

## **NAWDEX 2016 - Planning summary**

- **Today:**

- **HALO:** take-off 07:58 UTC towards north, following the poleward edge of extending ridge “Thor” along the curve indicated as WCB outflow in the ETH forecasts. Arc around almost half a circle passing above eastern Greenland, then south of Svalbard to fly over Andoya MST radar. Return to north of Iceland crossing centre of ridge dome.
- Passing Iceland into moist air stream on NW for intended comparison leg with both SAFIRE and DLR-FALCON flying towards the east and then south. Aiming for 6 dropsondes on comparison leg (flying last in line) if possible with ATC.
- **DLR-Falcon flight I:** 12:30 UTC take-off flying westwards (after climb to parallel to wind) across poleward jet stream along stratospheric side and then rendezvous at 1400 UTC at FL380. Comparison leg crossing jet stream and into the WCB on its eastern side – a PV-meter flight with the HALO dropsondes. Only doing eastward comparison leg, then returning to SW of Iceland to close loop at FL380 for integral divergence estimate.
- **DLR-Falcon flight II:** 17:30 UTC take-off aiming to cross the PV filament between Iceland and Greenland – crossing the jet stream on its eastern and western flank. Changing heading to SW near Greenland to cross strongly curved jet on western flank and predicted GW activity there. Idea of two different A2D scan patterns out and back.
- **SAFIRE:** take-off 12:30 UTC, following DLR Falcon track to the rendezvous at 1400, comparison leg to east and then south across Iceland with HALO through predicted orographic gravity waves.
- **Aircraft status:** At last minute announcement that a fuel leak has been detected on DLR-Falcon and *both DLR Falcon flights have been cancelled.*
- **Instrument status:** All instruments working on HALO and SAFIRE with the exception of the 183 GHz channel on HAMP which has an intermittent fault. Will try to fix after HALO flight today.

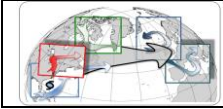
- **Responsibilities:**

- Scientific Manager: John Methven
- Chief Forecaster: Paolo Ghinassi
- Instrument Manager: Florian Ewald
- Coordinator Ground-Based Observations: Lucas Höppler

- **Schedule of the day:** Flight planning meeting with mission scientists and pilots at 12 UTC and a weather discussion at 16 UTC. Ground mission scientists for 3 aircraft (Tobi, Philippe & Matthias) to sit together in ops room for comparison legs.

- **Summary of the General Meeting:**

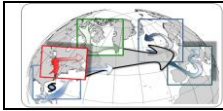
- **Topics**



**NAWDEX 2016**  
**Planning summary**

**Date: 13.10.2016**  
**Author: J. Methven**

- Weather discussion
- Plan for radiometer comparison flight of FAAM, SAFIRE, HALO on Friday, 14/10.
- Plan for HALO flight into TPV near Canada on Saturday 15/10.
- Two plans for DLR-Falcon on Saturday.
- Possibility for aerosol flight with two falcons on Sunday.
- **Weather discussion**
  - Analysis: Wind decrease at Keflavik started at 0000 UTC last night with shift of cold front to the east. Will shift back west in the afternoon. PV cut-off Sanchez/Brigitte has stretched meridionally, more like a narrow trough, and is incident on northern Spain and southern France.
  - Forecast: Precip ahead of Sanchez is forecast to be very heavy over S France and S Alps.
  - Friday – Heavy rain on S Alps continues. Frontal cyclone developing on the long trailing cold front extended southwards from Iceland is forecast to move in slowly towards southern Ireland, England and NW France.
  - Saturday – Meanwhile a tropopause polar vortex (TPV) is forecast to move from Canadian Arctic out over sea to the SE of Baffin Island. Steve Cavallo first alerted us to this coherent TPV on Monday and the possibility that it would move within range. TC Nicole interacts with narrow trough on jet stream and develops a narrow warm sector heralding extratropical transition.
  - Sunday – TPV introduces lower predictability to tropopause position locally and the development of the associated trough and lee cyclone forming to the east of Greenland.
  - Nicole stays out of reach.
- **Friday, 14.10.2016**
  - **FAAM, SAFIRE, HALO:** radiometer comparison. 0730 UT take-off from East Midlands (UK) required for FAAM aircraft in order to return from double flight in time. Fixes ETA at meeting point 61N, 10W at 0930 UT (later in day revised to 61N, 9W at 0915 UT). Requires SAFIRE, followed by HALO, to take-off at 0800 UT. Planned comparison levels: HALO FL410, SAFIRE FL370, FAAM FL330. Forecast cloud situation is good especially between point B (59.5N, 6.5W) and C (56.5N, 6.5W) with max cloud tops predicted at FL310 (below all aircraft) and also some mid and low-level cloud above weak occluded front between surface high and low.
  - **SAFIRE and HALO:** Also A-train overpass has been identified at 12:50 UT to the east of Scotland (56.8N, 0.3E) and joint leg is proposed from there towards the NNW (63.2N, 4.0W). This requires SAFIRE to refuel at Inverness and HALO to devise a two hour flight plan to fill the interval between the FAAM comparison and A-train rendezvous. Plans to be made together immediately.
- **Saturday, 15.10.2016**
  - **HALO:** Flight to target TPV as it crosses over Labrador Sea from Baffin Island.



**NAWDEX 2016**  
**Planning summary**

**Date: 13.10.2016**  
**Author: J. Methven**

Originally proposed late flight as best (crossing feature 1800-2100) but crew constraint following today's long flight and need for HALO down day on Sunday means latest landing is 1830 UTC. However, TPV is forecast to move very slowly during Saturday so earlier flight plan needs to be designed.

- **DLR-Falcon – flight I:** A2D lidar scan patterns proposed by Christian over northern Iceland in clear sky but RH=50-70% (ideal). Requires 3 passes in box with two different scan patterns and straight leg return. FL360.
- **DLR-Falcon – flight II:** lidar calibration flight in clear air above the Iceland glacier, as done on 28/9/16. Requires circles drifting with the ambient wind. FL360. Christian to be MS on both flights.
- **SAFIRE:** Down day.
- **Need to file plans for HALO on Friday and 3 Saturday flights now.**
- **Radiosonde requests**
  - Thursday/Friday: Sondes have already been requested spanning the northern Atlantic up to Svalbard. Federico Grazzini communicated via chat that additional 12 UTC radiosondes have been instructed from station 16144 in the Po Valley (Thurs, Fri and Sat) in high impact weather.
  - Saturday: additional sondes are requested from S Greenland (Tasiilaq and Narsarsuaq) for 15 and 18 UT to tie in with HALO flight.