

T-NAWDEX Falcon 2012 Weather summary

Date (UTC): 20121013 11:30

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Synoptic Overview

The cold front connected with a low over the British Isles moved eastwards over Germany in the night. In the upcoming night a deep low in the Bay of Biscay is forming.

Second Flight yesterday (IOP1b)

Yesterday's flight was conducted successfully over central Italy. Dropsondes were dumped in the Tyrrhenian Sea. Although the probability of WCB activity was low in this region, we hope that we measured the same air mass again that was probed on Thursday evening.

General forecast interest

Today, there are no planned flights. Therefore, the focus lies on IOP2, which will focus on a "golden" WCB case, starting west of Corsica on Sunday and moving northwards over Germany on Monday.

Forecast day 1 (Sunday 14th) IOP2a

The WCB probability of the 12/12 ensemble forecast shows very high values of up to 90 % in the layer of >800 hPa (Fig.1), which are promising conditions for the tracer release experiment. The tracer (maybe two tracers in different regions and time) will be released tomorrow morning most likely in a region west of Corsica. The exact area will be determined later today.

The Falcon will try to resample the released tracer in a region between Genoa and Montpellier. Start time of the Falcon will be 13:30 UTC in Oberpfaffenhofen.

The trajectories calculated with the deterministic model run from 12/12 UTC (Fig. 2) show the WCB of interest.

gt800hPa: Probability [%] of traj. occurrence in ENS, number of ensemble members: 51
list of member: 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 co

