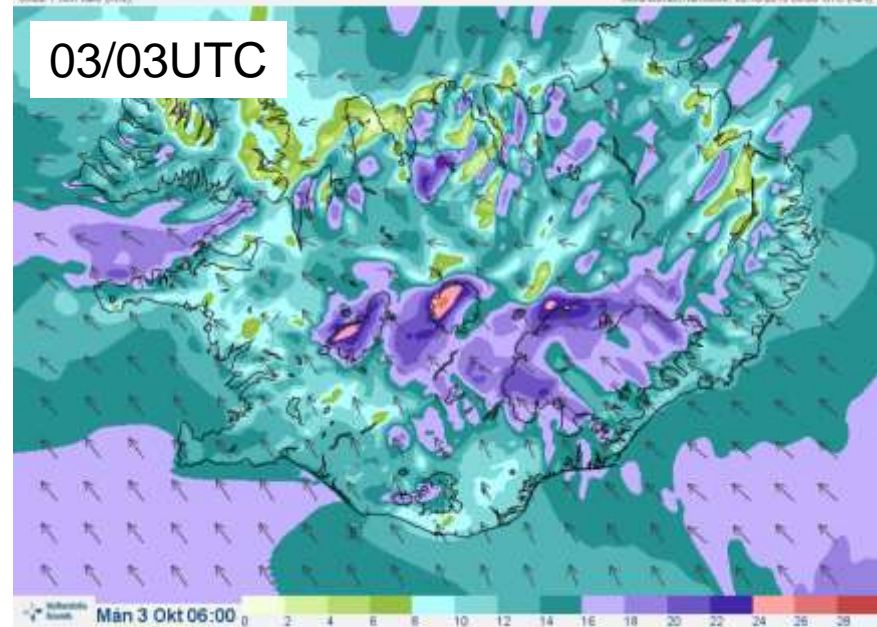
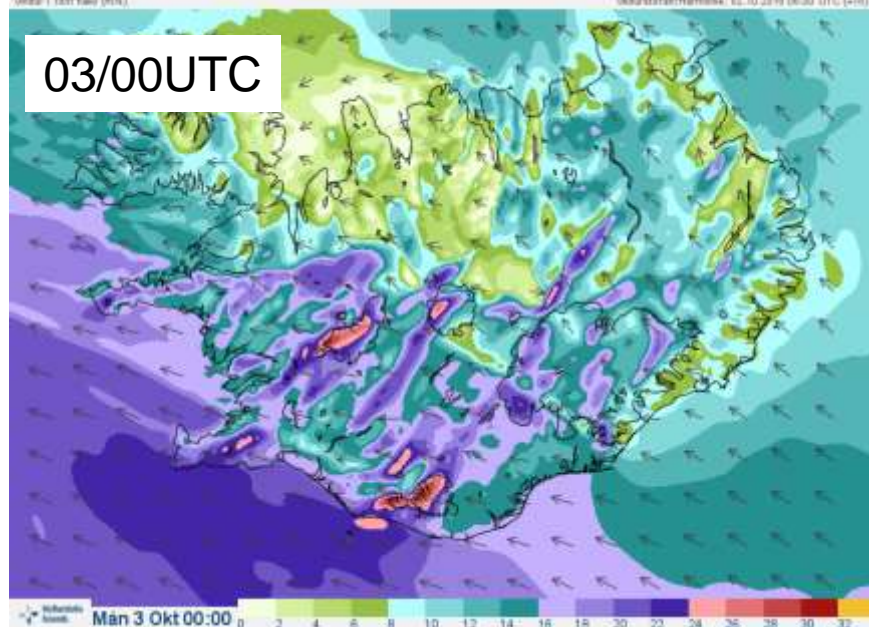
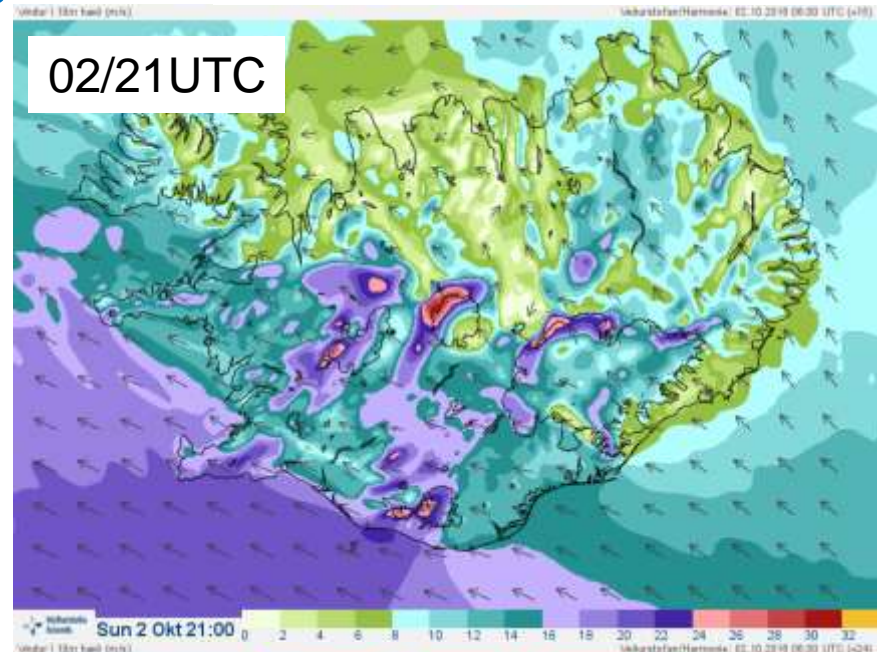
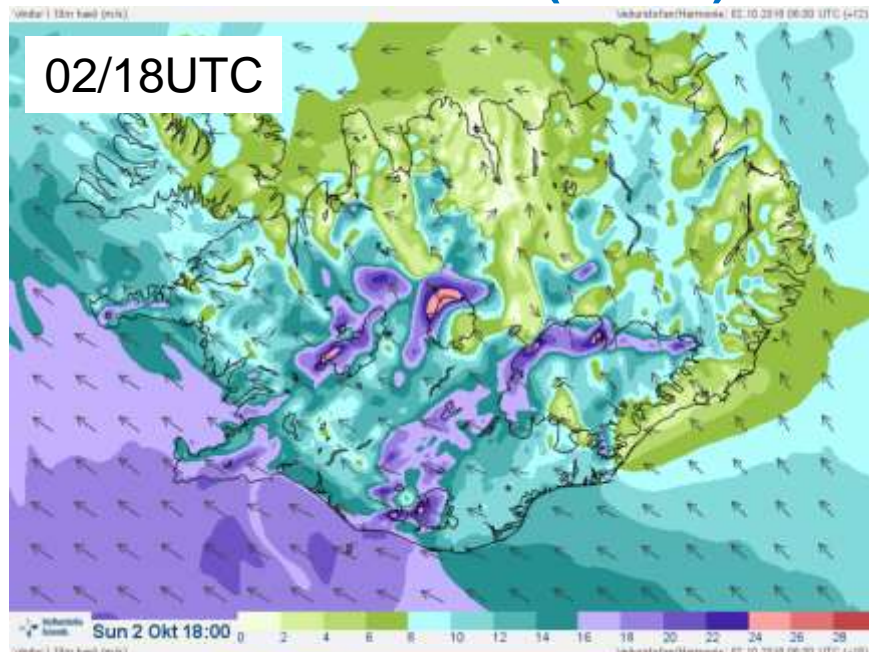


ENS Control(16 km)

High Resolution (8 km)

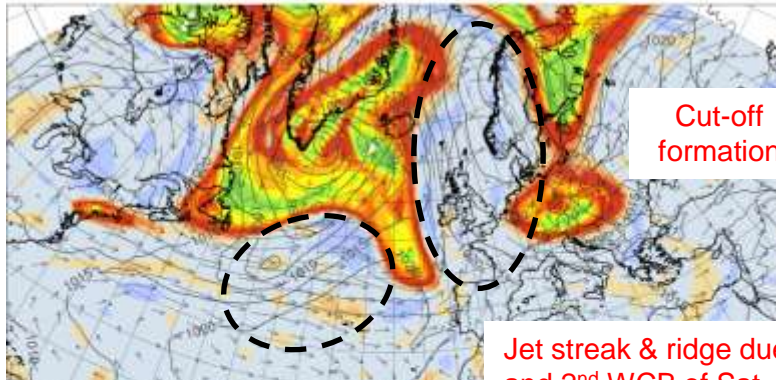
10m winds HARMONIE (2.5km) Sunday

HARMONIE vedur.is BT 02/06Z



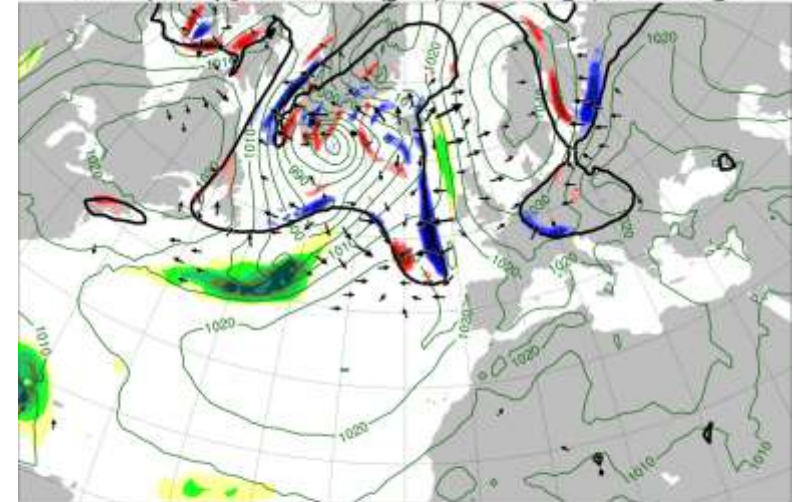
Forecast – Tue 4 Oct 2016, 00UTC PV320K, irrwind320K, THE850K, trajectories

PV@320K at 20161004_00

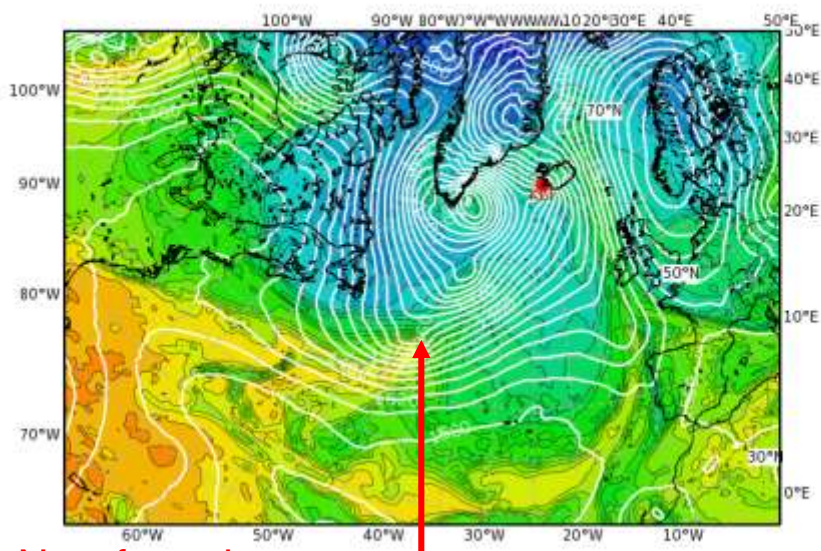


jet streak and incipient ridge-building with frontal wave WCB

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



pvu

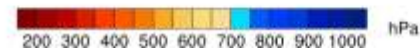
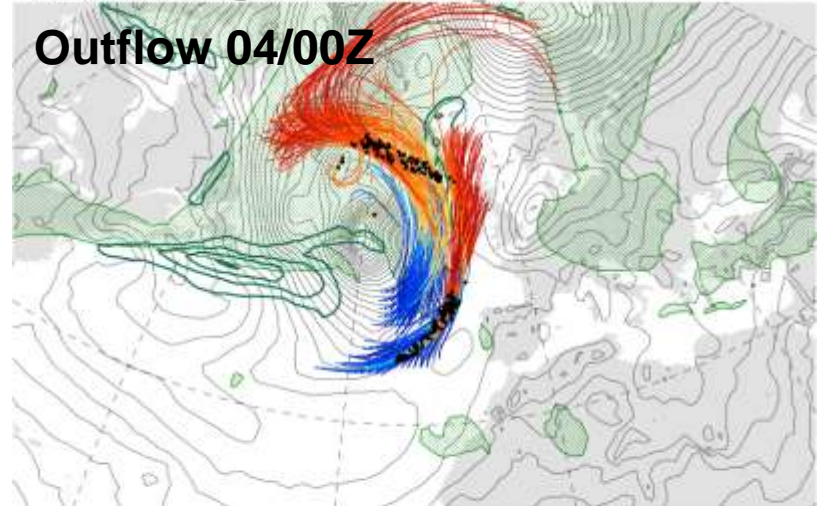


New frontal wave



Trajectory start and SLP VT: 20161002_00
WCB outflow and PV@250hPa VT: 20161004_00

Outflow 04/00Z

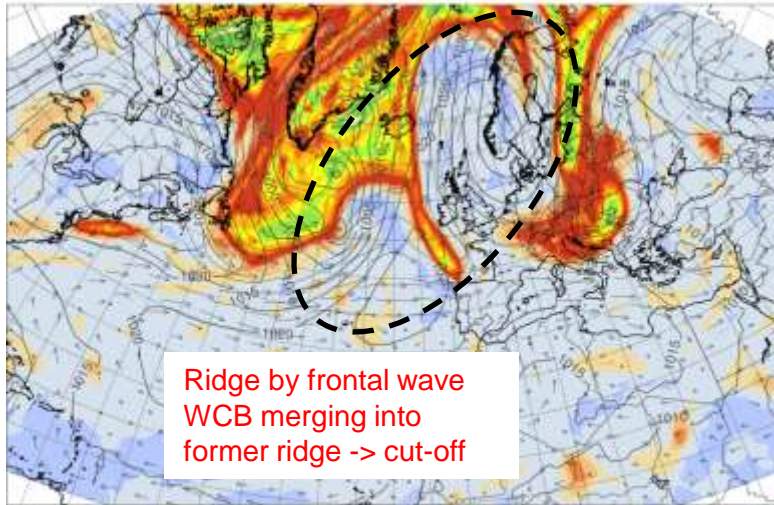


BT02/00Z

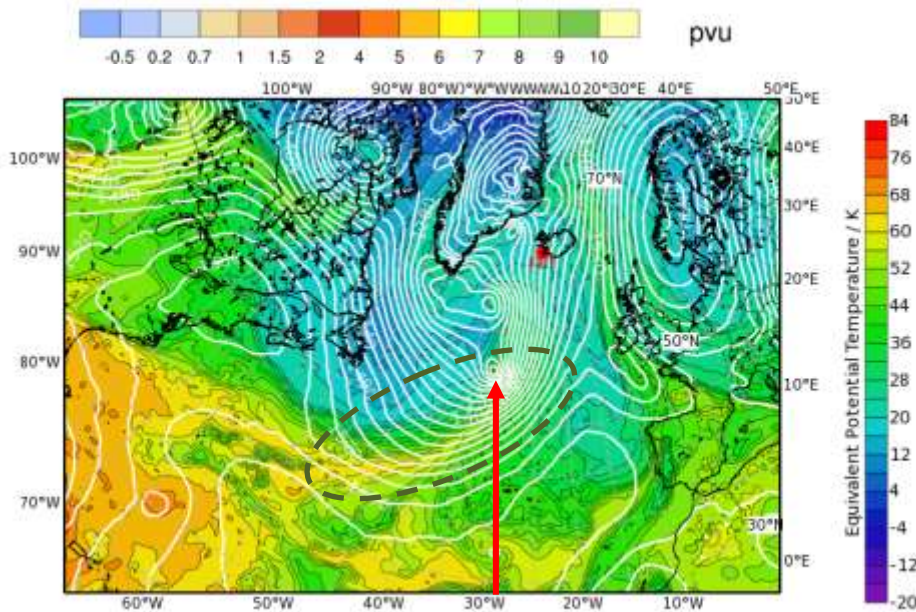
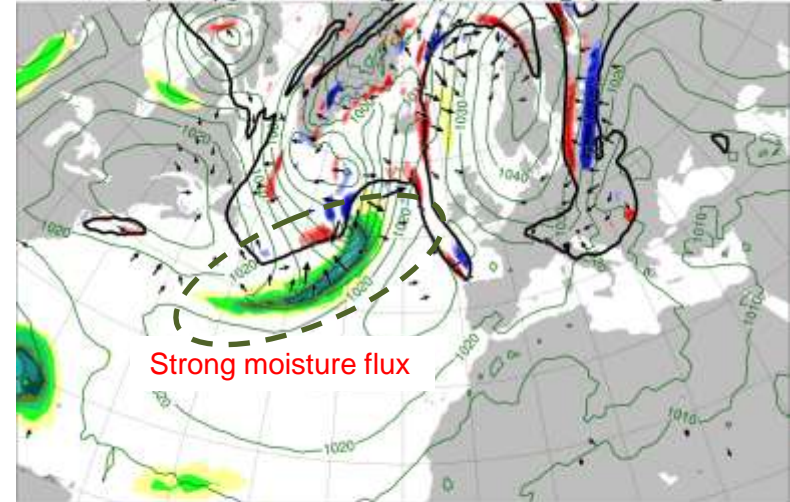
Keflavik, 02 October 2016

Forecast – Tue 4 Oct 2016, 12UTC PV320K, irrwind320K, THE850K, trajectories

PV@320K at 20161004_12



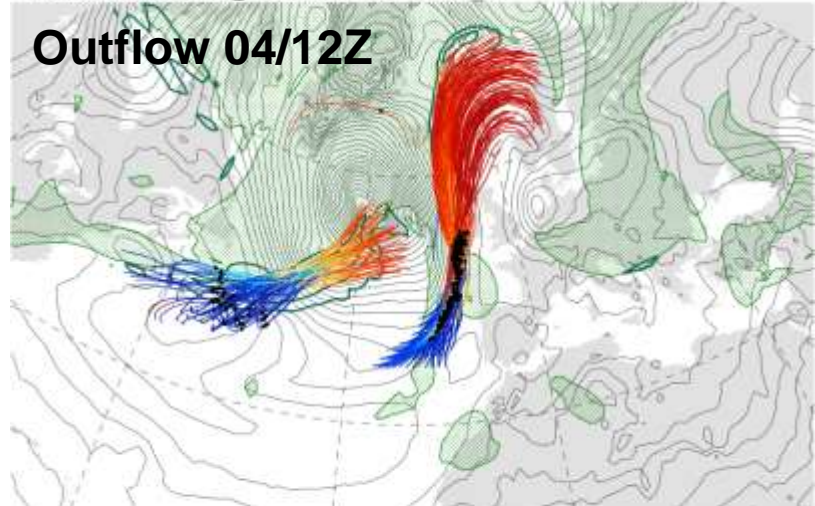
2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002_00, VT: 20161004_12



500 600 700 800 900 1000 1100 1200 kg/(m s)

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

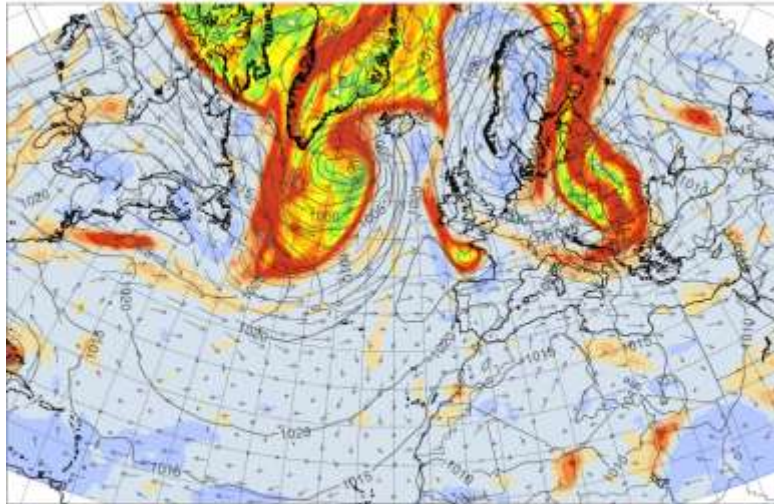
Outflow 04/12Z



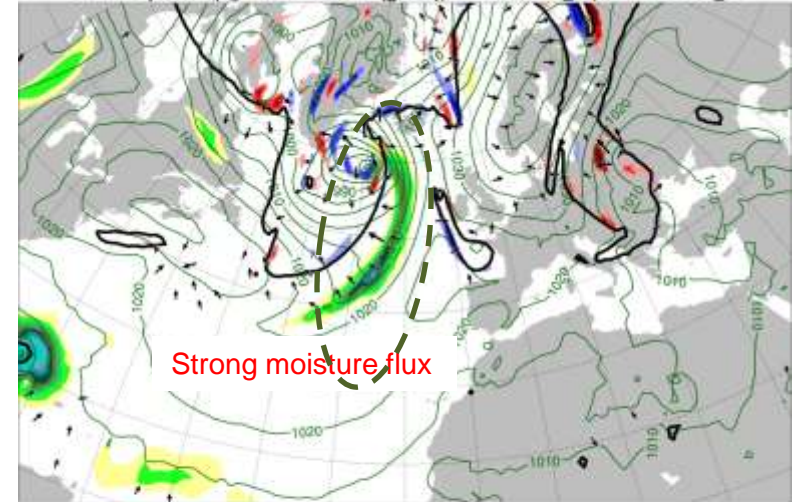
200 300 400 500 600 700 800 900 1000 hPa

Forecast – Wed 5 Oct 2016, 00UTC PV320K, irrwind320K, THE850K, trajectories

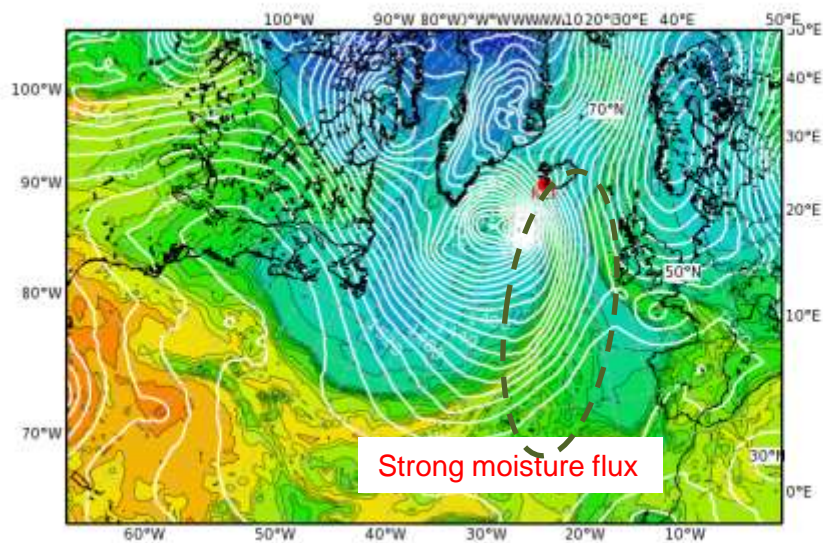
PV@320K at 20161005_00



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

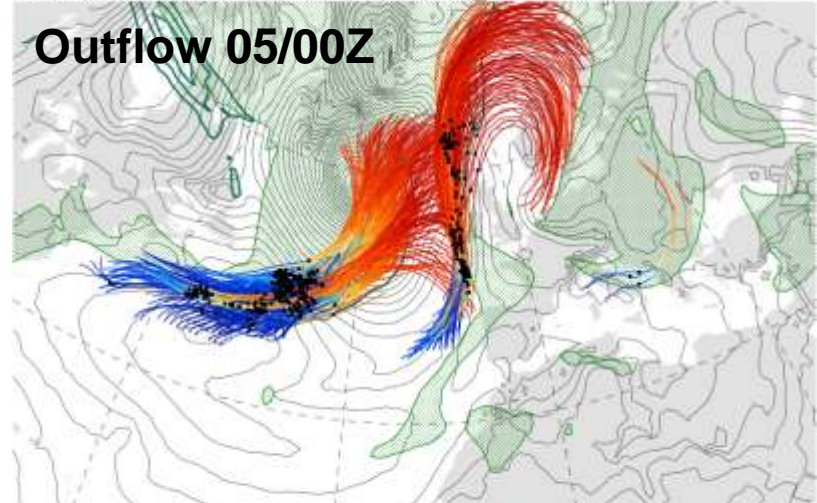


Color scale for PVU (Potential Vorticity Units): -0.5, 0.2, 0.7, 1, 1.5, 2, 4, 5, 6, 7, 8, 9, 10.



Color scale for moisture flux (kg/(m s)): 500, 600, 700, 800, 900, 1000, 1100, 1200.

Trajectory start and SLP VT: 20161003_00
WCB outflow and PV@250hPa VT: 20161005_00



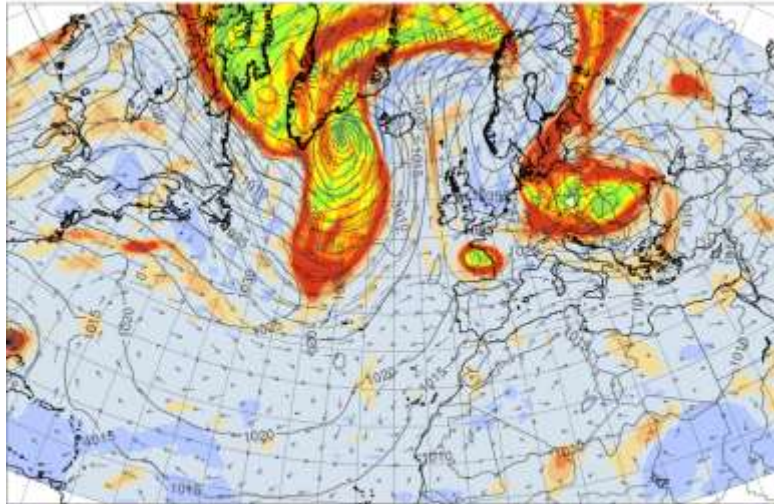
Color scale for hPa (height): 200, 300, 400, 500, 600, 700, 800, 900, 1000.

BT02/00Z

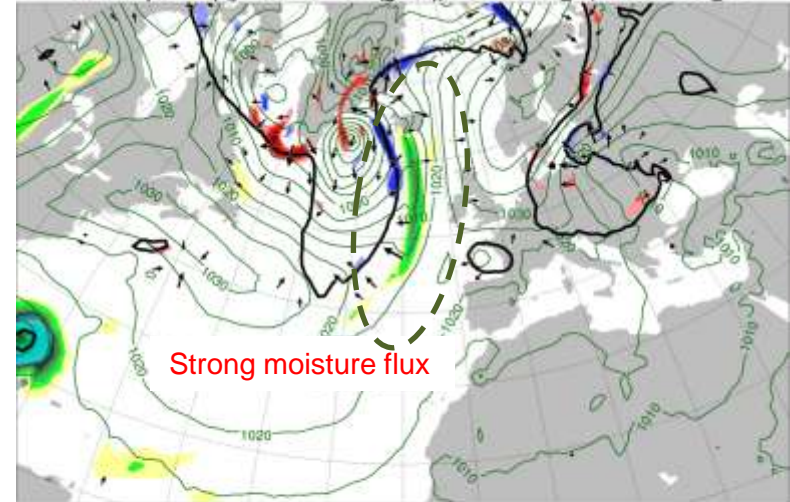
Keflavik, 02 October 2016

Forecast – Wed 5 Oct 2016, 12UTC PV320K, irrwind320K, THE850K, trajectories

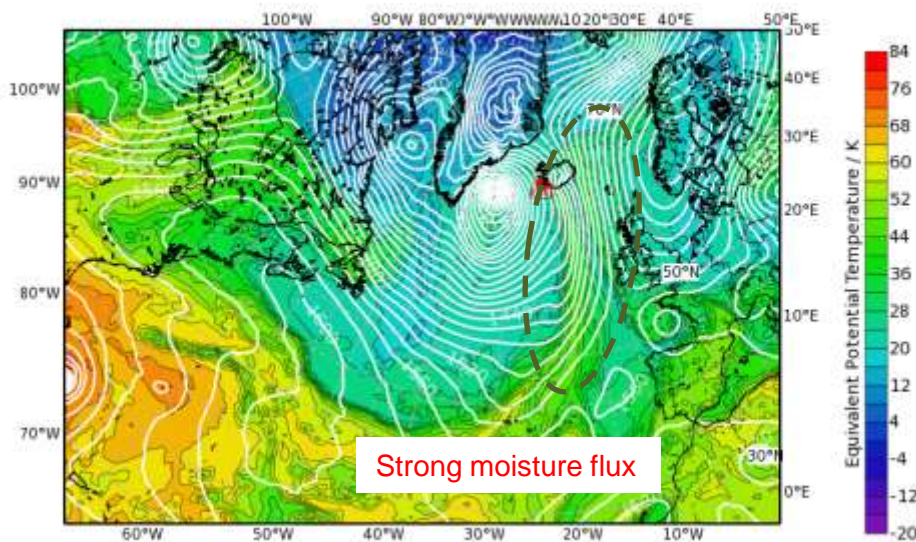
PV@320K at 20161005_12



2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002 00, VT: 20161005_12

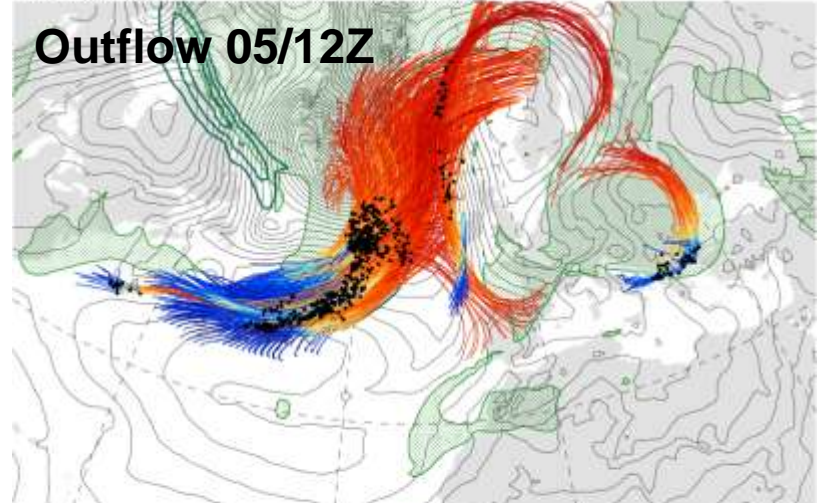


Color scale for PVU (black) and kg/(m s) (green).
-0.5 0.2 0.7 1 1.5 2 4 5 6 7 8 9 10 pvu



Color scale for kg/(m s) (green).
500 600 700 800 900 1000 1100 1200 kg/(m s)

Trajectory start and SLP VT: 20161003_12
WCB outflow and PV@250hPa VT: 20161005_12

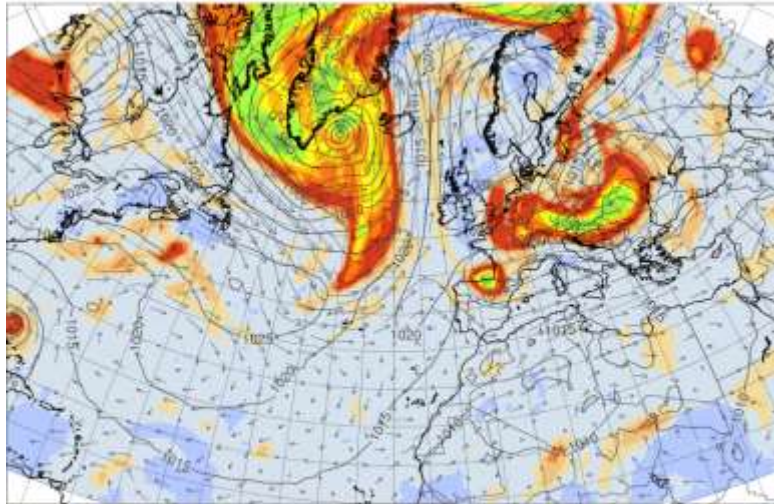


Outflow 05/12Z

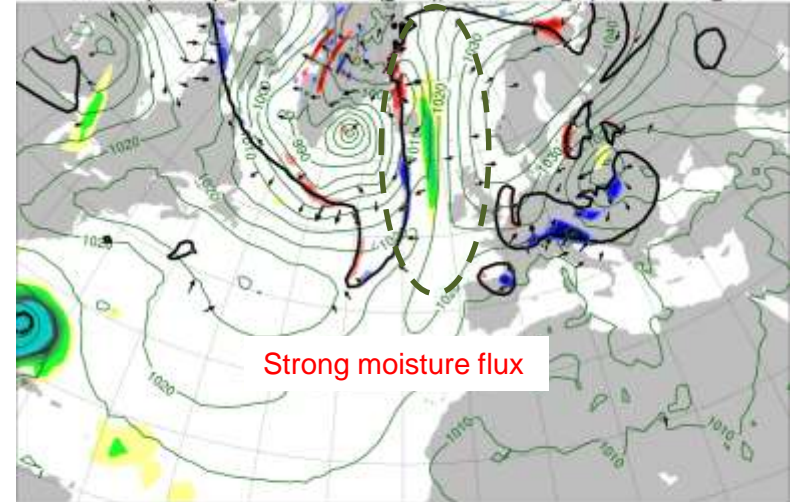
Color scale for hPa (red).
200 300 400 500 600 700 800 900 1000 hPa

