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Error growth during convective initiation in a mesoscale model

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Operational NWP will soon be run at resolutions where storm-scale convection can be resolved explicitly allowing forecasts of individual storms to be made. This work aims to quantify error growth during convective initiation within a mesoscale model.

The idealised version of the UK Met Office UM was run at 4km resolution with the convective parameterisation scheme turned off. Large-scale homogeneous destabilization was used to initiation scattered convective storms. The potential temperature field was perturbed using random Gaussian kernals at the lifting condensation level. The difference between two runs (one with perturbations added, the other subtracted) was used to calculate the growth rate and saturation level of the perturbations at various scales.