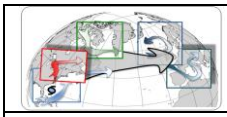
	**NAWDEX 2016** **Weather summary**	**Date: 05 October 2016** **Author: B. Crezee, J.Riboldi**

Synoptic analysis

After having reached its maximum strength, the “frontal wave cyclone” developed on Thursday starts gradually to fill, but it is still able to bring winds above 25m/s and heavy rain to western Iceland. The region sits under a pronounced jet streak, that drives a very broad WCB outflow above Iceland. Ridgebuilding associated with this cyclone joins a pre-existing ridge above Scandinavia and generates a “Rex blocking” configuration, with a broad anticyclone over Scandinavia and the North Atlantic, that persists until the end of the forecast period.

A broad PV cut-off embedded in a strong antizonal flow drives the weather over Central Europe and the Mediterranean, and leads to lower-than-average temperatures and heavy rain.

Forecast Day 1 (Thursday 6 Oct)

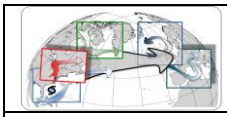
The “frontal wave cyclone” keeps weakening while it remains stationary near the southern tip of Greenland. The cyclone is at this time embedded in a broad PV streamer over Greenland, linked to the aforementioned jet streak, that brings a moist southerly flow over Iceland. After the gale of Wednesday, the wind remains weaker (<10 m/s) during the day in Keflavik. Moderate warm conveyor belt (WCB) activity brings precipitation to the south east coast of Iceland.

A tropopause polar vortex (TPV) moves from Hudson Bay towards Greenland and becomes embedded in the PV streamer to the west of Iceland. It is located at 12Z right under the southern tip of Greenland and at 18Z close to 40W, 55N. The system stands out in the weather charts as a small closed contour of high PV values (>8 pvu at 320K) and low moisture. The balanced wind component of this system enhances weak ridgebuilding along the waveguide and promotes the elongation of a small PV streamer in the direction of the Bay of Biscay.

Forecast Day 2 (Friday 7 Oct)

The large scale pattern does not show substantial variations during Friday: the flow over Iceland remains south-easterly and moist. The development of a surface low pressure centre, related to the action of the TPV, in the central Atlantic excites a weak WCB activity at the eastern flank of the PV streamer. This leads again to some precipitation and strong winds (15-20m/s) over Keflavik. Outflow of the WCB is directed towards Greenland and promotes a cyclonic wrap-up of the cited PV streamer.

The cut-off low over the Pyrenees, generated on Tuesday by the sudden ridgebuilding of the “frontal wave cyclone” moves to the Mediterranean and merges with the the cut-off over Central Europe. This merging is promoted by the Scandinavian blocking anticyclone, that induces a strong easterly flow over Central Europe and advects the cut-off low westward. Heavy rain is therefore forecasted over the Balkans and southern Italy, also associated with a WCB rising from the Mediterranean.

	**NAWDEX 2016** **Weather summary**	**Date: 05 October 2016** **Author: B. Crezee, J.Riboldi**

Forecast Day 3 (Saturday 8 Oct)

The synoptic pattern is blocked by a large anticyclone over Scandinavia, which is well structured at upper (broad region with PV < 0.2pvu) and lower (MSLP > 1040hPa) levels. Some PV filaments coming from the cut-off over Europe slowly re-circulate inside the ridge. The PV streamer moves eastward and reaches the west coast of Iceland, shifting also the jet core together with it. WCB activity is absent.

A new surface low, associated with significant diabatic outflow and WCB activity, forms at 40W, 40N. It is linked to the PV streamer now over Iceland by a small filament of high PV, that provides upper level forcing for deepening to 1000 hPa. The outflow of the system extends until 50N in the Central Atlantic. The system is however much weaker than the one shown by the ECMWF model in the run of yesterday, 04 October, at 00UTC.

Forecast Outlook

As already said, the flow over Europe is blocked and constrained by the big blocking anticyclone over Scandinavia. The large scale flow pattern shows a perturbed area to the west of Iceland and remains conductive for moderate bursts of WCB activity over Iceland. The deterministic run predicts one of such bursts to occur on Monday.

Two tropical system are moving in the North Atlantic. On Friday TC Matthew moves very close to the East Coast of the United States and is forecasted to recurve back to the Ocean south of Cape Hatteras, after having hit Florida and the Carolinas as a strong Cat.3 hurricane. The newly developed Tropical Storm Nicole remains South of Bermuda. Both the systems are obviously associated with strong diabatic outflow. Ensemble forecast guidance for Europe from the ECMWF model suggests two possible scenarios, depending on the fact that Matthew is able to undergo ET in the North Atlantic or not (and therefore decaying at lower latitudes in the Central Atlantic).

Scientific discussion

- Iceland remains under the influence of a PV streamer located at the west, that promotes continuous southerly flow rich in subtropical moisture.
- A TPV drifts quickly between Thursday and Friday from Canada to Greenland and wraps up cyclonically in a PV streamer located to the west of Iceland. An associated surface low in the vicinity leads to a weak WCB on Friday, with ascent just to the west of Iceland.
- The synoptic situation over Europe evolves towards a blocking pattern. The potential impact of the extratropical transition of hurricane Matthew and of Tropical Storm Nicole makes forecast for next week uncertain.