ECMWF ensemble forecast
BT 20121012_12UTC
VT 20121014_12UTC

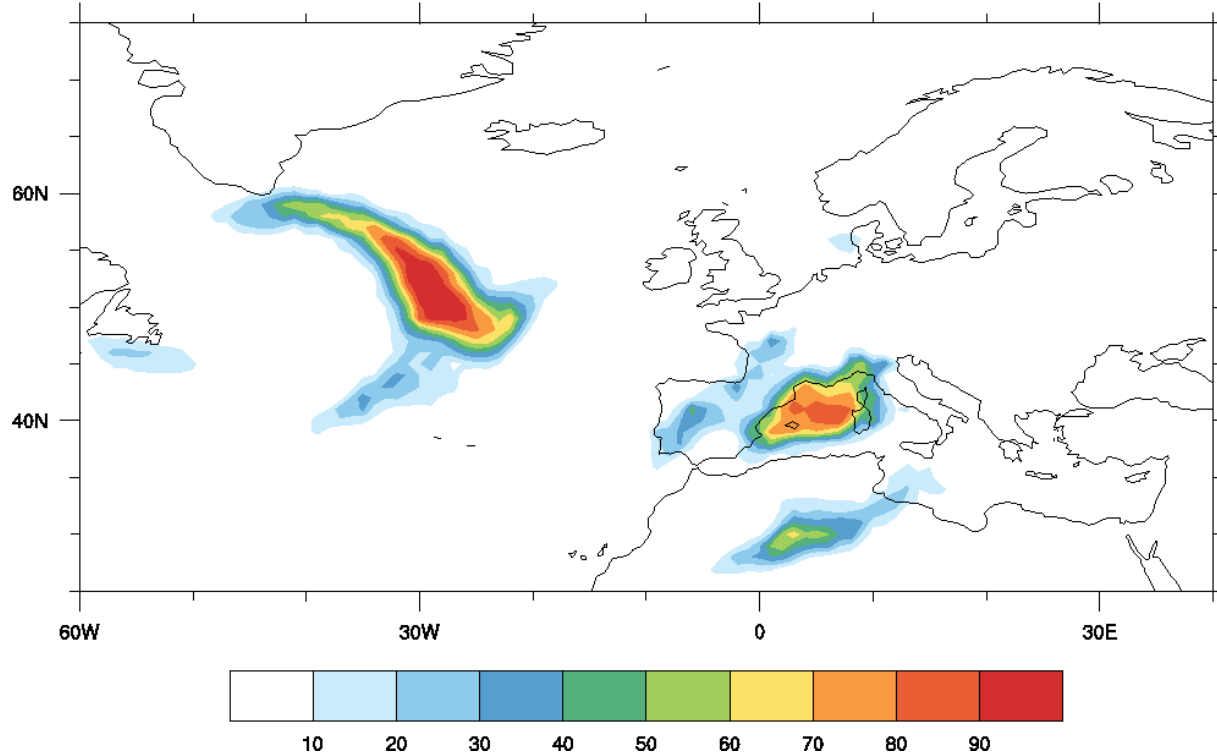


Fig. 1: Probability of WCB occurrence > 800 hPa at 14/12.

p along trajectories, position, 2pvu at 325K and SLP
WCB start at 20121014_12+0h (valid at 20121014_12)

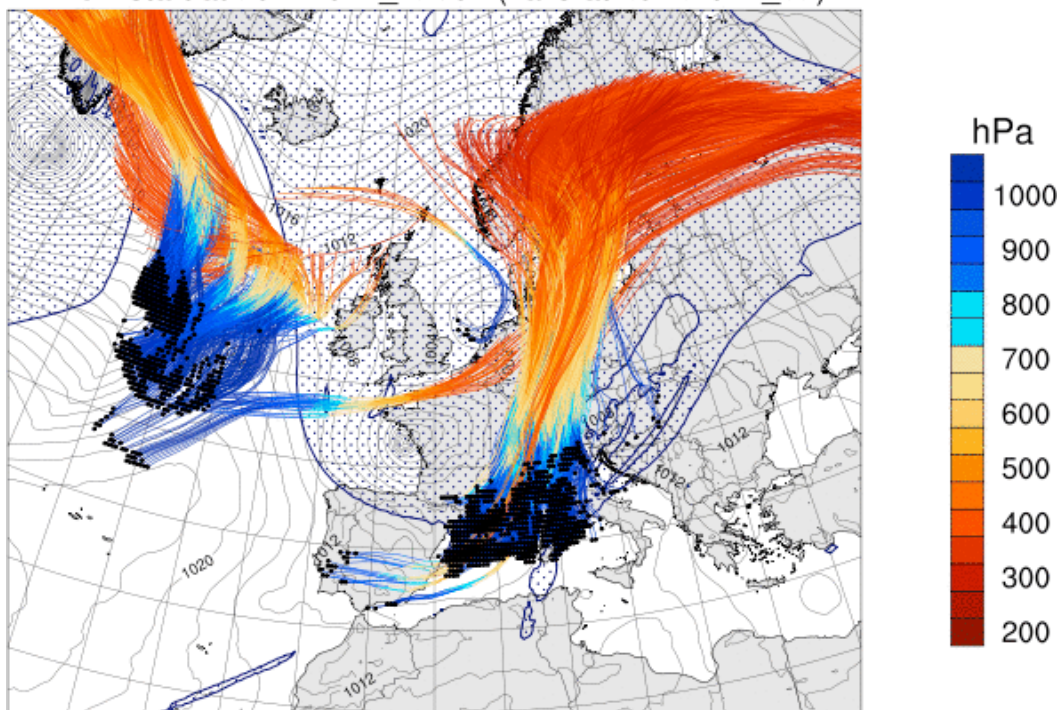


Fig. 2: Trajectories, started at 14/12 UTC, black dots show location at 14/12.

Forecast day 2 (Mondy 15th)

IOP2b: Morning flight

The second flight will take place on Monday morning over southern Germany. The flight pattern is reaching from Saarland in the West to Austrian border in the east. The Falcon will start on 06UTC and will fly on three different altitudes releasing eight dropsondes. As the black dots in Fig. 3 show, the WCB lies exactly in the flight pattern of the Falcon. However, latest simulations indicate that the air masse are moving to fast, but we still hope that we can adjust the tracer release in order to detect the tracer.

