

## **Comparing convective memory in different schemes with imposed fixed RCE state**

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Convective parameterizations necessarily reduce the number of degrees of freedom. Recent studies advocate for introducing an additional prognostic variables for unresolved atmospheric structures (“microstate memory”), adding on the more traditional large-scale influences on convection.

To test if convective schemes can capture such memory, we analyse various convective schemes in a single-column situation, with LMDZ and WRF as convective playgrounds. We compare the scheme responses in a setup similar to radiative-convective equilibrium but with an imposed fixed large-scale state. We use analogous cloud-resolving simulations (which showed exponential convective evolution) as a reference.

More fundamentally, this fixed large-scale state setup aims to identify to what extent the behaviour of convection is determined by the thermodynamic state variables, by fixing them to see how convection varies. Results show that one must add some other predictor to predict convective activity.