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Interactive comment on "A High-order Staggered Finite-Element Vertical Discretization for Non-Hydrostatic Atmospheric Models" *by* J. E. Guerra and P. A. Ullrich

J. E. Guerra and P. A. Ullrich

jeguerra@ucdavis.edu

Dear Simone,

Here are the results you requested. These are 2 hour simulations using the Schär mountain profile with zero background wind. Here we are again looking at vertical orders 2, 4, and 10 in the same manner as the original manuscript. The fields are plotted relative to the initial state of the atmosphere, but the reference state is not being used in the computations. We observe that there is an improvement in the error with increasing vertical order, however that is limited by the constant 4th order horizontal terms. We note the presence of the Lorenz vertical mode which does vanish for Charney-Phillips.
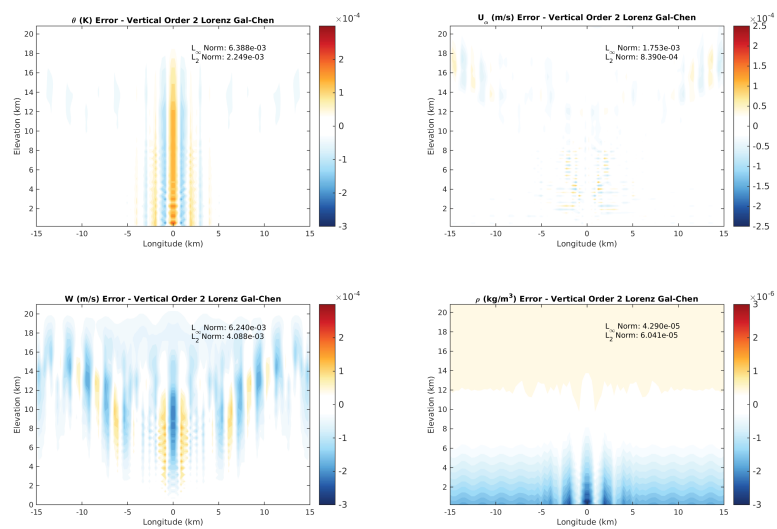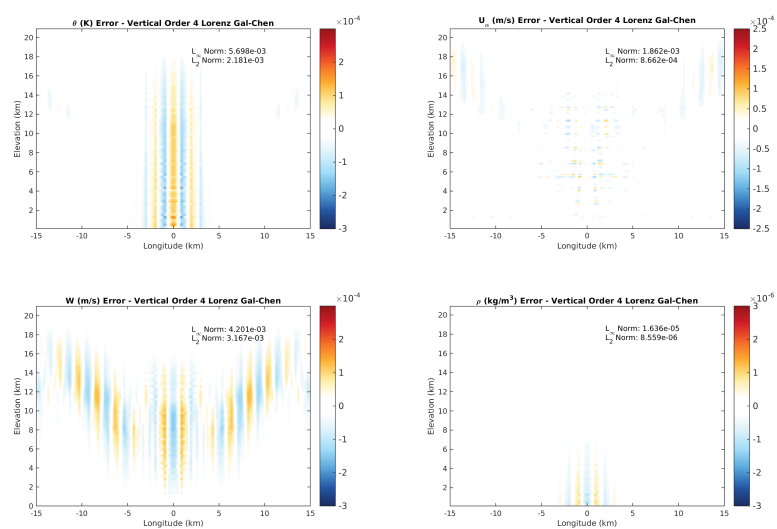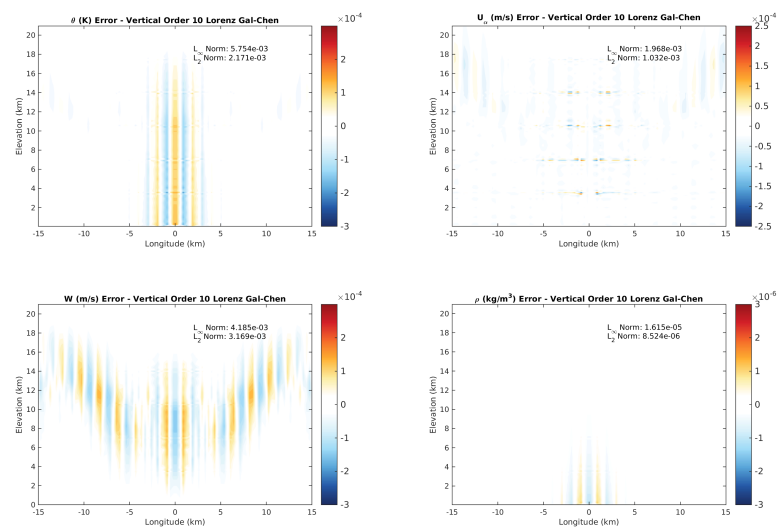
Fig. 1. Vertical Order 2 with Lorenz

Fig. 2. Vertical Order 4 with Lorenz

Fig. 3. Vertical Order 10 with Lorenz

C5