A new stochastic event catalogue for hail in Europe

Heinz Jürgen Punge, *KIT, Germany*
Kristopher Bedka, *Science Systems and Applications, Inc., United States*
David B. Stephenson, *University of Exeter, United Kingdom*
Michael Kunz, *KIT, Germany*
Marc Puskeiler, *KIT, Germany*
Angelika Werner, *Willis Re, Germany*

Damage by hail fall constitutes one of the major atmospheric risks to mobile, buildings and agricultural values. The quantification of this risk is of particular interest for insurance companies. However, there is little knowledge beyond local historical damage, due to the rarety of events and the lack of uniform detection methods.
Here, we present the hazard component of a stochastic risk model for hail in Europe. The stochastic event catalogue is based on hail observations from the ESWD network and satellite observations of overshooting cloud tops (OT), indicating very strong convection and thereby favorable conditions for hail formation.

Historic hail events are defined based on OT occurrences detected from infrared brightness temperatures of the MSG SEVIRI satellite between 2004-2011. The stochastic catalogue uses this historic event properties compromised by hailstone observations from the ESWD network to derive more than 1 million individual events with an event footprint resolution of 1km.
The presented catalogue is the first hail event catalogue based on a single homogeneous observation source over Europe. Key hail risk areas in central and southern Europe are represented, and high frequencies occur in regions neighbouring the Alps and the Pyrenees. A further maximum occurs in central Eastern Europe. However, major hail events can occur everywhere in Europe.