Electronic Supplementary Material to:
A Neural-Network-Based Alternative Scheme to Include Nonhydrostatic Processes in an Atmospheric Dynamical Core*

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Fig. S1. Time-σ cross-section of the horizontally averaged systematic biases (the upper row) and anomaly root-mean-square error (the lower row) of pressure (Pa) in the hydrostatic solver relative to the nonhydrostatic solver in five tests at the horizontal resolutions of (a and f) 5 km, (b and g) 10 km, (c and h) 20 km, (d and i) 40 km and (e and j) 80 km in the original experimental design domain of the baroclinic-wave test in the WRF idealized package, respectively. All tests adopt the same timesteps of 60 s except the 5km-tests have to reduce the timestep to 30 s for computational stability.

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Fig. S2. Meridian-height cross of the initial state of the (a) zonal wind, (b) potential temperature, and (c) density of the baroclinic wave test in the original idealized package of WRF. The two parallel dashed grey lines in each subfigure mark the meridional range of the reduction domain.

Fig. S3. Same as Fig. S1 but for the tests at the reduced domain (2000 km×2400 km).