



## **A violent tornado in mid-18th century Germany: the Genzmer Report**

Bernold Feuerstein and Thilo Kühne

European Severe Storms Laboratory, Germany (feuerstb@mpi-hd.mpg.de)

250 years ago, German scientist Gottlob Burchard Genzmer (1716-1771) published a detailed study of a violent tornado event which affected the eastern part of today's German federal state Mecklenburg-Vorpommern on June 29 1764. The report consists of a foreword and seven letters Genzmer wrote to the minister of Mecklenburg-Strelitz who asked him for a survey of the damage and the circumstances of this natural disaster. Genzmer started his site investigation two months after the event on August 30 and completed his work on December 18. The report was published in form of a book in 1765 including two copper plate illustrations by the author: one sketch of typical tree damage and a map of the tornado path. The title vignette depicts poorly the appearance of the wedge-type tornado at the lake shore near the city of Feldberg. Genzmer provides a detailed description of the tornado impact based on damage still visible as well as eye witness reports. With respect to the latter, he critically scrutinizes possible exaggeration and inconsistencies. This concerns particularly "incredible" damage such as large oaks stubs ripped off the ground.

Genzmer's report allows for a comprehensive reconstruction of the event which he calls an "Orcan" (referring to extremely high winds). Interestingly, he abstains from any explanation of the phenomenon which he considers to be too speculative. Only a slight similarity with dust devils and waterspouts is discussed. The overall length of the well-documented path is about 30 km with a maximum width of more than 900 m. With respect to the "incredible" damage the maximum tornado intensity can be estimated to be F5 on the Fujita scale. The accompanying very large hail and the description of the thunderstorm activity suggest a supercell moving from SSW to NNO. Genzmer mentions a large field of debris fallout including frosted tree branches.

Our presentation gives a summary and an interpretation of the Genzmer Report. Based on the damage description we discuss the indications for F5 intensity and conclude that the event was one of the strongest in the history of Central Europe. The report is a pioneering work in scientific analysis of a tornado event and it comes close to today's standards for a reliable damage survey.