Physics for Global Non-hydrostatic Applications

John M. Brown
NOAA/ESRL/GSD

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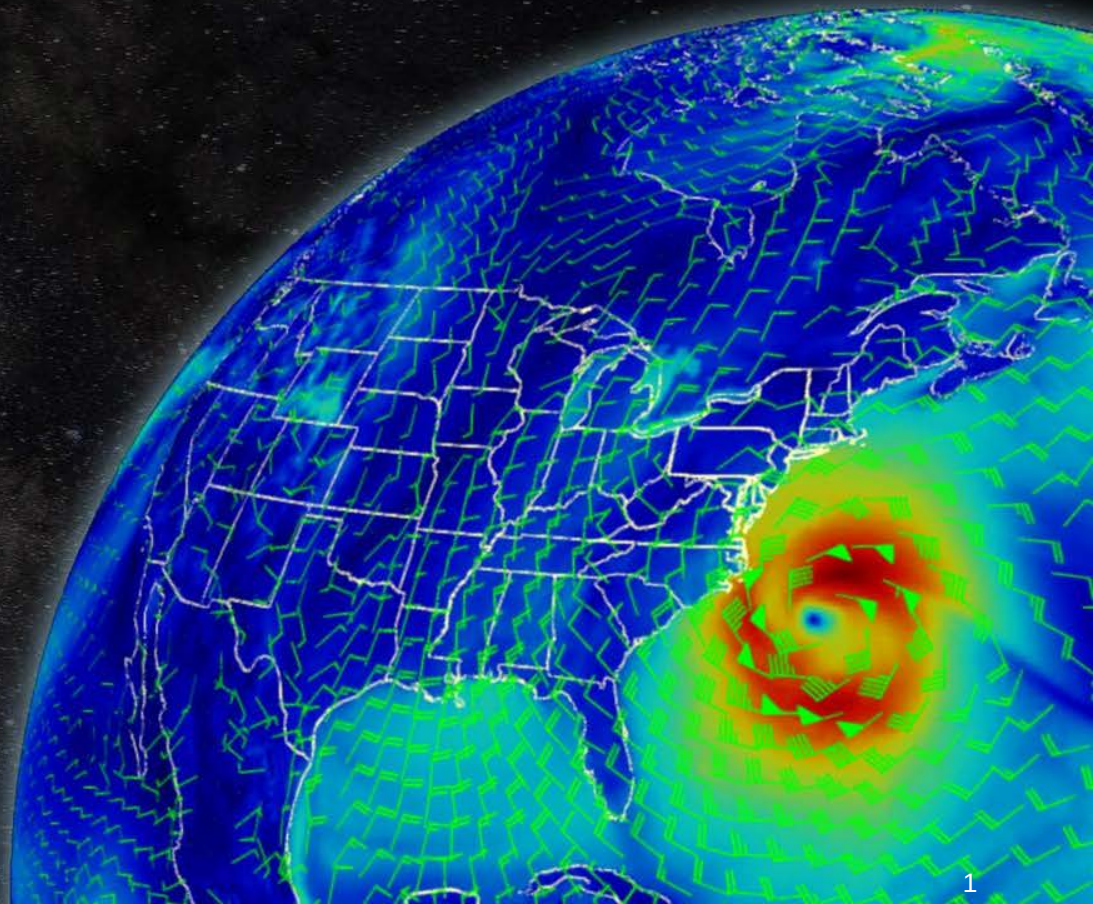
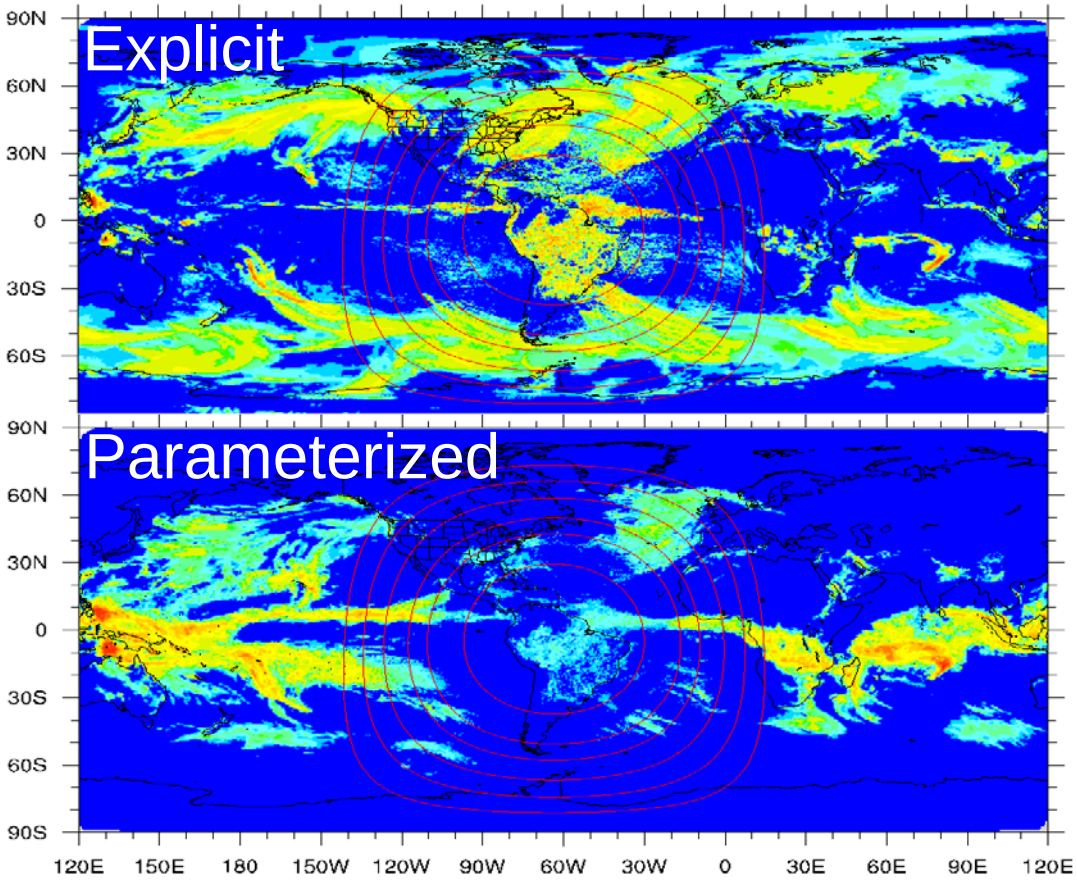


