

XEFS Planning Meeting – 21 May 2009

Attendees: Rob Hartman, Albrecht Weerts, John Schaake, Mary Mullusky, Hank Herr, Xuning Tan, Julie Demargne, Albrecht Weerts, and Mark Fresch

### **XEFS/HEFS HOSIP/OSIP**

Mark Fresch reminded everyone that today is the last day to provide comments on the HEFS HOSIP Statement of Need for the umbrella project called *Implementation of Hydrologic Ensemble Forecast Service (HEFS)*.

### **EPP3 Coding**

The EPP3 code to handle the CFS temperature grids is not yet completed as scheduled [was due in mid-May as agreed in late March]. John Schaake had eye surgery last week and will be recovering for another week. His recent work has been fixing critical issues in EPP3. John said the code to handle the grids would be done “maybe early June”.

Mark expressed concern that integration testing (of the EPP3, model adapters, and FEWS) should be done with a final version of the EPP3. In addition, if critical issues continue to be found within EPP3, then completing temperature grids will continue to slip. Also, (as was discussed later), a field test of EPP3 is supposed to start in late June.

John responded that having the code to handle the temperature grids by late June is no problem. John thinks EPP3 is in good shape because the code to handle the temperature grids will be the same as the already provided code to handle the precipitation grids. In addition, the interface between the model adapters and EPP3 will not change.

### **Meteorological Model-based Ensemble Forecast System (MMEFS)**

Earlier this week DJ had visited OHRFC and exchanged information about OHD’s XEFS and ER RFC’s MMEFS with the OHRFC staff, especially Tom Adams. Prior to the meeting, DJ sent the URL to a wiki-page describing MMEFS ([https://collaborate.werh.noaa.gov/wiki/index.php/MMEFS\\_Info](https://collaborate.werh.noaa.gov/wiki/index.php/MMEFS_Info)). DJ also provided the OHRFC with a presentation describing the THORPEX project, an OHD collaborative project which includes several XEFS related plans. Below is a summary of DJ’s briefing at the meeting of his visit to OHRFC. Robb Shedd is planning to make the CAT aware of MMEFS.

MMEFS uses a partial GEFS as input to hydrologic models as an interim solution to a more sophisticated method. DJ added that HEP has shown that EPP2 outperforms using only the operational GEFS. DJ showed a schematic of EPP3 which shows an API for “other ensembles”. There was a discussion about the advantages and disadvantages of MMEFS over XEFS. [Thanks to Rob Hartman for providing the following summary after the meeting:

“The primary *disadvantage* of MMEFS is that the atmospheric forcings are not conditioned to the climatology of the forcings used to calibrate the hydrology model. If there are biases in the precipitation and temperature grids generated by the atmospheric model, then those will go uncorrected. Its a pretty safe assumption to say that ~all atmospheric models produce bias results of some (unknown) magnitude and likely have some (under) spread issues. There is no way to know if your resulting forcing ensembles are reliable (unbiased, accurate spread). This technique is also incompatible with our hindcasting processes so you cannot assess the reliability of the resulting hydrologic ensembles either. The *advantage* is that you can feasibly generate the information without gathering archived and/or reforecast information. I see this as an exploratory/experimental activity that allows more individuals to participate in the process and will highlight the need for techniques that appropriately condition the raw model ensembles. I would be very hesitant to portray the results to our customers without a serious dose of caveats related to their reliability.”]

MMEFS is run by partly outside of AWIPS. Ingesting, downscaling and remapping of the ensemble grids to mean areal temperature and precipitation grids are done with Geographic Resources Analysis Support System (GRASS) using a high-end processor. The high-end processor is used in order to provide output in a reasonable amount of time which would take 10 times as long on AWIPS. Albrecht said that similar mapping is already available within FEWS. Also, the GEFS is acquired from NOAA's National Operational Model Archive and Distribution System (NOMADS, <http://nomads.ncdc.noaa.gov/nomads.php?name=about>).

DJ discussed the THORPEX Project Plan. The Plan addresses improving meteorological ensembles, correcting biases, and downscaling (to long-term precipitation climatology). DJ is cautiously optimistic these things can be down within the next two years.

### **XEFS Schedule**

Mark Fresch reviewed the XEFS schedule which he had drafted in January and last updated in March; several changes were made. Early versions of the Graphics Generator will only be prototype GUIs, since Andre (Deltares) won't have the Graphics Generator API done until after the IFD is delivered (in June). The prototypes will only show menus and won't have much functionality. Still, Rob agreed to review the GUI in early June. EPP3 debugging will go on throughout the summer. EPP3 version of code which handles the CFS temperature grids need to be tested by the end of June. The EPP3 model adapter will need to be changed to accept location sets. Rob agreed to give a college try to start the EPP3 field test by the end of June for some basins; DJ and John agreed this field test will include the CFS temperature grids. DJ reported that the new HMOS prototype coding is nearly done. Hank, DJ, Xuning, and Satish will meet next week to discuss what needs to be done to integrate the new HMOS and EnsPost into CHPS, especially whether the model adapters need to

be changed. For EVS, the plan is to have the prototype version 2 to all RFCs by September 30, even if the support is done mostly with the verif-hydro listserver (and not directly from HEP). HEP will do the testing in the summer and will ask MARFC (Andrew Philpott) to test it as well before the release date.

Mark Fresch