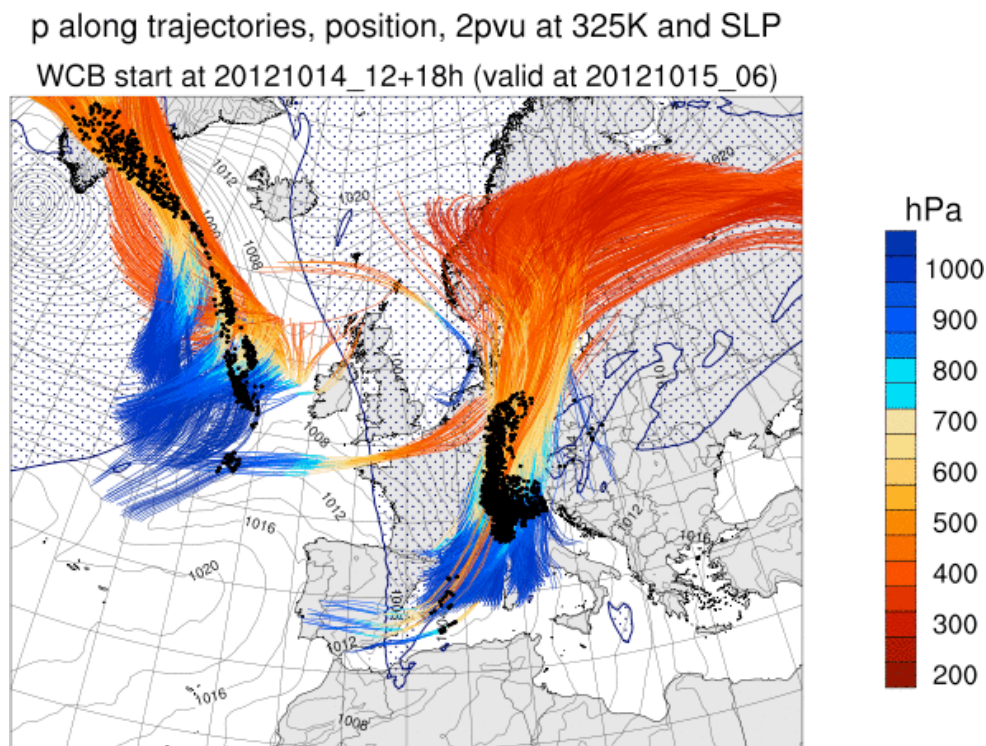


Fig. 3: Trajectories, started at 14/12 UTC, black dots show location at 15/06.

IOP2c: Afternoon flight

In the course of the day the air masse in the WCB are ascending and the corresponding cold front lies over Germany (from southwest to northeast, Fig. 4). The afternoon flight will head northwards to an area around the Island of Ruegen. The aim of this flight is, if we are lucky, to measure the tracer for the third time in the outflow region over northern Germany. It is also planned to fly into ice supersaturated regions to measure cirrus clouds and also to probe the air within the stratosphere. Model simulations indicate the occurrence of a tropopause fold (Fig. 5).

To summarize, Fig. 6 shows the planned flights on Sunday and Monday as well as a preliminary release area of the tracer.

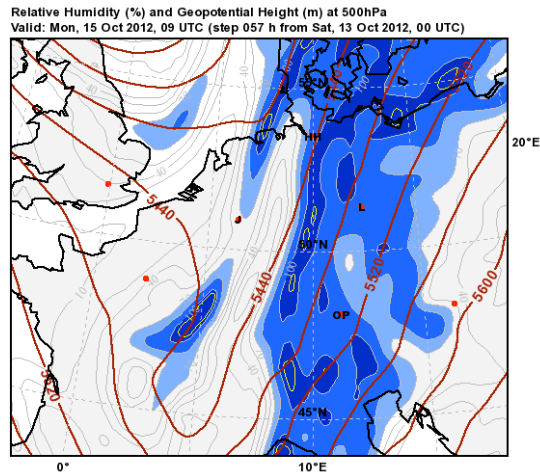


Fig. 4: Relative Humidity [%] and geopotential height in 500 hPa [m] at 15/09.

