Retiring the SREF on the Path Toward the Unified Forecast System

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And with helpful feedback/comments provided by many colleagues
Current ~3km Regional Models → Quite a bit

- Cover CONUS + OCONUS in a large variety of capacities
- NAM + Nests [Frozen]
- HRRR CONUS and Alaska [soon to be frozen]
- HiRes Windows [Frozen]
  - ARW and NMMB members for each domain
- Much of this has been consolidated in the HREF
  - High Resolution Ensemble Forecast system
  - Only one more upgrade, then frozen
- FY22/23 → Rapid Refresh Forecast System
  - Unified under FV3 dynamics
Current Atmospheric Ensemble Systems

- **SREF** → 26 members, 16 km, 4x/day out to 3.5 days
  - Multi-model, multi-IC, multi-LBC (GEFS), multi-physics
  - 10/2015 Last and final upgrade (going on 4 years of being frozen)
- **GEFSv12** → 31 members, ~25 km, 4x/day out to 16 days
- **HREFv3** → 10 members, 3 km, 4x day out to 2 days

Given similar resolution and coverage, plan is for the GEFS to take over the current role fulfilled by the SREF → *Is this feasible?*
The SREF generally remains the preferred ensemble for day 2-3 convective and aviation weather applications and used for derived/calibrated products (days 1-3)

i. GEFS does not adequately portray thermodynamic structure in the pre-convective environment

ii. GEFS is typically under-dispersive in days 1-3
Retirement of SREF is critical for unification of the production suite

Proposal:

a. Transition to a combination of GEFS and HREF
   i. GEFS creates SREF look-a-like products to ease transition
   ii. 3 km HREF be extended from 36 to 48 hrs for day 2 applications
b. NOAA Testbeds: Evaluate GEFS+HREF combination vs SREF

Testing/eval should start early to gather evidence/data to inform development/retirement decisions

When can this be done? HREFv3 and GEFSv12 scheduled for FY20 implementations

a. Need a target SREF retirement date. FY21? Earlier? Later?
**FV3-CAM Timeline → Rapid Refresh Forecast System**

**CAM Development Continues**
- Demonstration FV3-CAM ensemble DA + forecast system - evaluate against HREF.
- Continue physics testing/advancement.

**Freeze all non-FV3 CAM systems**

- **FY18/19**
  - Development underway standalone/regional, nesting, DA, physics, etc.

- **Q3FY20**
  - HREFv3
    - Replace poorly performing members with FV3-CAM if justified via objective stats

- **Q4FY20**

- **FY21**
  - RRFSv1
    - Implement RRFSv1 pending favorable evaluation

- **~FY22/23**
  - Retire SREF?

**Rapid Refresh Forecast System → To replace HREF, HRRR, NAM + nests, HiResWs**

*Timeline may be revised as development matures/progresses*