Hydrologic Ensemble Forecasting Service (HEFS)

Seminar E
Next Steps

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HEFS Components

= Forecast tool (real-time/hindcast)  = Supporting tool  = Future capability

MEFP: pre-processor  EVS: verification  Verification results
MEFP PE: parameters  Unbiased forcing (basin scale)

Hydrologic Ensemble Processor  “Raw flow”  “Corrected flow”

GraphGen: products

EnsPost: post-processor
EnsPost PE: parameters

Data assimilator

Raw weather and climate forecasts (GEFS, CFSv2,..)

Hydrologic data
Objective

- Confirm schedule for upcoming events
  - HEFSv1 (aka 1.0.1) installation, configuration and beta testing
  - Subsequent maintenance release

- Discuss future HEFS plans
Up-coming Dates

- **Schedule assumes**
  - AB, CB, MA, and NE will install HEFSv1 (aka 1.0.1) when available
  - CB will install HEFSv1 on a stand alone temporarily until HEFS 1.0.2
  - CN will not install HEFS 1.01, and will wait for HEFS 1.0.2

- **HEFSv1 release**: Sep. 24th

- **CHPS 4.0.1 release**: late Oct

- **HEFS maintenance release, with CHPS 4.0.1**: November 15th

- **HEFS workshop (with travel)**: week of Dec. 9th; likely 2-3 days of workshop time
HEFSv1

To do: AB, CB, MA, & NE

- Install (2+ pages) takes approximately 1 hour
- Required changes From “What’s New” (Hank Herr’s talk)
  - All MEFP and EnsPost parameters must be re-estimated
    - Use saved SA from previous estimation to save time
  - Various minor configuration changes
  - Test (sections of the Test Manual have tests and procedures):
    - 1) Section 2, make sure existing functionality works – all HEFS RFCs
    - 2) Section 3, test Fogbugz fixes - reporting RFCs
    - 3) Section 4, test enhancements – all HEFS RFCs
HEFSv1 (continued)

To do (continued)

- MA and NE HEFS NYCDep runs – these are the only remaining configuration changes requested (but weren’t viable until this build)
  - Use a CHPS merge transformation to provide observed climatology after day 270 in the forecasts (see section 6.1.3 of MEFP Config. Guide: Forecast Components)
  - Switch HEFS runs to calendar year, for consistency with hindcasts
    - Use new MEFP module “advanced” run File Property, memberIndexingYear, (see section 4.4.3 of the MEFP User’s Manual)

When? Release date Sep. 24th – AB, CB, MA, and NE

- Complete by Oct 15th? (3 weeks) – MEFP, EnsPost, and GraphGen should be executing with newly estimated parameters on the ‘live’ system with (at least) the same # of points as now.
- Will regularly check progress since this is the last planned major release for a while
HEFS maintenance release (1.0.2)

Why plan a maintenance release soon after the HEFSv1 release?

- CHPS 4.0.1 coming, but did not want to rely on CHPS 4.0.1 for HEFSv1
- A quick (2 weeks) maintenance release after the CHPS 4.0.1 release ensures HEFS will work with CHPS 4.0.1 with very little additional HEFS-related work

HEFS RFCs - to do

- AB, CB, MA, and NE
  - Install and test fixes
  - No anticipated parameter estimation or configuration changes needed
- CB – upgrade HEFS from SA to live system
- CN - Install, re-estimate parameters, configuration changes and execute tests from 1.0.1 and 1.0.2
HEFS maintenance release (1.0.2)

- **HEFS RFCs – when? (assuming CHPS release)**
  - Release date Nov 15th
  - Complete (Thanksgiving is Nov 28th) – running MEFP, EnsPost and GraphGen ‘live’ for all previously configured locations
    - AB, CB, MA, and NE – Nov 30th
    - CN – Dec 20th?

- **MARFC and NERFC Operational Test**
  - Purpose: to show that the HEFS forecasts are as planned
  - Schedule: December 2013; alternately could be done sooner (Oct/Nov) with HEFS 1.0.1
  - Scope: Mainly confirmation by OHD and NYCDEP reps (RTi) of things that are already happening and being checked
  - MA and NE involvement: keep flow of data and make adjustments, if issues are found
HEFS schedule through 2013

Questions or concerns about the proposed schedule through the end of 2013?

- Sep 24 – Oct 15: HEFS-1.0.1 install and minor configuration

- Late Oct: CHPS 4.0.1 install and configuration

- Nov 15 – Nov 30: HEFS-1.0.2 install
  - CN – Dec 20th?

- Week of Dec 9th: Travel / Workshop

- December: NE and MA Ops Test (limited role at RFCs)

- After Dec 2013, less frequent HEFS RFC Test Team Meetings transitioning to ConOps discussions for all RFCs and OHD Mgmt
Future HEFS Plans

- HEFS - now
  - Proven can run HEFS in an operational setting
  - Shows benefit in limited validation
  - Several limitations

- HEFS strategy related to roll-out to all RFCs
  - Recommend phased implementation at RFCs - initially for limited # locations without regulation, similar to HEFS RFC Test Team
  - HEFS “Buddies”, similar to CHPS?
Future HEFS Plans

- HEFS related OHD Annual Operating Plan (AOP) milestones, i.e. reported to NWS Director
  - AOP - ConOps by March 2014
    - OHD just starting, and will need help from HEFS RFCs
  - AOP - Complete HEFS operational testing at MA and NE in support of NYCDEP by March 2014, more likely by end of Dec. 2013
  - AOP - Provide training to all RFCs by end of FY14
    - Re-package past HEFS (workshop) incremental training into end-to-end training
    - Create Training Plan which will transition training to NWC Training Center in FY15 (not part of the AOP milestone)
**Future HEFS Plans**

- **HEFS related OHD AOP milestones, continued**
  - **AOP - Move HEFS into CHPS baseline by end of FY14**
    - Assumes CHPS “summer” build will be before end of FY14
  - **AOP - “Complete transition of CHPS into AWIPS” by end of FY14**
    - CHPS on AWIPS in RFCs by end of June 2014
Future HEFS Plans

- Other HEFS plans beyond 2013 will be gelling in the next few weeks. Below is a list of possibilities, timing and details TBD, not a comprehensive list. **We plan to include HEFS RFCs in the planning around the end of October**
  - More validation, e.g. compare to operational forecasts
  - Investigate and fix most critical science issues
  - More diagnostics with guidance
  - Ensure distribution of model forcings grids through official means
  - Better definition of required ensemble products
Future HEFS Plans

- Other HEFS plans beyond 2013, continued

  - Connect HEFS to WFIPPP (Water Forecast Improvement Preparatory Project, i.e. Water Center) activities, especially archiving and hindcasting/verification

  - After release to all RFCs, allow for additional changes

  - Add forcings: WPC QPF, other – need many years of reforecasts with somewhat stable operational model

  - Add data assimilator: start with single value model state updating to reduce the need for manual MODs (This was mentioned in the original high level requirements.)