Forecast – Thu 6 Oct 2016, 00UTC PV320K, irrwind320K, THE850K, trajectories

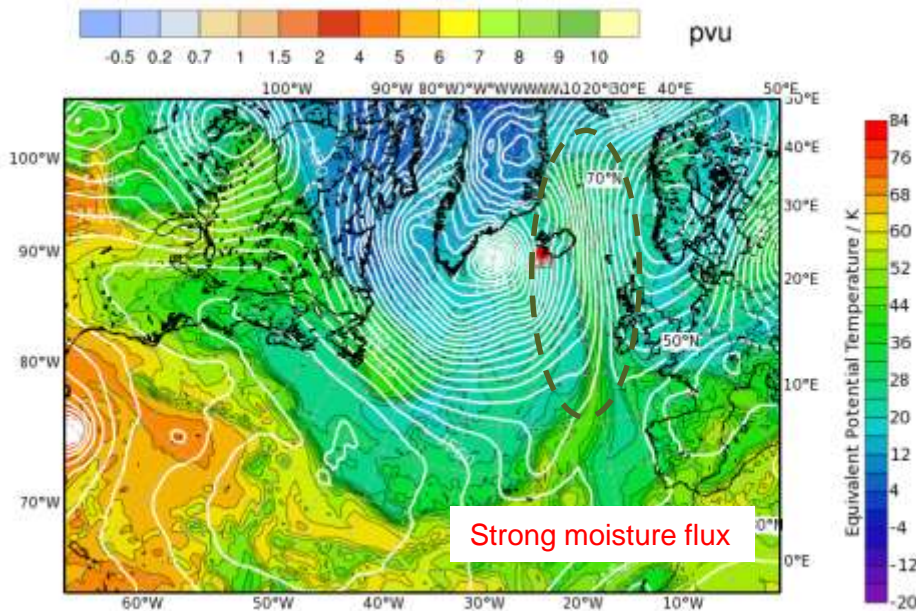
PV@320K at 20161006_00



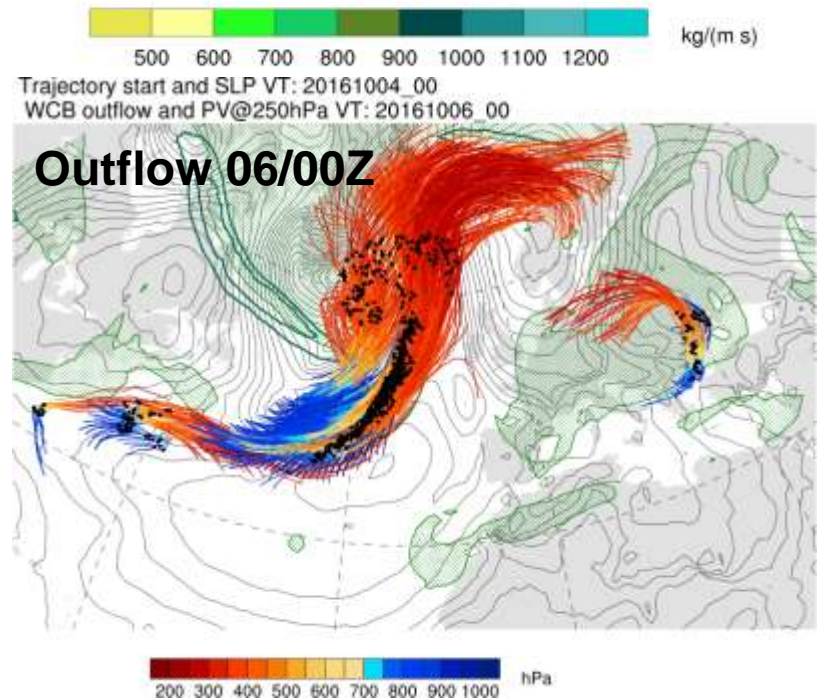
2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002 00, VT: 20161006_00



Strong moisture flux



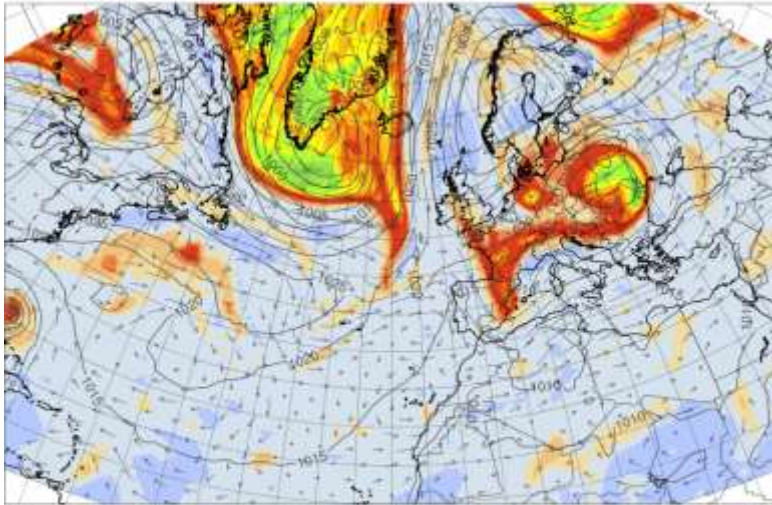
Strong moisture flux



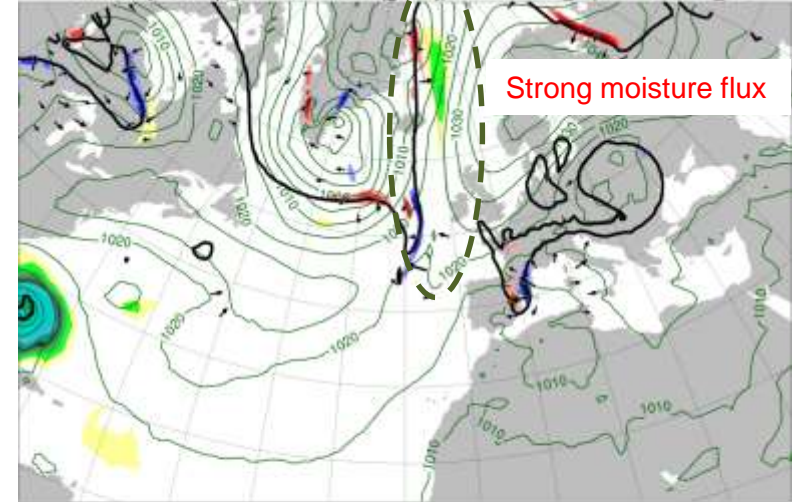
Outflow 06/00Z

Forecast – Thu 6 Oct 2016, 12UTC PV320K, irrwind320K, THE850K, trajectories

PV@320K at 20161006_12

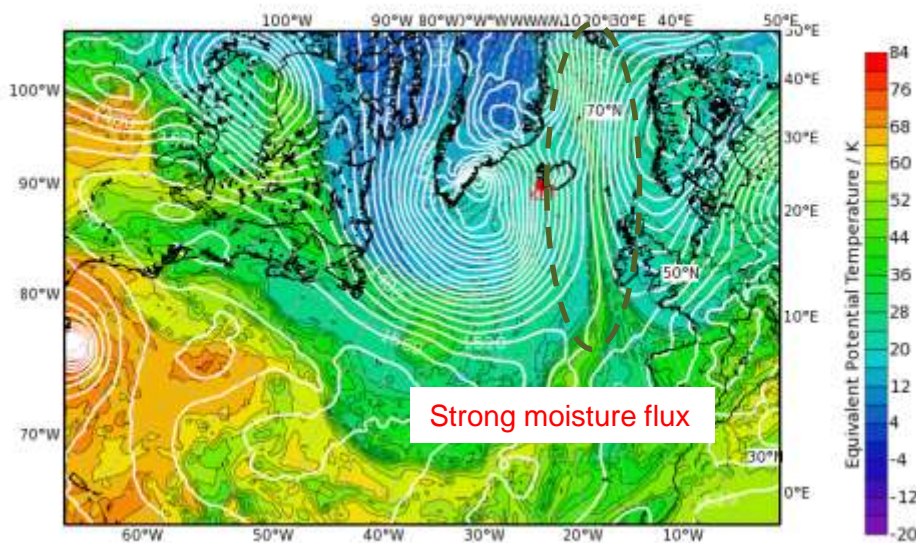


2 PVU (black), PV adv by div wind (shading), div wind (vectors) @320K and MSLP (green). BT: 20161002_00, VT: 20161006_12



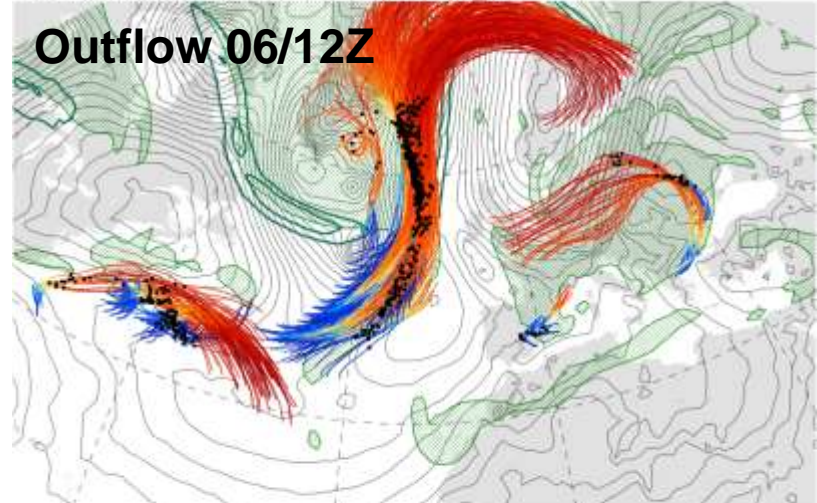
Strong moisture flux

Color scale for PVU (black) and moisture flux (kg/m s) ranging from 500 to 1200.



Strong moisture flux

Trajectory start and SLP VT: 20161004_12
WCB outflow and PV@250hPa VT: 20161006_12



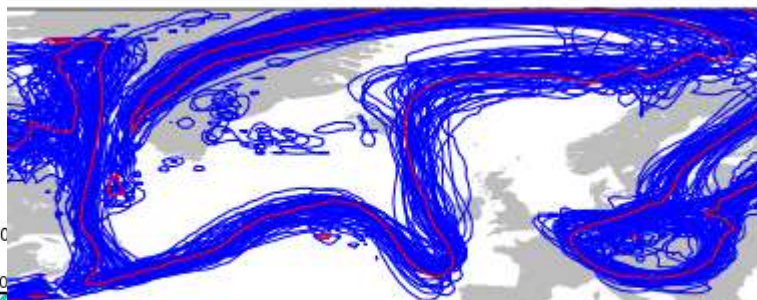
Outflow 06/12Z

Color scale for PVU (black) and moisture flux (kg/m s) ranging from 500 to 1200.

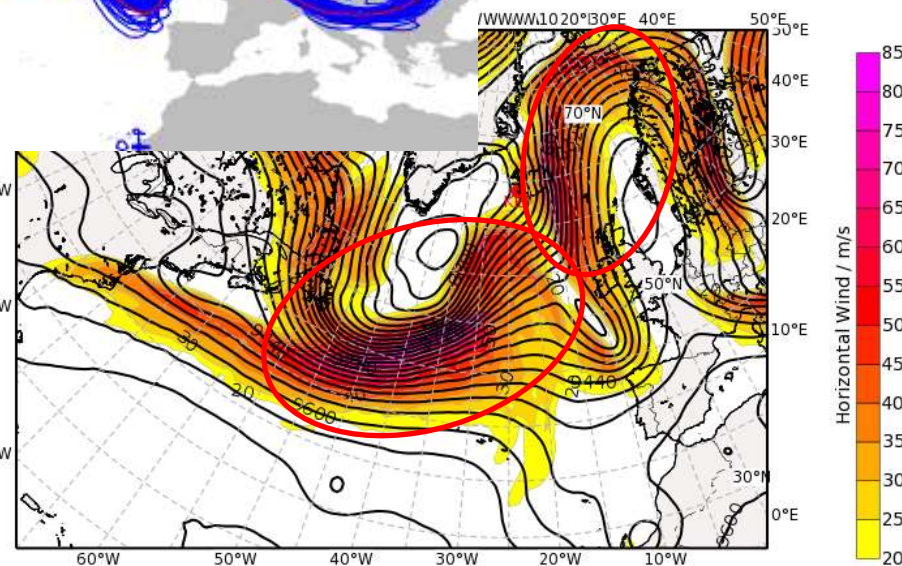
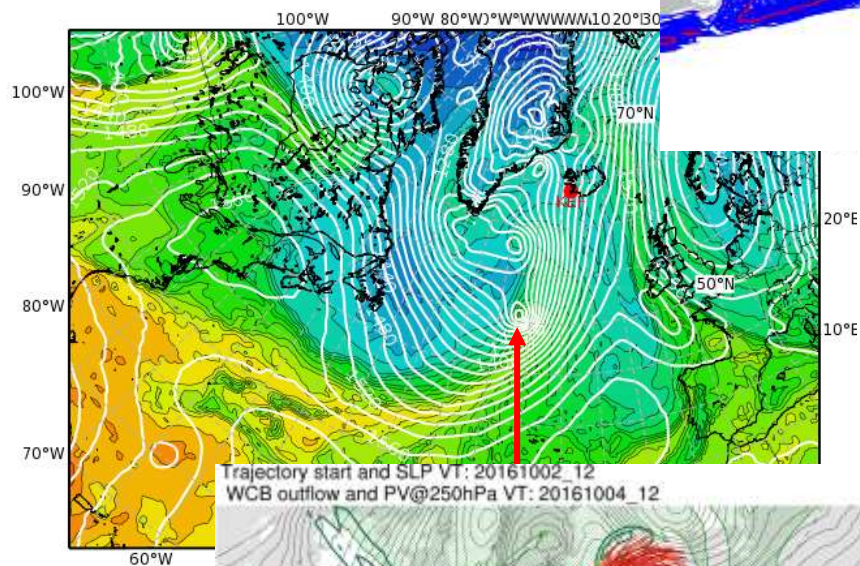
Discussion of the frontal wave cyclone Tue-Thu 4-6 Oct

Cut-off forming over Europe

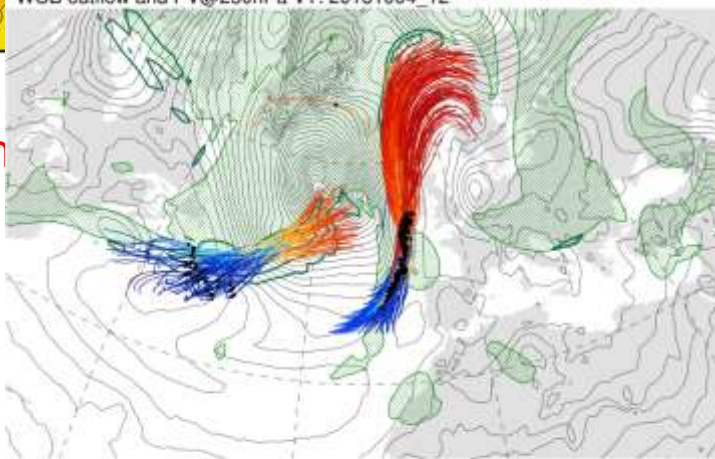
Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 04 Oct 2016, 12 UTC (step 060 h from Sun, 02 Oct 2016, 00 UTC)



hPa
02 Oct 2016, 00 UTC



New from



jet streak and incipient ridge-building with frontal wave WCB

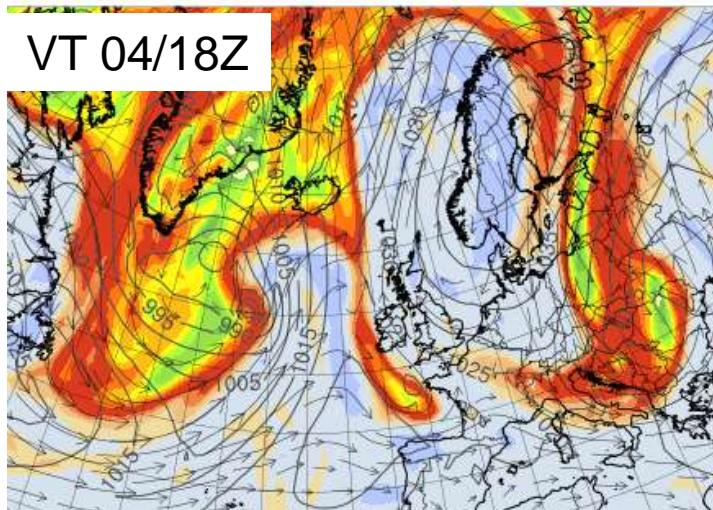
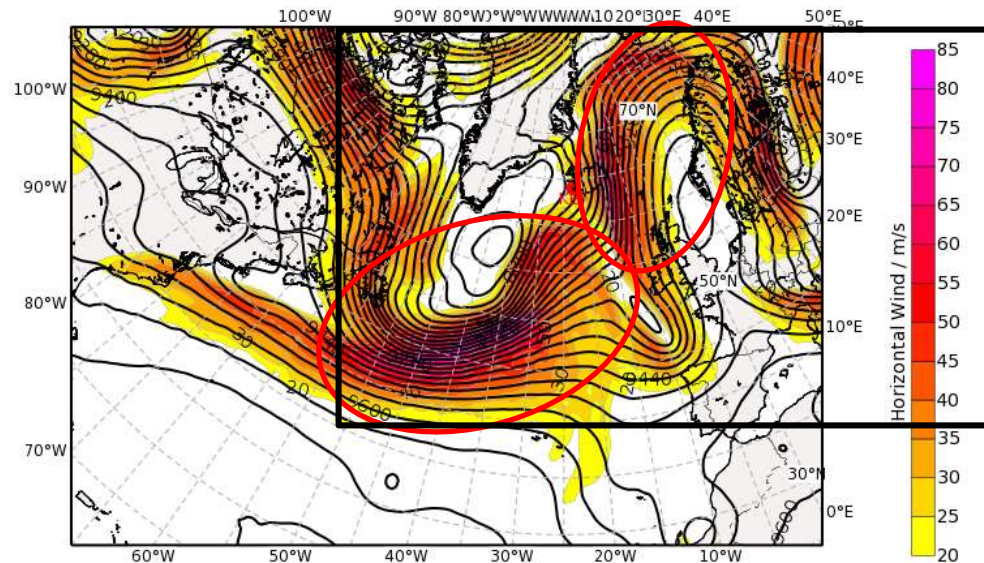
Jet streak & ridge due to 2nd WCB of Sat. cyclone

Forecast for Tue 04 Oct 2016 18 UTC

PV320, Z300 BT02/00Z

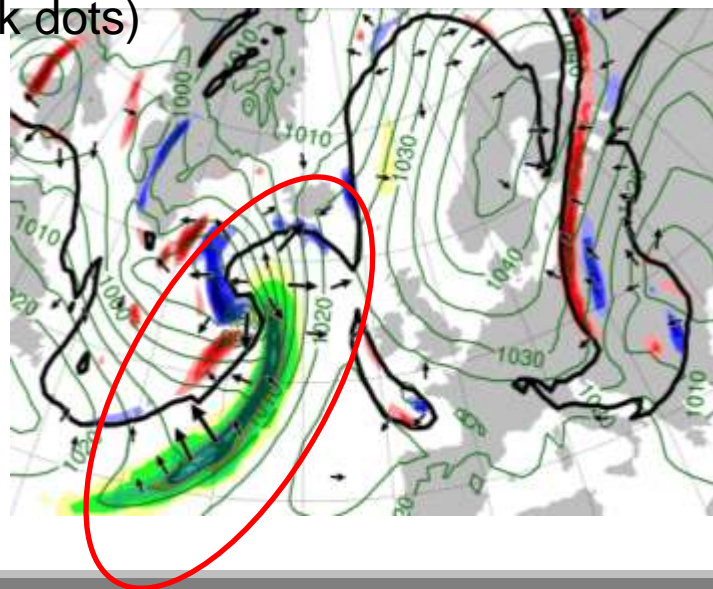
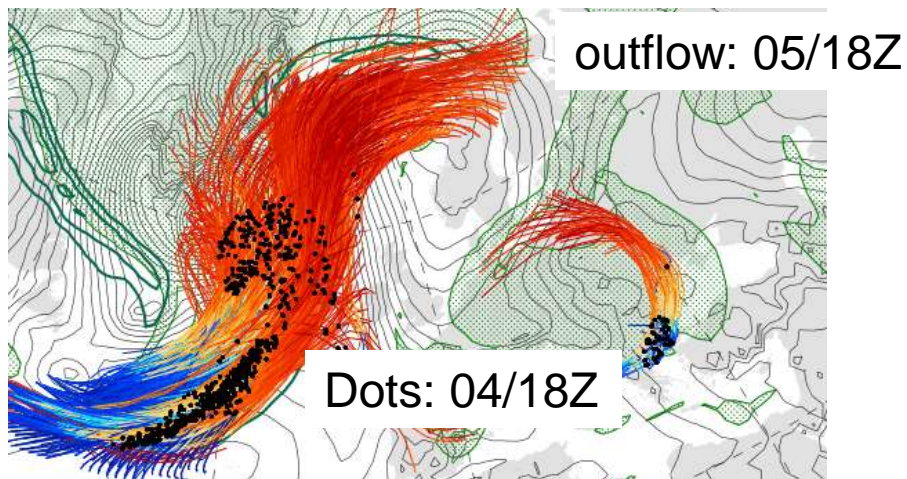
Traj, moisture flux/irrwind

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)



strong moisture flux

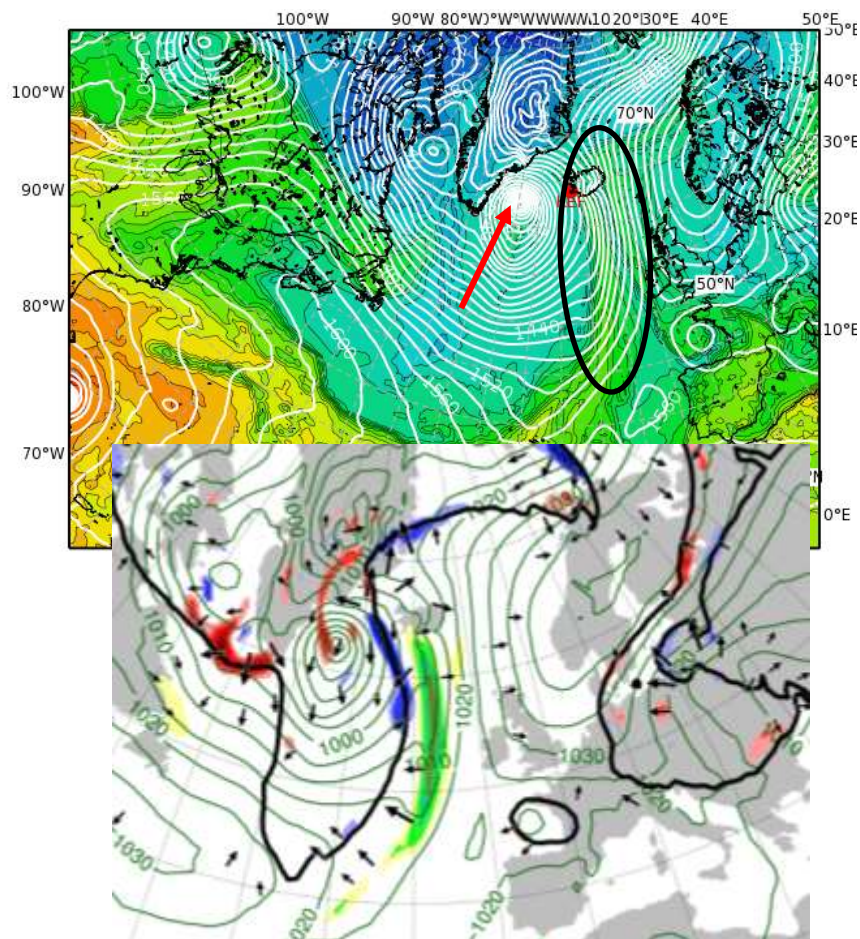
Trajectories having their ascent at 04/18Z (black dots)



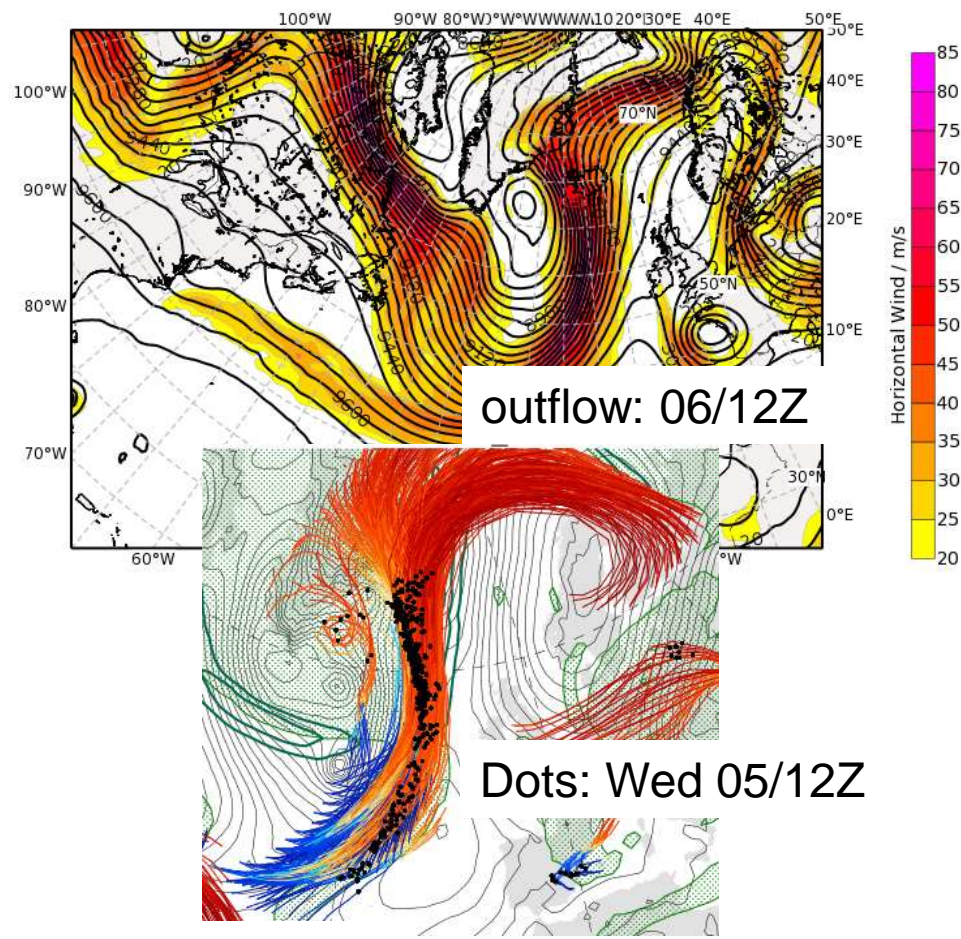
inflow: 03/18Z

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)

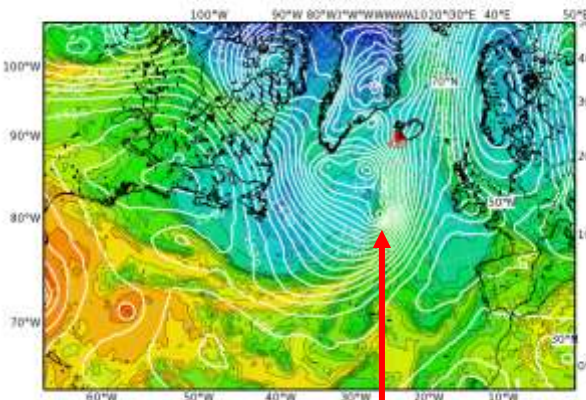


Geopotential Height (m) & Horizontal Wind (m/s) at 300 hPa
Valid: Wed, 05 Oct 2016, 12 UTC (step 084 h from Sun, 02 Oct 2016, 00 UTC)



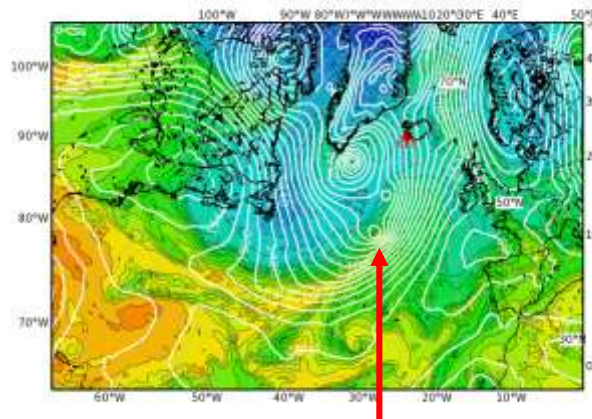
Model consistency for Tuesday 4 October 18UTC

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 04 Oct 2016, 18 UTC (step 090 h from Sat, 01 Oct 2016, 00 UTC)



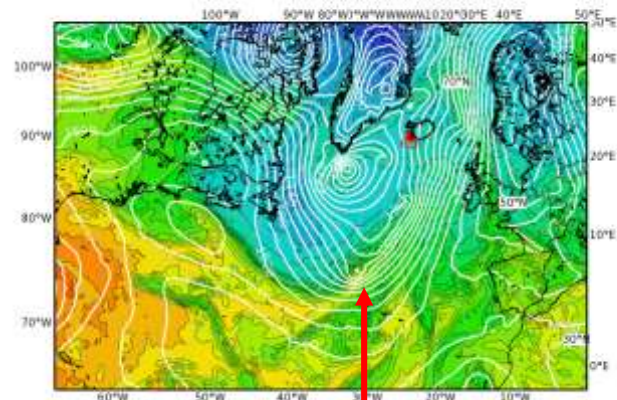
BT01/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 04 Oct 2016, 18 UTC (step 102 h from Fri, 30 Sep 2016, 12 UTC)



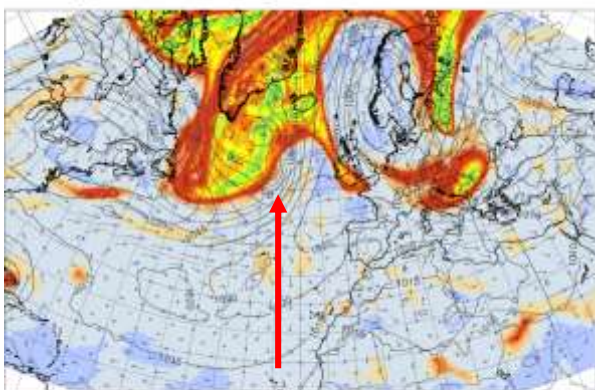
BT30/12Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 04 Oct 2016, 18 UTC (step 114 h from Fri, 30 Sep 2016, 00 UTC)

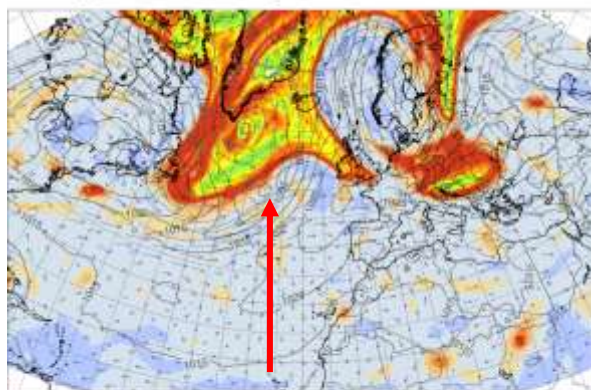


BT30/00Z

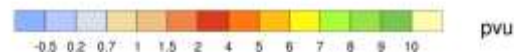
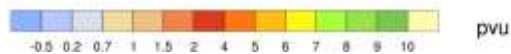
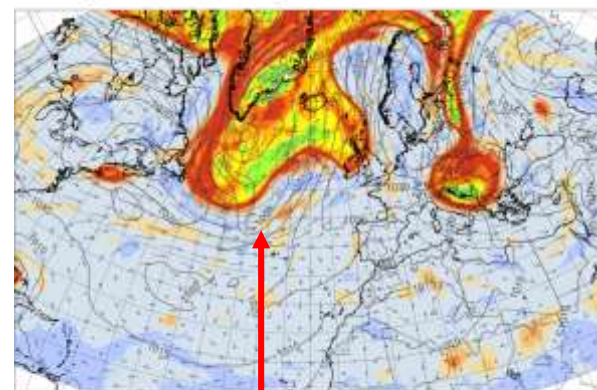
PV@320K at 20161004_18



