



## A hail verification algorithm for Germany

Daniel Betten, Ivan Kuhnel, and Franck Chapin  
CoreLogic Inc

Every year, hail damage is a major contributor of insurance claims and losses, with worldwide annual losses measuring in the billions (USD). While hail reports are necessary to estimate the size of the hail that reached the ground, their spatial representativeness is unknown without observations from a remote sensor. Therefore, a radar-based method must be employed to estimate the areal coverage and impact of each hailstorm.

To this end, CoreLogic developed a hail verification algorithm that has been running operationally since 2010. The goal of this algorithm has been to combine radar observations and hail reports in the most optimal way in order to estimate the areal coverage of damaging hail. The radar data is processed and advection errors between radar scans are minimized using a complex, spatially varying advection-correction scheme. The final hail-size estimate uses a data assimilation approach to incorporate ground observations. We are also exploring using the hail swaths to estimate property losses, combining property information and vulnerability models originally developed by our catastrophe modeling group.

Recently, this algorithm has been adapted for Europe with an ongoing pilot project in Germany. The adapted algorithm uses radar data from the DWD network and hail reports from the European Severe Weather Database (ESWD). Select events over the past 10 years have been processed and a few of the most significant events will be presented in this study, along with preliminary loss estimates for each event.