

TORNADOS IN GERMANY – TREATMENT AT DWD

Dipl.-Met. Andreas Friedrich

Deutscher Wetterdienst (DWD), Kaiserleistr. 29-35, D-63067 Offenbach, Germany, andreas.friedrich@dwd.de

April 24, 2007

I. INTRODUCTION

The presentation will treat the topic Tornado with the point of view from DWD, as the NMS of Germany. With some examples from the last years it will be illustrated that significant Tornados also happened in Germany. Some information will be given concerning the climatology of Tornados in Germany. The main part of the presentation will reflect the different activities at DWD with the topic Tornados, especially with the efforts to set up a warning management for this severe weather phenomena.



FIG. 1: Example of an F3 Tornado, observed near Michelh (Sachsen-Anhalt), 23.6.2004

II. PRESENTATION OF ACTIVITIES IN DWD

Severe Tornados with significant damages and injured persons happen also in Germany several times per year. Alone in the 2006 3 people were dying in the connection with a Tornado. In the year 2004 the board of directors in DWD has established the new position of a Tornado commissioner and has assigned this position to the author of this abstract.

In 2006 DWD has taken over the database from TorDACH for Germany. In this database are gathered historical Tornado events for the last centuries up to 2005. Starting with 2006 DWD was part of the ESWD project and has taken over the responsibility for severe weather reports in Germany and in 2007 DWD want to start his full membership in the ESSL organization.

One important area of activities is the topic of eyewitness reports. As well for the realistic climatology of Tornados as for a possibility of an effective warning management, it is necessary to have enough and trustworthy eyewitness reports. Therefore DWD has founded in 2006 the new project "Severe weather observation". On the DWD internet warning site (www.wettergefahren.de), an online form for the public is available.

Other sources for eyewitness reports are different rescue- and relief organizations. For these groups are special hotline numbers available, with direct calls to the DWD Forecast and Warning centres. Also all reports from Skywarn Germany are used realtime in the DWD warning management.

The focus of activities in DWD is concentrated in the effort to build up a Tornado Warning System for Germany. One milestone to reach this goal was an international Tornado Workshop which was organized from DWD Tornado commissioner in February 2005. At this event, international experts (e.g. Dr. Charles Doswell) had presented results of their research activities. Experiences and new technologies are used in DWD and will be improved in the next years. For example international recognized parameters like CAPE, low level wind shear or SRH was introduced in the operational information platforms (e.g. NinJo Workstation) for meteorologists by using the actual numerical forecast models in DWD like the non-hydrostatic LMK model, with a horizontal grid width of 2,8 km, and will become available in the near future.

One decisive tool for Tornado warnings are realtime information from Doppler radar networks. The operational DWD radar network consists of 16 Doppler radars. In the scope of the NinJo project, a Mesocyclone detection algorithm should be available in the near future. The algorithm was formerly developed at the SPC in Oklahoma and is also in use at the Meteorological Service of Canada (MSC). The technique has to be transformed to the DWD radar network and evaluated with the different synoptic conditions in central Europe.

Since July 2006, risk assessment for Tornados and Tornado warnings, together with warnings for severe thunderstorms, has become part of the operational warning management in DWD. A specific severe weather warning for thunderstorms with a Tornado will only be issued, when an eyewitness report of a Tornado or a funnel cloud is available and when this information was confirmed by radar information.

The verification of severe weather warnings was carried out systematically in DWD. The ESWD data base is a helpfully tool in this field.

III. CONCLUSIONS

Tornados are also in Germany a dangerous weather phenomena. Therefore DWD, as the NMS of Germany is engaged in this topic and has assigned a Tornado commissioner. DWD is active in the climatology and detection of Tornados. State of the art technologies are in use for the risk assessment and warning management of Tornados. Since 2006 Tornado warnings has become an official part of the DWD warning management.

IV. AKNOWLEDGMENTS AND REFERENCES

The author would like to thank all colleagues in DWD who are involved in the activities concerning Tornados, especially Thomas Kratzsch (General Management and verification) and also all external people who assist and cooperate with DWD. Here I have to honour the strong and successful cooperation with Dr. Nikolai Dotzek (DLR, TorDACH, ESSL).