PV@320K at 20161004_18

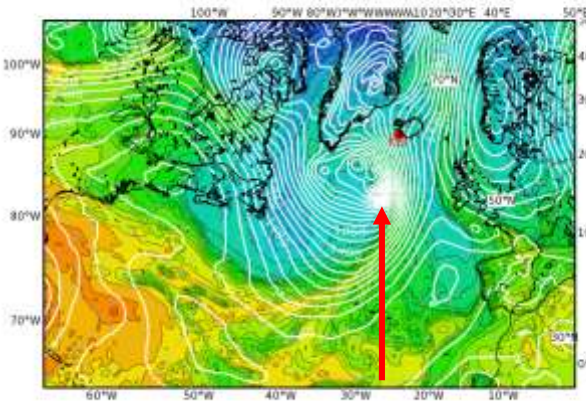


PV@320K at 20161004_18



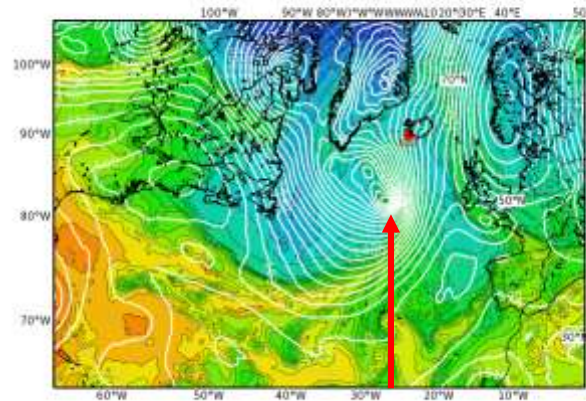
Model consistency for Tuesday 4 October 18UTC

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 04 Oct 2016, 18 UTC (step 066 h from Sun, 02 Oct 2016, 00 UTC)



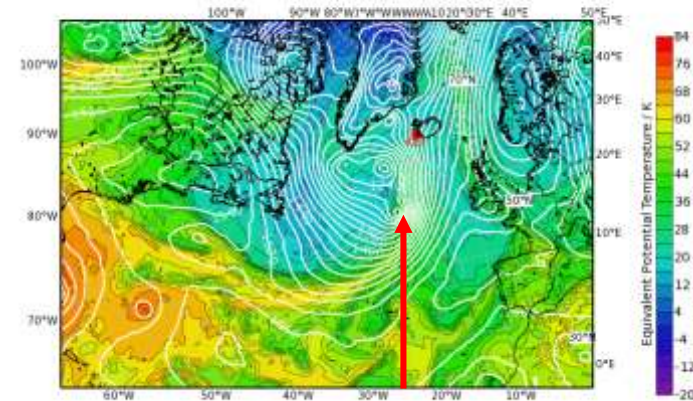
BT02/00Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 04 Oct 2016, 18 UTC (step 078 h from Sat, 01 Oct 2016, 12 UTC)



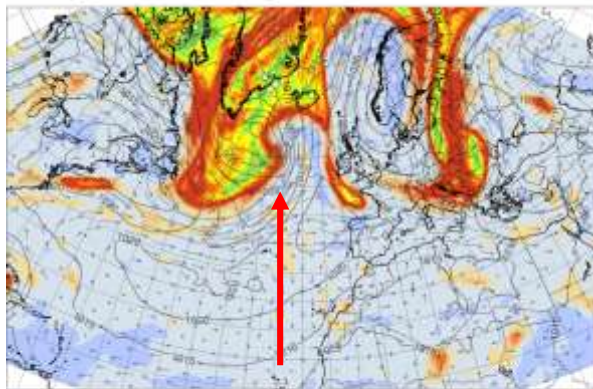
BT01/12Z

Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Tue, 04 Oct 2016, 18 UTC (step 090 h from Sat, 01 Oct 2016, 00 UTC)

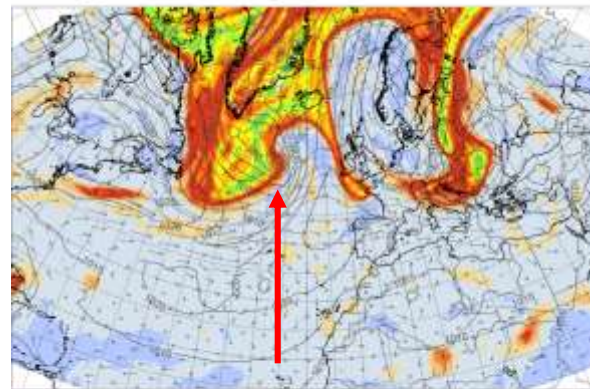


BT01/00Z

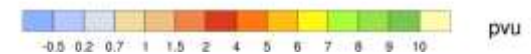
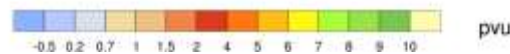
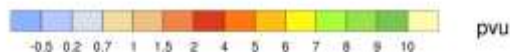
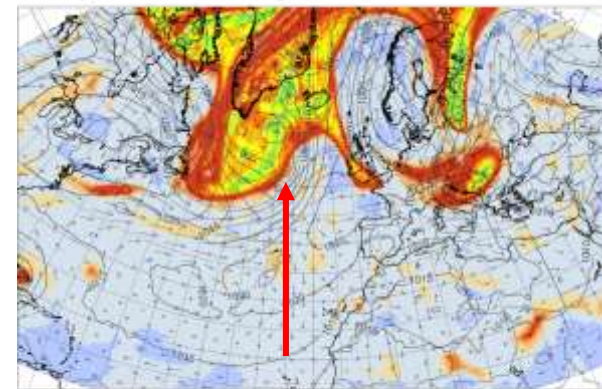
PV@320K at 20161004_18



PV@320K at 20161004_18



PV@320K at 20161004_18

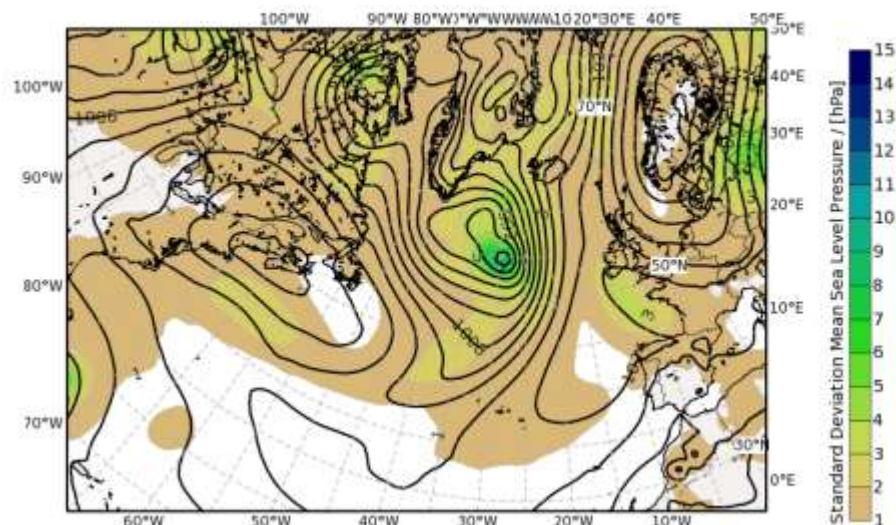


Model consistency for Tuesday 4 October 18UTC

ECMWF ENS MEAN & STDEV for MSLP / [hPa]

Valid: Tue, 04 Oct 2016, 18 UTC (step 066 h from Sun, 02 Oct 2016, 00 UTC)

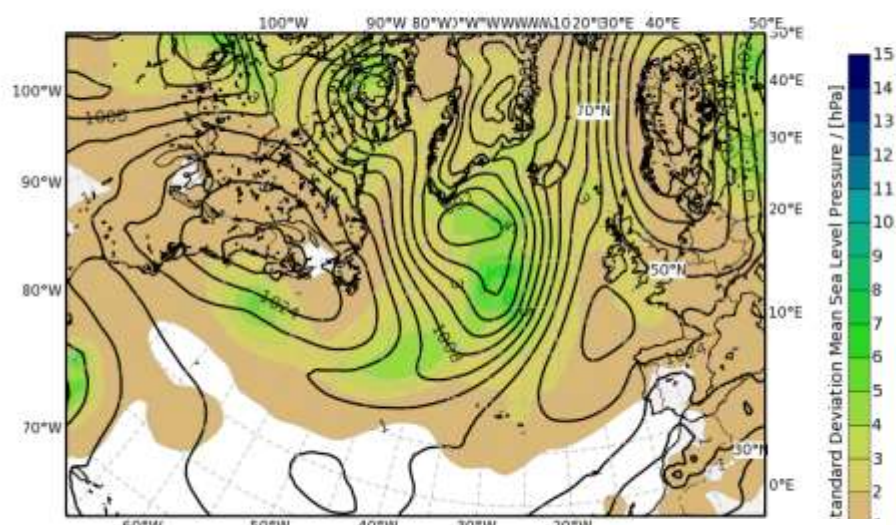
BT02/00Z



ECMWF ENS MEAN & STDEV for MSLP / [hPa]

Valid: Tue, 04 Oct 2016, 18 UTC (step 090 h from Sat, 01 Oct 2016, 00 UTC)

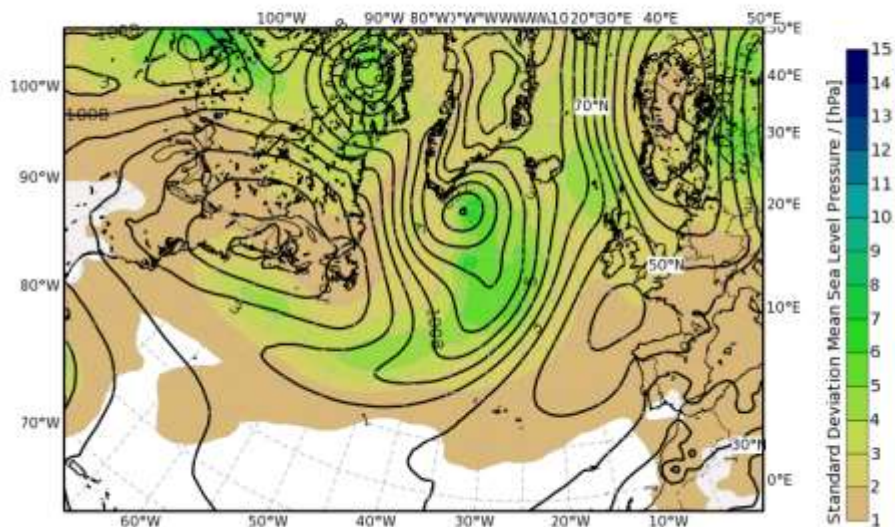
BT01/00Z



ECMWF ENS MEAN & STDEV for MSLP / [hPa]

Valid: Tue, 04 Oct 2016, 18 UTC (step 102 h from Fri, 30 Sep 2016, 12 UTC)

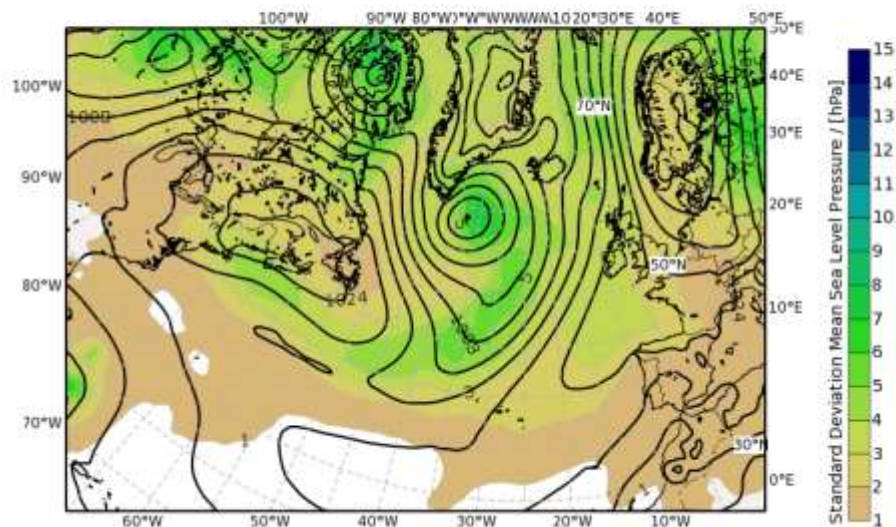
BT30/12Z



ECMWF ENS MEAN & STDEV for MSLP / [hPa]

Valid: Tue, 04 Oct 2016, 18 UTC (step 114 h from Fri, 30 Sep 2016, 00 UTC)

BT30/00Z

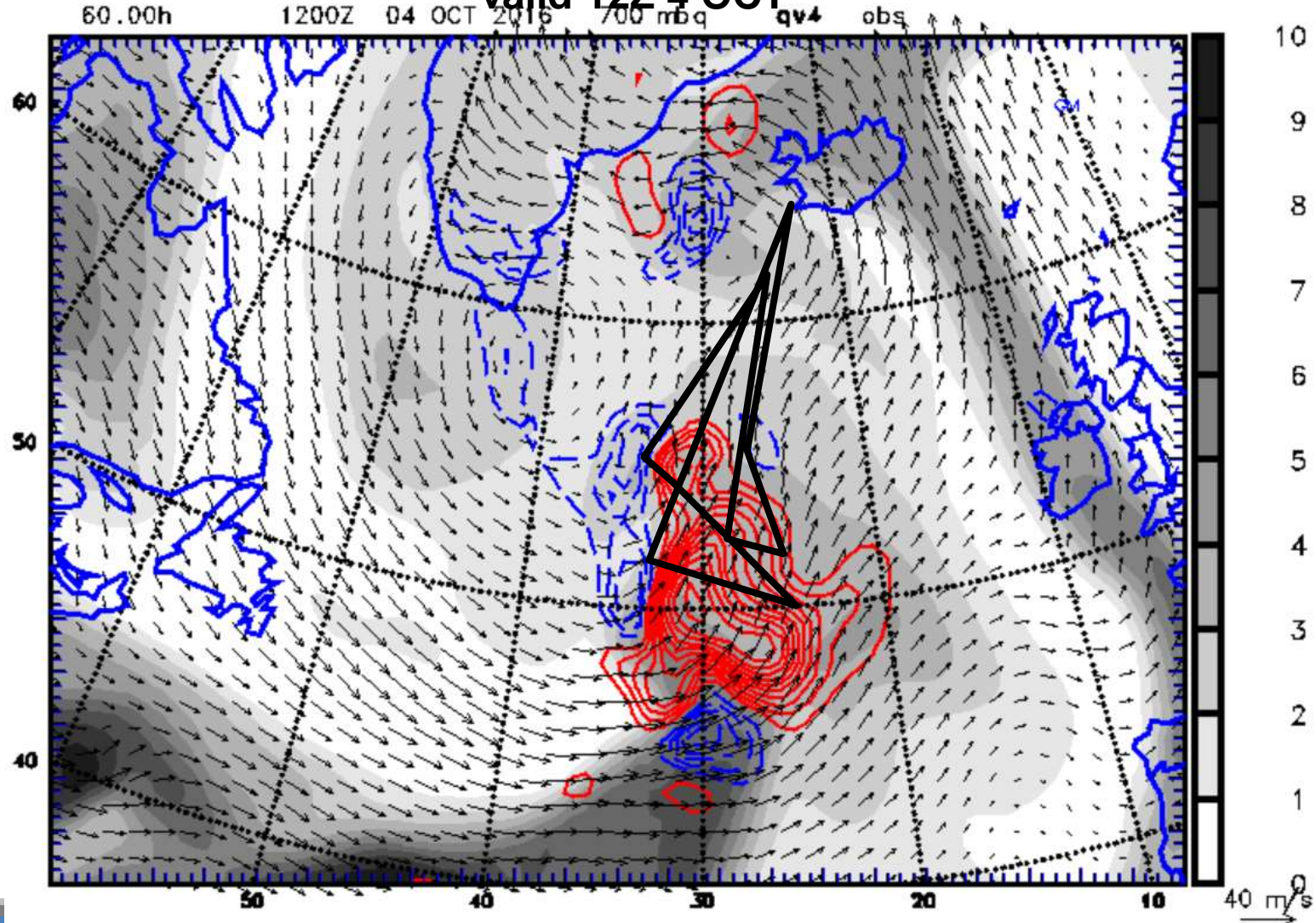


COAMPS Sensitivity (24h) Valid 12Z 4 Oct (Tuesday Flight)

Box centered on cyclone (kinetic energy – Cyclone Intensity)

q Sensitivity and water vapor at 700 hPa

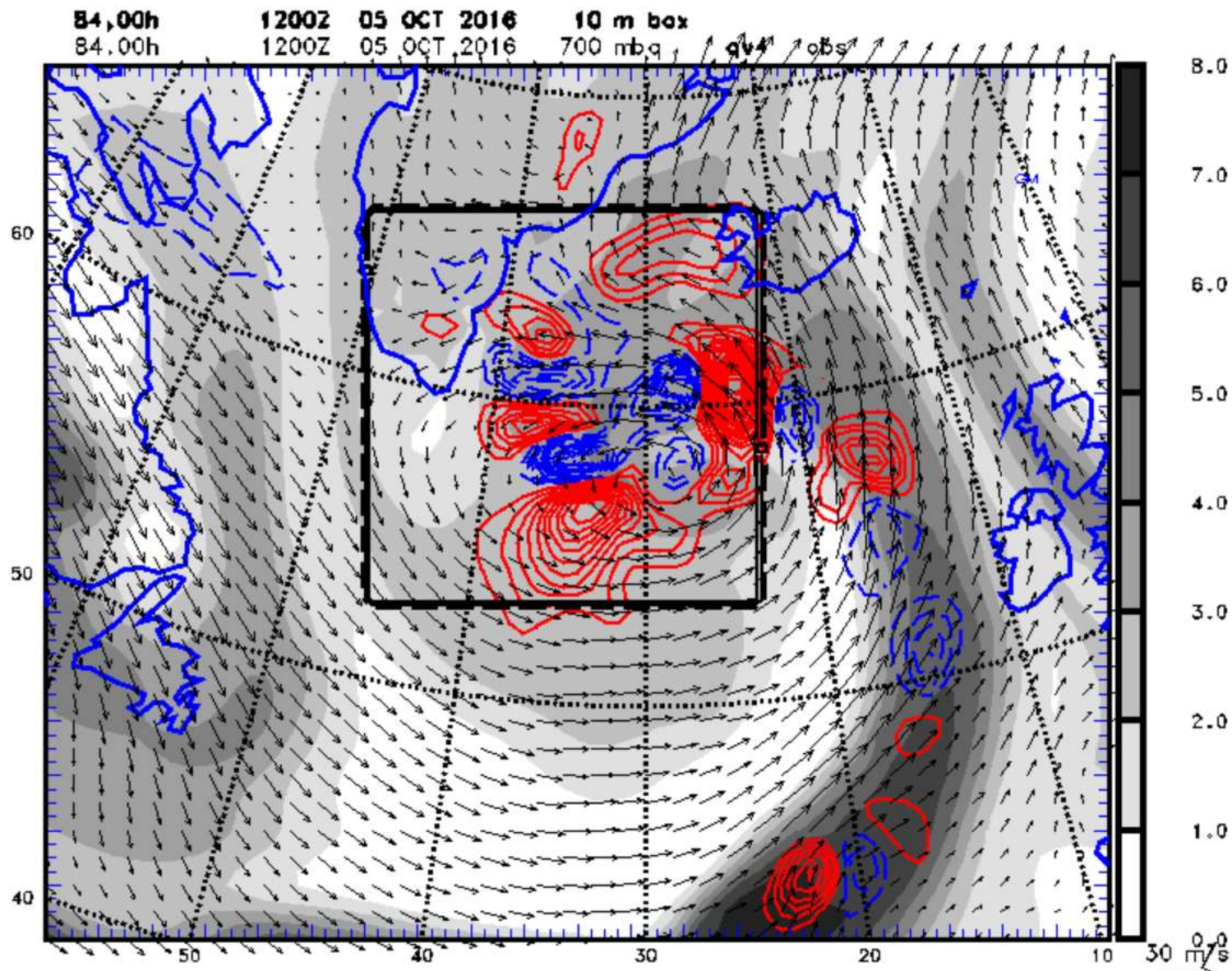
valid 12Z 4 OCT



COAMPS Sensitivity (24h) Valid 12Z 5 Oct (Wednesday Flight)

Box centered on cyclone (kinetic energy – Cyclone Intensity)

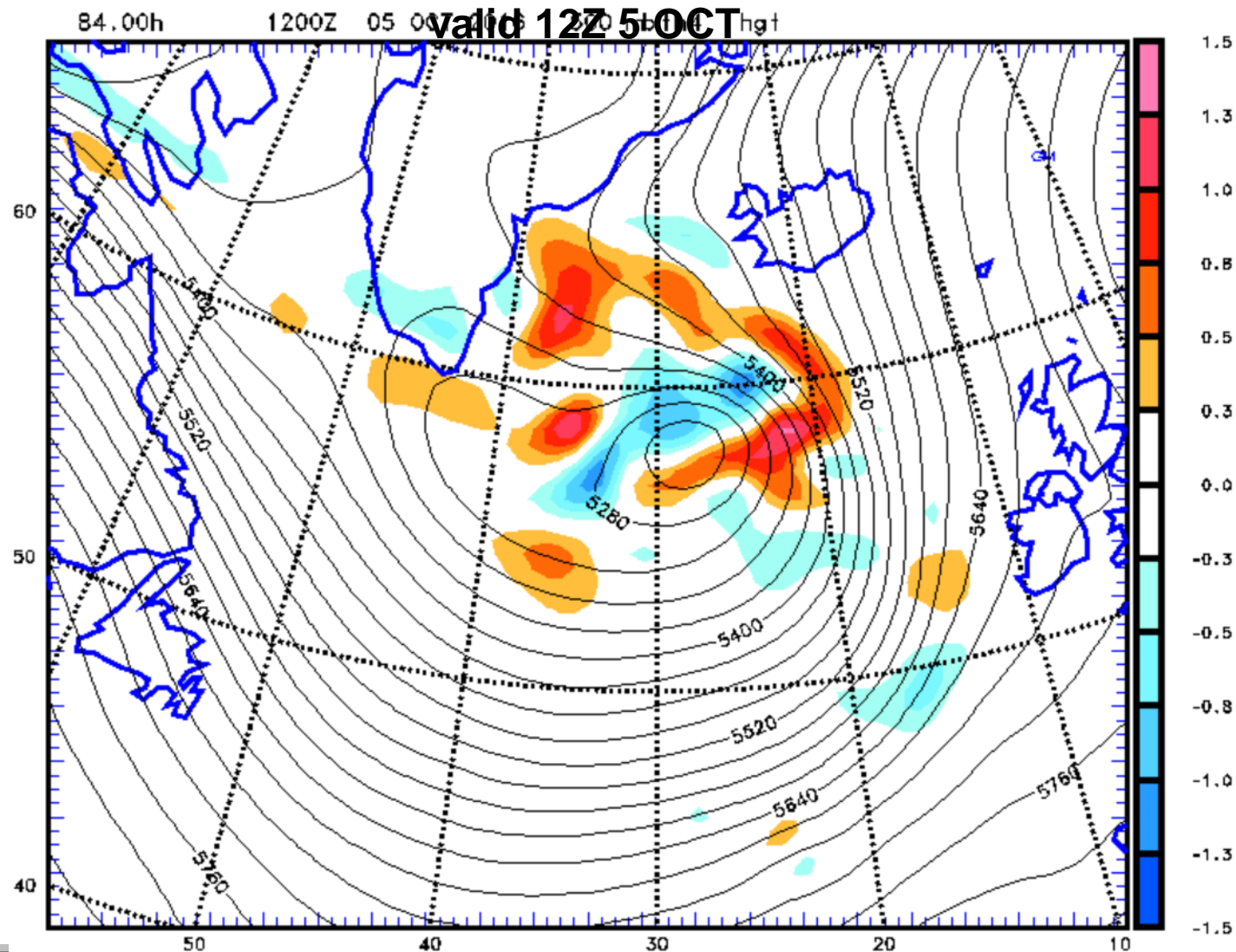
q Sensitivity and water vapor at 700



COAMPS Sensitivity (24h) Valid 12Z 5 Oct (Wednesday Flight)

Box centered on cyclone (kinetic energy – Cyclone Intensity)

**Potential Temp. Sensitivity and heights at 500
hPa**



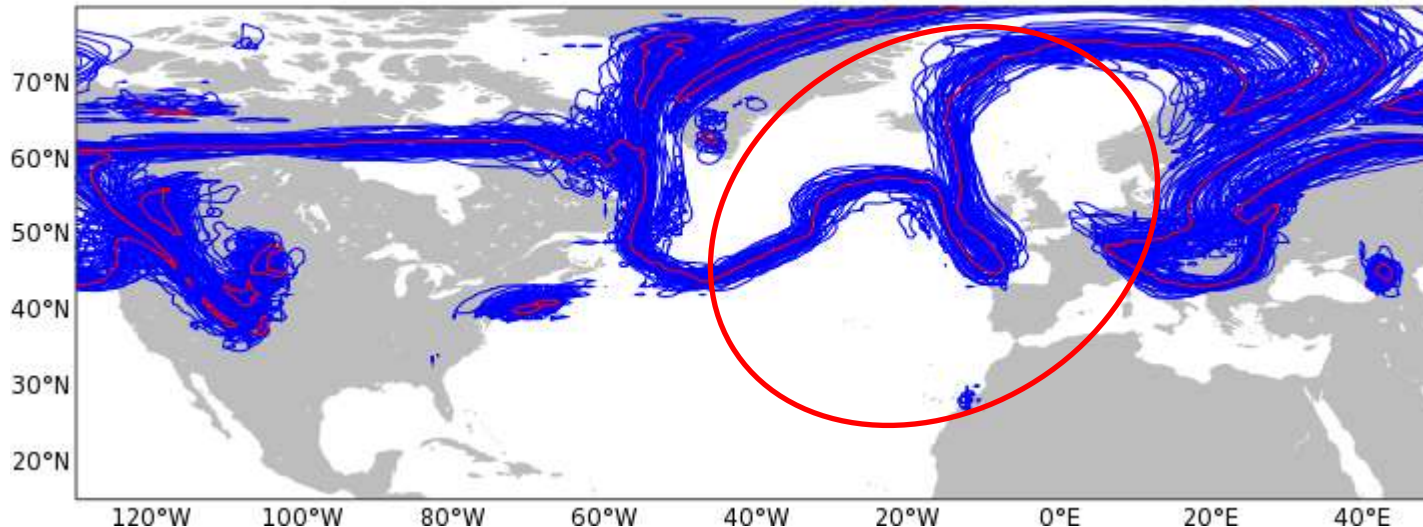
2PVU@320K, MSLP990 Spaghetti (based EC Ens 02/00Z)

ECMWF ENSEMBLE FC

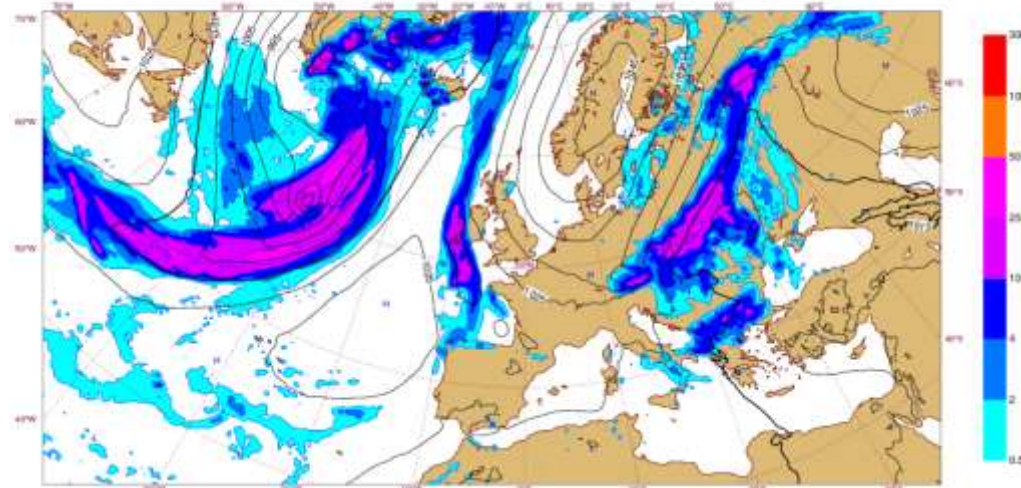
BT: 20161002 00UTC, VT: 20161004 12UTC

blue: perturbed, red: control

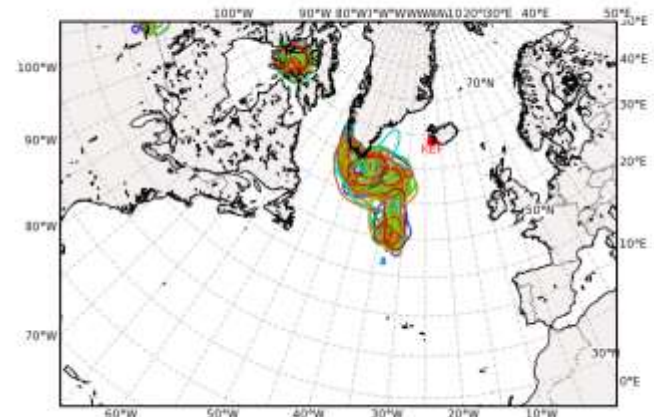
Tue 04/12Z



Sunday 02 October 2016 0000 UTC ECMWF 1+60 VT: Tuesday 04 October 2016 1200 UTC
Surface: Mean sea level pressure / 12hr Accumulated precipitation (VT-6h/VT+6h)



ECMWF ENS MSLP (990hPa-isoline)
Valid: Tue, 04 Oct 2016, 12 UTC (step 060 h from Sun, 02 Oct 2016, 00 UTC)



Tuesday

- ridge merging with frontal wave WCB
- Cut-off formation Europe and south of Ireland

