

Synoptic Analysis

A deep trough over the western North Atlantic and a corresponding ridge downstream dominate the large-scale synoptic situation. A weak low-level disturbance has formed in the southwesterly flow ahead of the trough. Warm, moist air masses are being transported eastward in the warm sector of this disturbance. This moisture transport is presumably fed by the former tropical cyclone Lisa which is located to the south of the midlatitude disturbance.

Ex-Karl and the associated upper-level PV anomaly are located to the south of Iceland. The upper-level positive PV anomaly is stretched zonally and eventually breaks apart. Below the eastern edge of this west-east elongated PV anomaly, a new low-pressure system develops. This low pressure system moves northeast toward the Norwegian coastline. The low pressure system and its associated frontal systems bring strong winds and precipitation to southern Norway.

Forecast Day 1 (Wednesday, 28/09/2016)

The low-level disturbance that started to develop on the previous day, intensifies to less than 985 hPa over the central North Atlantic ahead of an upper-level trough. On its southern flank and in the warm sector of this baroclinic wave, moist air masses are transported eastward. This moisture transport is potentially enhanced through moisture injection from the former tropical cyclone Lisa. Until Thursday, the region of strongest moisture transport reaches the Norwegian coast. Here, the lifting of air masses will result in heavy precipitation.

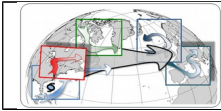
Forecast Day 2 (Thursday, 29/09/2016)

The low-level disturbance over the eastern North Atlantic is propagating north-eastward and will most likely reach the Norwegian coast during the day. The moist air masses in the warm sector of this system will be lifted over the Norwegian coast. This will potentially result in heavy precipitation and strong winds in southern Norway. In addition, a relatively strong pressure gradient on the southern flank of the system will bring strong winds over the North Sea and Baltic Sea. Upper-level outflow of strongly ascending air masses is presumably contributing to ridge building in downstream regions.

Over the western North Atlantic, the break-up of a PV streamer will result in two upper-level cut-off systems. The eastern cut-off is associated with the development of a weak surface pressure anomaly in the Newfoundland region.

Forecast Outlook

The low pressure system over Newfoundland is predicted to propagate eastward in the following days. In a moist environment and ahead of an upper-level trough, this system is expected to intensify rapidly over the central North Atlantic. Current forecasts agree well concerning the location of the low pressure system during the next days. However, high uncertainties exist concerning the intensity of this system. Upper-level outflow associated with WCB activity on the eastern flank of the low pressure system will contribute to a strong ridge building over Iceland during the weekend. The evolution of the low pressure system itself as well as the development of the upper-level ridge are certainly a target for further NAWDEX flights.



NAWDEX 2016
Weather summary

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Author: J. Quinting

Scientific discussion

- The DLR-Falcon will perform Lidar calibration flights over Iceland on Wednesday.
- Flights on Saturday and Sunday will be planned in detail from Thursday onwards.