DWD
Deutscher Wetterdienst
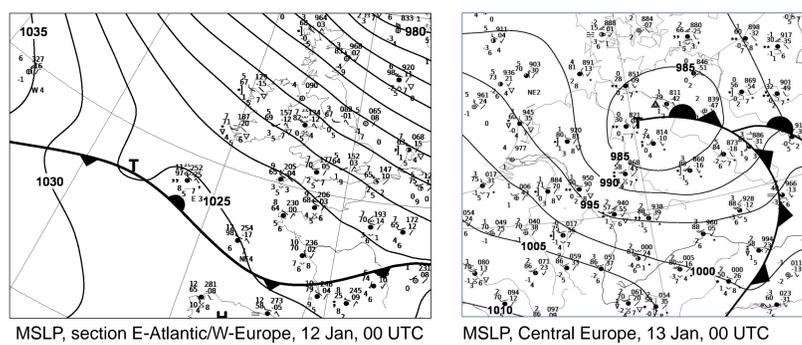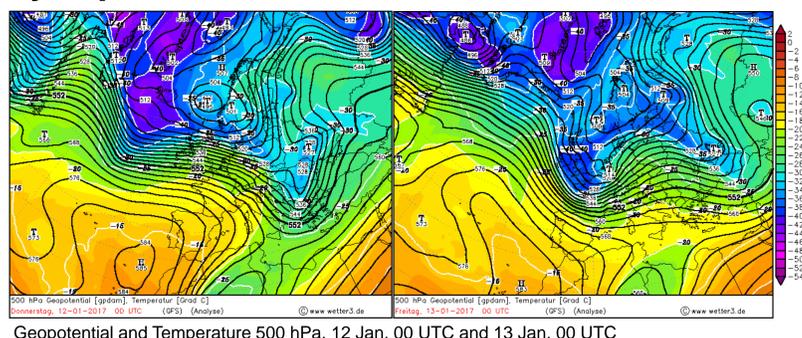Wetter und Klima aus einer Hand

The Windstorm „EGON" – an example for a rapid cyclogenesis

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One of the most severe weather events since the beginning of this year was the storm cyclone "EGON", affected 12/13 January larger areas of Western Europe and the southwestern area as well as the central highlands of Germany with maximum wind gusts up to 148 km per hour. This windstorm caused mayor disruptions by broken trees, heavy gusts and cross winds on the southern flank of the cyclone. North of the path of the storm railway lines and roads has been blocked by a blizzard-like snowdrift. Thousands of households were affected by power outage.

An accurate prediction of this type of high-impact events is the core task of the DWD. To provide tailored forecasts for the general public and authorities already during the medium range the web based ECMWF forecast product portfolio is essential. The windstorm "EGON" was not a type of a major synoptic windstorm like "CHRISTIAN" from late October 2013. "EGON" has had smaller dimensions developed as a result of a rapid cyclogenesis and was therefore difficult to predict. Forecasts products at different lead times will be presented and discussed.

Synoptic situation at 12/13 Jan 2017

Geopotential and Temperature 500 hPa, 12 Jan, 00 UTC and 13 Jan, 00 UTC

MSLP, section E-Atlantic/W-Europe, 12 Jan, 00 UTC   MSLP, Central Europe, 13 Jan, 00 UTC

Difficult road conditions in Central Germany (T. Brehme via Wetteronline)   Damage by windstorm in Hanau near Offenbach (dpa)

Warnings, issued at 12 Jan, late evening
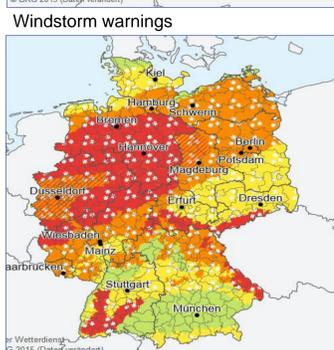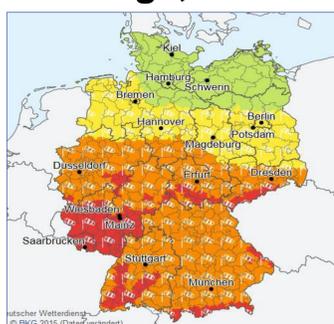

Windstorm warnings

The development from an open frontal wave to one of the heaviest winter cyclone of the last years took place within 24 hours. The mean sea level pressure dropped from 1025 to 980 mbar. Interacting with a sharp though the wave and later the cyclone was for a rapid deepening in a favorable position. The low passed in the afternoon the English Channel. The correct path of "Egon" was predictable by nowcasting methods (approximation) not till the system arrived over Northern France.
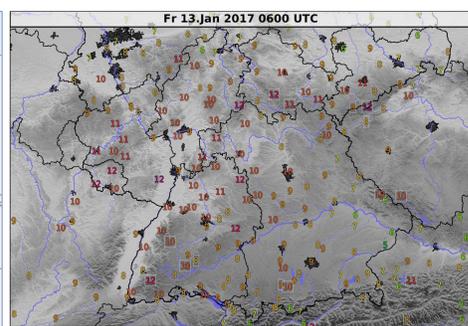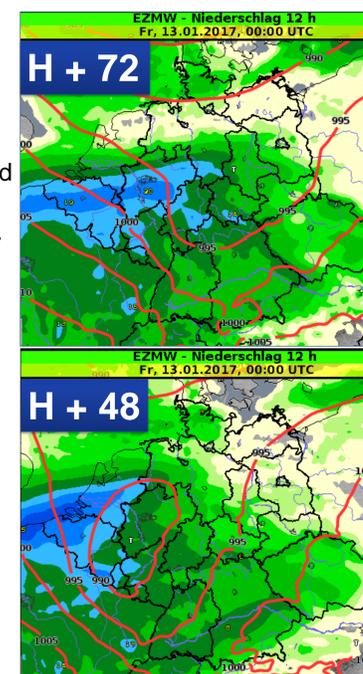