WCB probabilities Tuesday 4 October

BT01/00Z

00z

06z

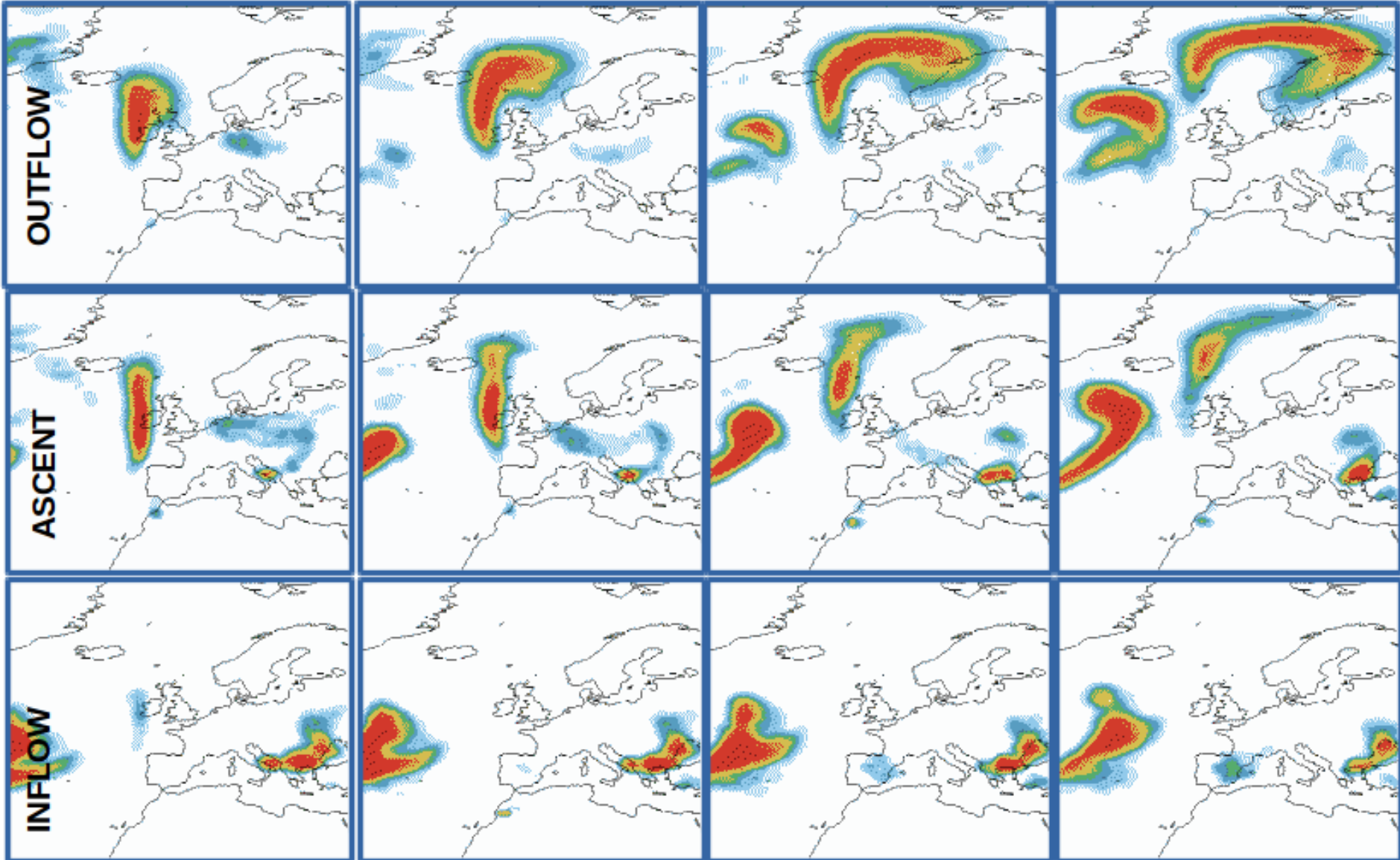
12z

18z

OUTFLOW

ASCENT

INFLOW



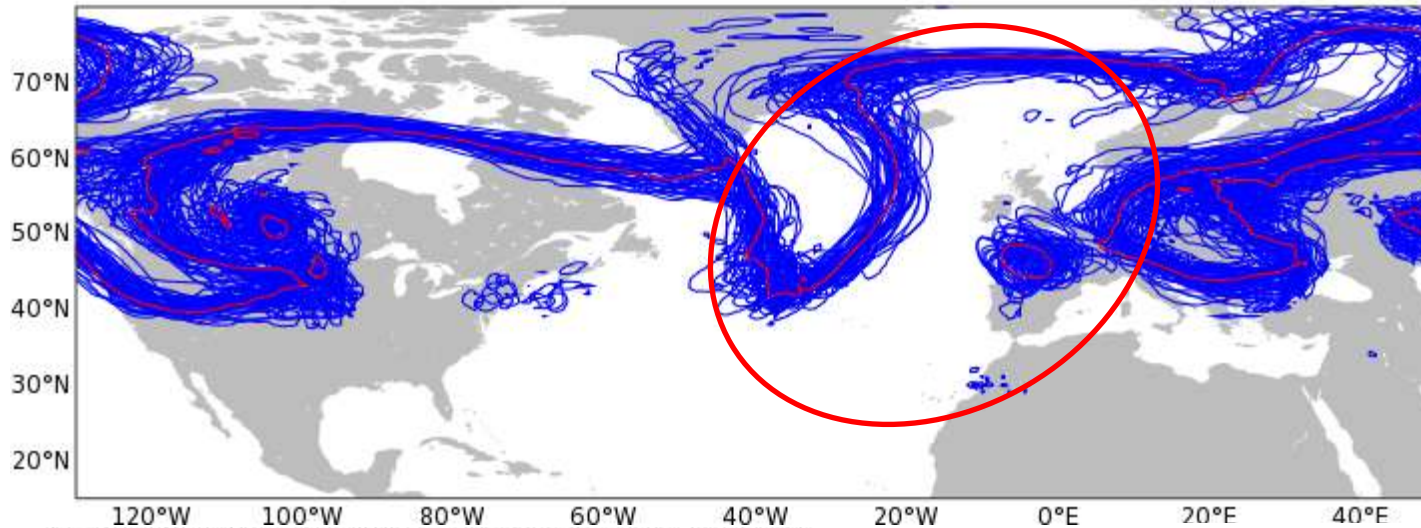
2PVU@320K, MSLP990 Spaghetti (based EC Ens 02/00Z)

ECMWF ENSEMBLE FC

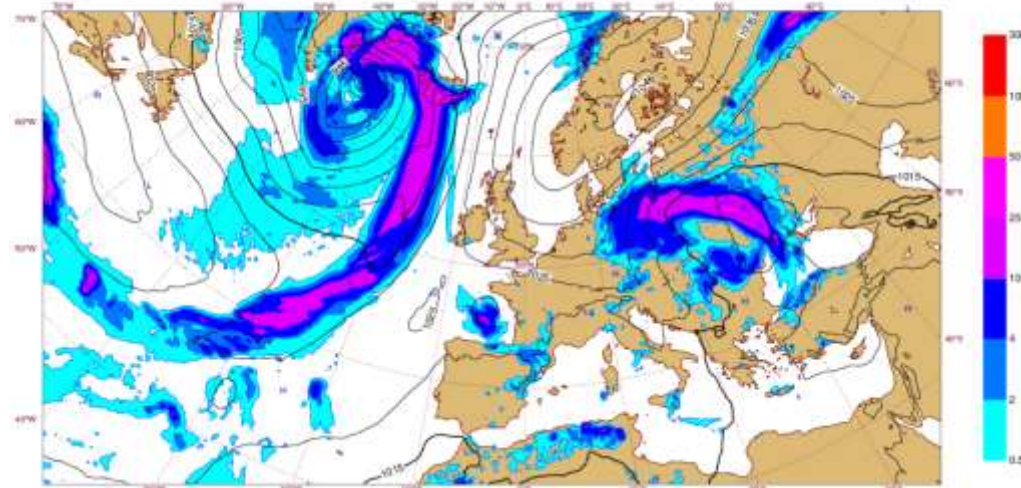
BT: 20161002 00UTC, VT: 20161005 12UTC

blue: perturbed, red: control

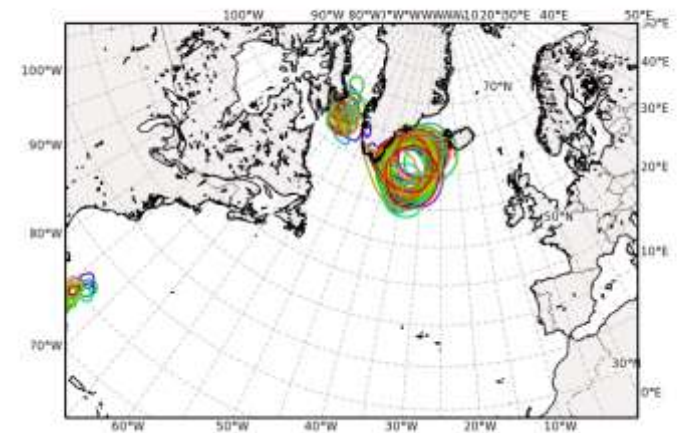
Wed 05/12Z



Sunday 02 October 2016 0000 UTC ECMWF 1+84 VT: Wednesday 05 October 2016 1200 UTC
Surface: Mean sea level pressure / 12hr Accumulated precipitation (VT-6h/VT+6h)



ECMWF ENS MSLP (990hPa-isoline)
Valid: Wed, 05 Oct 2016, 12 UTC (step 084 h from Sun, 02 Oct 2016, 00 UTC)



Wednesday

- ridge re-amplification by frontal wave WCB
- WCB ascent over Iceland and jet streak

WCB probabilities Wednesday 5 October

BT02/00Z

00z

06z

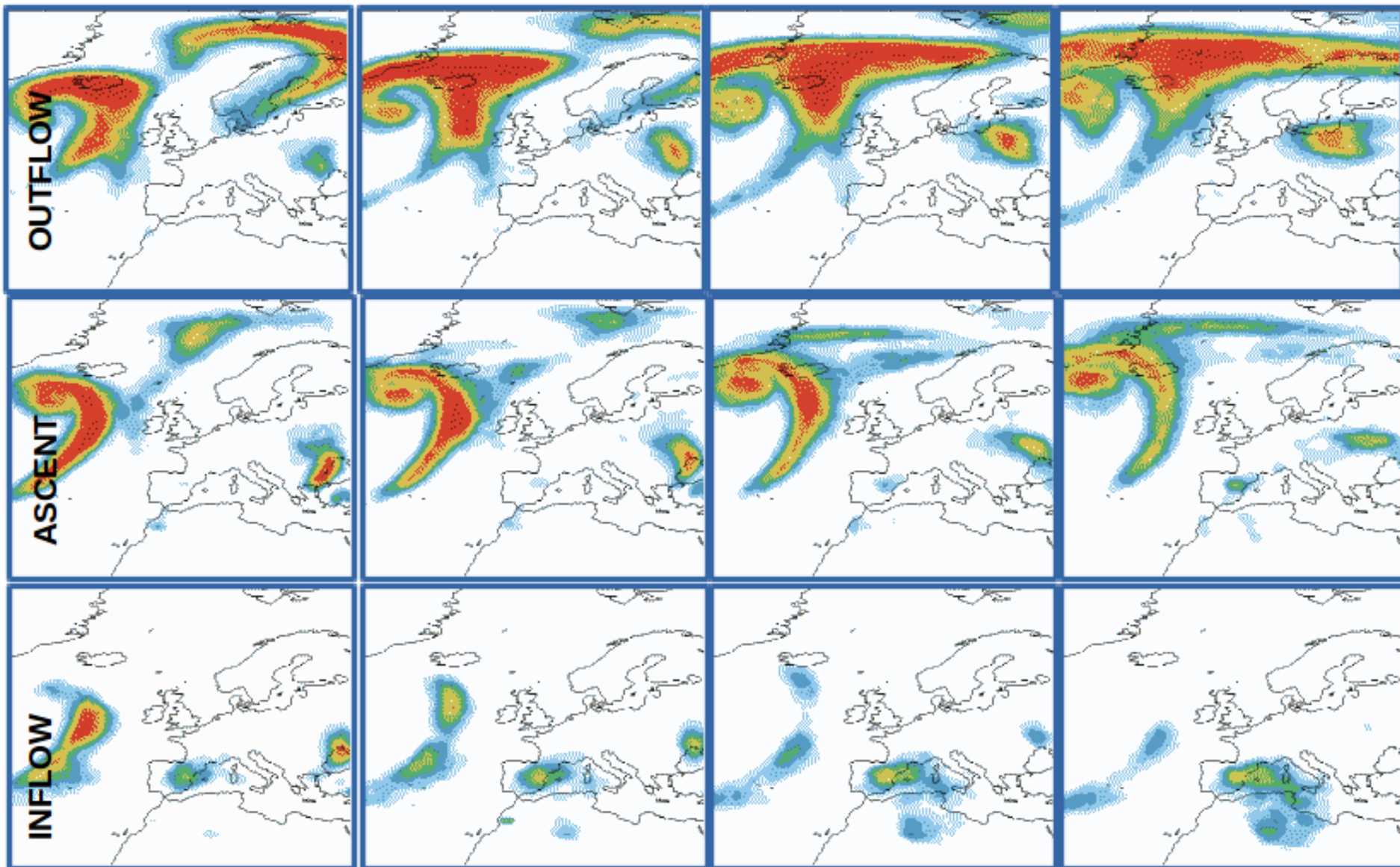
12z

18z

OUTFLOW

ASCENT

INFLOW



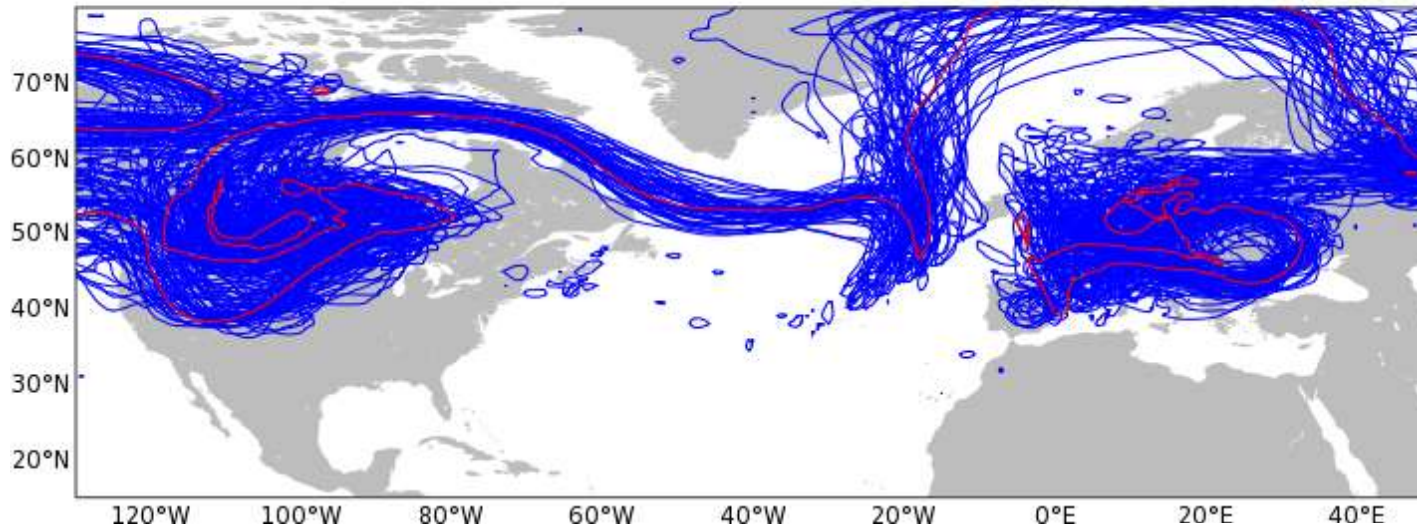
2PVU@320K, MSLP990 Spaghetti (based EC Ens 02/00Z)

ECMWF ENSEMBLE FC

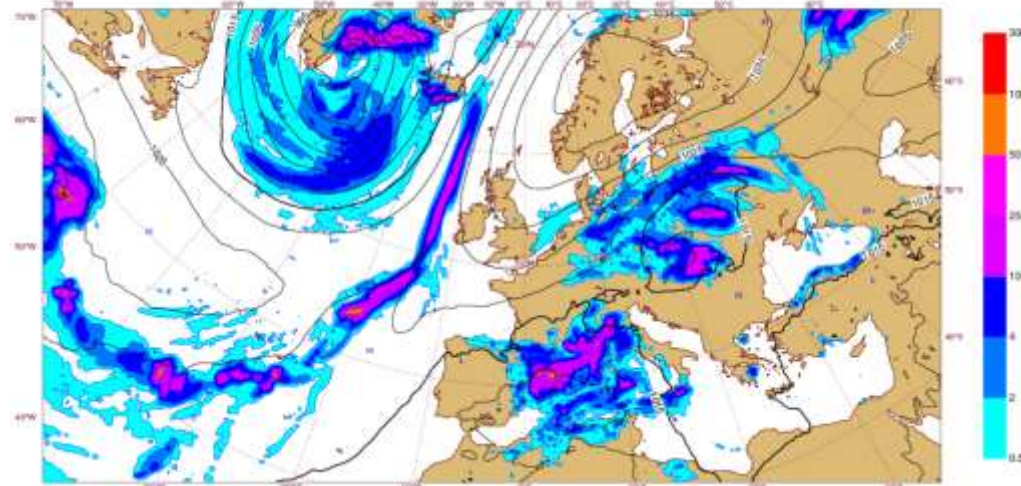
BT: 20161002 00UTC, VT: 20161006 12UTC

blue: perturbed, red: control

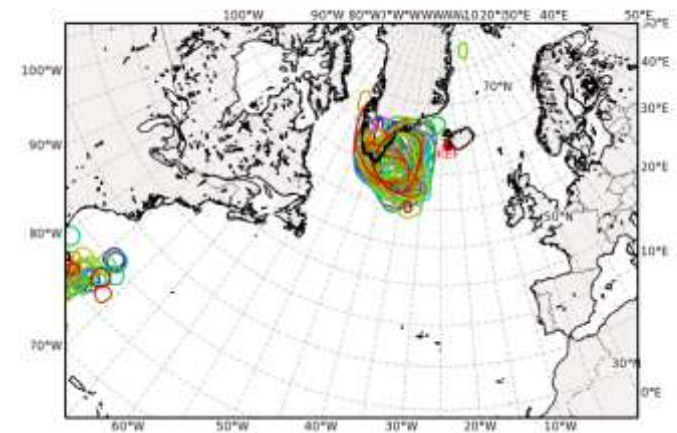
Thu 06/12Z



Sunday 02 October 2016 0000 UTC ECMWF 1+108 VT: Thursday 06 October 2016 1200 UTC
Surface: Mean sea level pressure / 12hr Accumulated precipitation (VT-6h/VT+6h)



ECMWF ENS MSLP (990hPa-isoline)
Valid: Thu, 06 Oct 2016, 12 UTC (step 108 h from Sun, 02 Oct 2016, 00 UTC)



Thursday

- jet streak east of Iceland
- Poleward moisture transport

WCB probabilities Thursday 6 October

BT02/00Z

00z

06z

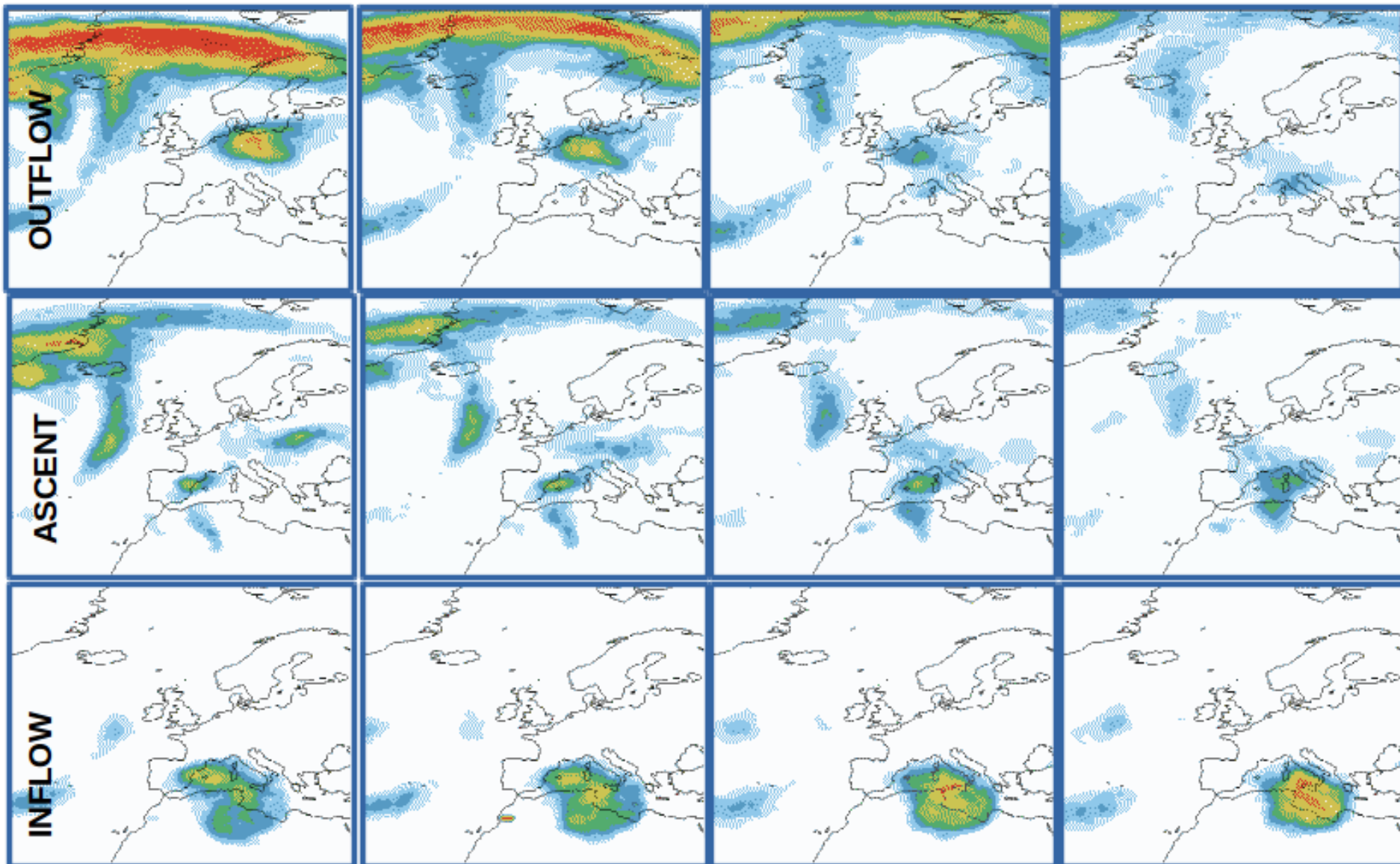
12z

18z

OUTFLOW

ASCENT

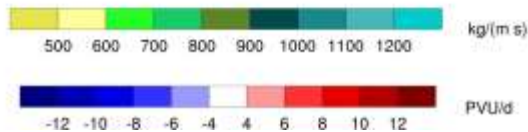
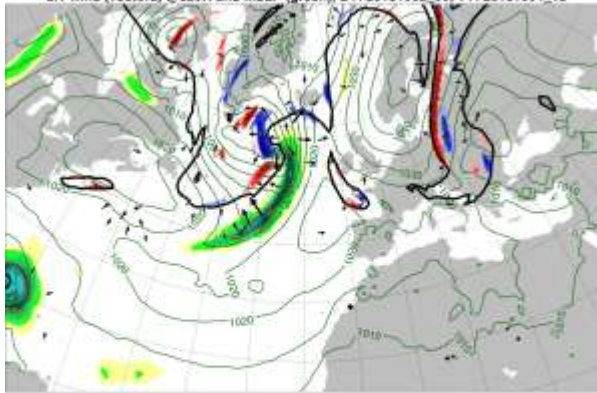
INFLOW



Summary opportunities Tue-Thu

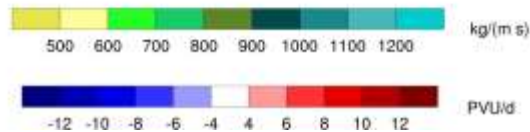
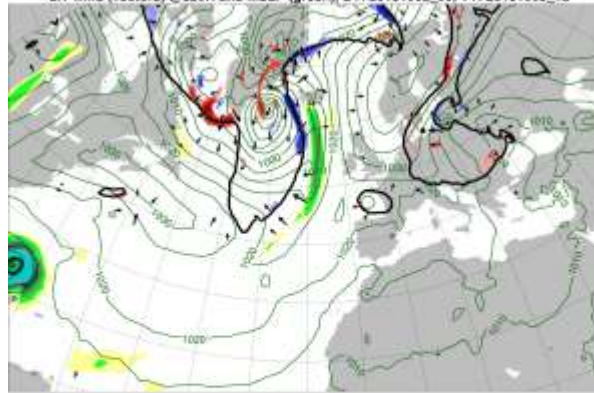
Divwind and 2PVU@320K

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



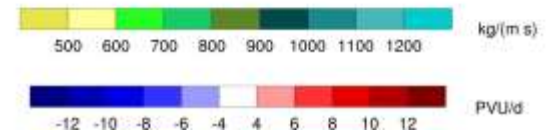
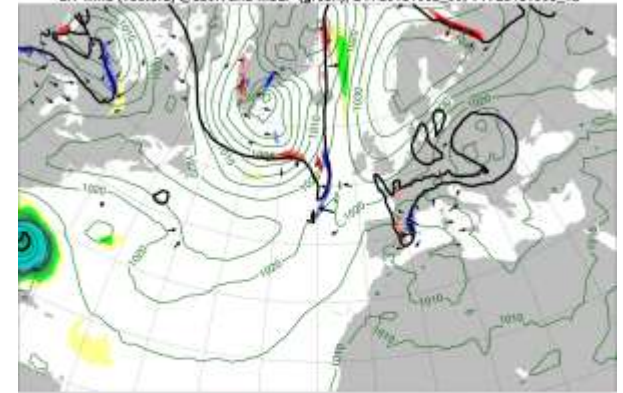
Tue, 4 Oct 18UTC

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

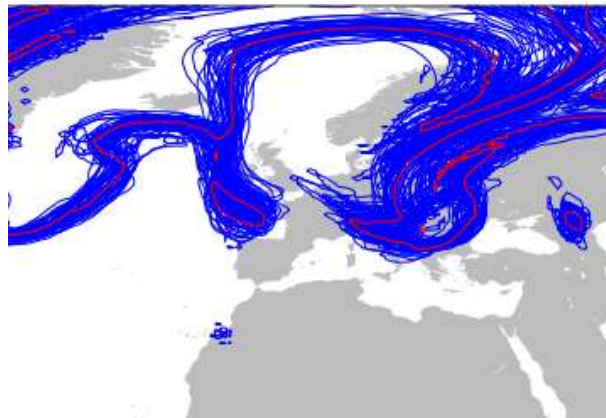


Wed, 5 Oct 12UTC

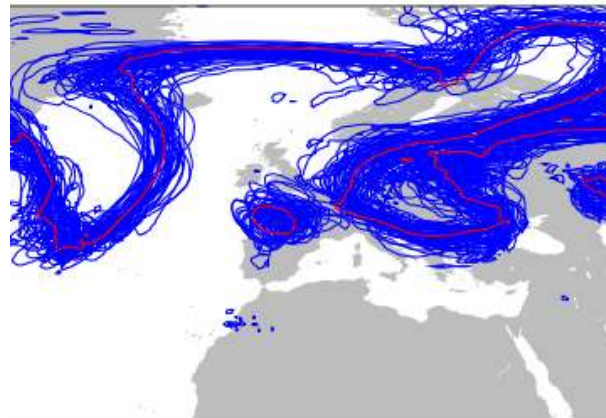
2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002_00, VT: 20161006_12



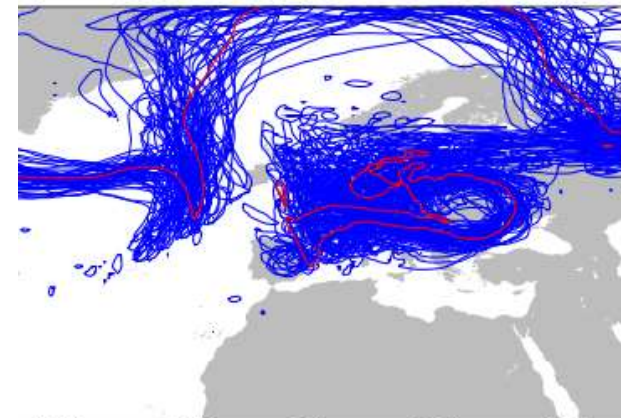
Thu, 6 Oct 12UTC



40°W 20°W 0°E 20°E 40°E



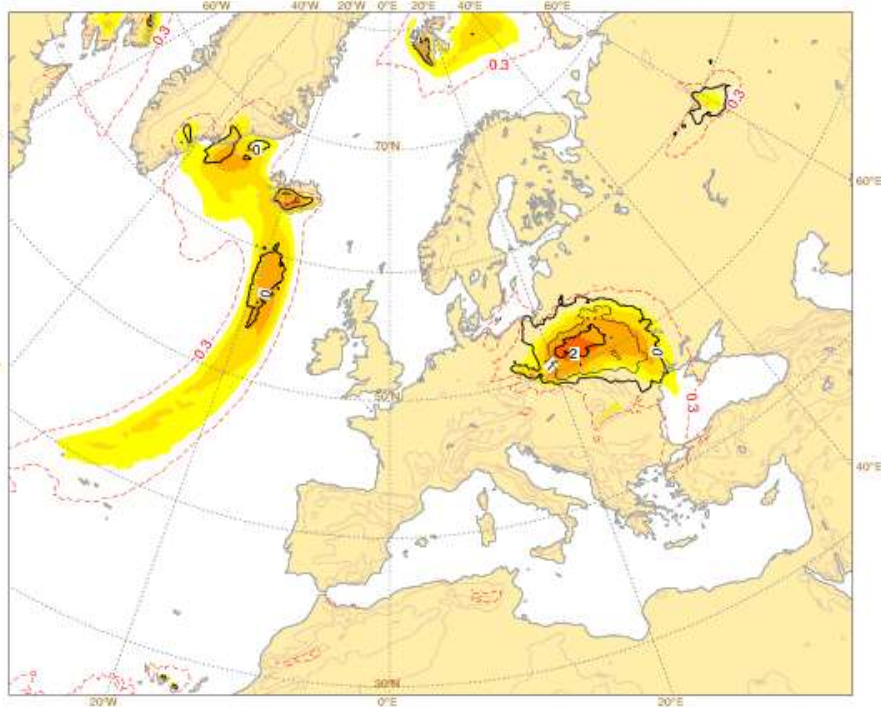
40°W 20°W 0°E 20°E 40°E



40°W 20°W 0°E 20°E 40°E

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



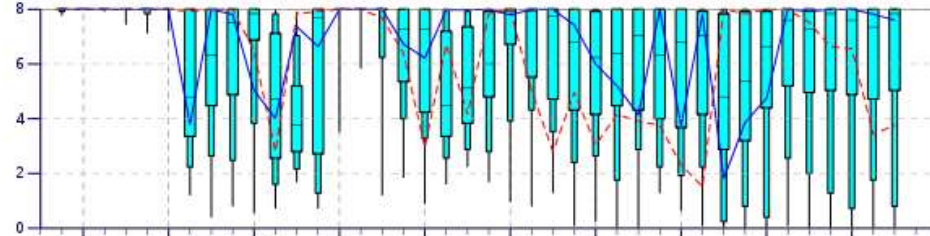
- Strong precipitation expected on Wednesday in southern Iceland

ENS Meteogram

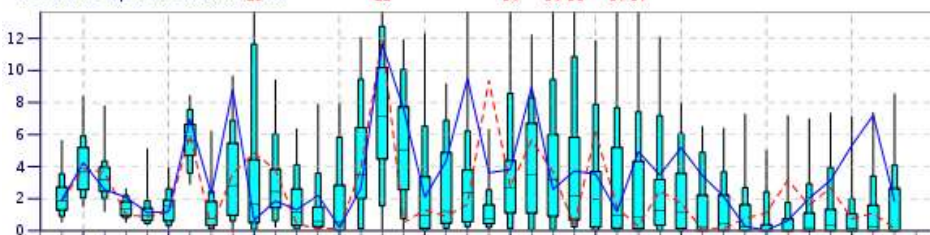
Keflavík, Iceland 63.89°N 22.26°W (ENS land point) 5 m

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

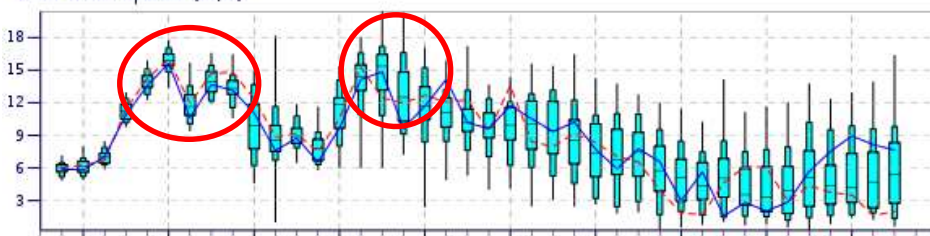
Total Cloud Cover (okta)



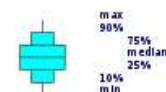
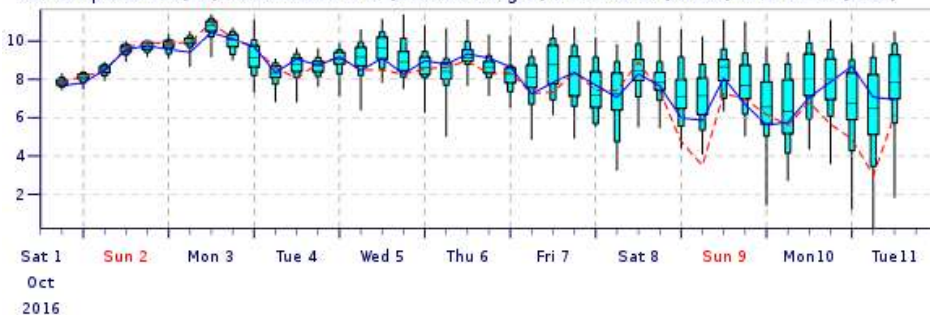
Total Precipitation (mm/6h)



10m Wind Speed (m/s)



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

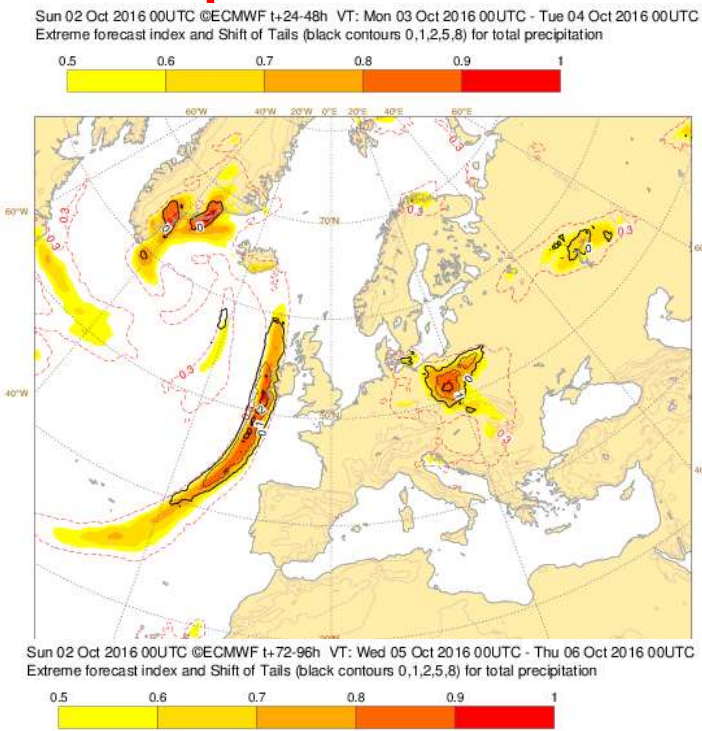


ENS Control (16 km)