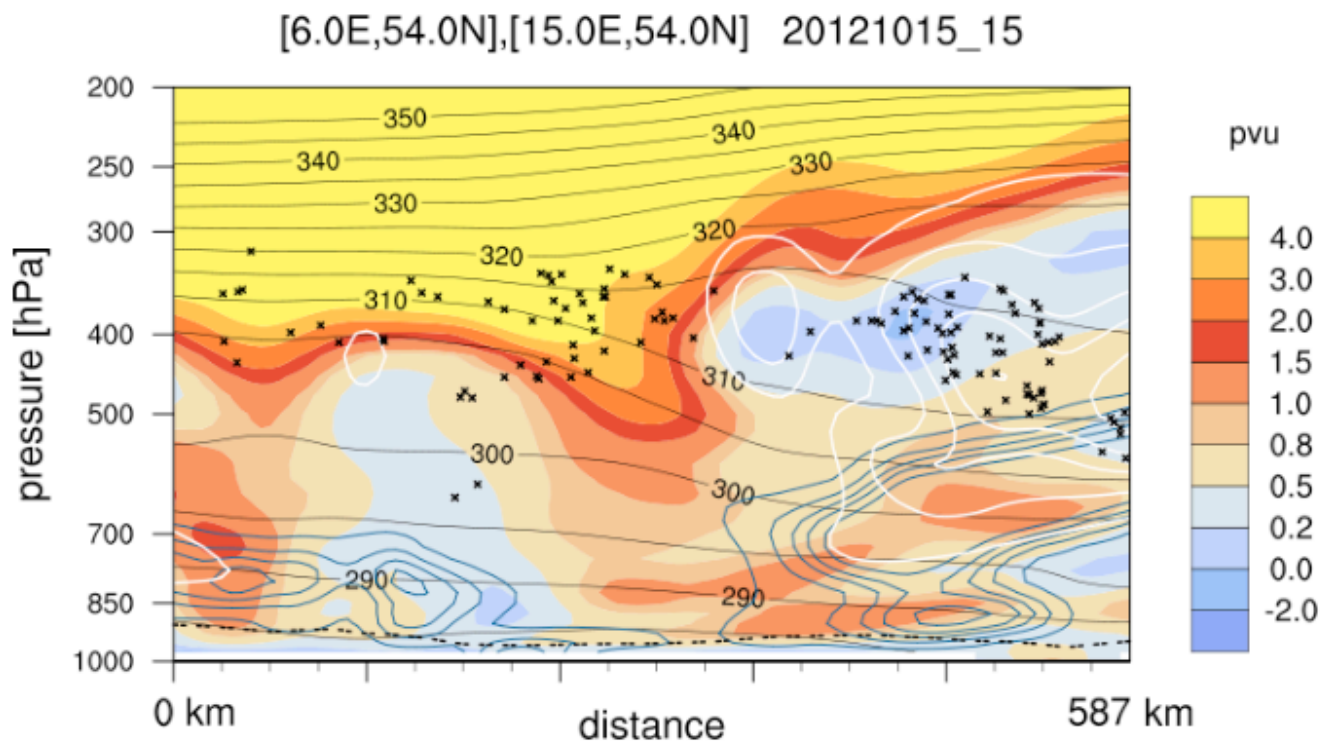


Fig. 5: Vertical cross section between from (left end) west of Helgoland and (right end) east of the Island of Ruegen.

