Development Strategy for GSL-led to Physical Parameterization for all Model Hosts/Applications

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ABSTRACT

The set of GLS-led physical parameterizations include the Mellor–Yamada–Nakanishi–Niino (MYNN) Eddy Diffusivity-Mass Flux (EDMF) moist-turbulence parameterization scheme (and associated surface-layer scheme), the Thompson-Eidhammer Microphysics Parameterization for Operations (TEMPO), the Community Convective Cloud (C3) scheme, the RUC LSM, and the Gravity Wave Physics suite. These parameterizations have been part of the Rapid Refresh (RAP), High-Resolution Rapid Refresh (HRRR), and are slated for the first version of the Rapid Refresh Forecast System (RRFSv1). More recently, its development focus has expanded to include global applications and higher resolution applications in multiple model hosts. Most of the recent updates have been developed within the CCPP/FV3 framework but recent attempts to unify the schemes for non-CCPP frameworks will allow for more easy and frequent updates in the future.

This presentation will overview the incoming improvements and how we plan to implement these schemes for centralized development across all platforms. Each scheme is currently being set up in a stand-alone submodule repository which can be linked to different model hosts. This is done to centralize development, work towards self-hosted testing with CI/CD, where testing can be incremental and we have a clean separation of “scheme development” and “host coupling”. With a permanent public-facing submodule repository, the public can see all “minor”/incremental commits not seen in larger releases and developers can tag versions for publications or operational product versions.