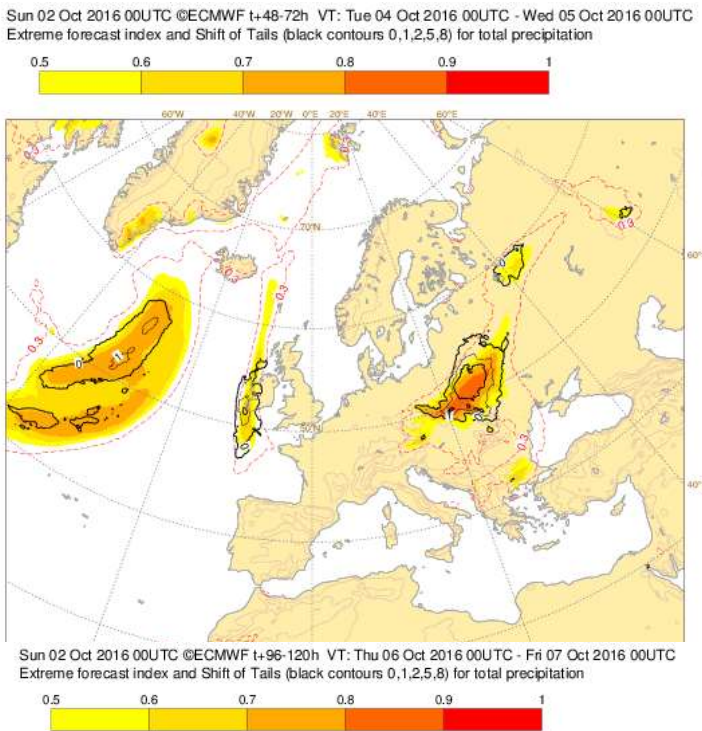
High Resolution (8 km)

ECMWF EFI Precipitation

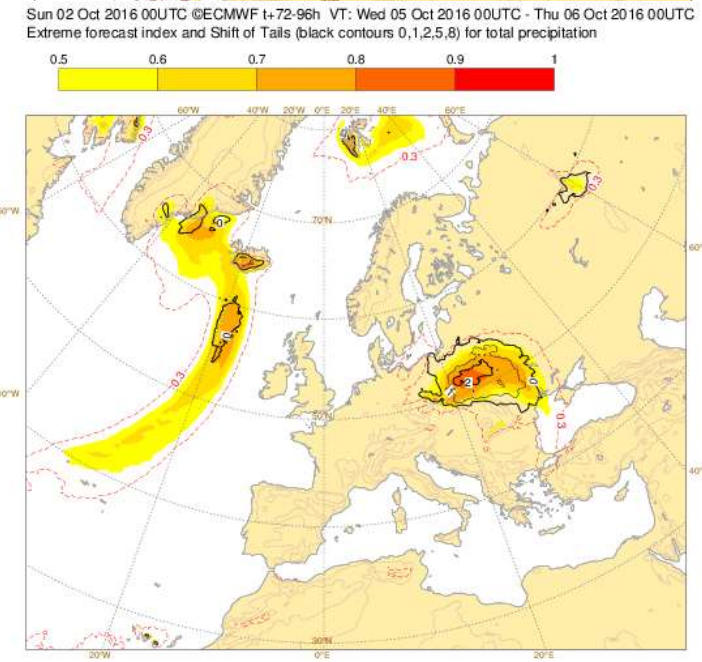
Mon 03



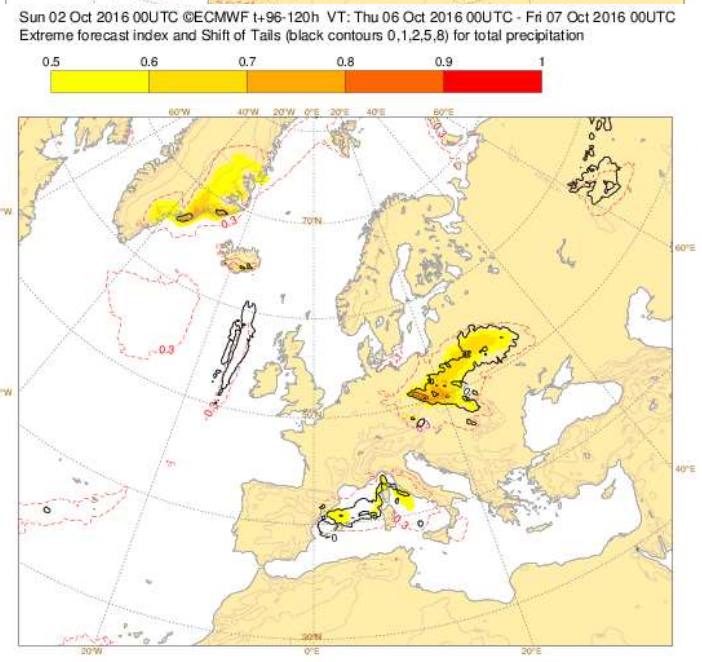
Tue 04



Wed 05

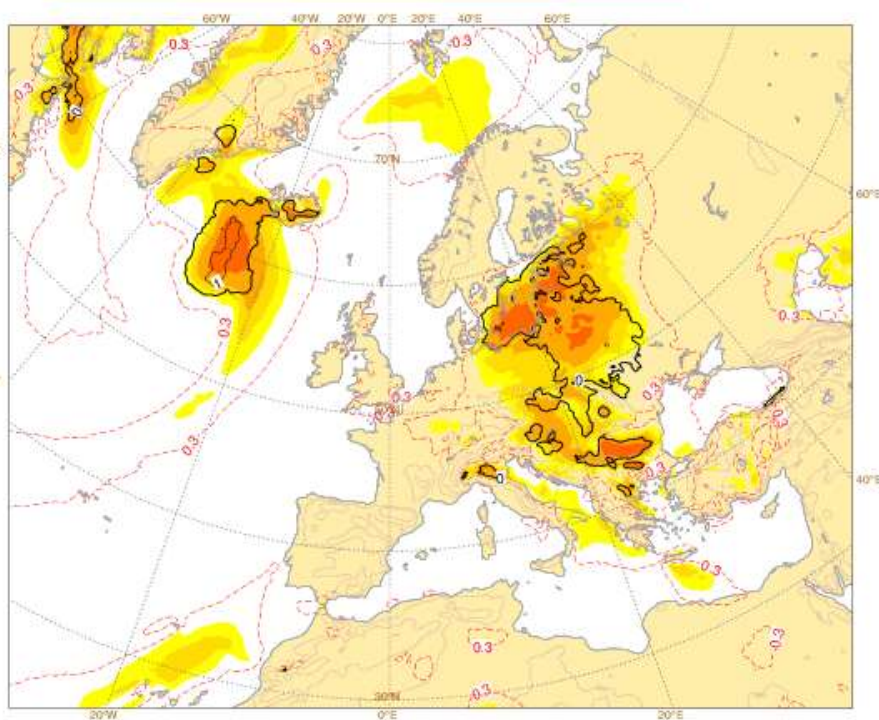


Thu 06



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



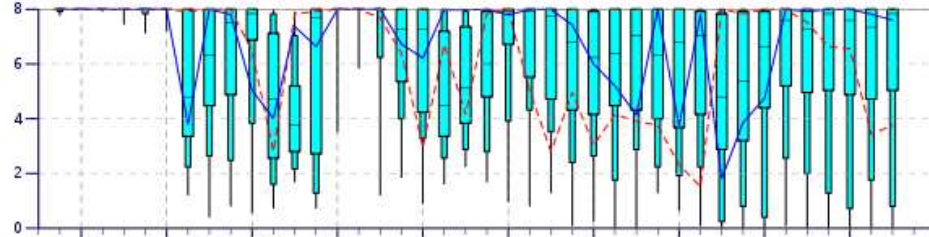
- Strong winds (mean 15-20m/s) in KEF Sun 18UTC-03UTC, Mon 9UTC-15UTC, Wed 6-18UTC

ENS Meteogram

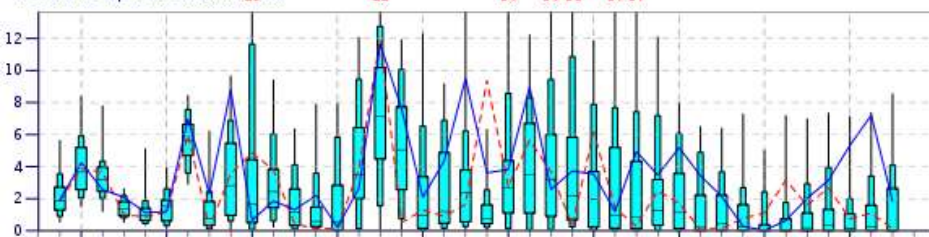
Keflavík, Iceland 63.89°N 22.26°W (ENS land point) 5 m

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

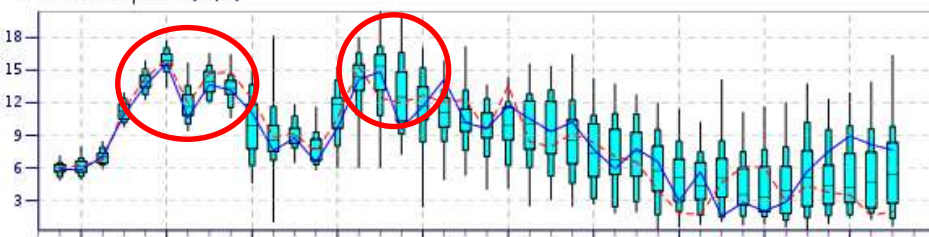
Total Cloud Cover (okta)



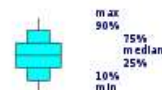
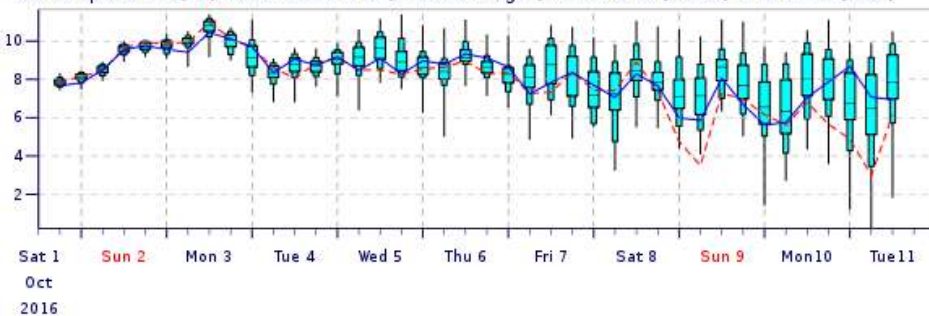
Total Precipitation (mm/6h)



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)

Flight plans

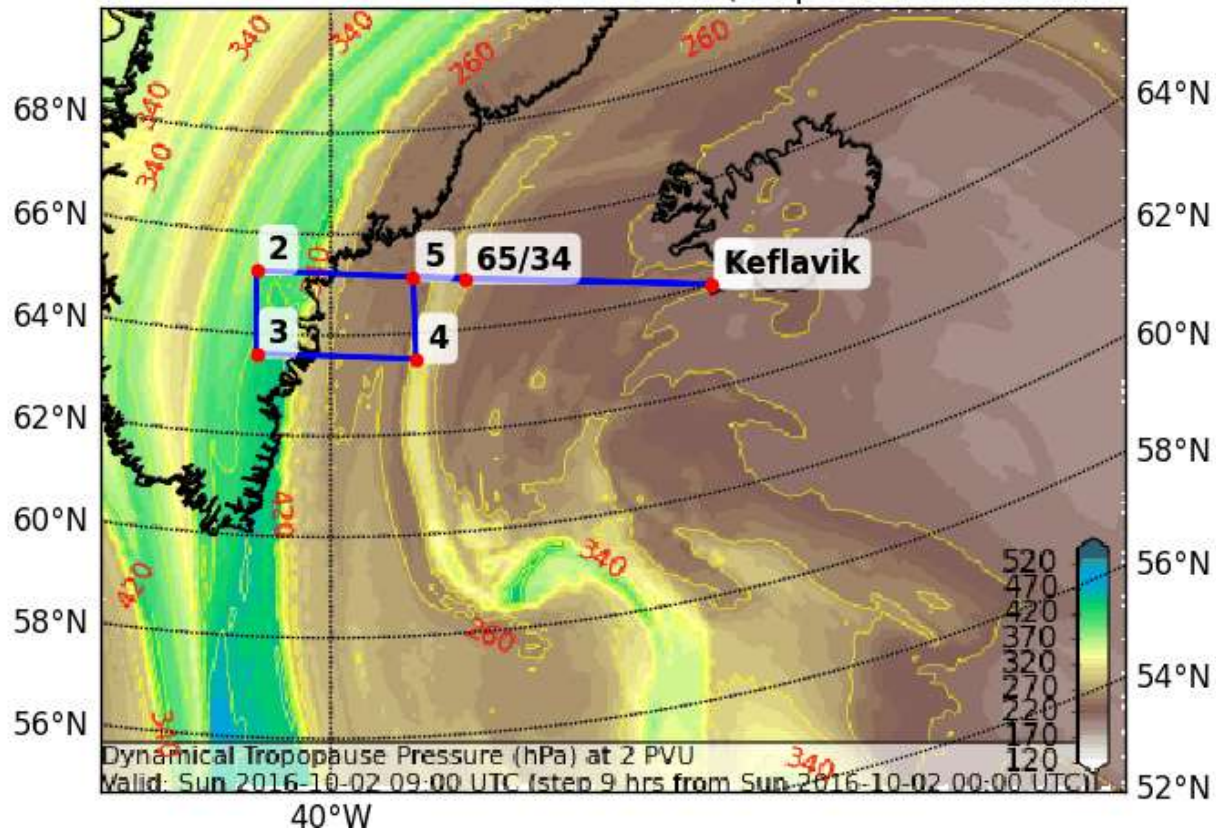
Sunday 2 October

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

Tuesday 4 October IOP8

HALO flight

Scientific Objective of IOP8

frontal wave (or former DRW/DRV)

- Dynamical structure (dropsondes)
- moisture transport
- Phases of the WCB ascent: moist inflow, strong ascent and outflow (low PV air)
- Takeoff ~10 UTC
- Landing ~19 UTC

Scientific Objective of IOP8

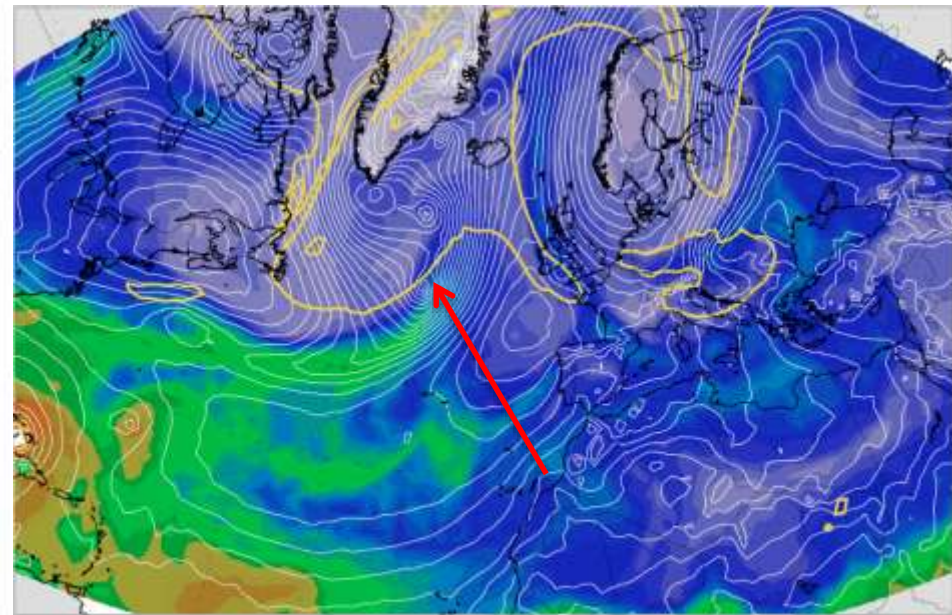
DRW propagation phase

Monday, 15 UTC



DRW intensification:
interaction with tropopause

Tuesday, 15 UTC

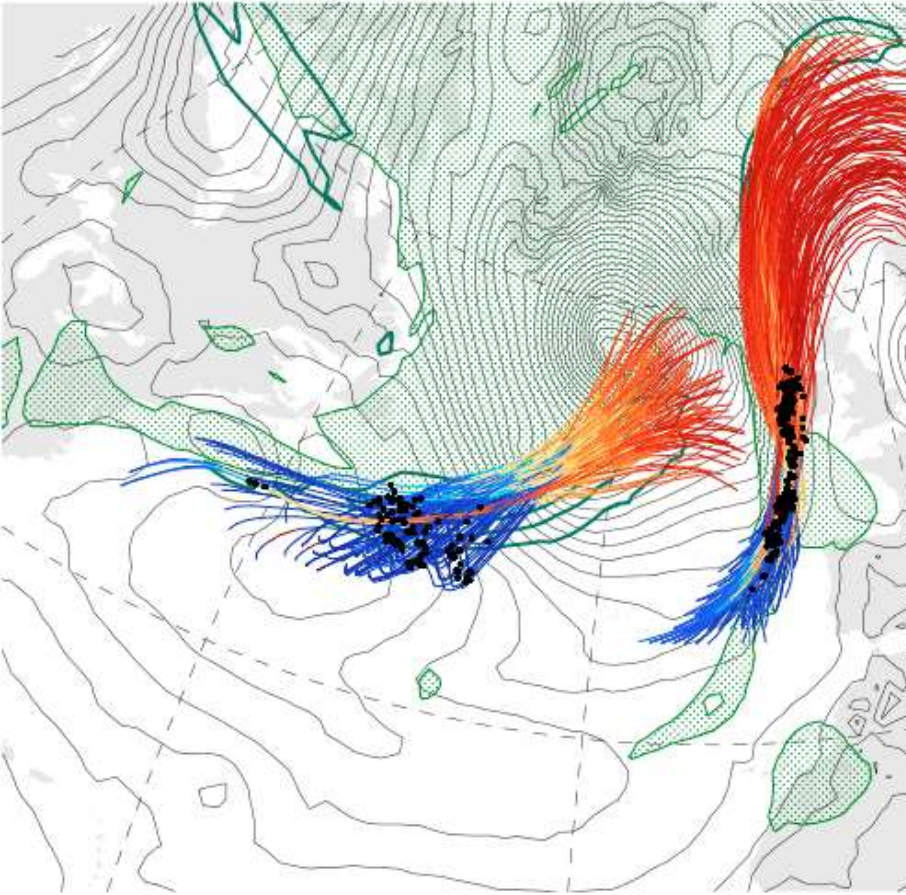


IWPV, 2pva at 320K (yellow line)

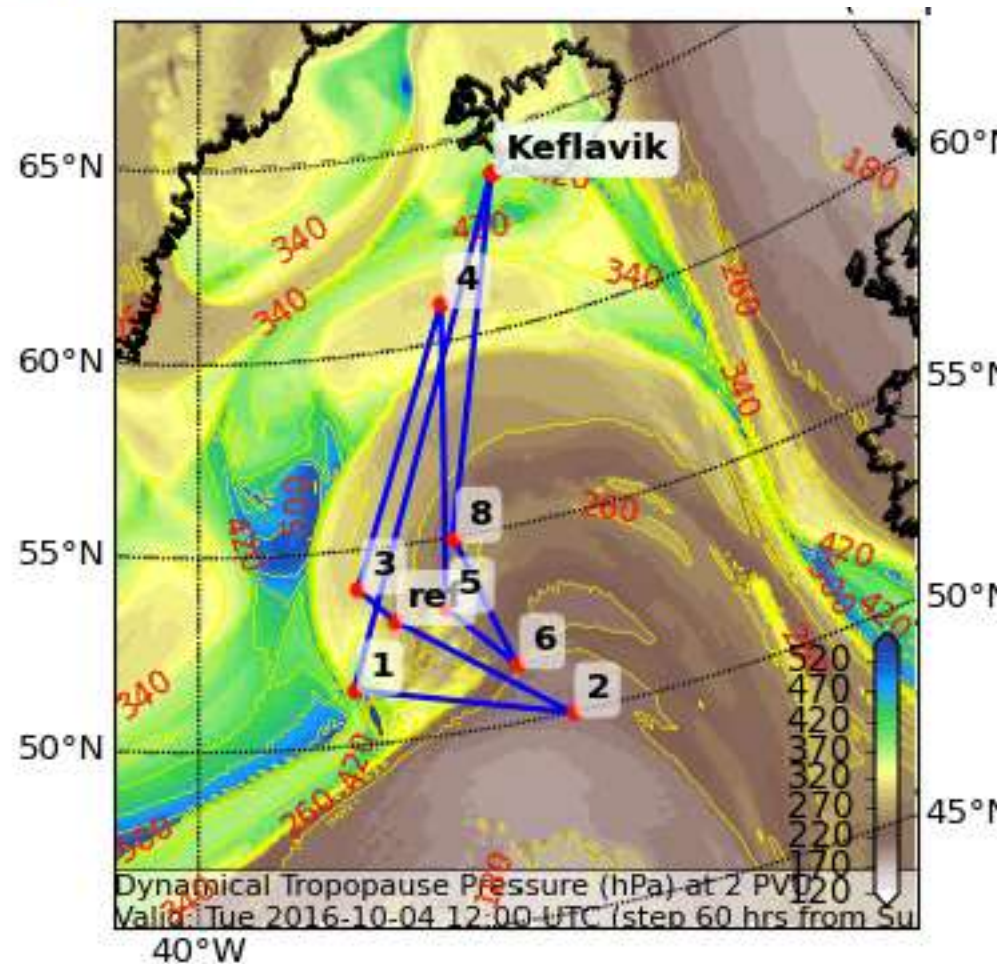
Tuesday 4 October HALO flight

12 UTC

Trajectory Started 02 Oct 15 UTC
WCB outflow and PV@250hPa VT: 20161004_15



P at TP

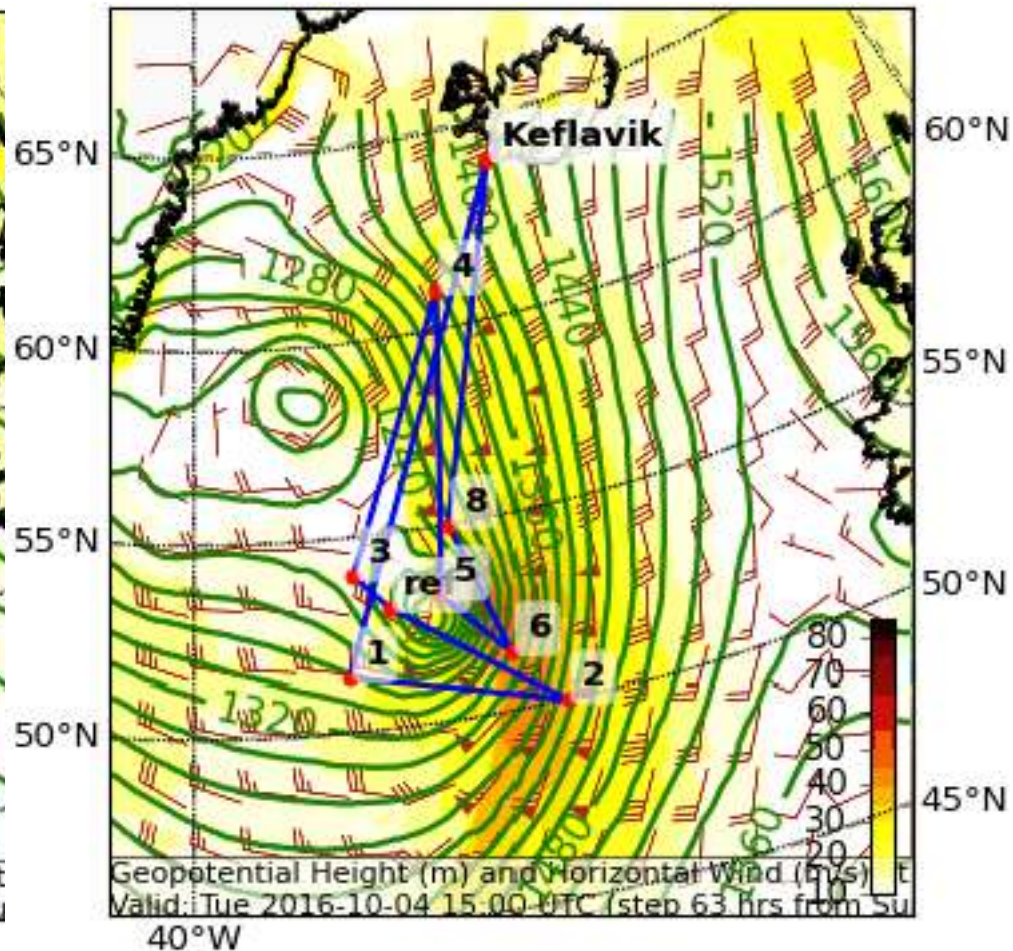
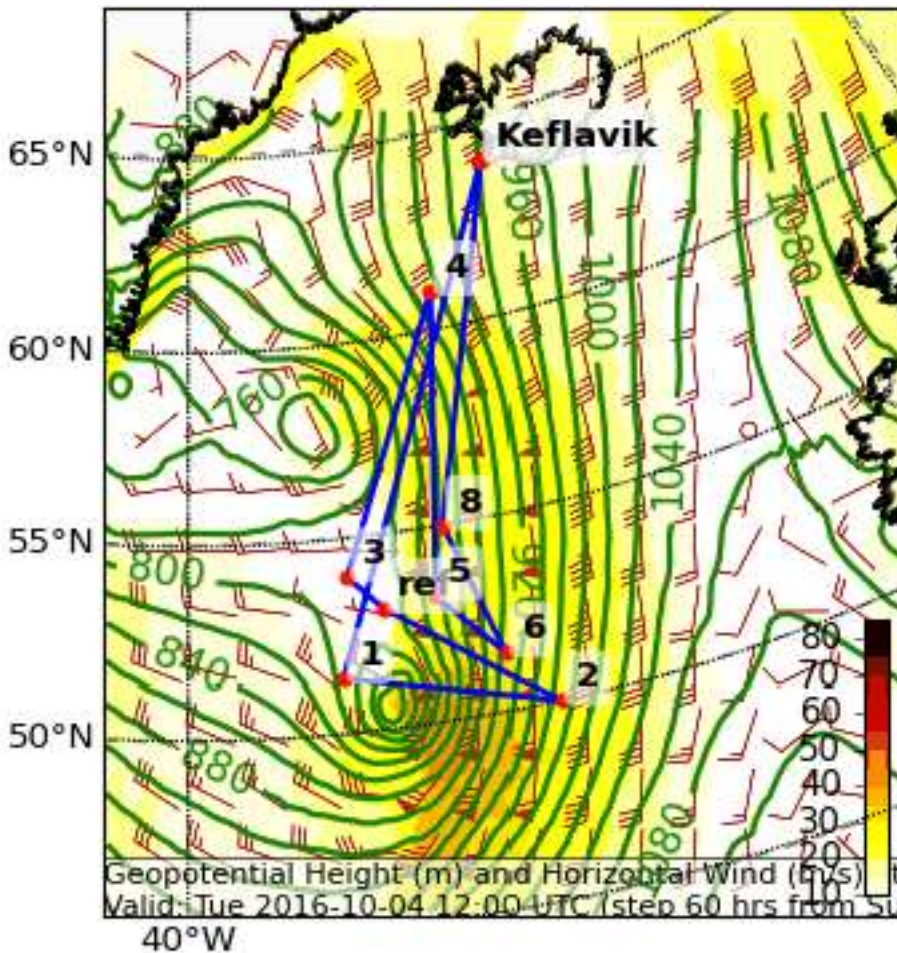


