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Assessing accuracy of transport schemes in global climate-weather models

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The number of prognostic tracers in climate and weather models is constantly increasing to accommodate modern microphysics parameterizations, more prognostic chemical species, etc. From a computational point of view the cost of the resolved-scale dynamics can easily be dominated by the cost of tracer transport hence efficient multi-tracer transport is becoming increasingly important. In terms of overall model fidelity accurate tracer transport is crucial. This talk will focus on assessing accuracy of transport in global climate-weather models.

Idealized testing of transport schemes on the global domain has historically been overly simple. A new and more challenging idealized test case suite is being proposed that, among other things, uses novel evaluation of transport schemes in terms of interrelated tracers, scatter plots and mixing diagnostics. Results for a range of state-of-the-art transport schemes will be presented