# Retiring the SREF on the Path Toward the Unified Forecast System

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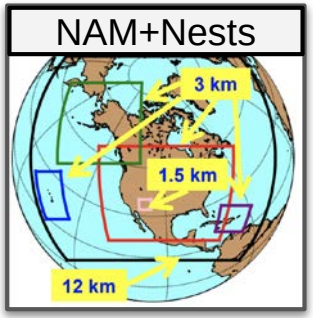
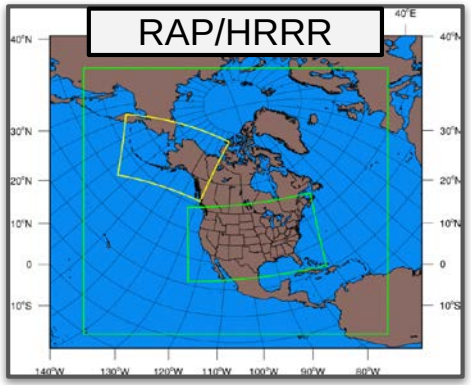
**And the UFS CAM SIP Working Group**

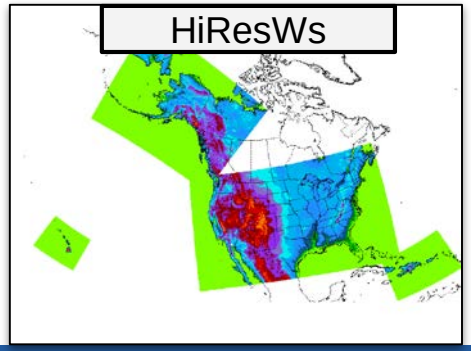
*And with helpful feedback/comments provided by many colleagues*

# 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



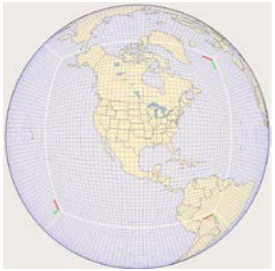



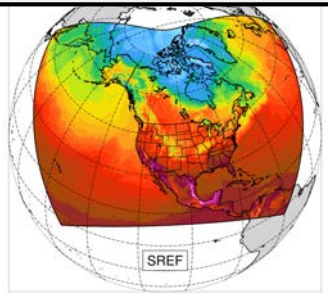
# Current Atmospheric Ensemble Systems

- 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)
- GEFS***v12*** → 31 members, ~25 km, 4x/day out to 16 days
- HREF**v3** → 10 members, 3 km, 4x day out to 2 days

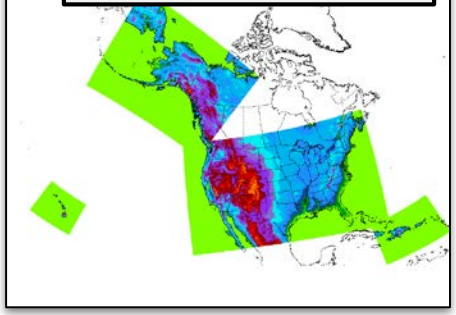
GEFS Domain



SREF Domain



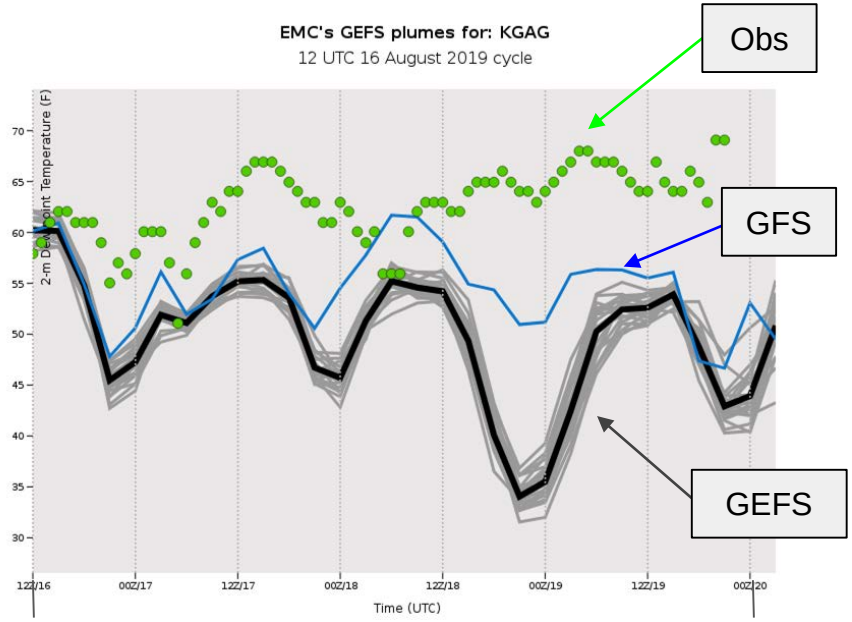

HREF Domains



*Given similar resolution and coverage, plan is for the GEFS to take over the current role fulfilled by the SREF → <u>Is this feasible?</u>*

# The Challenge → Unification

- 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




12Z Aug. 16 00Z Aug. 20

**GEFS 2m Td for Gage, OK**

# Proposal

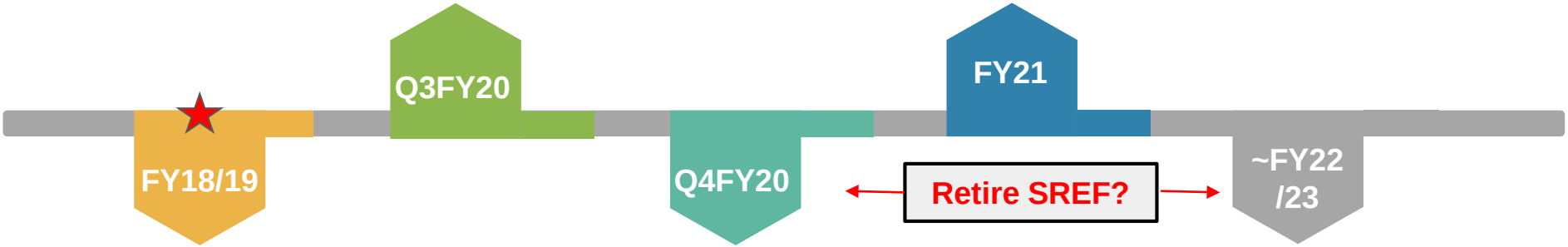
- Retirement of SREF is critical for unification of the production suite
- *Proposal*:
  a. Transition to a combination of GEFS and HREF
     i. GEFS creates SREF look-a-like products to ease transition
     ii. 3 km HREF be extended from 36 to 48 hrs for day 2 applications
  b. NOAA Testbeds: Evaluate 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

Freeze all non-FV3 CAM systems

CAM Development Continues

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




Development underway

standalone/regional, nesting, DA, physics, etc.

HREFv3

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

RRFSv1

Implement RRFSv1 pending favorable evaluation

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

*Timeline may be revised as development matures/progresses*