Tuesday 4 October HALO flight

Z850

12 UTC

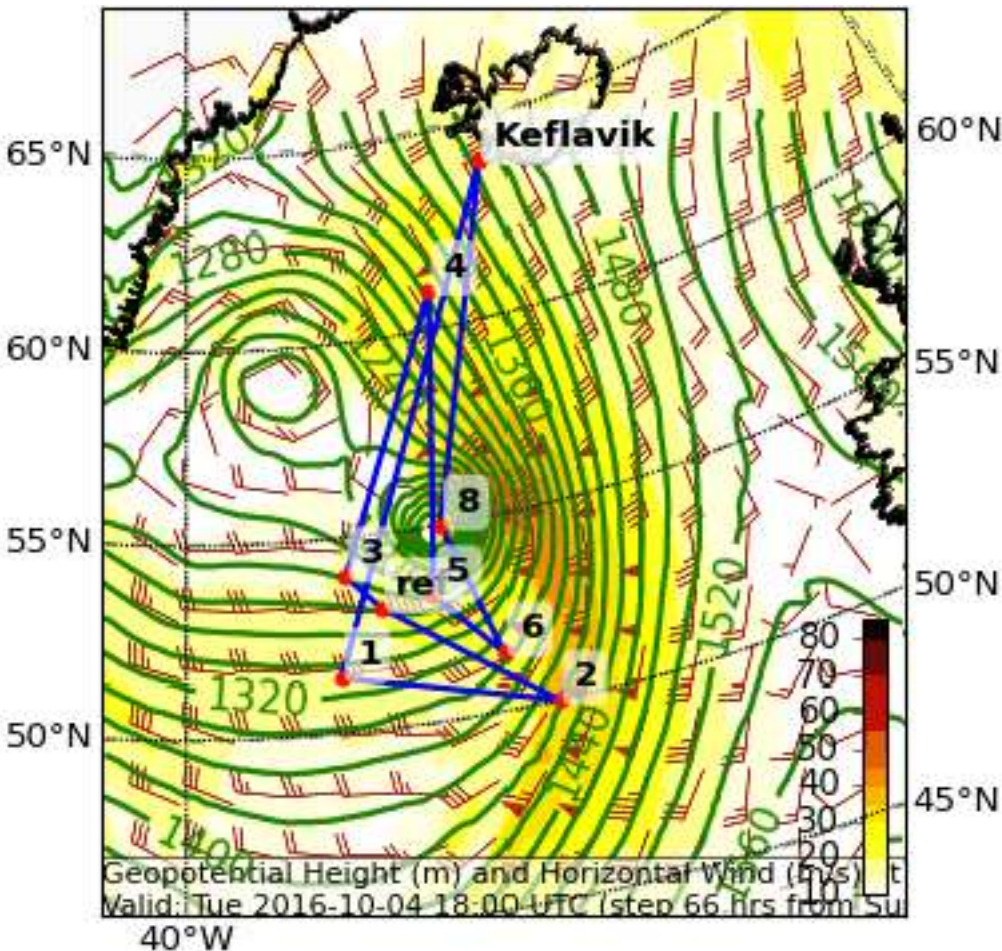
15 UTC



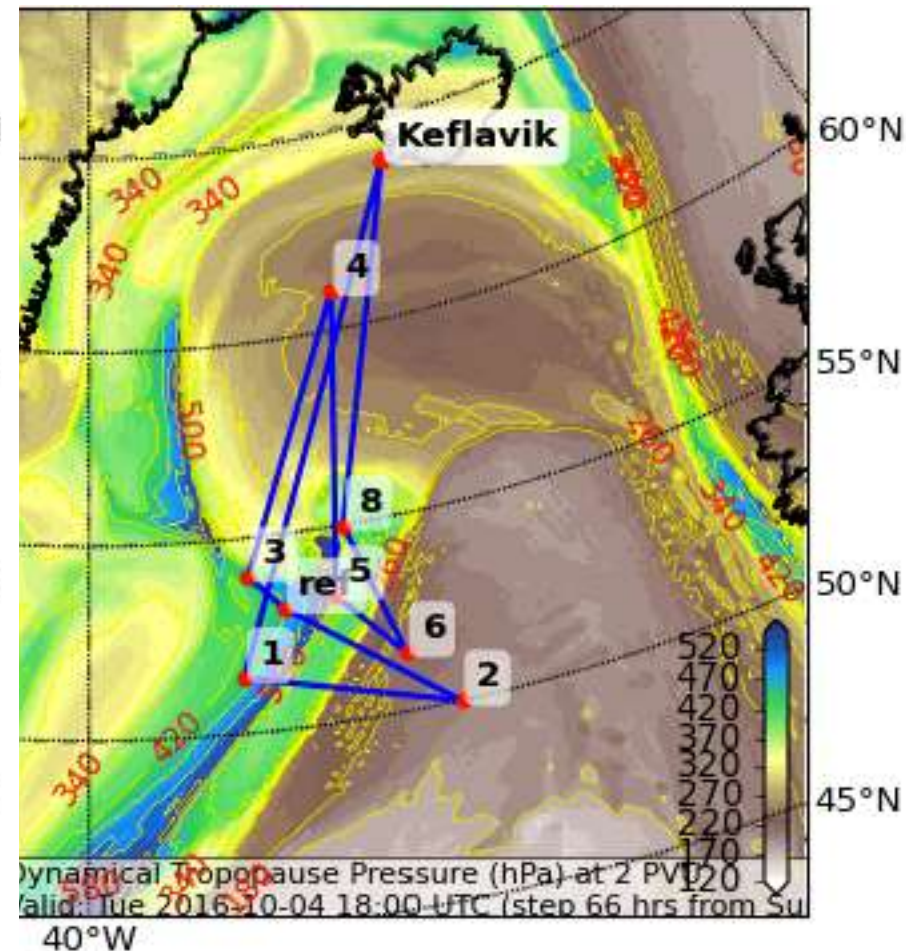
Tuesday 4 October HALO flight

18 UTC

Z850



P at TP

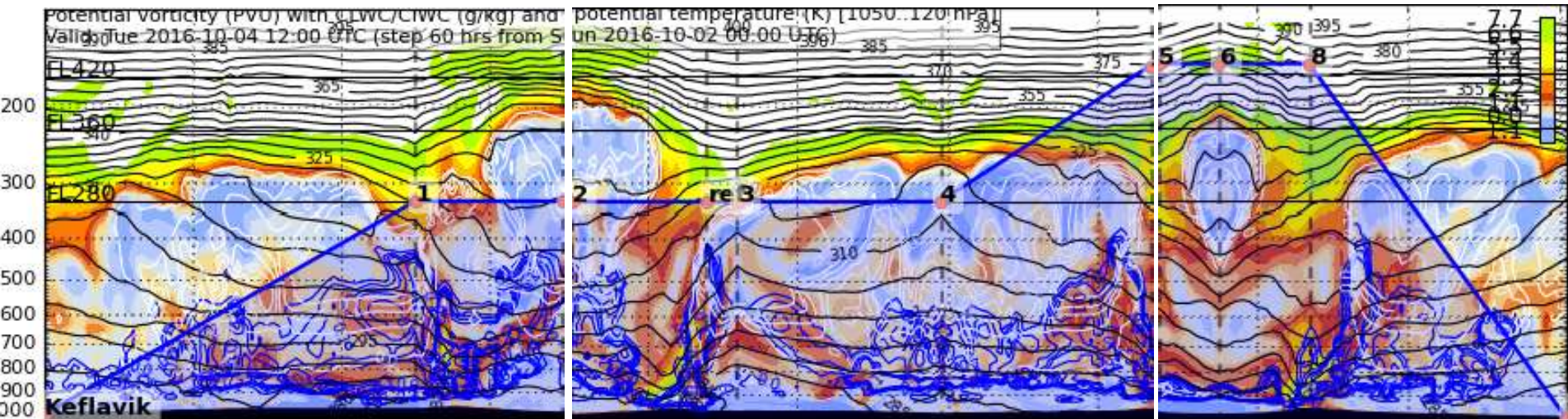


Tuesday 4 October HALO flight

12 UTC

15 UTC

18 UTC



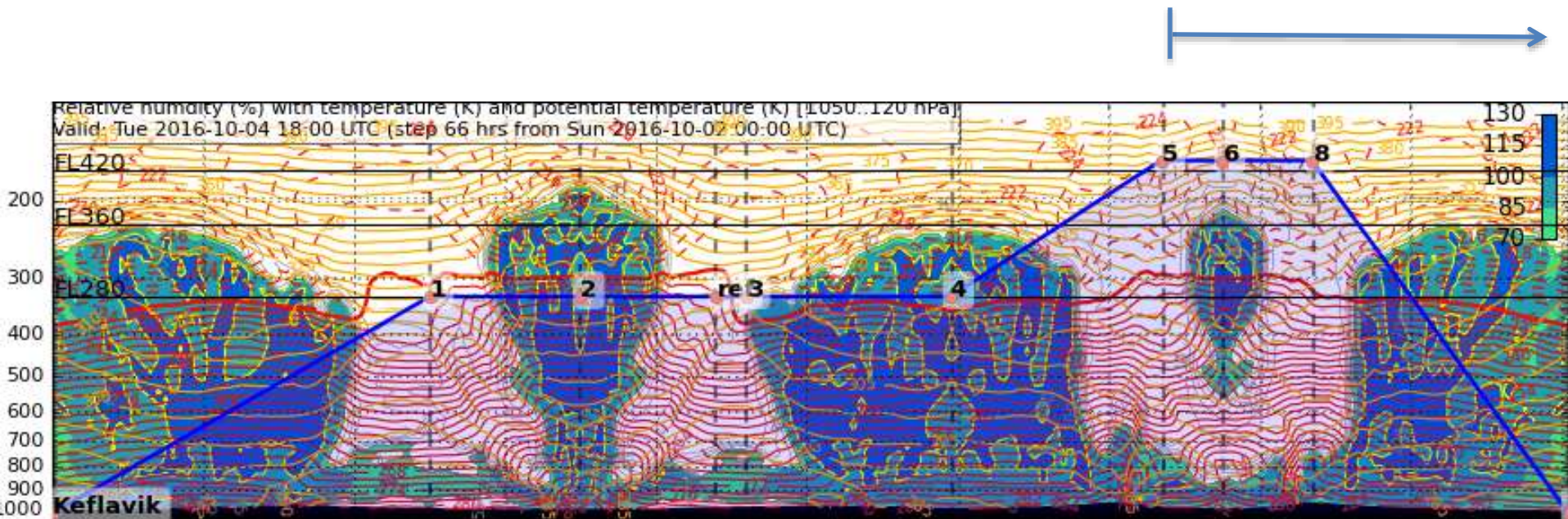
2 ★

8 ★

10 ★

+ SAFIRE

Tuesday 4 October HALO flight



+ SAFIRE

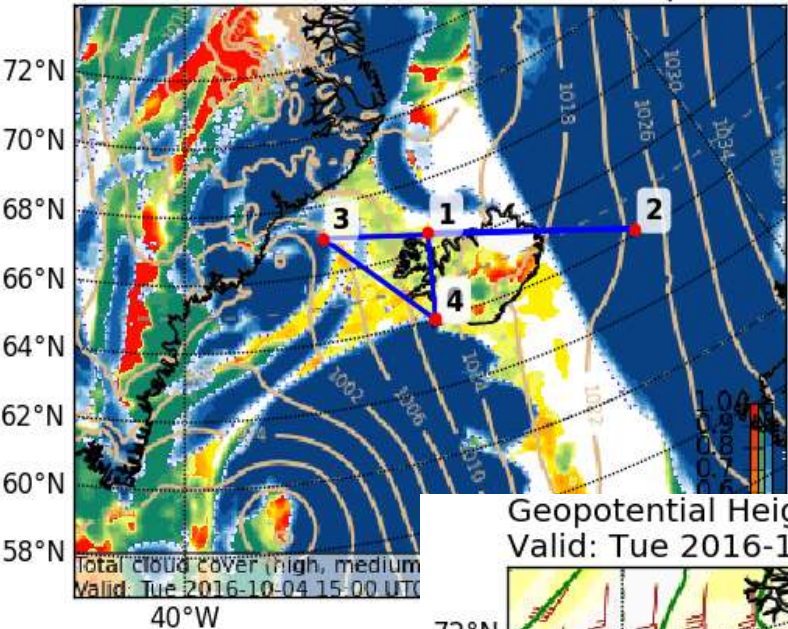
Tuesday 4 October

FALCON

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

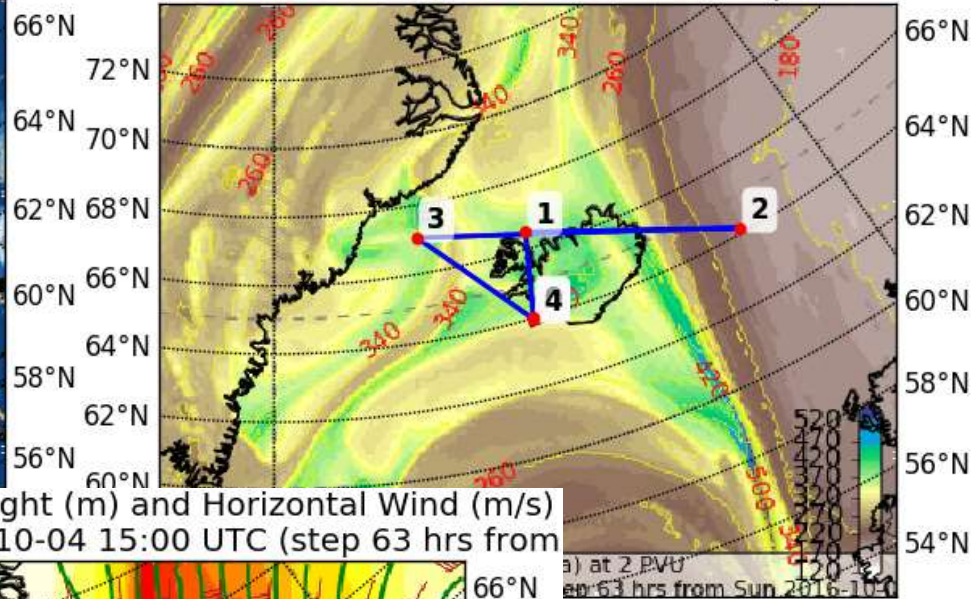
Cloud Cover (0-1) (Total Cloud Cover)

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



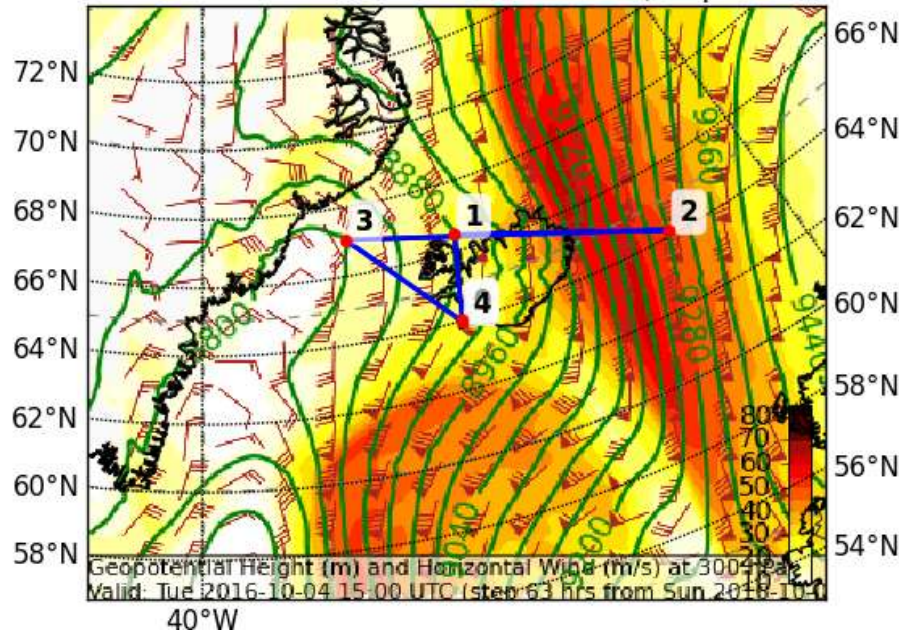
Dynamical Tropopause (Pressure (hPa)) at 2000 (1

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

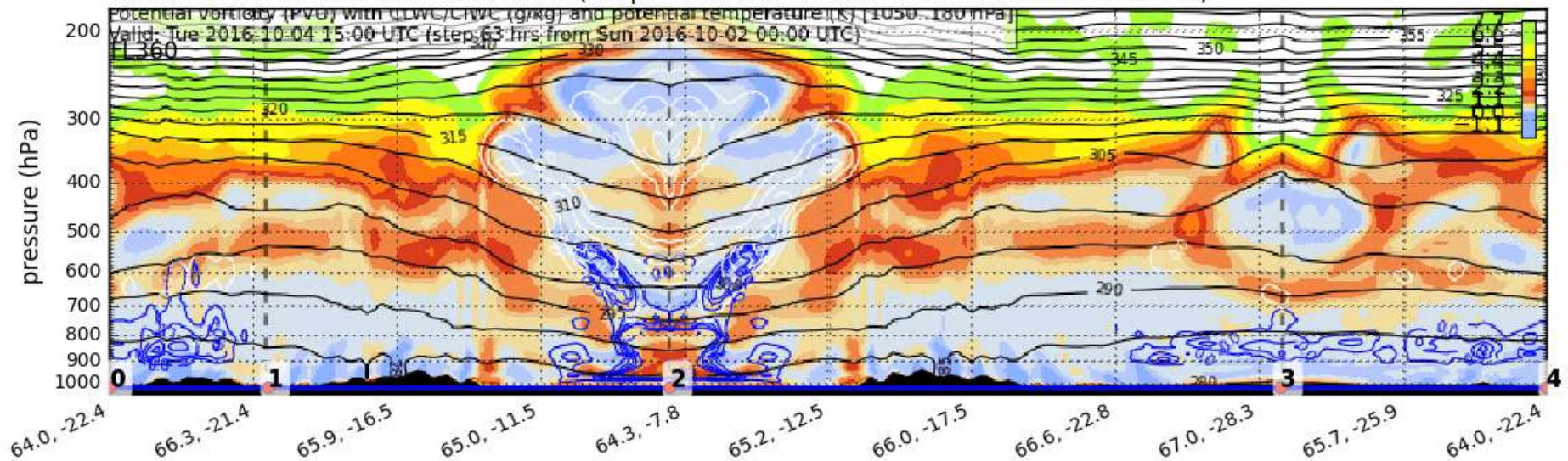


a) at 2 PVU
Valid: Tue 2016-10-04 15:00 UTC (step 63 hrs from Sun 2016-10-02

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

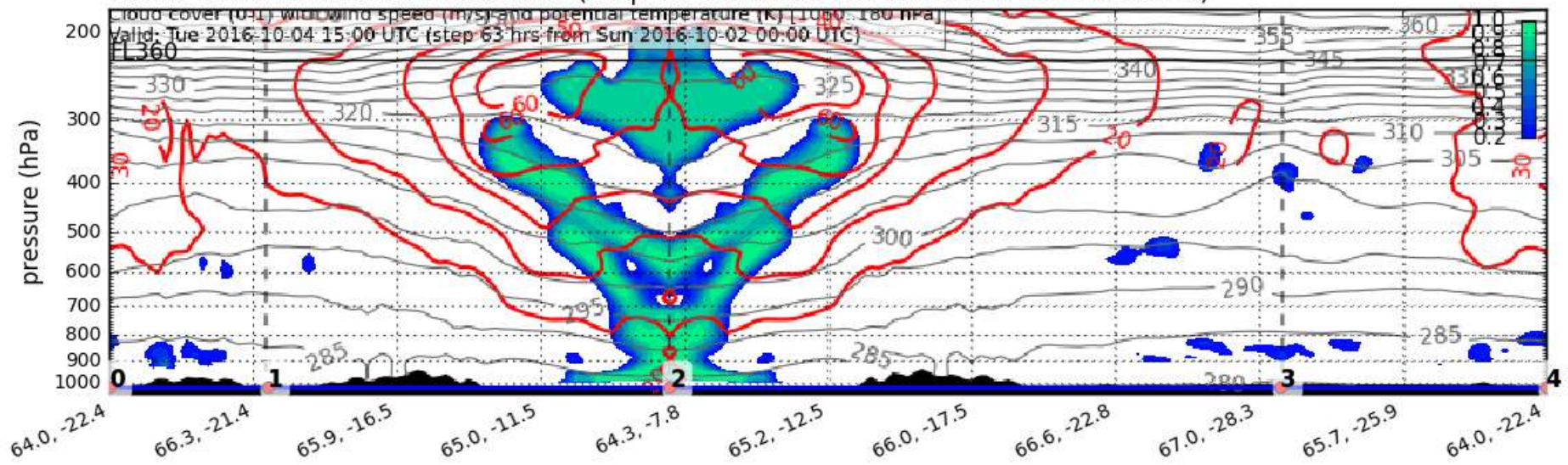
potential vorticity (PVO) vertical section (northern hemisphere)

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

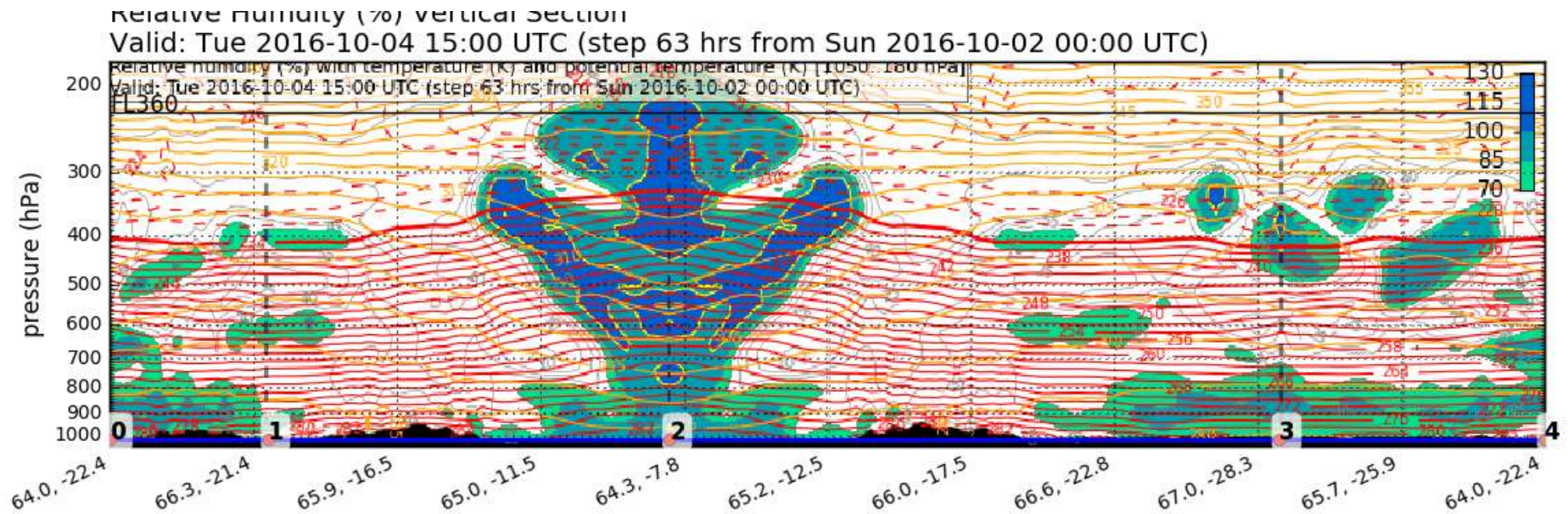


cloud cover (0-1) and wind speed (m/s) vertical section

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



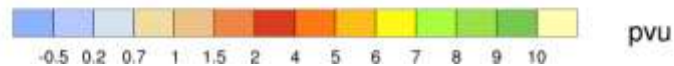
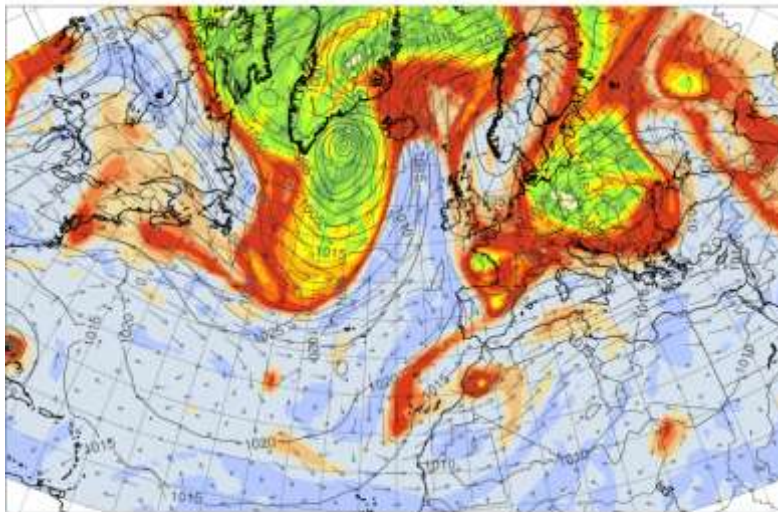
Wednesday 5 October

HALO

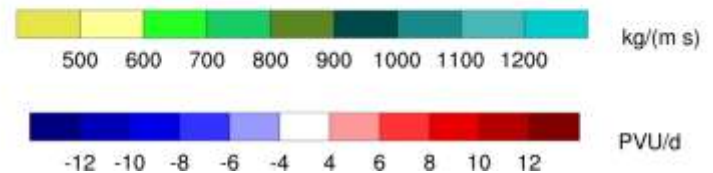
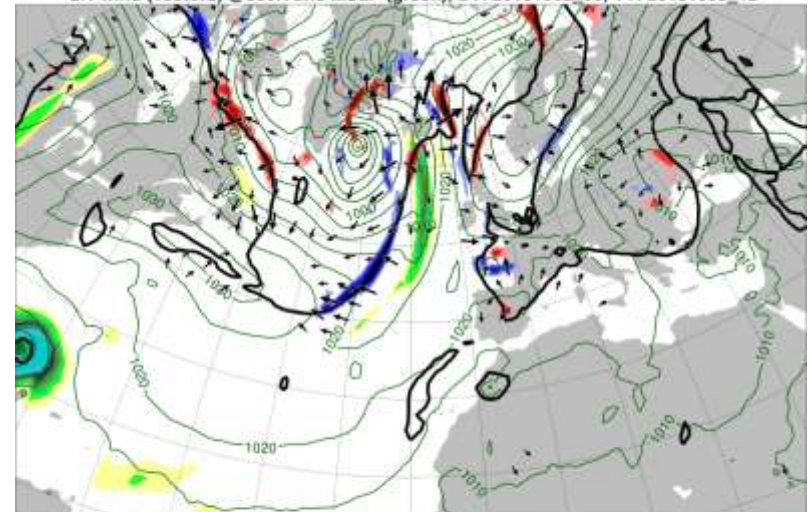
WED, 05/10/2016

BT02/00Z VT05/12Z

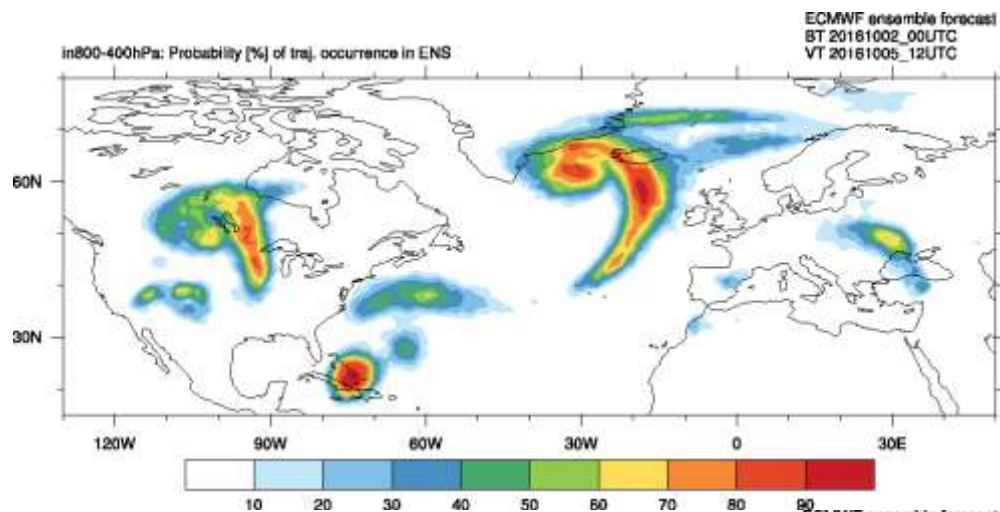
PV@330K at 20161005_12



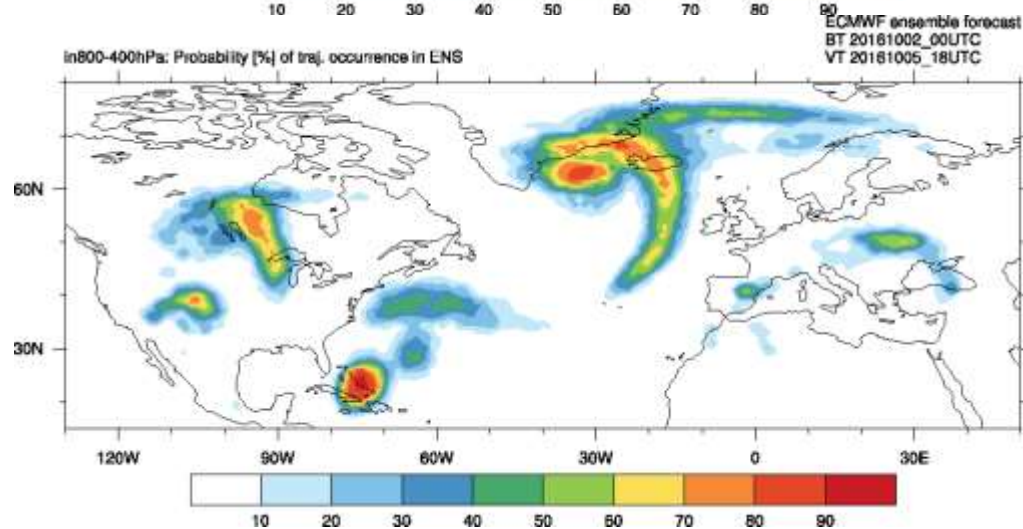
2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @330K and MSLP (green), BT: 20161002 00, VT: 20161005 12



WCB ascent Wed 05/10



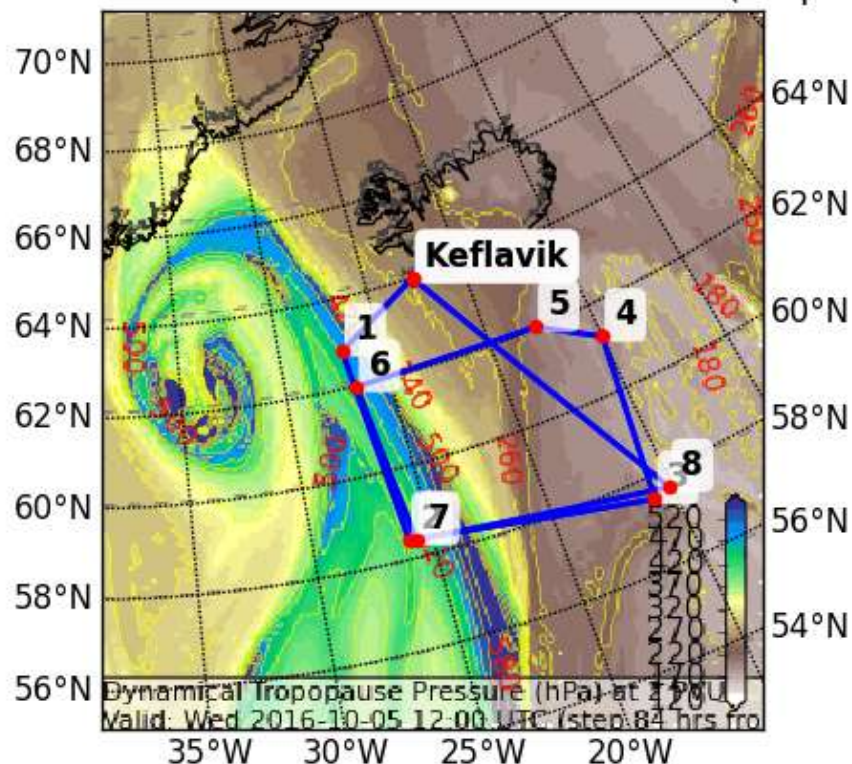
BT02/00Z VT05/12



BT02/00Z VT05/18

Possible HALO flight WED, 05 Oct

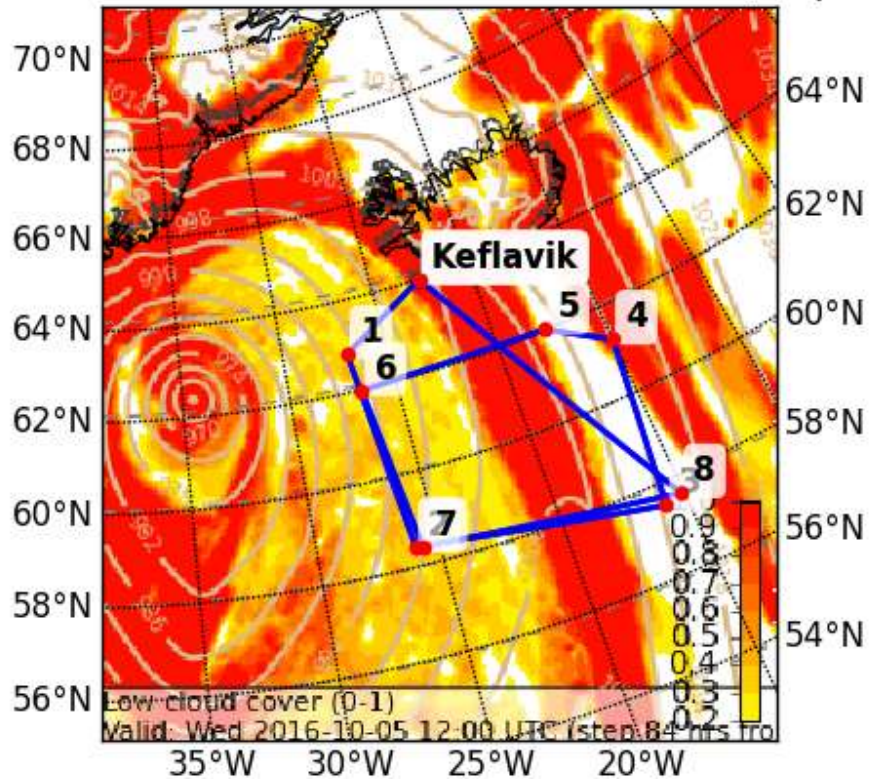
Dynamical Tropopause (Pressure (hPa)) at 2000 (10^{-3} PVU)
Valid: Mi 2016-10-05 12:00 UTC (step 84 hrs from So 2016-10-02 00:00 UTC)



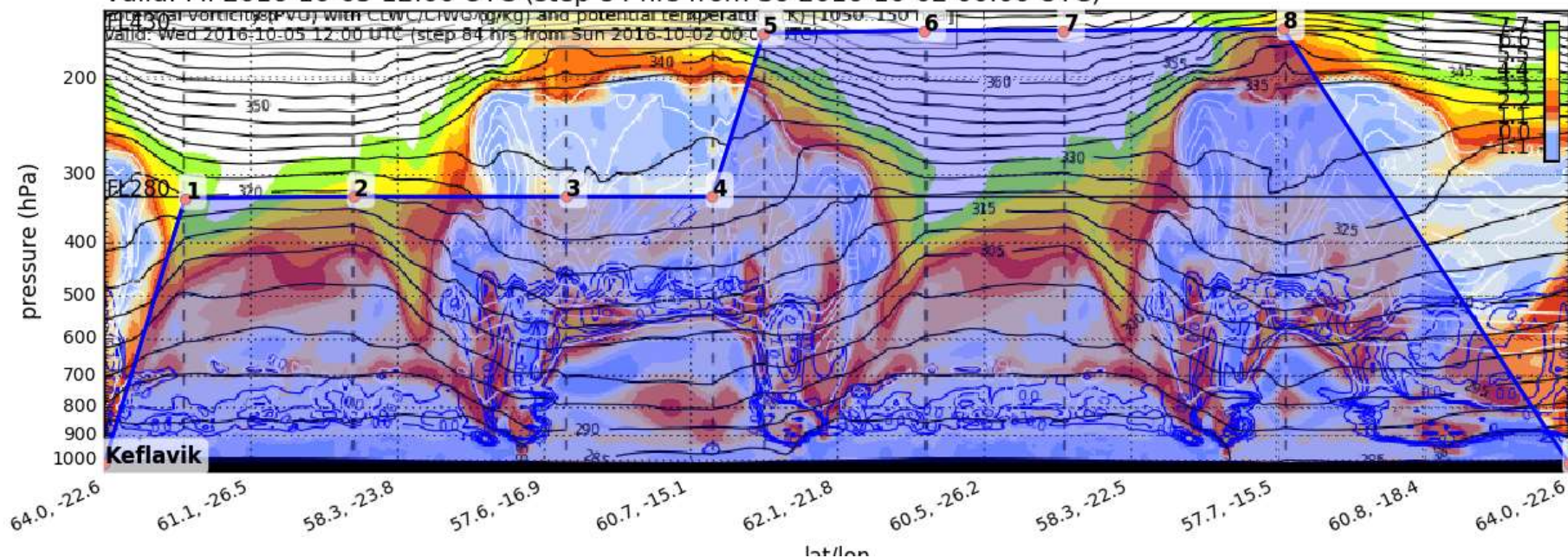
Shallow convection

Cloud Cover (0-1) (Low Cloud Cover)

