

COPS Weather Summary

29 July 2007

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Synoptic overview

On the southern flank of a low pressure complex over Scandinavia a rather strong westerly flow stretches from England into the Baltic area. On the contrary, much of southern Europe and the Mediterranean benefit from high pressure.

Initially found over the Netherlands, a frontal wave quickly travels eastward. It is expected over Poland on Monday, 00 UTC, finally merging with the Scandinavian low. Between this low pressure complex and a ridge, that builds up over the eastern North Atlantic, a pretty strong northwesterly flow will be established, forcing cold air of polar origin into central Europe towards Monday. Embedded mid/upper level short wave troughs mainly affect the northern parts of central Europe. Being quasi-stationary at first, the ridge progresses eastwards on Tuesday, crossing Germany on Wednesday. Ahead of a long wave trough, located along the western edge of Europe, a southwesterly flow of moist and warm air is likely to increase in the course of Thursday. Whereas the southern portion of the trough should keep its position, the northern part is expected to move eastwards on Friday, again followed by cooler air masses spreading into central Europe.

Analysis and forecast of synoptic controls in the COPS region

Today (Sunday), 29 July

In the strong westerly flow aloft, an embedded surface frontal wave currently moves eastward over Germany on Sunday. During afternoon hours large amounts of low/mid-level mainly stratiform clouds prevail, some stratiform rain is expected in places. While the cold front approaches, rain becomes of partly convective nature, although a thunderstorm seems not to be very likely. The cold front itself is expected to cross the COPS area at 16-18 UTC. While crossing a mid/upper-level short wave trough might give additional forcing enhancing precipitation activity. The passage could be quite pronounced with heavy rain, a possible thunderstorm and storm force gusts.

Tomorrow (Monday) 30 July

In the wake of the frontal wave a strong northwesterly flow pushes cold air of polar origin into central Europe. Although being under the influence of a long-wave trough, forcing for vertical motion is expected to be relatively weak in the COPS area on Monday. Remnants of low level clouds (Sc) might be present at first. In the course of the day widespread cumulus clouds of Cu hum and Cu med type should occur, a single shower may develop.

Tuesday 31 July

An upper-level short wave trough is expected to cross the COPS area in the night to Tuesday, generating mostly stratiform clouds, a few rain drops cannot be excluded. The stratiform cloudiness will be transformed into more convective (Cu) in the course of the day. As a slowly eastward moving high pressure ridge builds up over France, mid-level subsidence in the southwestern parts of Germany becomes evident. If the subsidence leads to a pronounced inversion, cumulus clouds may partly spread again into Stratocumulus. There is only a marginal risk for weak showers.

Wednesday 1 August and Thursday 2 August

On Wednesday, the ridge is expected over Germany. Strong mid-level subsidence creates fair, dry and warmer conditions in the COPS area.

Ahead of an approaching long-wave trough, the southwesterly flow increases on Thursday, advecting warmer and moister air into the COPS area. The remnants of an MCS, that formed over central France in the night before, could affect the COPS area in the morning hours already, leading to partly stratiform, partly convective cloudiness and some rain throughout the day. However, this scenario still is quite uncertain.

Extended outlook

According to GFS model runs, central Europe is under the influence of an upper-level long wave trough or even an cut-off low. Clouds prevail, convection would be of partly embedded character. But models are not consistent yet.

Today, Sunday 29 July

Time/location of first convective cloud development	Embedded convective clouds in the late afternoon.
Time/location of convective storm initiation	Embedded showers/thunderstorms ahead of/with the approaching cold front.
Mode/coverage/evolution	Embedded and widespread showers/thunderstorms towards the evening/night, might organize into lines.
Convective cloud base	About 900 m.
Storm motion	From westerly directions at about 20 m/s.
Maximum temperature	Up to 23 °C in the Rhine Valley.
Precipitation	Up to 25 mm.
Severe weather threat	Low. Storm force gusts with passage of the cold front in the afternoon/evening.

Tomorrow, Monday 30 July

Time/location of first convective cloud development	Embedded cumulus clouds in the morning hours.
Time/location of convective storm initiation	Single shower possible before noon.
Mode/coverage/evolution	Partly embedded; very local and weak.
Convective cloud base	About 900 m in the morning, rising to about 1800 m in the afternoon.
Storm motion	At about 10 m/s from the northwest.
Maximum temperature	21-23 °C in the Rhine Valley.
Precipitation	Up to 5 mm.
Severe weather threat	-

Tuesday 31 July

Time/location of first convective cloud development	Embedded Cu in the morning.
Time/location of convective storm initiation	-
Mode/coverage/evolution	-
Convective cloud base	About 900 m in the morning, rising to about 1700 m in the afternoon.
Storm motion	-
Maximum temperature	20-22 °C in the Rhine Valley.
Precipitation	-
Severe weather threat	-

Wednesday 1 August

Time/location of convective storm initiation, Mode/coverage, Evolution	-
Convective cloud base	Around 2000 m.
Storm motion	-
Maximum temperature	25-28 °C in the Rhine Valley.
Precipitation	-
Severe weather threat	-

Suggestions for IOP's and down days

The evening-passage of a cold front is associated with embedded convective activity.

Monday and Tuesday are dominated by cold polar air. Shallow cumulus clouds, partly embedded, and mainly dry conditions will prevail. IOP's are not recommended – apart from some flux measurements or if there is interest in the development of only shallow convection.

On Wednesday, only few shallow cumulus clouds will form mainly over the mountains. An IOP is of lower interest. Convective activity and the potential for thunderstorms increase on Thursday.