Difference growth in global simulations with explicit convection

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In the process of cultivating an aqua-planet simulation with icosahedral grid spacing of 3.5 km, and a Cess-type SST +2K climate sensitivity experiment, 3 pairs of integrations were created which diverged from identical (but regridded) states after resolution was changed (14, 7, 3.5 km spacings).

Difference fields are examined for the 3 available parallel runs, using datasets on a common 0.25 degree grid. Although differences grow, some large-scale tropical weather events appear to be "predictable" more than a week in advance, at least within this framework (a perfectly initialized quasi-perfect model whose only physics "error" is different resolution).

Further analysis will focus on the nature of growth (in both amplitude and scale) of these differences. We examine different fields, tropics vs. midlatitudes, nondivergent vs. irrotational winds, and sensitivity to resolution.