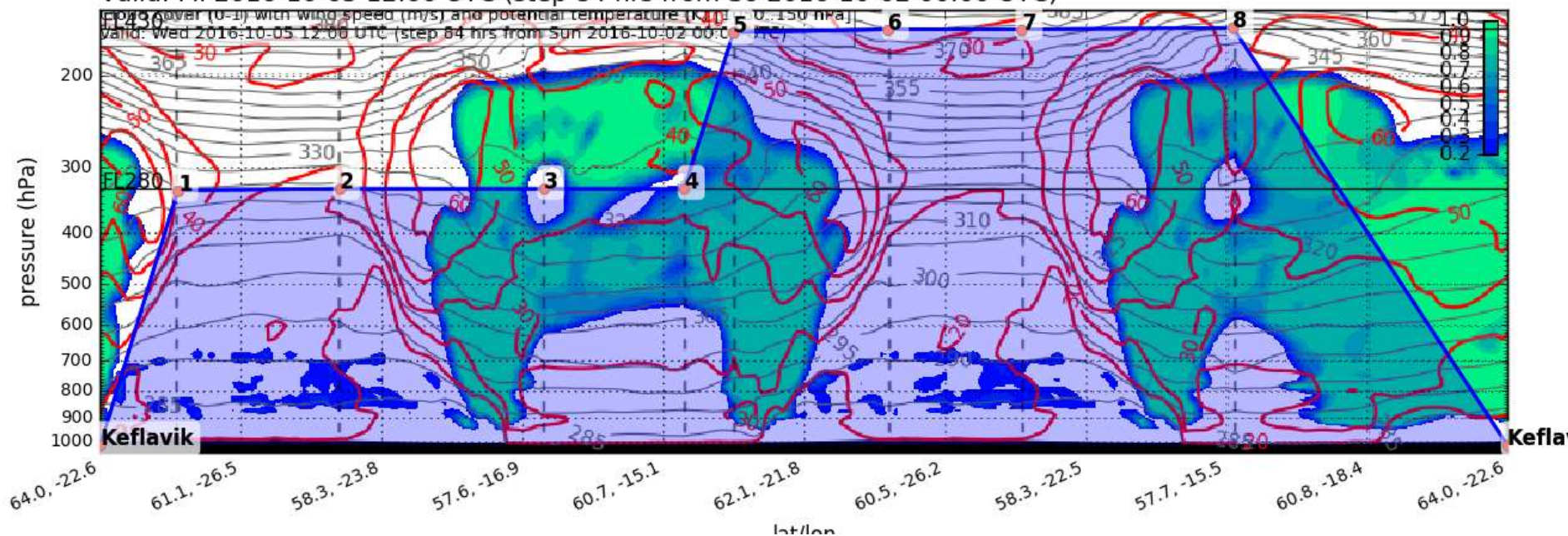
Valid: Mi 2016-10-05 12:00 UTC (step 84 hrs from So 2016-10-02 00:00 UTC)



Potential Vorticity (PVU) Vertical Section (Northern Hemisphere)
Valid: Mon 2016-10-05 12:00 UTC (step 84 hrs from Sun 2016-10-02 00:00 UTC)

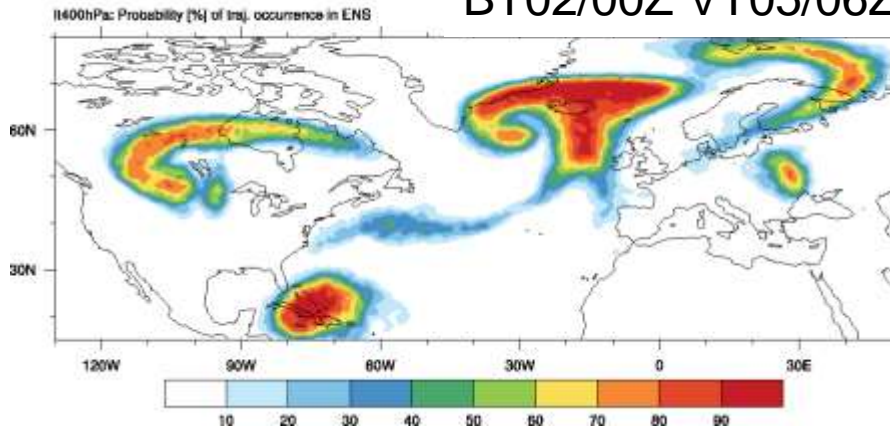


Cloud Cover (0-1) and Wind Speed (m/s) Vertical Section
Valid: Mi 2016-10-05 12:00 UTC (step 84 hrs from So 2016-10-02 00:00 UTC)

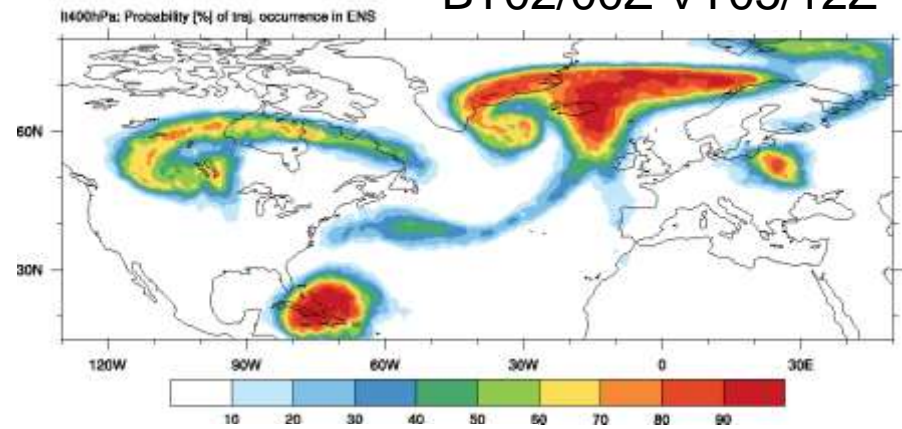


WCB outflow and cloud cover in the Iceland region

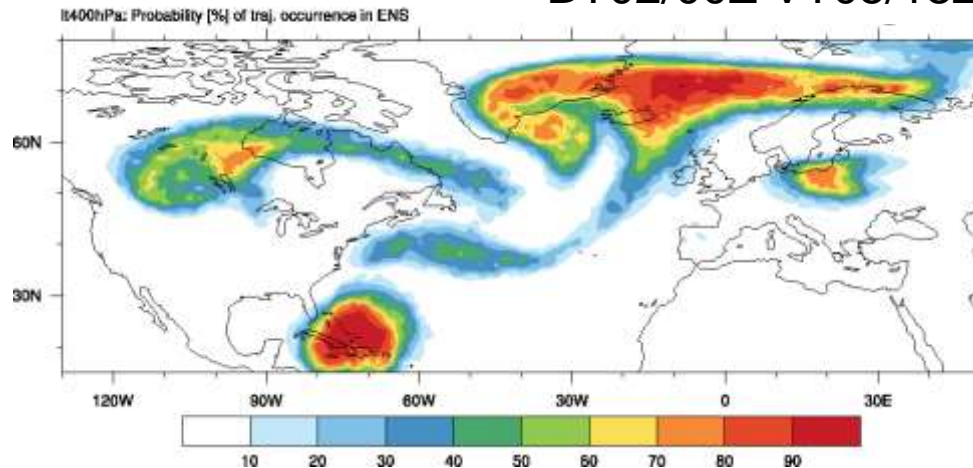
BT02/00Z VT05/06Z



BT02/00Z VT05/12Z



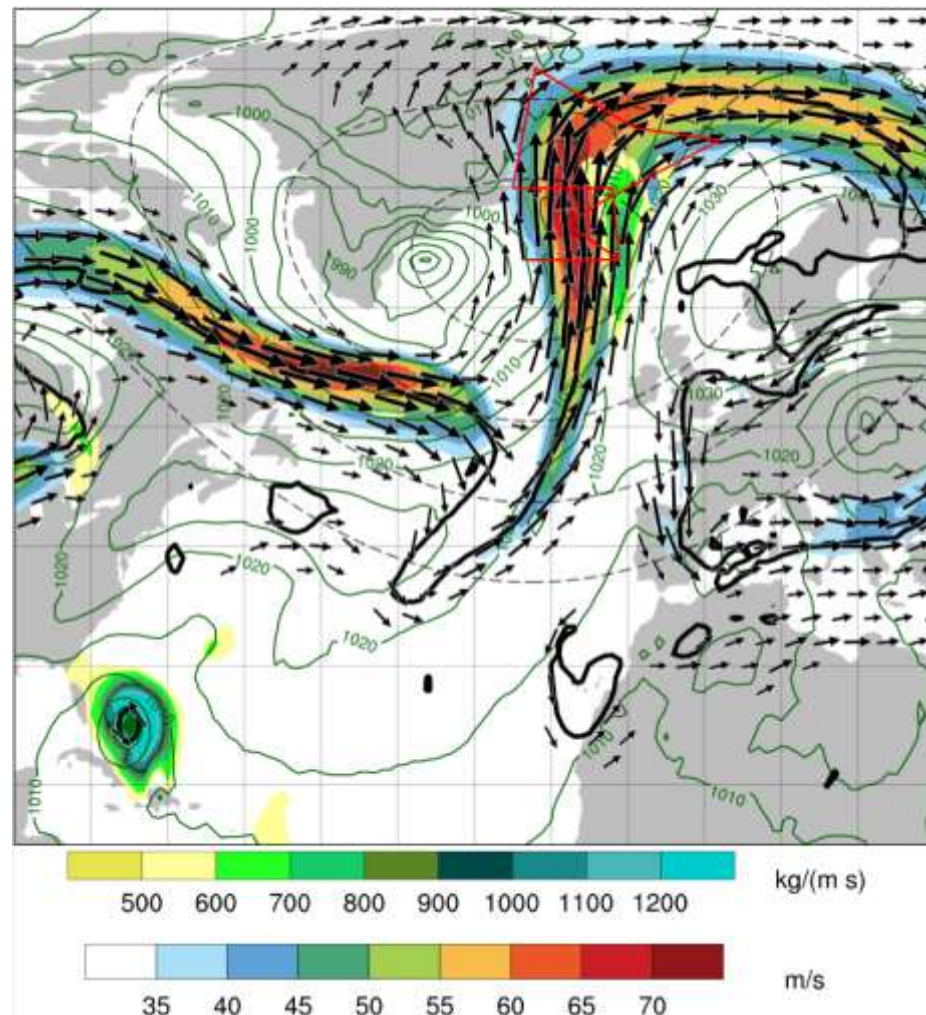
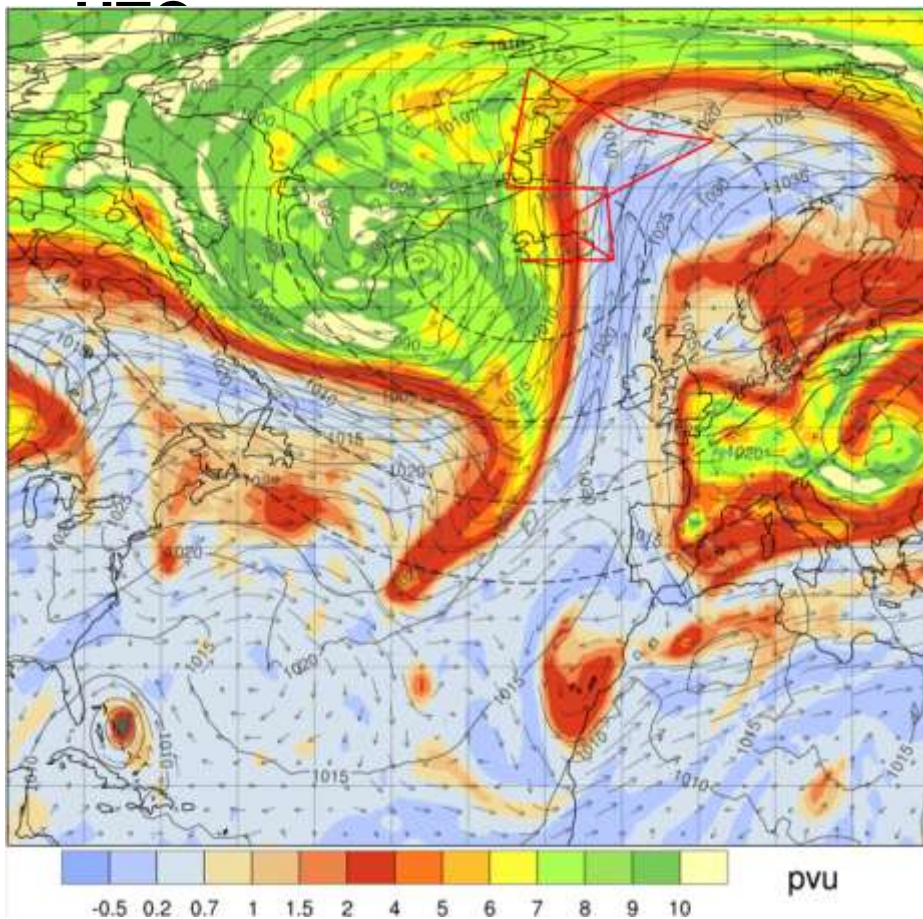
BT02/00Z VT05/18Z



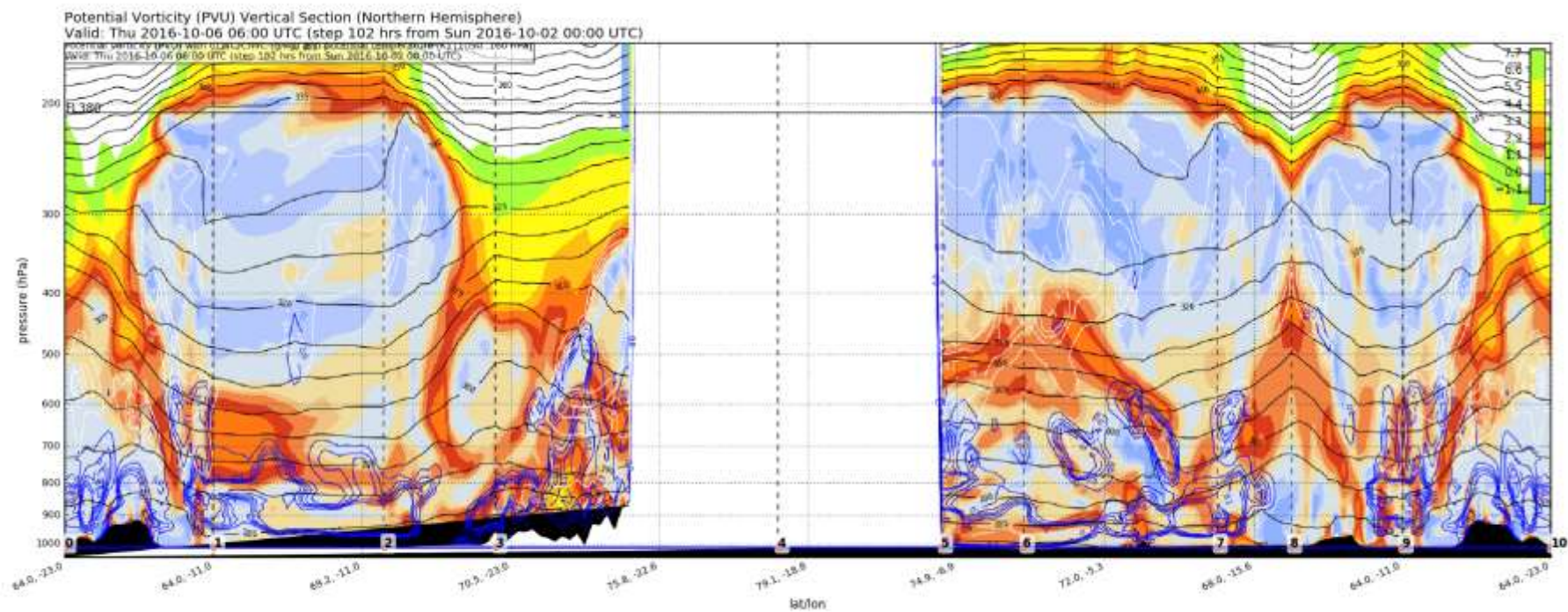
Thursday 6 October IOP8

HALO and Falcon flight

Tentative flight plan 06 Oct 2016, 06



Tentative flight plan 06 Oct 2016, 06 UTC



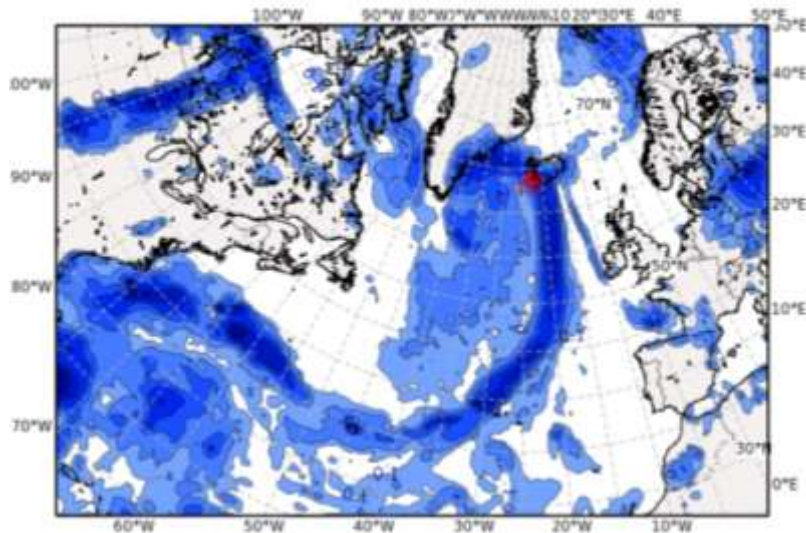
Radiosoundings

COAMPS Sensitivity (48h) Valid 12Z 5 Oct (Wednesday)

Azores sondes at 00Z 5 and 6 Oct, Off-day sondes over Latvia (5th/6th)

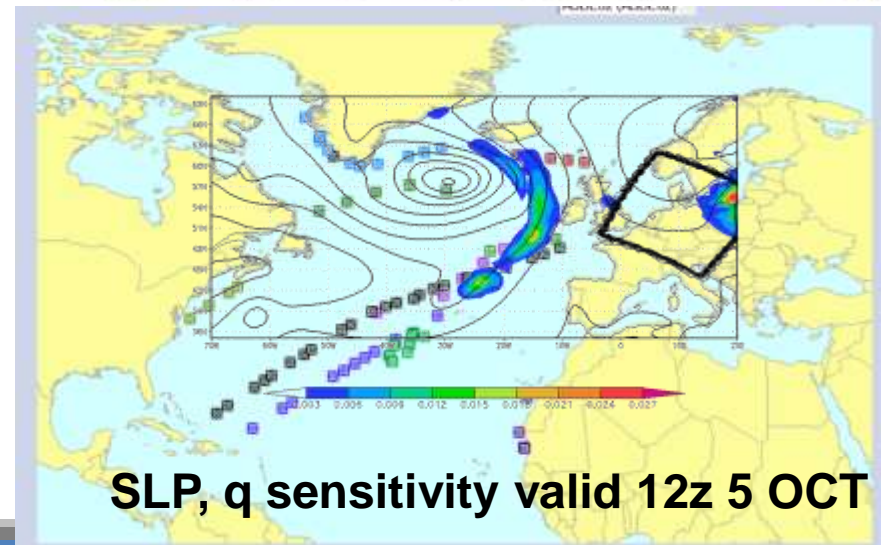
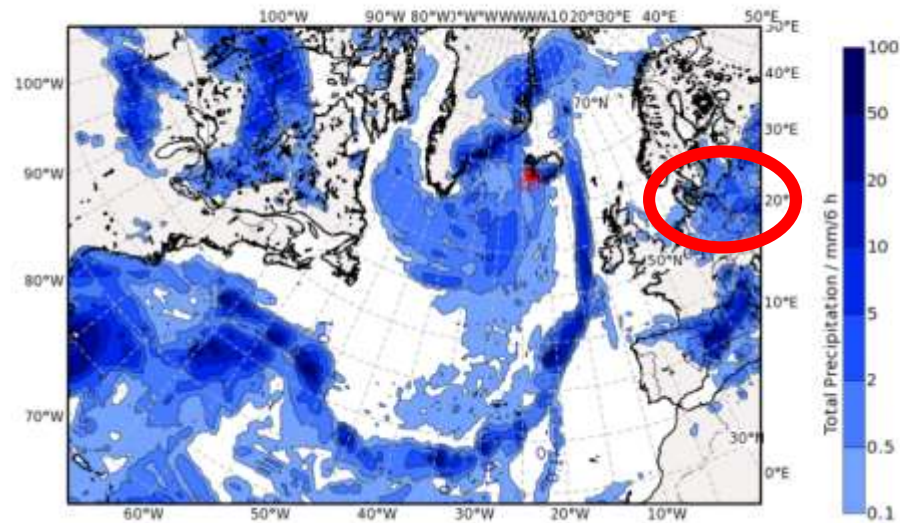
PRECIP 12Z 5 OCT

Total Precipitation, accumulated over 6 hours prior to valid time (mm)
Valid: Wed, 05 Oct 2016, 12 UTC (step 084 h from Sun, 02 Oct 2016, 00 UTC)



PRECIP 12 Z 6 OCT

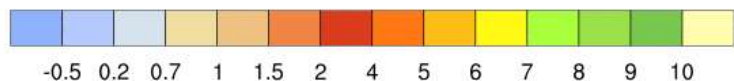
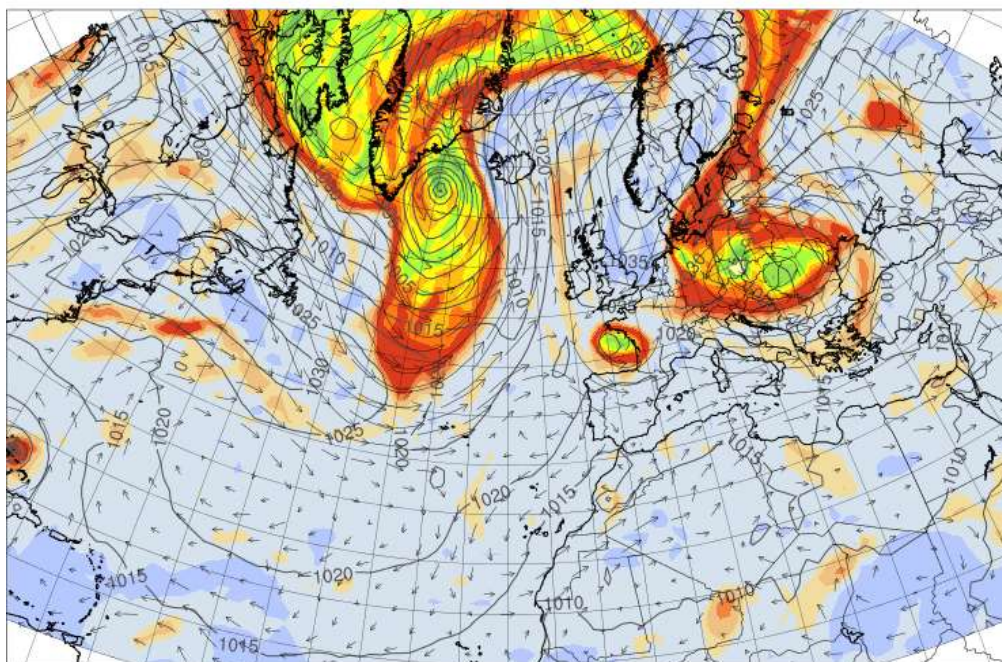
Total Precipitation, accumulated over 6 hours prior to valid time (mm)
Valid: Thu, 06 Oct 2016, 12 UTC (step 108 h from Sun, 02 Oct 2016, 00 UTC)



SLP, q sensitivity valid 12z 5 OCT

Sondes: Wed 05 10

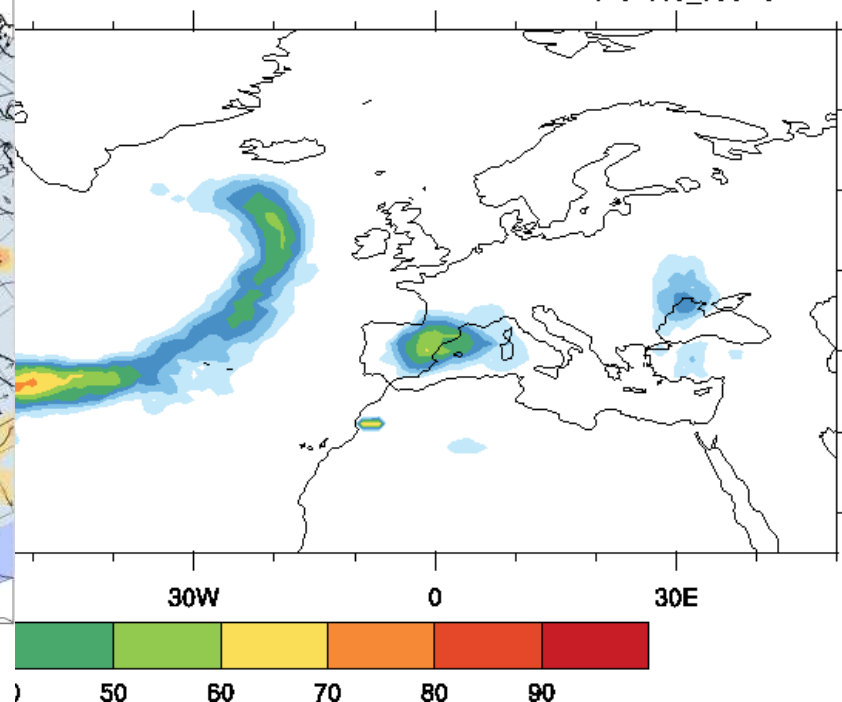
PV@320K at 20161005_12



pvu

WCB Inflow

ECMWF ensemble forecast
BT 20161001_12UTC
VT 20161005_06UTC



Requests: Brest 06, 18 Z

Poprad-Ganovce 06, 18 Z (Heavy precip)

Requests

Wed 05 10:

Brest; 06, 18

Sriveri; (Latvia): 00

Poprad-Ganovce; (Slovakia): 06, 18

Thur 06 10:

Azores; 00

Sriveri; 00

TOTAL requests until Wed 05 10 2016: 139

TOTAL remaining: 86 for approx 10 last days

Outlook

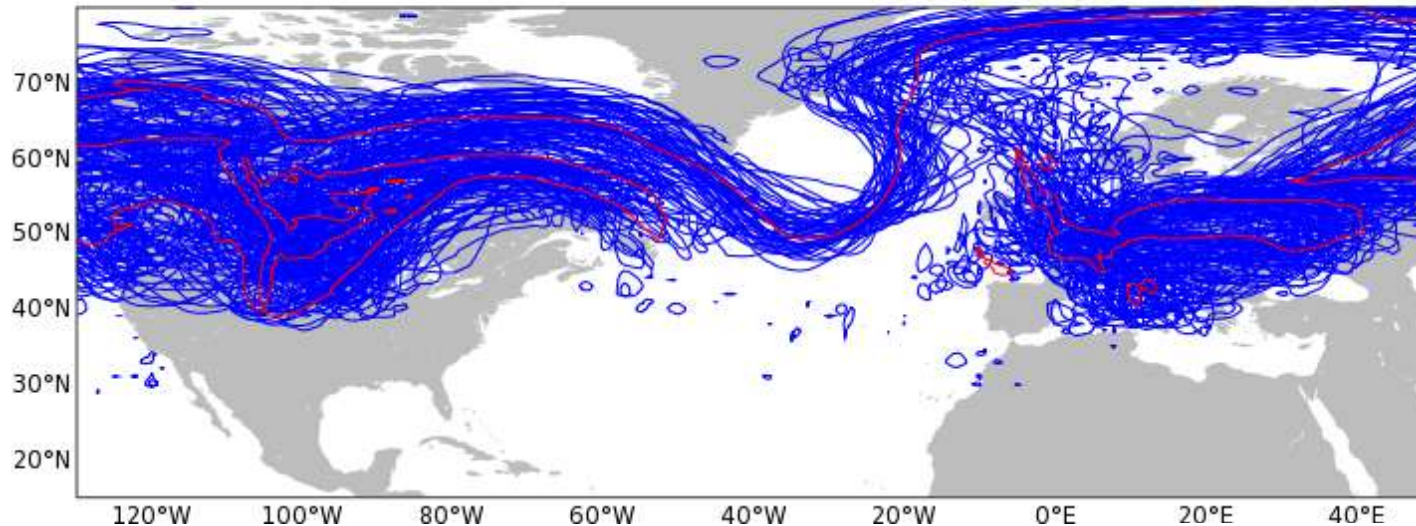
2PVU@320K, MSLP990 Spaghetti (based EC Ens 02/00Z)

ECMWF ENSEMBLE FC

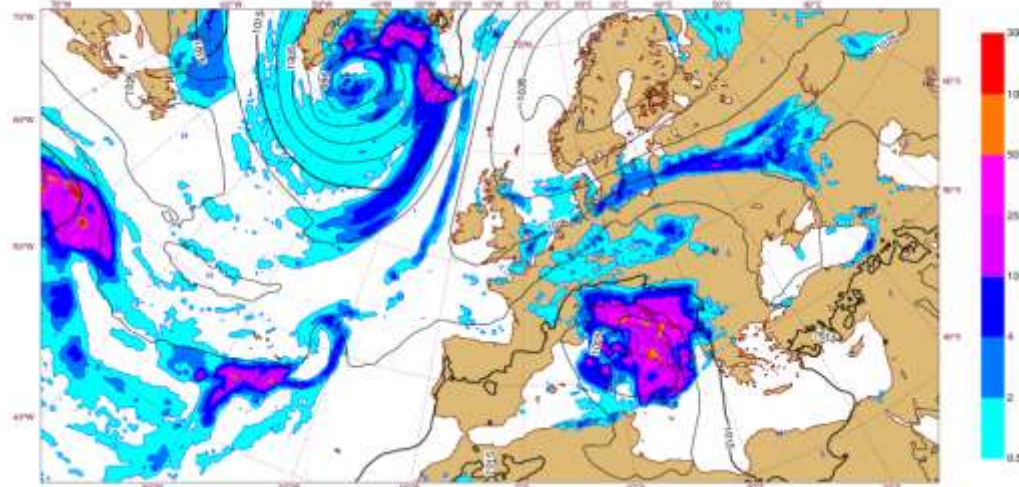
BT: 20161002 00UTC, VT: 20161007 12UTC

blue: perturbed, red: control

Fri 07/12Z

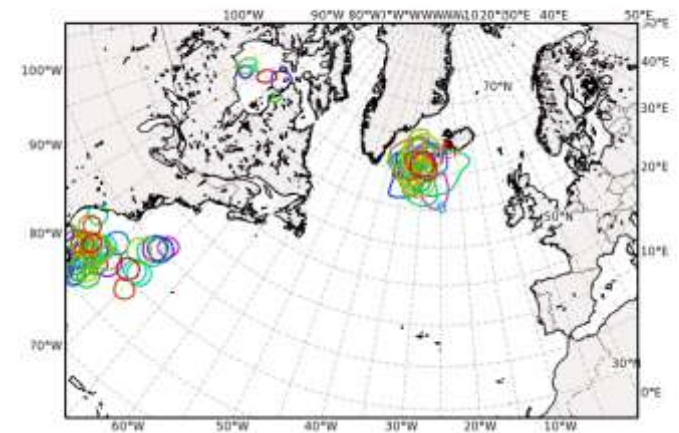


Sunday 02 October 2016 0000 UTC ECMWF 1+132 VT: Friday 07 October 2016 1200 UTC
Surface: Mean sea level pressure / 12hr Accumulated precipitation (VT-6h/VT+6h)



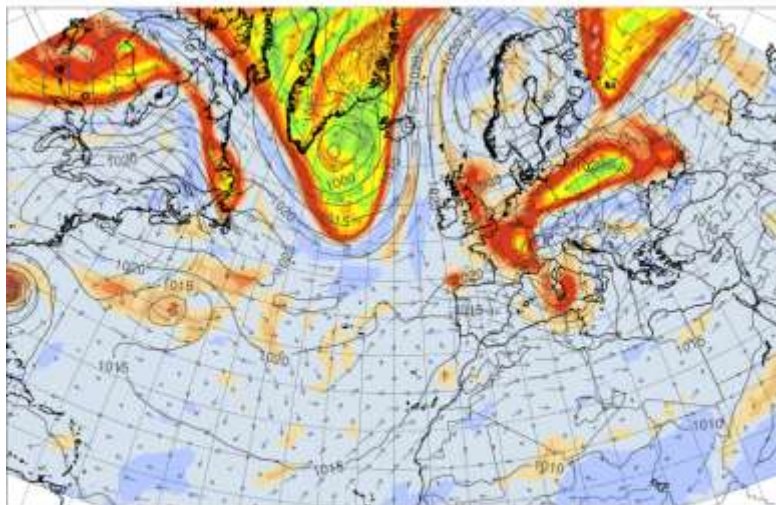
ECMWF ENS MSLP (990hPa-isoline)

