

Facilitating external collaboration in CFS development

- The primary task of CFS is operational coupled ensemble prediction between 2 weeks and a year.
- Our vision is that all NCEP prediction models be the most skillful in the world, and their outputs be freely, widely and wisely used.
- The US has the largest and strongest scientific community in weather and climate science in the world.
- This community would embrace a CFS designed to facilitate community use, testing and collaborative model development, in which they have a stake. This process has begun but to transform CFS it must go much further.
- Keeping the CFS tightly unified with GFS will leverage the resources of the US weather community and allow the software engineering and infrastructure needed for this vision.

Examples of external CFS users

- Use CFS outputs and reanalyses (already active) for diverse applications (hydro, fire, ag, health, etc.)
- Use CFS as part of an MME (already active)
- Run CFS for fundamental analysis of climate variability or extreme events
- Run CFS for predictability and attribution studies
- Improve data assimilation methodology / OSSEs
- Improve model physics and dynamics; reduce biases
- Add new earth system processes (e.g. chemistry)
- Improve ensemble statistics

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Moving to this vision

- With enough R2O support, a large active pool of external model users accelerates system improvement, as they are motivated to help solve the problems they encounter
- Required elements of such R2O support
 - ✓ CPT-like support for transitioning promising high-priority improvements to operations
 - ✓ Clear metrics to measure model improvement
 - ✓ Clear internal strategic plan for model development
 - Comprehensive on-line documentation
 - Extensive, user-friendly run scripts, input files, and basic diagnostic packages on accessible HPC.
 - Clear internal EMC points of contact
- A sustained investment in these elements pays off!