



Medium-range forecasting of convective hazards using ESSL's Additive Regression Convective Hazard Model (ARCHaMo)

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We developed a method to forecast convective hazards, such as hail exceeding 2 cm in diameter, severe wind gusts 25 m/s and significant tornadoes based on a statistical model and NWP data. The model treats the occurrence of a convective hazard as the product of the probability of a thunderstorm and the probability of a hazard, given that a storm occurs. The model was originally developed to be applied to climate research models and uses merely three simple predictors, i.e. the Lifted Index, Deep-layer shear, and mid-tropospheric Relative Humidity. It was calibrated using the ERA-Interim global atmospheric reanalysis, lightning data from the European Cooperation for Lightning Detection and severe weather reports from the European Severe Weather Database in Central Europe during the period 2008-2013. Applying the model to operational NWP forecasts yields a quantitative probabilistic forecast of the hazards.