Cloud-allowing and variable resolution Grid-refinement or nesting likely

- “Scale-aware” physics
- Initial development: “HRRR-like” physics suite
- Proven at 13 and 3km grid spacing

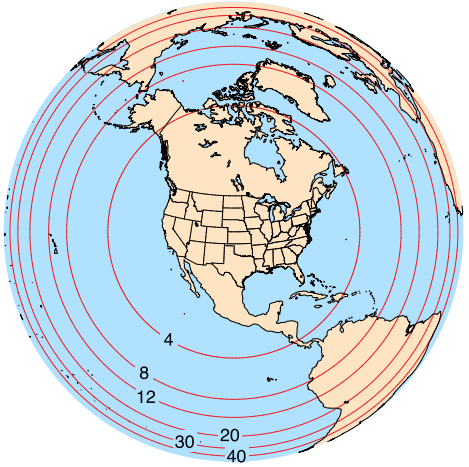
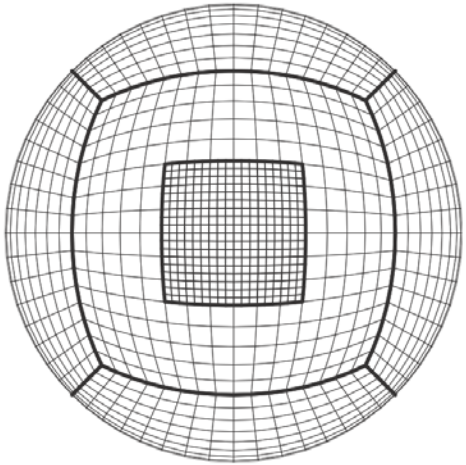
Physics for Global Models

- Example of scale-aware physics: Grell-Freitas (GF) convection from a single 72-h global run with a stretched grid.
- Parameterization of convection still needed, perhaps even at 3km grid spacing
- Avoid bulls-eyes of excessive precipitation
- GF convection becomes essentially a shallow scheme at 3km



Outlook

- Test global application of HRRR-like physics to stretched grids with MPAS and FV3
- **Intrigued? Come see the poster!!**

HRRR-like Physics:

- RRTMG lw and sw radiation
- RUC (Smirnova) land-surface
- MYNN surface layer
- MYNN boundary layer +GFO shallow convection
- Grell-Freitas convection scheme
- NCAR aerosol-aware microphysics