Warnings, related to snowfall / snowdrift   Maximum wind gust, 13 Jan, 06 UTC (in Bft)

Prediction of the event

The windstorm „EGON" was a result of a rapid cyclogenesis of the Shapiro-Kaiser-type. It was a challenge to predict this event. To cover the areas of highest wind gusts on the southern flank of the low it was essential to know the exact path of the low as early as possible. On the northern side of the cyclone a blizzard-like snow drift was to be taken into consideration. The ENS (EFI) gave rather a signal for heavy snowfall than an indication for a windstorm. Therefore the warning activity was more focused on a heavy snowfall event. EPS gave no hints for one of the heaviest windstorms of the last 30 years, shown by the „Dalmatian charts" from the cyclone data base (Thanks to L. Magnusson).

EFI (Snowfall, isoareas and 10m wind gusts, dots), forecasts valid at 13 Jan, 00 UTC
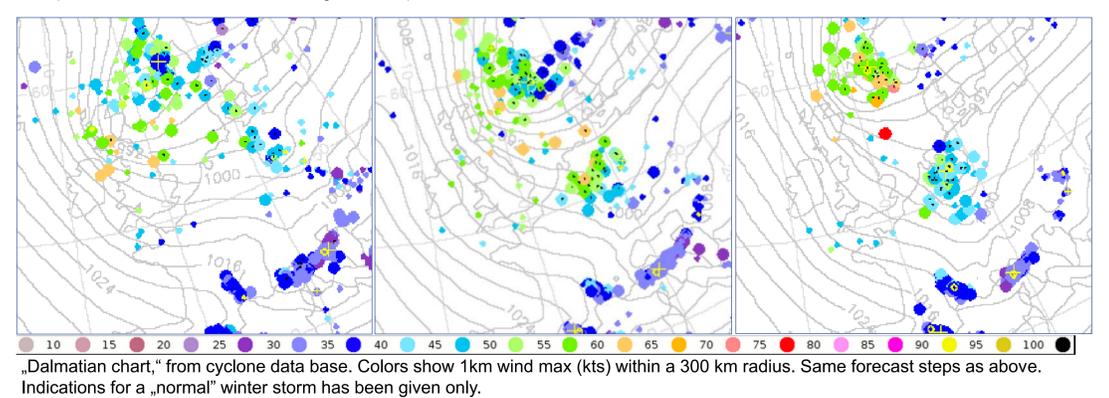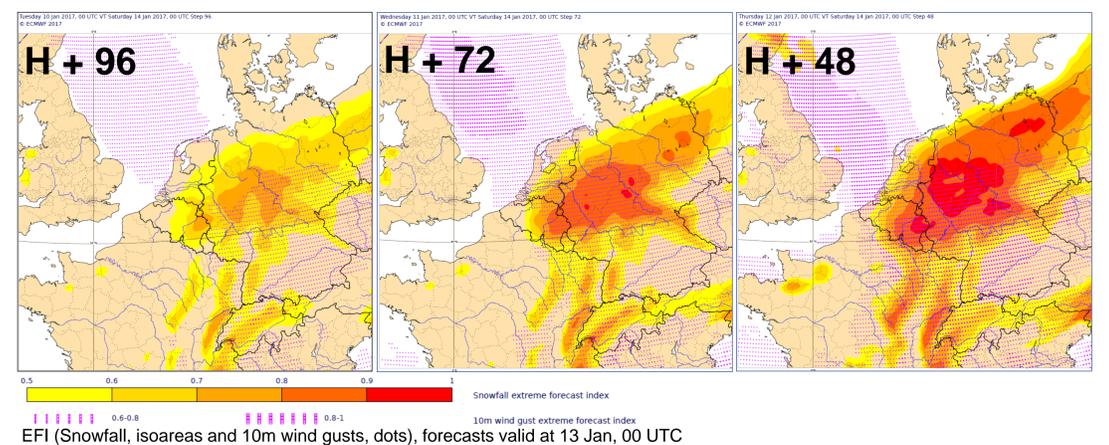
„Dalmatian chart," from cyclone data base. Colors show 1km wind max (kts) within a 300 km radius. Same forecast steps as above. Indications for a „normal" winter storm has been given only.

Deterministic models have not been given an early indication for a heavy windstorm event as well. Severe weather pre-warnings were issued well in advance for a high-impact snow event but not for heavy gusts. The cyclone was in the forecasts too weak. The spread of the path of the low, predicted by different models, was even 48 hours in advance to large for a NWP of the state of the art. The geographical distribution of the path varied by 400 km. Therefore the region of the sharpest gradient with the highest wind gusts was not predictable. Tailored warnings has been issued for some western parts and highlands during the early evening, but for some affected areas rather too late at night.

12-hr precip (isoareas) + MSLP (red contour lines), forecasts valid at 13 Jan, 00 UTC

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