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Convection in future winter storms over northern Europe.

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Met Office convection-permitting 2.2km simulations over a European domain show 10-20% larger increases in winter mean precipitation at the end of the century compared to their 25km convection-parameterised driving model. We identify individual storms with a maximum vorticity tracking algorithm and look at storm characteristics at their time of deepest minimum sea level pressure. We show that the thermodynamical characteristics of future winter storms are getting closer to present-day autumn storms, with future winter storms showing larger values of convective available potential energy and convective inhibition and more intense rainfall in their warm sector. This suggests that embedded convection in the warm conveyor belt is a good candidate to explain the larger future intensification of rainfall per storm in the 2.2km model compared to the convection-parameterised model. Multi-model analysis is underway to identify whether these conclusions hold in other convection-permitting models.