



Strategic Implementation Plan (SIP) for a Community-based Unified Forecast System

CAM Working Group

Presented by

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Presented at SIP Coordination Meeting

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CAM WG *Membership*



- *Curtis Alexander ESRL/GSD ***
- *Lucas Harris GFDL ***
- *Jack Kain NCEP/EMC ***
- *Dave Stensrud Penn State ***

- Eric Rogers NCEP/EMC
- Brad Ferrier NCEP/EMC
- Geoff DiMego NCEP/EMC
- Lou Wicker NSSL
- Adam Clark NSSL
- SJ Lin GFDL

- Stan Benjamin ESRL/GSD
- Ming Xue OU/CAPS
- Glen Romine NCAR/MMM
- Bill Putman NASA/GMAO
- Gary Lackmann NC State
- Vittorio Gensini NIU

- *Co-Chair ***



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Project Milestone Accomplishments



- **SIP project accomplishments to date:**
 - EMC/GSD proposed pathway to a Unified CAM-based Ensemble by 2022
 - EMC developing initial stand-alone regional FV3, implemented HREFv2
 - GSD FV3 real-time 30-km global 10-day w/GFS vs GF, RAOB/AC verification
 - GSD and NCAR coordinating efforts for single-core CAM ensemble design
 - GFDL developing nesting (e.g. vertical two-way) and variable-res physics
 - GFDL participating in global convective-scale intercomparisons and initiatives
 - NSSL established HREFv2 as CAM-Ensemble baseline in 2017 HWT SFE
 - CAPS added 5 PBL/4 two-moment MP schemes into FV3, tests with HWT/HMT
 - CAPS/GFDL real-time CONUS-nested FV3 runs in HWT SFE/HMT FFaIR (figs)
- **SIP project issues:**
 - FV3 compatibility/documentation challenges across varied NOAA HPC systems
 - Need vetted CAM-scale verification metrics
 - “Optimal” single-core CAM ensemble spread/skill remains a grand challenge
 - More studies of CAM-scale FV3 behavior needed for operational readiness (figs)



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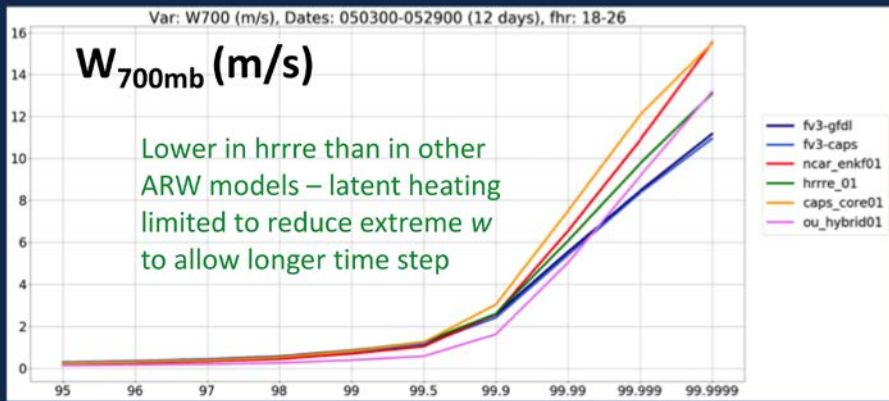
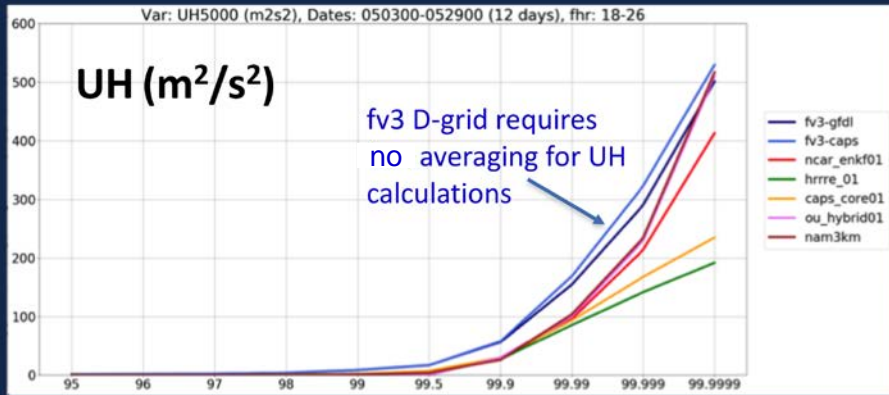