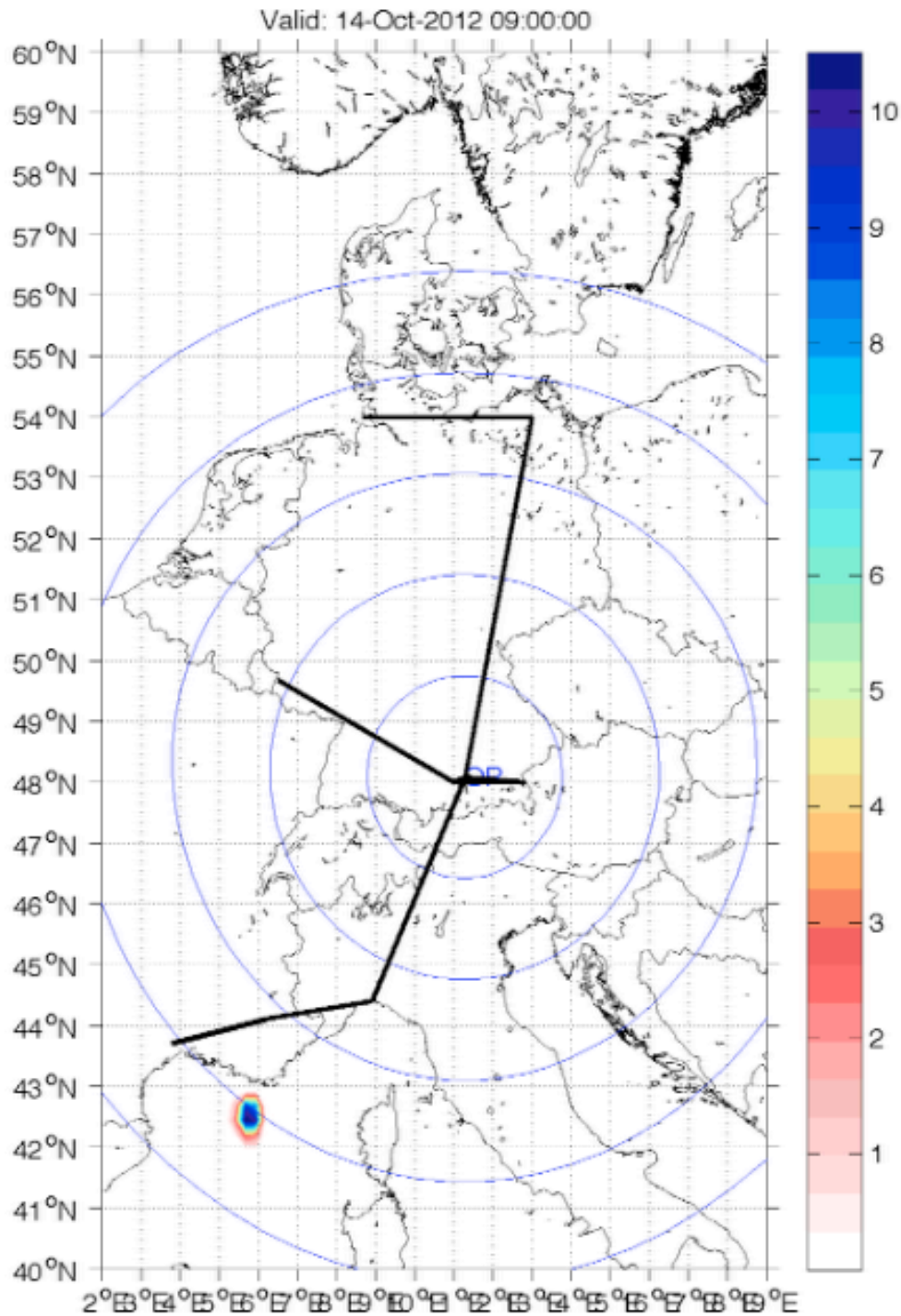


Fig. 6: Map of the planned flights on Sunday (southern leg), Monday morning (west-to-east leg) and Monday afternoon (northern leg). A preliminary tracer release area is colour coded.

Forecast day 3 to 7 (Tuesday 16th to Friday 19th)

On Tuesday a cut off low over northern Italy will move further eastwards out of the area of interest.

