

# COPS Weather Summary

27 July 2007

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## Synoptic overview

On the southern flank of a large low pressure complex, covering most of northern Europe and the central North Atlantic a rather strong westerly to southwesterly flow has been established ; it stretches from the Azores Islands over central Europe into the Baltic area. Embedded mid/upper-level short wave troughs are expected to generate two frontal waves. The first will be initiated on Friday southwest of Ireland, quickly travelling eastwards affecting central Europe on Saturday. 24 hours later, the second one will appear in the vicinity of Ireland. Given strong upper-level forcing even a surface cyclogenesis is likely to occur. Its center will be located over the German Bight on Sunday around noon. As the associated long-wave trough digs southwards and progresses to the east, the cold front is pushed southeastwards arriving the Alps in the night from Sunday to Monday. On Monday the low pressure system becomes quasi-stationary over Scandinavia/Baltic Sea, leading to a strong northwesterly flow of a polar airmass entering central Europe. Towards Tuesday, ahead of another long-wave trough stretching to the Azores, a ridge should build up from northern Spain over the Bay of Biscay into England. It's expected to travel quickly eastwards.

## Analysis and forecast of synoptic controls in the COPS region

### Today (Friday), 27 July

In a rather strong mid/upper-level westerly flow only weak forcings are to be expected over the COPS area in the course of Friday. Two weak frontal zones linger around the COPS area but will not become very active. Some low-level clouds prevail early on, becoming scattered during the afternoon. Insolation leads to cumulus clouds (Cu hum, Cu med), partly embedded in stratiform layers. Chances for sunshine are best in the late afternoon/evening. Most of the area will stay dry, however, isolated weak showers are possible. A mean westerly wind of 25 kt is expected above 1000 m.

### Tomorrow (Saturday) 28 July

In the strong westerly flow aloft, an embedded upper-level short wave trough generates a frontal wave southwest of Ireland on Friday evening. Travelling quickly eastwards, it is expected to cross central Germany in the course of Saturday. It should affect the COPS area in the first half of the day with large amounts of clouds at all levels and some mainly stratiform rain. However, the most intense rain stays north of the COPS area. Ahead of the cold front, that is expected to move over the COPS area in the afternoon hours, slightly unstable air will be present, giving a chance of mainly embedded showers or a few thunderstorms, preferably in the eastern parts of the COPS area.

### Sunday 29 July

A second and stronger frontal wave will be initiated west of Ireland on Saturday. Quickly travelling eastwards, it will pass over northern Germany on Sunday. Further to the south, the COPS area gets into an increasing southwesterly flow of quite unstable moist and warm air. As insolation is expected at least during the first half of the day, some amounts of CAPE are likely to develop. Starting from around noon, towering cumulus clouds appear eventually growing into showers and thunderstorms and being isolated at first, mainly over the mountains. With the approach of the cold front and an enhancing upper-level short wave trough showers/thunderstorms become more widespread and of embedded character, they might be weakly organized in a line. Possible storm force gusts are associated with the passing frontal zone.

### Monday 30 July and Tuesday 31 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, forcings should be weak in the COPS area on Monday. Therefore fair conditions are to be expected. However, widespread cumulus clouds of Cu hum and Cu med type should occur, a few showers are most likely in the morning hours.

After a very chilly night, a slowly eastward moving high pressure ridge builds up over France on Tuesday, leading to mid-level subsidence in the southwestern parts of Germany. Shallow cumulus clouds are likely to develop in the course of the day. If the subsidence leads to a pronounced inversion already, Cumulus might partly spread into Stratocumulus in the afternoon hours. Showers are not to be expected.

### Extended outlook

While flattening the ridge is expected to cross Germany on Wednesday. Another west European long-wave trough will cause an increasing southwesterly flow over central Europe. With warm air advection and the large-scale forcing, a frontal wave might enter central Europe on late Wednesday. In its wake, the westerly flow of cooler air will be renewed. However, this scenario still remains uncertain.

### Today, Friday 27 July

Time/location of first convective cloud development	Shallow/embedded convective clouds already present.
Time/location of convective storm initiation	Very few showers in the course of the day.
Mode/coverage/evolution	Very few showers, mainly embedded.
Convective cloud base	About 1300 m, rising to about 1500 m in the afternoon.
Storm motion	From the southwest at about 15 m/s.
Maximum temperature	Up to 25 °C in the Rhine Valley.
Precipitation	Up to 5 mm.
Severe weather threat	-

### Tomorrow, Saturday 28 July

Time/location of first convective cloud development	Partly embedded convective clouds in the late morning.
Time/location of convective storm initiation	Showers/local thunderstorms in the afternoon/evening.
Mode/coverage/evolution	Mainly embedded/widespread.
Convective cloud base	Around 1000 m.
Storm motion	At about 15-20 m/s from westerly directions.
Maximum temperature	21-24 °C in the Rhine Valley.
Precipitation	Up to 10 mm.
Severe weather threat	Low.

### Sunday 29 July

Time/location of first convective cloud development	Towering Cu from around noon.
Time/location of convective storm initiation	Showers and thunderstorms mainly over the mountains during afternoon likely.
Mode/coverage/evolution	Single cells might weakly organize into multicells in the afternoon; mainly embedded and widespread showers/thunderstorms towards the evening/night, might organize into lines.
Convective cloud base	About 1200 m, decreasing towards evening.
Storm motion	About 15 m/s from westerly directions.
Maximum temperature	23-26 °C depending on insolation.
Precipitation	Up to 20 mm.
Severe weather threat	Low to medium. Storm force gusts in the afternoon/evening with local thunderstorms and passage of cold front possible.

### Monday 30 July

Time/location of convective storm initiation, Mode/coverage, Evolution	Brief morning shower cannot be excluded.
Convective cloud base	Rising to about 2000 m.
Storm motion	About 10-15 m/s from the northwest.
Maximum temperature	20-23 °C.
Precipitation	Up to 5 mm.
Severe weather threat	-

### Suggestions for IOP's and down days

As showers/thunderstorms are of mainly embedded character on Saturday, an IOP is of lower interest. In contrast, Sunday looks much more promising. Given CAPE and insolation isolated thunderstorms are possible at first, followed by a pronounced passage of a cold front. Monday and Tuesday are dominated by cold polar air, only shallow cumulus clouds and mainly dry conditions will prevail; IOPs are not recommended.