Project Milestone Accomplishments

Potvin et al 2018

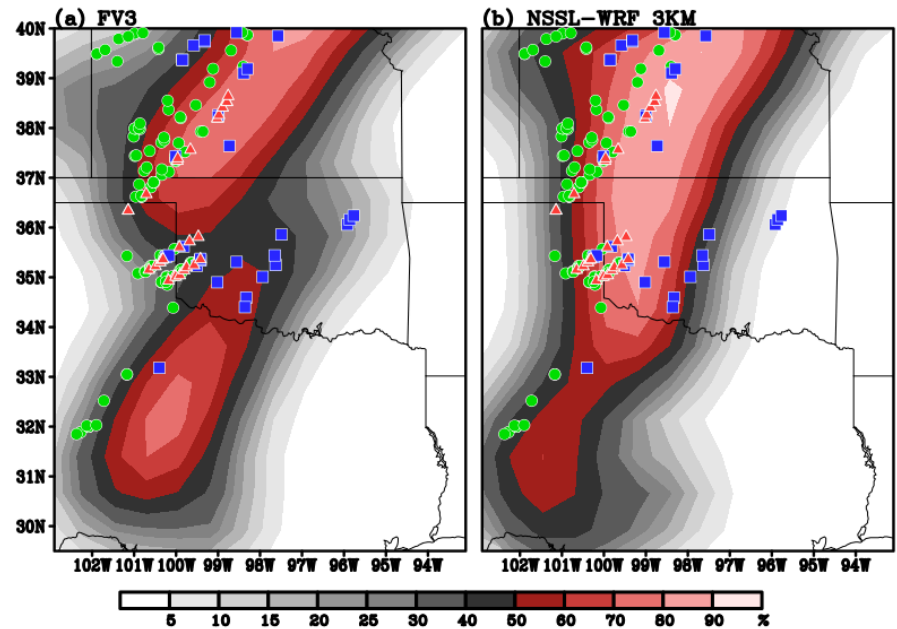
UH and W CAM climatologies from 2017 CLUE

Percentiles (UH, W_{700mb})



CLUE Results: FV3-GFDL (2017)

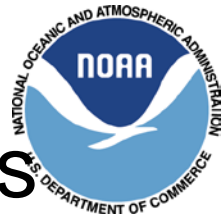
Surrogate severe method (Sobash et al. 2011, 2016) used to compare FV3-GFDL and 3-km NSSL-WRF



	MAX AUC	MAX FSS
FV3	0.89	0.67
NSSL-WRF	0.92	0.74



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Team Coordination and Dependencies

- **Team Coordination (progress)**
 - Formed EMC/GSD/NSSL FV3 regional stand-alone development team
 - Team scheduling “Early Adopters” Regional FV3 Workshop, 11-12 Sep 2018
 - GFDL/CAPS/GSD/NSSL/NCAR tighter coordination for 2018 CLUE/SFE in HWT
 - NSSL/DTC meetings for CAM scorecard development using MET
 - GFDL interactions with EMC (dycore), CAPS (physics), PSU (DA), AOML (tropic)
- **Team Dependencies (progress)**
 - Dynamics: Stand-alone Regional FV3, multi-model pre-processing
 - Physics: CCPP for RAP/HRRR physic suite, scale-aware/stochastic development
 - Data Assimilation: GSI/JEDI interface with regional FV3
 - Post-Processing: UPP interface with FV3 output
 - Verification: Unified CAM-scale metrics
- **Team Coordination (challenges)**
 - Need more consolidation of CAM code repositories
 - Need more communication with some testbeds for effective experiment planning
 - Need more FTEs and HPC for CAM ensemble development efforts