Valid: Fri, 07 Oct 2016, 12 UTC (step 132 h from Sun, 02 Oct 2016, 00 UTC)



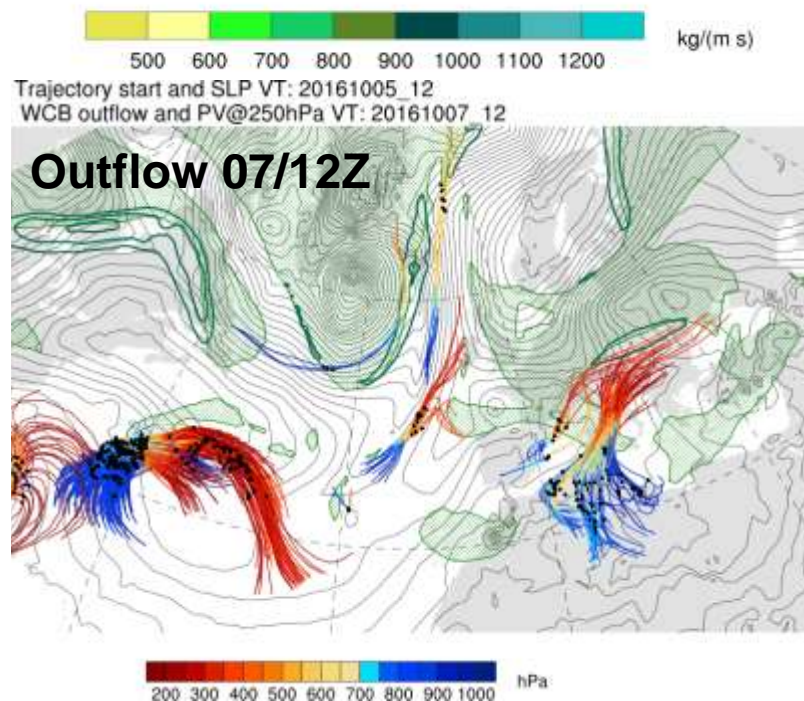
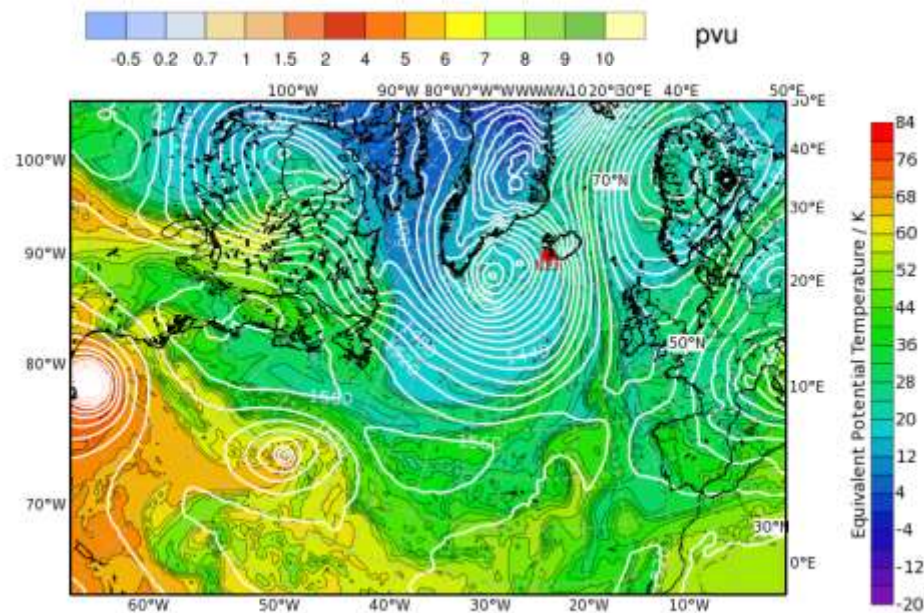
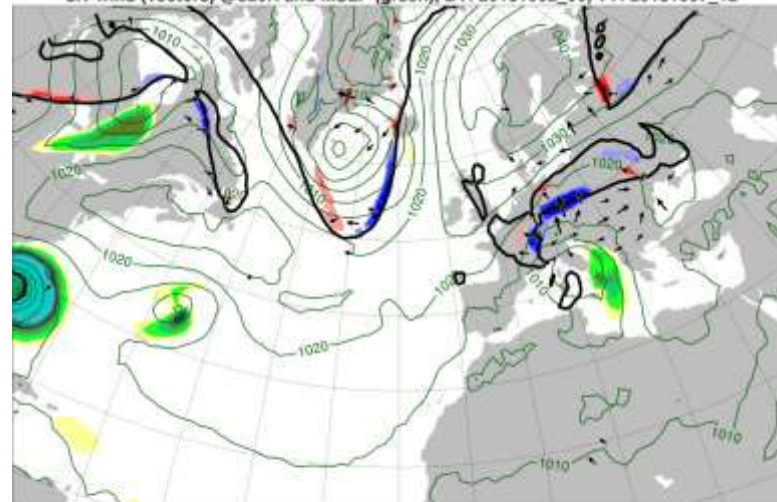
Forecast – Fri 7 Oct 2016, 12UTC

PV@320K at 20161007_12



PV320K, irrwind320K, THE850K, trajectories

2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002_00, VT: 20161007_12



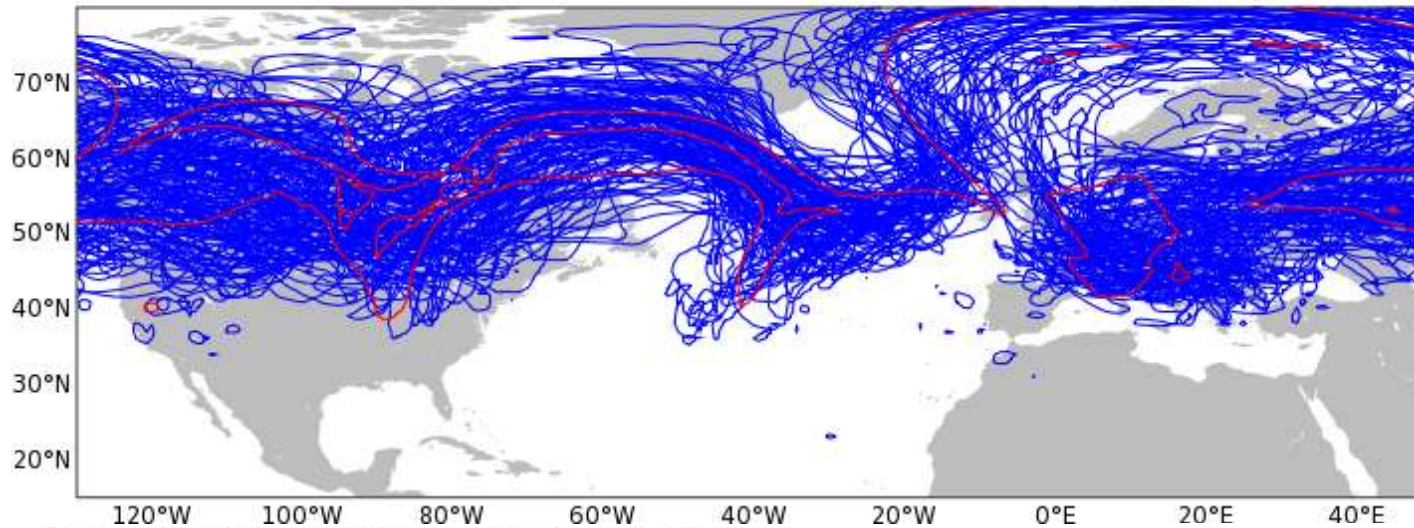
2PVU@320K, MSLP990 Spaghetti (based EC Ens 02/00Z)

ECMWF ENSEMBLE FC

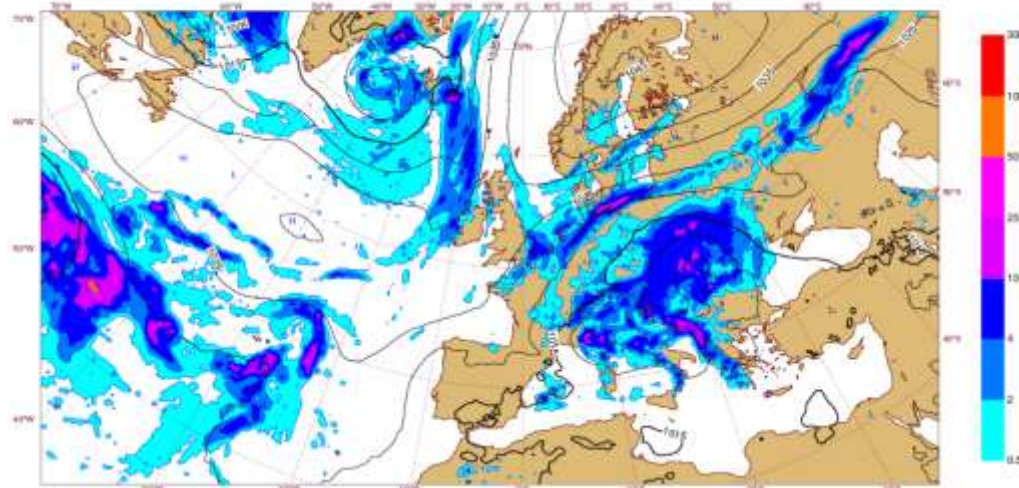
BT: 20161002 00UTC, VT: 20161008 12UTC

blue: perturbed, red: control

Sat 08/12Z

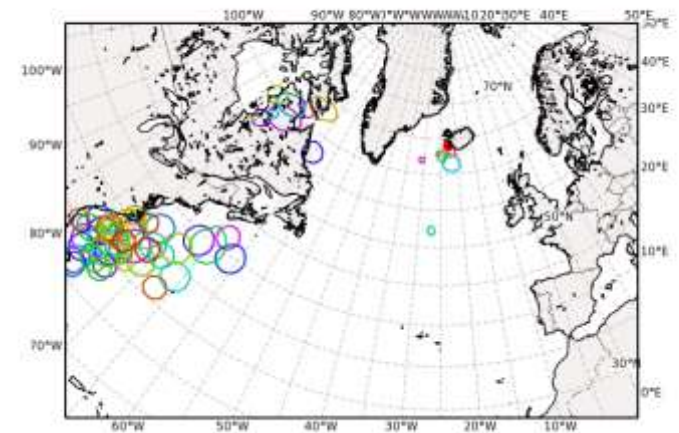


Sunday 02 October 2016 0000 UTC ECMWF 1+156 VT: Saturday 08 October 2016 1200 UTC
Surface: Mean sea level pressure / 12hr Accumulated precipitation (VT-6h/VT+6h)



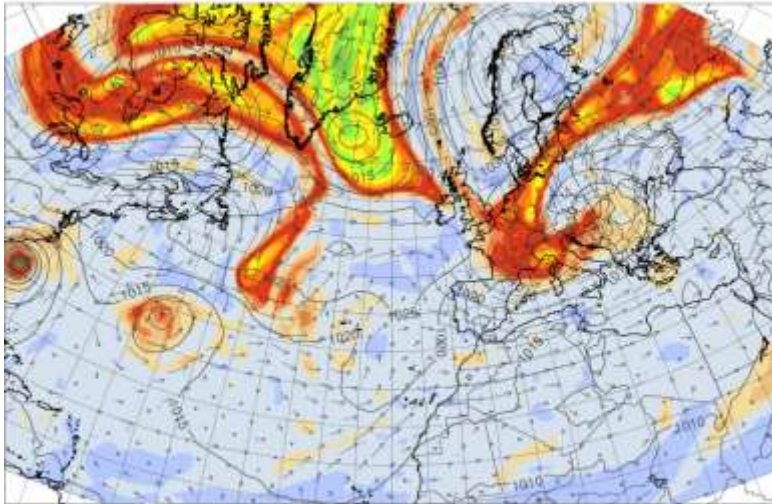
ECMWF ENS MSLP (990hPa-isoline)

Valid: Sat, 08 Oct 2016, 12 UTC (step 156 h from Sun, 02 Oct 2016, 00 UTC)

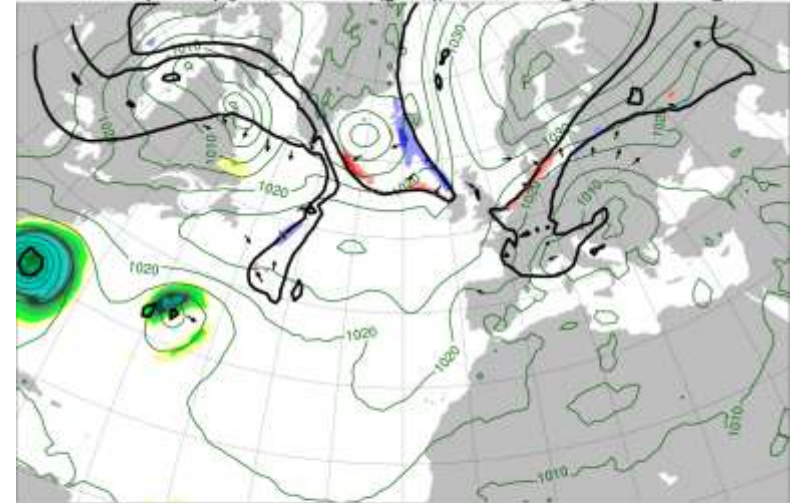


Forecast – Sat 8 Oct 2016, 12UTC PV320K, irrwind320K, THE850K, trajectories

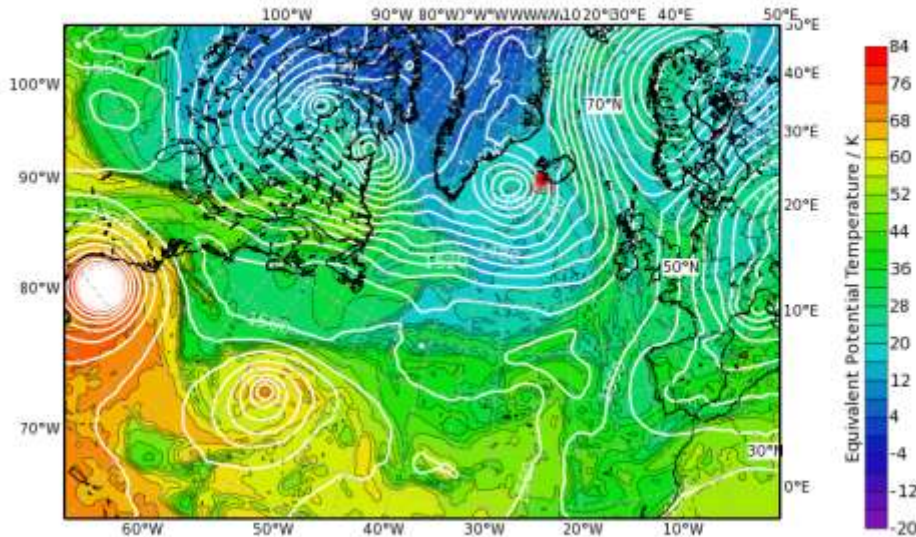
PV@320K at 20161008_12



2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green), BT: 20161002_00, VT: 20161008_12

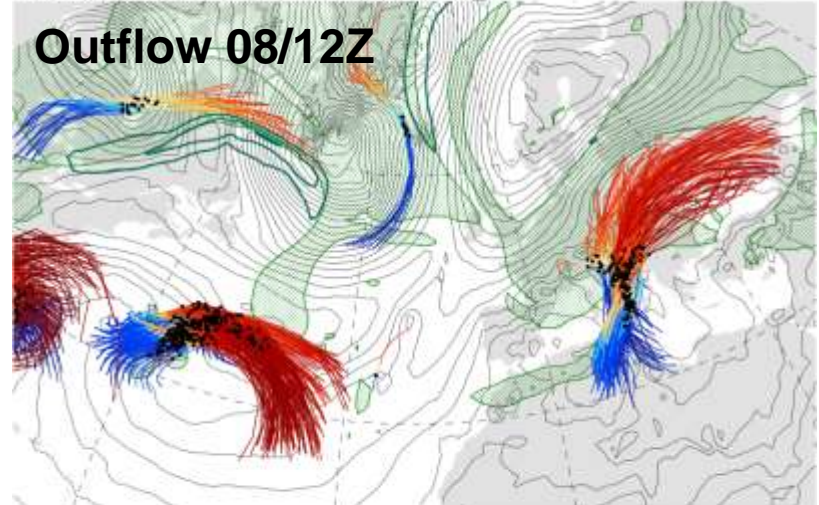


Equivalent Potential Temperature (degC) & Streamlines at 850 hPa
Valid: Sat, 08 Oct 2016, 12 UTC (step 156 h from Sun, 02 Oct 2016, 00 UTC)



500 600 700 800 900 1000 1100 1200 kg/(m s)

Trajectory start and SLP VT: 20161006_12
WCB outflow and PV@250hPa VT: 20161008_12



Outflow 08/12Z

200 300 400 500 600 700 800 900 1000 hPa

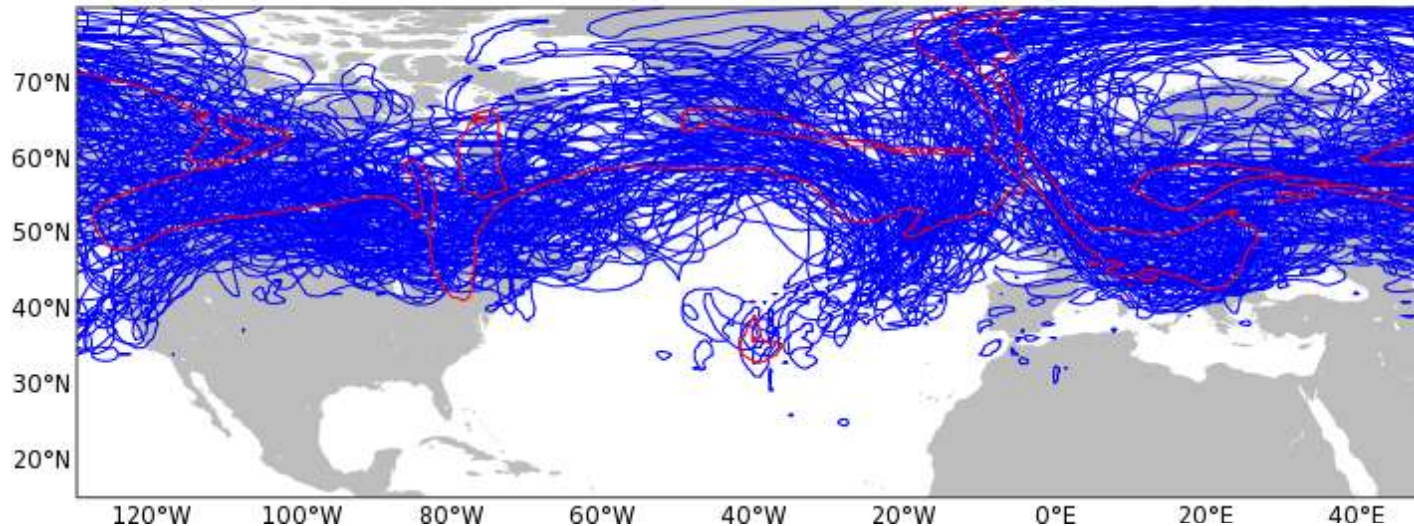
2PVU@320K, MSLP990 Spaghetti (based EC Ens 02/00Z)

ECMWF ENSEMBLE FC

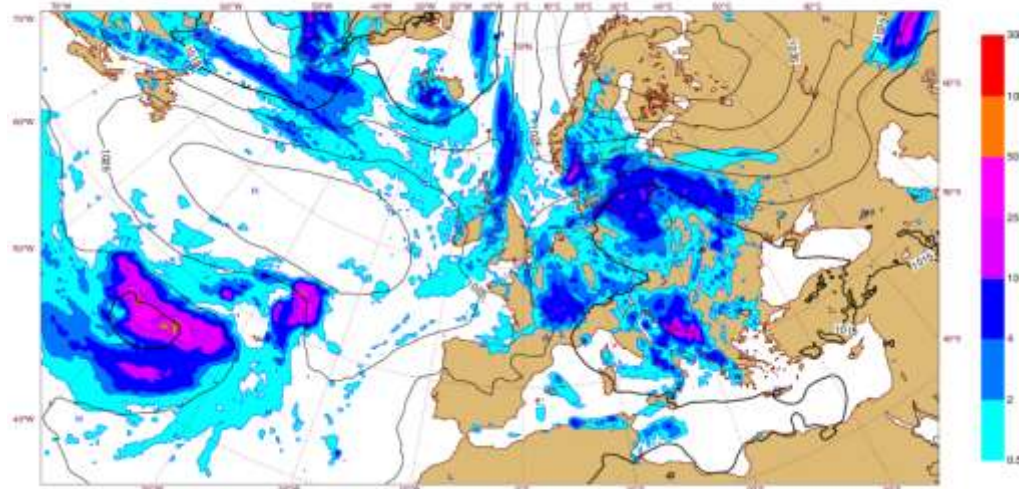
BT: 20161002 00UTC, VT: 20161009 12UTC

blue: perturbed, red: control

Sun 09/12Z

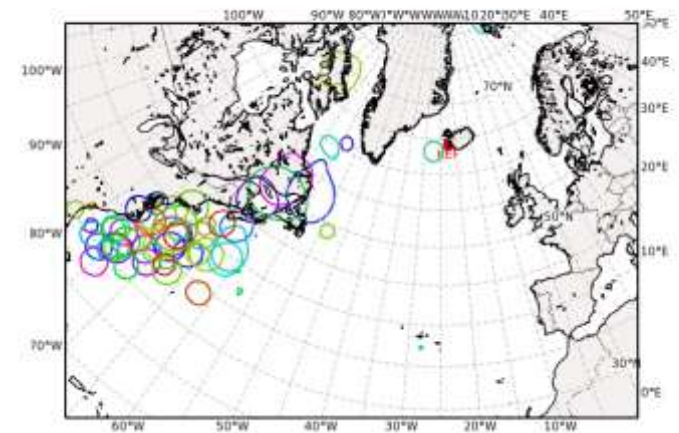


Sunday 02 October 2016 0000 UTC ECMWF 1+180 VT: Sunday 09 October 2016 1200 UTC
Surface: Mean sea level pressure / 12hr Accumulated precipitation (VT-6h/VT+6h)



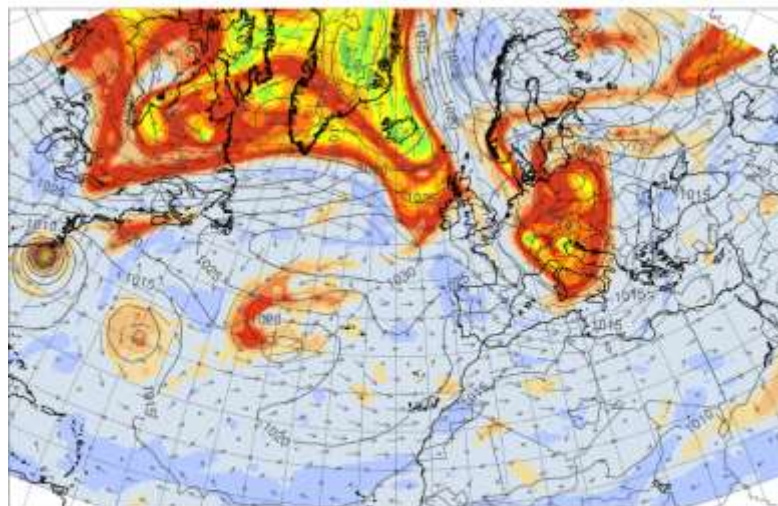
ECMWF ENS MSLP (990hPa-isoline)

Valid: Sun, 09 Oct 2016, 12 UTC (step 180 h from Sun, 02 Oct 2016, 00 UTC)

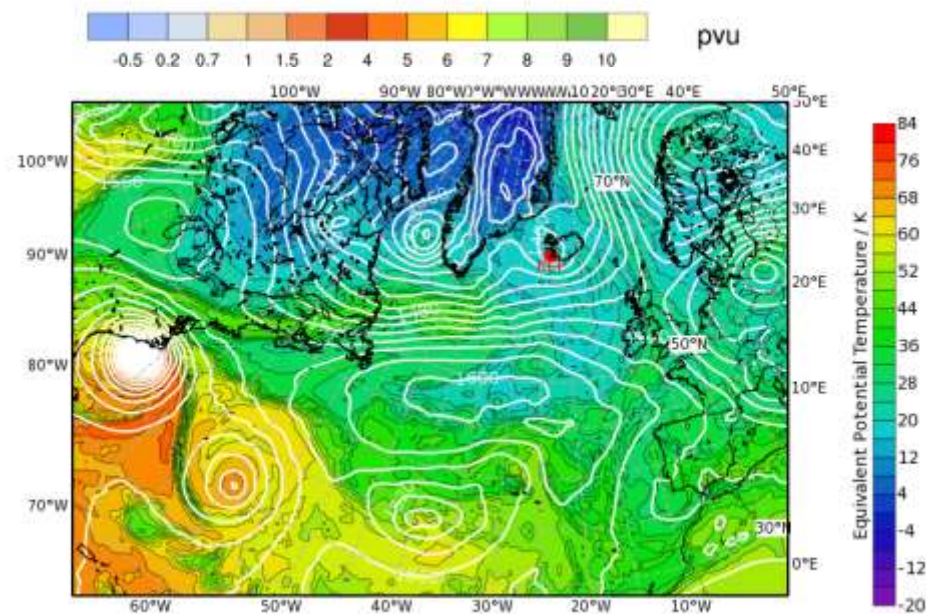
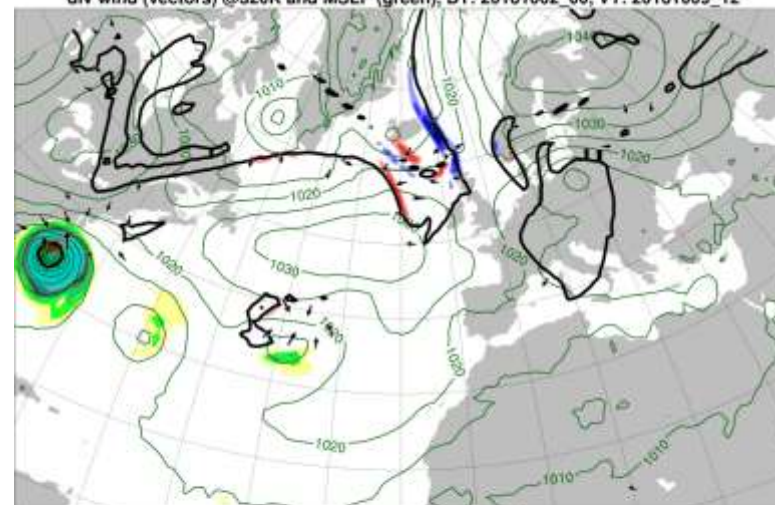


Forecast – Sun 9 Oct 2016, 12UTC PV320K, irrwind320K, THE850K, trajectories

PV@320K at 20161009_12

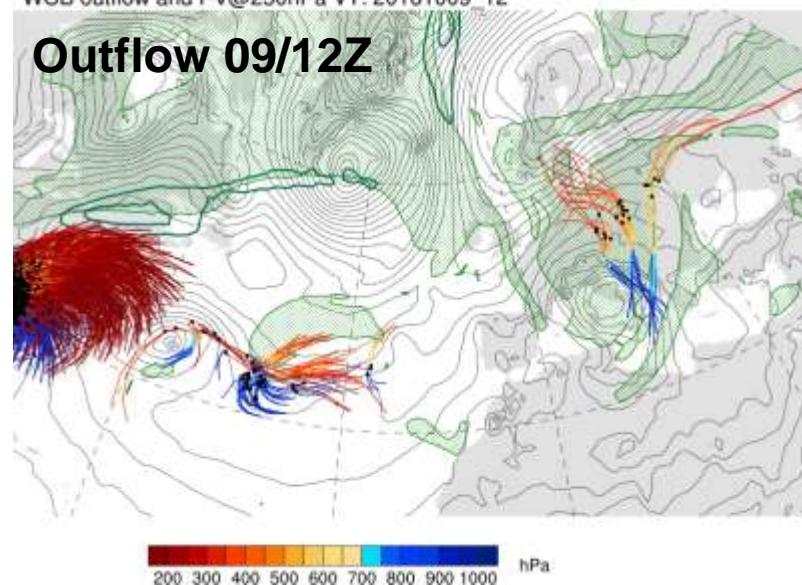


2 PVU (black), PV adv by div wind (shading),
div wind (vectors) @320K and MSLP (green). BT: 20161002_00, VT: 20161009_12



Trajectory start and SLP VT: 20161007_12
WCB outflow and PV@250hPa VT: 20161009_12

Outflow 09/12Z



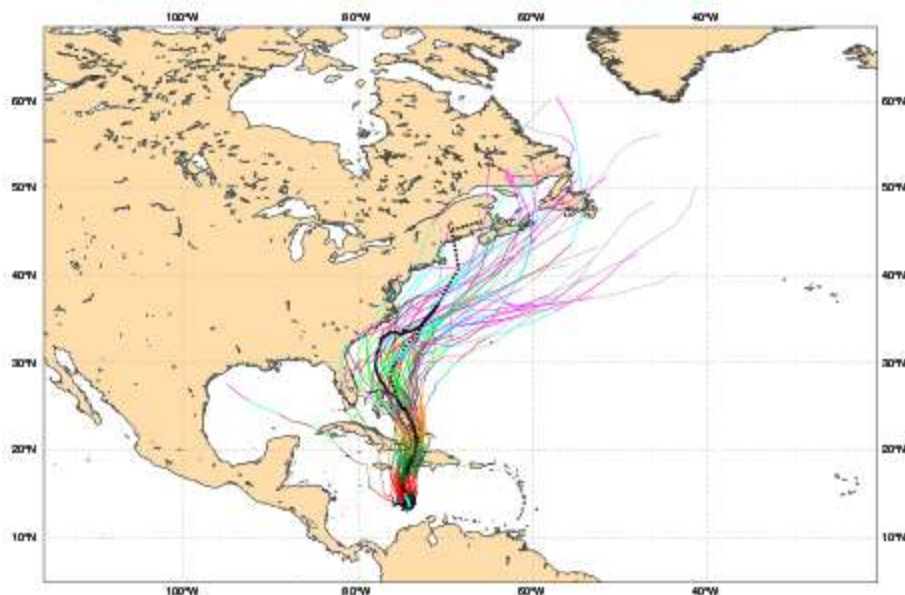
Potential extratropical transition of Hurricane Matthew (now cat. 5!)

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



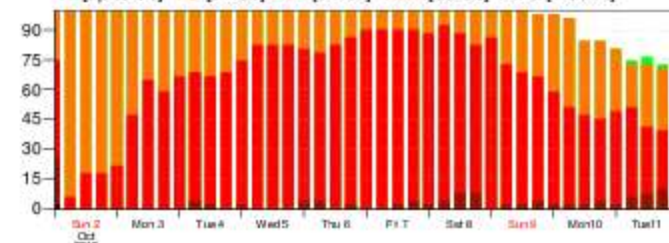
List of ensemble members numbers forecast Tropical Cyclone

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

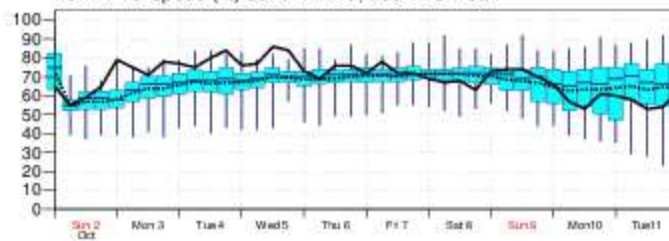
+024 h: hr=01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
 +120 h: hr=01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
 +144 h: hr=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
 +168 h: hr=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
 +192 h: hr=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
 +216 h: hr=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
 +240 h: hr=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

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

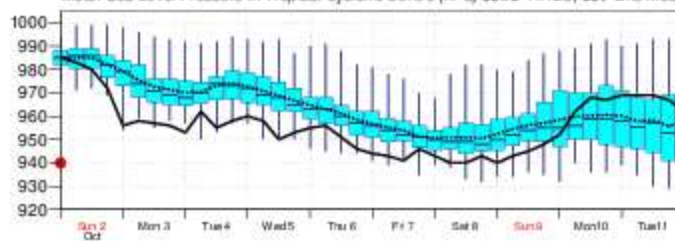
TD[up to 33] **TS**[34-63] **HR1**[64-82] **HR2**[83-95] **HR3**[> 95 kt]



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

- **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)