

Review of Stripe Patterns in Wind Forecasts Induced by Physics-Dynamics Coupling on a Staggered Grid in CMA-GFS 3.0 by Chen et. al.

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This manuscript is an intriguing analysis of how physics-dynamics coupling can lead to numerical artifacts (striping) when the physics and dynamical processes are evaluated using data non-located grid points. It combines, in my view successfully, results from global model experiments, a simplified numerical model demonstrating similar difficulties, and a theoretical analysis of how staggered winds may lead to dispersive behavior. The presentation of most points is clear and convincing, and most of my concerns with the originally submitted draft have already been corrected in the response to Nigel Wood.

I have two minor concerns outstanding. First, the equation (7) in the manuscript is not the analytic solution to (6) if α is spatially varying. To give an example, if $\alpha = \alpha_0 \cos(mx)$, i.e.

$$\frac{\partial u}{\partial t} + c \frac{\partial u}{\partial x} = \alpha_0 \cos^2(mx) u \quad (1)$$

then one solution is given by:

$$u = u_0 \exp \left\{ ik(x - ct) - \frac{\alpha_0 t}{2} - \frac{\alpha_0 \sin(2mx)}{4cm} \right\} \quad (2)$$

When the length scale across which α varies is