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Supercell predictability on Iberian Peninsula using WRF-ARW model

Roberto Granda-Maestre¹, Carlos Calvo-Sancho², and Yago Martín³

¹Independent, Horche, Spain (rgm2396@gmail.com)

²University of Zaragoza, Geography, Zaragoza, Spain (ccalvosancho@gmail.com)

³University of Central Florida, FL, United States (ym@ucf.edu)

Spain, having a complex topography, has many climate and weather particularities, acting in many aspects like a mini continent. This is shown in many aspects, such as supercells, which count for more than 1000 in the last 10 years. This indicates that severe weather happens yearly, and supercell thunderstorms are one of the biggest threats, producing damage to population and economical assets, which makes reliable supercell forecast for risk management and mitigation a priority.

This research evaluates supercell forecasts from the Weather Research and Forecasting (WRF-ARW) model over Spain. This first iteration analyzes 2018 supercells, trying to predict this events using three nested domains (15-3-1 km), feeded with GFS operational datasets. The configuration chosen for the model has been used in the past for a master's thesis, with great results, and thus this work aims to evaluate the operational usage of this configuration for prediction with 12-36 hours of anticipation. Results so far show that around 80% of supercells could be perfectly forecasted, and another 15% could have medium forecasting skill. This results show that risk alarms could have been issued if this forecasts had being operative at the moment.