

## HAFS Coordination Meeting Minutes/chat log

March 3, 2021, 2-3 pm ET

### Participants

EMC ([The Current HAFS DA Development](#), Zhan Zhang)

- Requirements for HAFS DA - includes various DA components/options, and meets both operational and research requirements.
- Current capacity includes - GSI-based TC relocation capability, 6-hourly hybrid 3DEnVar by using GDAS ensemble, 3-hourly (configurable) FGAT capability, 3DVar DA to assimilate the observational data used by operational HWRF and GFS and 6-hourly hybrid 3DEnVar by using HAFS ensemble.
- Some changes are made to workflow to add options for ensemble members
- Results from self cycled 3DEnVar - testing workflow, ran four cycles for hurricane Laura, no obvious impact on track forecast.
- 2D impact of self cycled - DA increment both vortex, large difference in first guess and analysis
- Large DA increments at LBC, may cause discontinuity at the boundary layer.

Q. Are there plans to include ocean DA? Yes, that's long term goal.

OU ([Accelerate the development HAFS](#), Xuguang Wang)

- The objective is to establish a dual resolution 4DEnVar system for HAFS and further develop and test HAFS EnVar with respect to simultaneous multiscale assimilation of observations of various scales.
- With multiscale DA, it helps resolve obs. better
- The GSI based hybrid DA system is developed with the following capabilities, continuously cycling, dual resolution, 3DEnVar/4DEnVar/Hourly, assimilating all operational observations and integrated with VI.
- Workflow on HAFS DA developed at OU (see slide 7)
- HAFS DA is not not mature enough for 3DEnVar yet.

UMD ([HU-2: Accelerate the development of the Hurricane Analysis and Forecasting System](#), Jon Poterjoy)

- The objective is to bring all-sky radiance data assimilation capabilities into HAFS and add new Bayesian data assimilation methodology.
- Added local PF into the latest version of GSI with SAR-FV3 IO and grid options. Testing in HAFS is ongoing.
- New methods are initially validated using obs-space verification of FV3 prior, posterior, and forecast solutions.
- Next steps - finalize testing of recent local PF code developments, add "hybrid" version of the PF into HAFS, finalize strategy for satellite bias correction, begin testing of new methodology for all-sky radiance measurements.

## Chat Log

Zhan Zhang - NOAA Federal 2:37 PM

@Xuguang We can work with you to add 4DnVAR capability to the HAFS-DA workflow.

Xuejin Zhang - NOAA Federal 2:38 PM

@Zhan, Any consideration of the DA framework for global-nest configuration?

Ghassan Alaka - NOAA Federal 2:40 PM

@Zhan, to add onto Xuejin's comment, Andy and I would be interested in learning some details of how to test the current DA framework for global-nest. Let us know if you want to talk more about this.

Xuguang Wang - NOAA Affiliate 2:41 PM

@Zhan sure after some additional testing

Zhan Zhang - NOAA Federal 2:44 PM

@Xuejin @Gus yes, it's in our to-do list. We have not tested it yet. We may need to take care of discontinuity at LBC when using global-nest configuration. We may have to wait until we have optimal interpolation/merging utility, which is under development.

Andrew Hazelton - NOAA Affiliate 2:47 PM

@Zack that makes sense. It seems like that discontinuity wouldn't be great for either setup but would probably make the global-nested setup blow up

Is the basic infrastructure at least capable of supporting the global-nested system?

Zhan Zhang - NOAA Federal 2:49 PM

@Gus @Andy if you are interested, you can try to run the current HAFS-DA using global-nest config. out of the box.

Zhan Zhang - NOAA Federal 2:50 PM

the current system may work out of the box for global-nest, or only need minor changes.

Andrew Hazelton - NOAA Affiliate 2:50 PM

@Zack that sounds like an interesting first step. Maybe if you could point us to the hafs.conf file you are using for the current system, and we can modify the nesting/grid options