

Severe Weather Warning and Management of Pressure and Stress at DWD

Introduction

Resolution of numerical weather models and nowcasting-tools has improved very much in recent years. This is why Deutscher Wetterdienst (DWD) started a three-stage temporal warning concept in 2001, extending this to a spatial resolution of about 350 districts in 2003.

Especially in mass media, competition has developed between the national weather service and many private weather companies since the beginning of the 1990s. This competition has spread out into the weather warning business.

This competition and a few unfortunate severe weather incidents have increased pressure on DWD and its forecasters considerably in recent years.

Severe weather warning at DWD

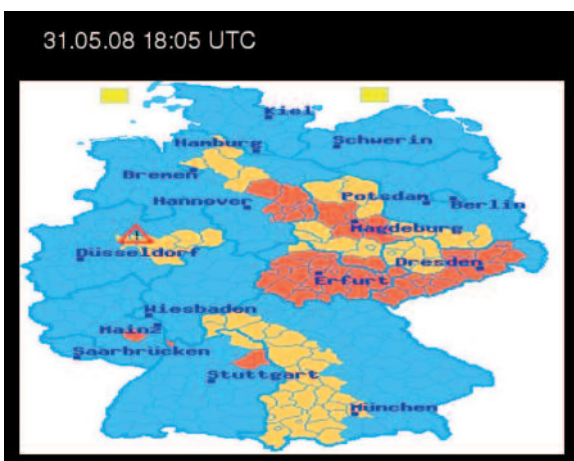
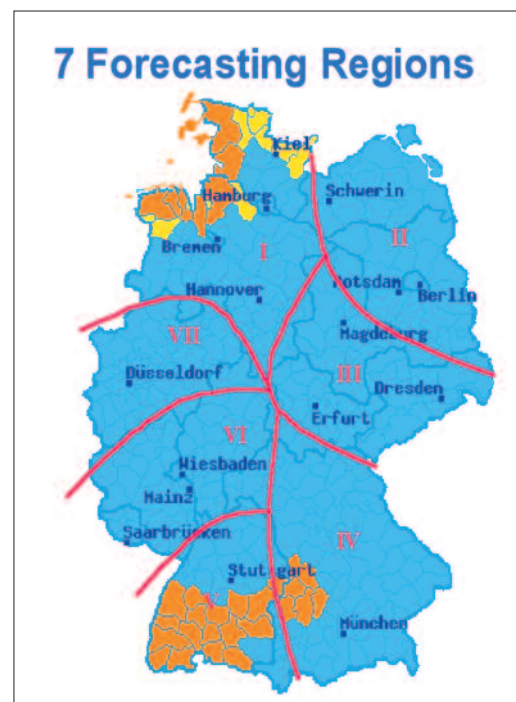
Deutscher Wetterdienst issues warnings in a three-stage temporal warning concept since 2001 and at spatial resolution of about 350 districts since 2003. In mountainous counties the vertical resolution of warnings is in 3 stages.

The three-stage temporal warning concept means that, in a timescale of 7 to 3 days, early warnings of a severe weather incident will be issued at relatively coarse resolution.

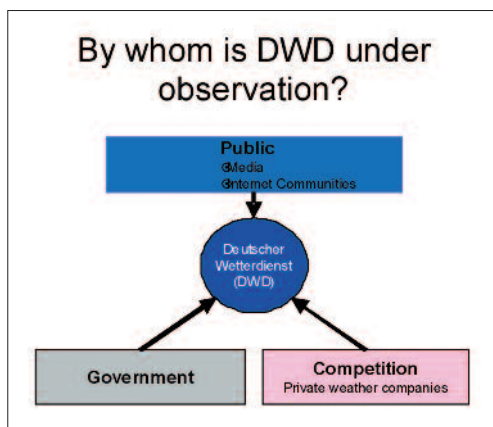
3 to 1 days before an incident occurs, prewarnings are issued on the basis of the 7 regional forecast centers. Depending on the scale of the incidents actual warnings are issued 12 to 1 hours before the incident.

Severe warning thresholds:

- **Torrential rain** ($\geq 25\text{mm}/1\text{h}$)
- **Long lasting rain** ($\geq 40\text{mm}/12\text{h}$)
- **Gale force wind** ($\geq \text{Bft } 11$)
- **Heavy snowfall** ($\geq 10 \text{ cm}/6\text{h}$)
- **Widespread freezing rain**



◀ Example of DWD severe warning website



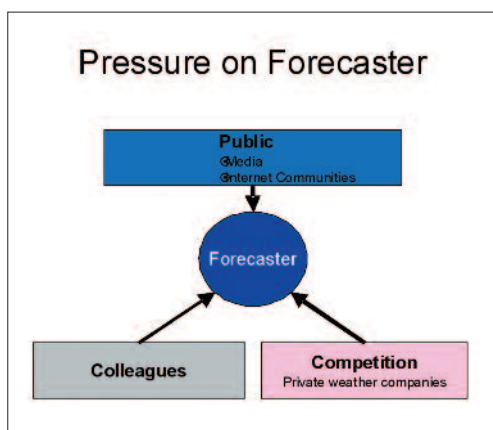
Pressure on DWD and forecasters

Especially in the media sector, competition has developed between the public weather service and many private weather companies since the beginning of the 1990s.

Also private services have started to supply their customers and the public with weather warnings in the last few years. This has increased competition between the national weather service and private companies even more. This competition and a few unfortunate severe weather incidents have increased pressure on DWD and its forecasters considerably in the last years.

While private weather companies had a strong appearance in the medias and made propaganda for their product they always said, in contrast to the state-owned weatherservice, they are not financed by taxpayers money. Hence DWD has been eagerly watched by the public in medias and internet chatrooms, by private companies and at last by the government more and more.

Because the warning process is not fully automated, but still assisted by the forecaster, pressure on the national weather service is transferred to the forecasters.



So forecasters are under particular pressure from the public, and from vigilant competitors always waiting for mistakes. Even colleagues who are less in the forefront of forecasting operations can have a pressure impact on forecasters.

Immediate reports

DWD is used to the challenge of severe weather warnings and false forecasts.

How does DWD deal with this challenge?

- **Transparency**

- Weather reports are issued on the internet
- Warnings are issued on the internet

- **Information management**

- Internal bulletins
- external bulletins

- **Verification**

Therefore it has issued internal immediate reports since 2001, in which special weather situations are studied. The subjects of these immediate reports are the synoptic situation, quality of the numerical models and forecast tools, quality of early and actual warnings as well as the evaluation of the warning management of the central and regional forecasting offices.

Since competition between the national weather service and the private weather industry has become stronger, the reports have, in the interests of transparency, been disseminated for all weather warnings on the internet. In addition, information management was increased by systematising immediate reports.

- **Regional immediate report**

- if there was a severe weather warning in one of the responsible local areas.
- if there was a severe weather incident in the regional area without being warned.

- **Time of issue: 07.00h next morning**

- **National immediate report**

- if there was a severe weather warning in at least 7 local warning areas.
- if there was a severe weather incident without being warned.

- **Time of issue: 07.00h next morning**

However this requires a lot of time and effort by the workforce. Because of almost daily severe weather warnings more than 50 immediate reports were issued due to strong convective situations in summer 2008.

