



## Preliminary climatology of derechos in Czechia

David Rýva

Czech hydrometeorological Institute, Radar Department, Prague, Czech Republic (david.ryva@chmi.cz)

Derechos are well known, especially in North America, as originators of widespread and significant damage associated with convective storms. Damage caused by derechos can even be compared to damage produced by tornadoes, but an affected area is much larger. As a result, derechos are able to cause significant damage to structures, forests, etc. and even cause numerous fatalities. The research activities of some authors in Europe during the last decade have shown that derechos are not just an American phenomenon. It is becoming to be clear that they are relatively frequent even in Central Europe.

This study presents preliminary results of our research on the occurrence of the derecho phenomenon in the Czech Republic. We have decided to choose only warm season events and events from the previous two decades (1999–2018). The reasons for this selection are as follows. Cold season derechos are often a part of a large, synoptic-scale, windstorms and it is not easy to determine which wind gusts are convective and which are not. Such cases need more data to verify if the event truly was a derecho. The reason for excluding the cases before 1999, at least for now, is the lack of electronically archived data from meteorological stations before 1999. We have developed software for the first preselection of days for further processing, which is simply looking for days with a sufficient number of at least near-severe maximum daily wind gusts in combination with enough stations with thunderstorm reports. The events before 1999 and cold season ones will be processed later.

Our database contains 135 convectively induced wind-squalls over the Czech Republic, 33 of them met the used derecho criteria and 9 of them reached high-end intensity. The results of our study show that derechos are a common phenomenon in the Czech Republic (1.5 events per warm season on average) with a maximum frequency of occurrence in July. The comparison with US climatology shows that derechos here in Central Europe are almost as frequent as in the US and that they should be taken into account during in weather forecasts and also in the weather risk assessment.