

Uncertainty in weather forecasts and warnings. Perception, communication and application.

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Using an inter-and transdisciplinary approach, meteorologists and social scientists at the Hans-Ertel-Centre for Weather Research in Berlin analyse weather warnings and their perception and use by stakeholders of civil protection authorities and the public. In the first project phase the emphasis is on storm events in the city of Berlin. The goal is to improve the warning process and the communication of warnings to reduce weather related damages. In cooperation with the German Meteorological Service (DWD) and different users of severe weather warnings, the project will develop recommendations for end-user-oriented information products. In detail, the here presented work deals with the communication and perception of weather warnings, particularly in terms of probabilistic information. The aim is to reveal the shortcomings in the communication of forecasts (uncertainties) and give suggestions for improvement if necessary. This is based on the assumption that the development and use of new technological possibilities for the prediction of complex atmospheric phenomena are of little value, if they are wrong or not understood by the receiver. This requires addressing the tools for communication as well as possible differences between the scientific practices of weather forecasts and the understanding and implementation of this information by the users. The analysis of effective communication strategies of weather warnings requires not only the knowledge how forecasts are understood cognitively, but also an analysis of the institutional factors that influence this communication.

The poster shows results of several studies that discuss the perception and use of uncertainties in weather warnings by experienced users from emergency management using a mix of quantitative and qualitative methods. In detail, first expert talks and an expert survey using an online questionnaire were conducted to get access to the research field. Highlighted topics are addressed in several qualitative interviews with representatives from emergency management (ongoing task). In addition, non-participatory observations (fire brigade control centre) complete the methodological triangulation.

First results show that emergency managers are aware of uncertainties in weather forecasts. But most of them are not willing to react to forecasts based on low probabilities. However, this is in opposition to the “scientific orthodoxy” and to societal emphasis of taking “early and proactive actions” (Demeritt 2012: 5).

Information about uncertainty in weather forecasts can be presented in many different ways. Probabilistic information is one way to indicate the level of uncertainty. It can be communicated by numeric information as well as by a verbal statement. Nevertheless, it is unclear which form is the most appropriate way to communicate warnings even to experts (Handmer & Proudley 2007), and whether the information is properly understood by the receiver (Gigerenzer et al. 2005). Often the chosen format is a further source of uncertainty. In particular verbal statements themselves are highly uncertain (Sink 1995). Survey results show that the verbal statements used in DWD’s 7-days forecasts - in particular the term ‘possible’ - scatter and overlap.

To satisfy diverging users’ needs and to meet different risk perceptions, tailored warnings could be an appropriate way to communicate severe weather warnings.