



## **Investigating the effect of memory on a convective system**

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Current convection parameterisation schemes used in weather forecast and climate models require an equilibrium assumption between the large-scale forcing and the convective response. However, there are many important situations when this assumption may not be valid. Significant and continual variations in the convection can occur in response to time-varying external forcings: for example, in the longstanding problem of the diurnal cycle.

We compare simulations from a cloud-resolving model (the Met Office LEM). The model forcing is realistic in the sense that surface fluxes are imposed which are taken from observations of the diurnal cycle. However, in order to investigate the effect of forcing timescale on the ability of a convective system to reach, approach or fail-to-reach an equilibrium the length of the day is artificially altered.

At shorter forcing timescales the convective response is shown to be less predictable and does not achieve equilibrium. At these timescales the convection exhibits signs of memory. Current work focusses on investigating this memory with a simple analytic model.