On Thursday a strong low pressure system is centred over Ireland, bringing strong precipitation to the Iberian Peninsula and France. This looks like a further promising case for a WCB investigation. However, it is not clear yet if the corresponding WCB comes into range for meaningful Falcon flights.

Total Precipitation, accumulated over 6 hours prior to valid time (mm)
Valid: Thu, 18 Oct 2012, 00 UTC (step 120 hrs from Sat, 13 Oct 2012, 00 UTC)

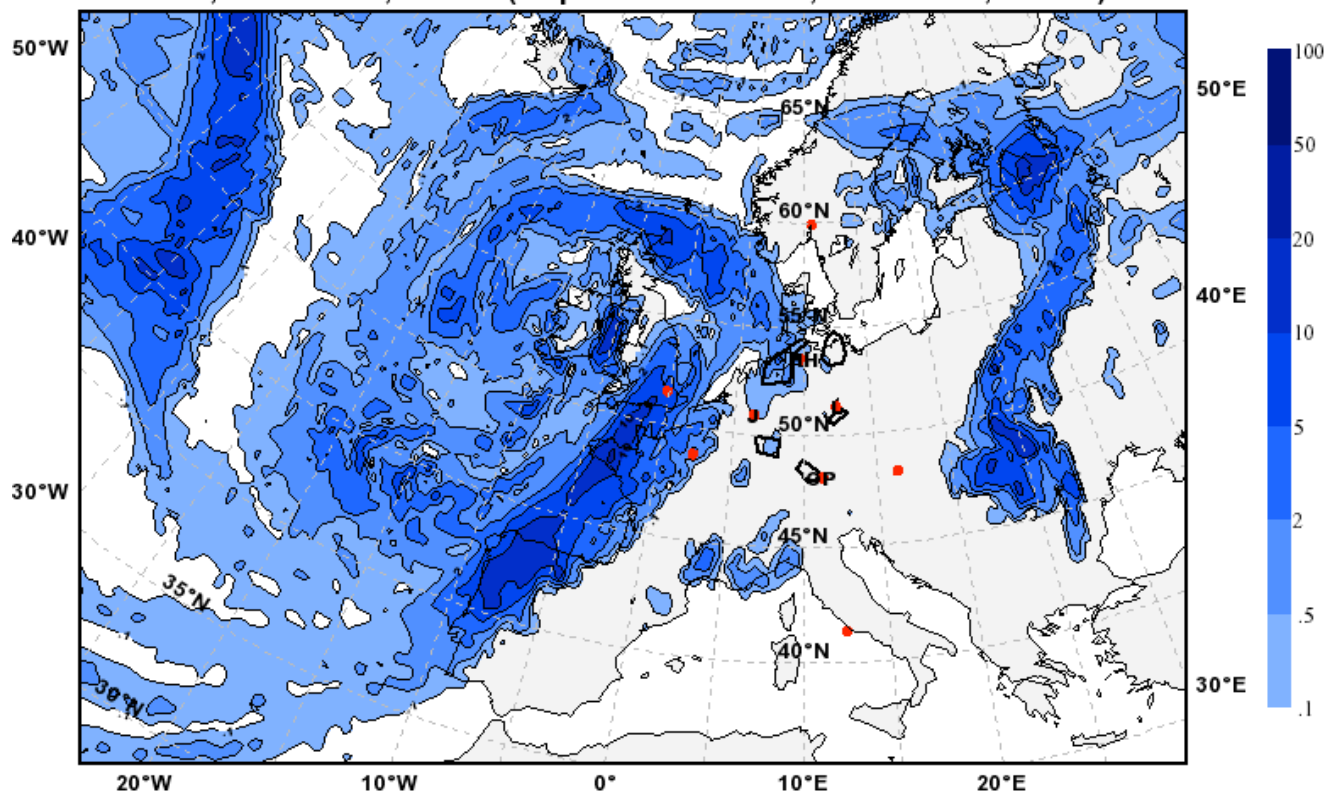


Fig. 7: Total Precipitation for Thursday 18th 00UTC, started at 13/00.