NWS Operations Proving Ground

Operational Evaluation Report

Advanced Beta Test of Hazard Services Initial Operating Capability for Hydrologic Watch, Warning, and Advisory Functions

NWS Operations Proving Ground
7220 NW 101st Terrace
Kansas City, MO 64153

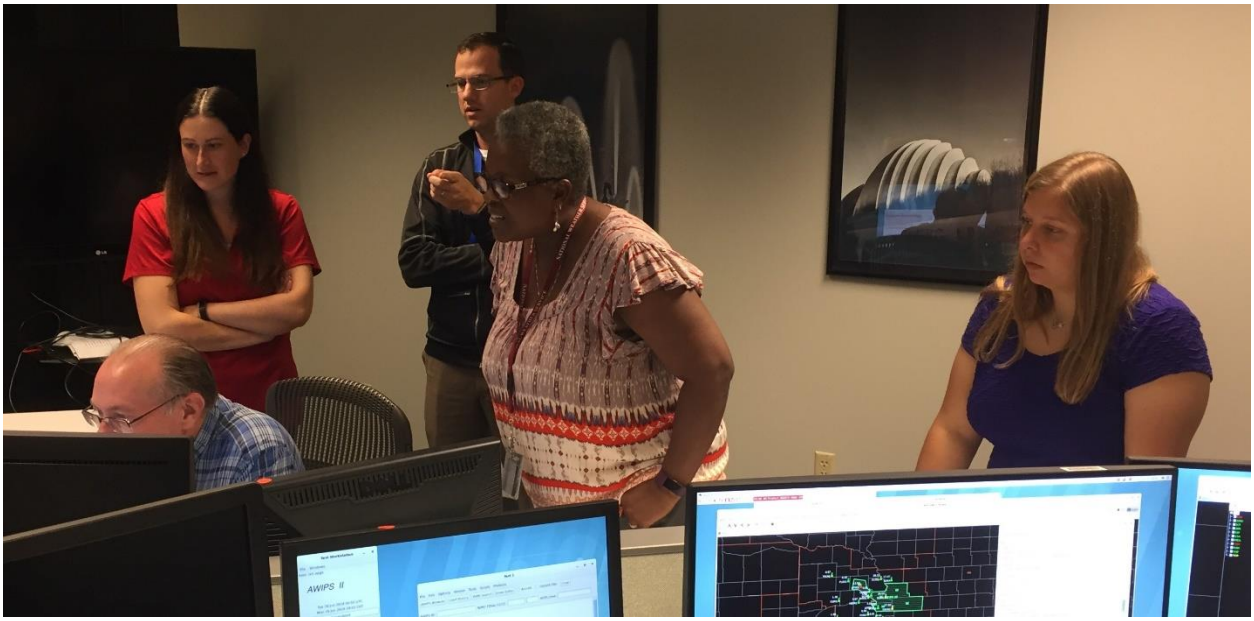
Hazard Services IOC Testing at OPG – Summary of Forecaster Feedback

During the period from September 17-28, 2018, the Operations Proving Ground (OPG) hosted two week-long advanced beta testing sessions, aimed at evaluating Initial Operating Capability (IOC) functional requirements of the Hazard Services (HS) warning software for NWS WFO hydrologic products and services. These tests, conducted in collaboration with the AWIPS Program Office and the HS Tiger Team, involved a series of simulation cases, run in displaced real-time, during which forecasters were assigned to issue appropriate watches, warnings, advisories, and river statements, as needed. Simulations were preceded by a full day of training and familiarization exercises to ensure participants were prepared to assess functionality and performance characteristics effectively.

A total of six forecasters (three each week) participated in the test. Individual names and home offices are listed in Appendix 1. The group included three women and three men, all with significant experience in NWS WFO hydrologic operations. Geographic diversity ranged from the Intermountain West to the East Coast, and from the Northern Plains to Texas. Each participant engaged in the process with diligence, enthusiasm, and candor. Therefore, while the sample size was relatively small, we believe the test results to be robust and generalizable.

In addition to the participating forecasters and OPG staff, an on-site Subject Matter Expert (SME) was available each week to answer questions, provide coaching and training on the software's functionality, and assist with technical problems. At the conclusion of each simulation case, participants shared observations and concerns in debrief sessions facilitated by the SME and OPG staff. At the end of the week, participants completed a formal survey to document their key takeaways. Participants also shared additional opinions about the software and their evaluation experience with the development team via conference call.

Key observations and opinions of the test participants, drawn from the End of Week Surveys and Debrief Sessions, are summarized below. This synopsis includes both laudatory comments and critical concerns, broken down into common subject matter categories.



From left to right, standing: Amanda Lee, Dave Pearson, Althea Austin-Smith, and Katie Vigil look on as Mark Faucette (seated) transitions a flash flood warning to an areal flood warning using the Hazard Service interface.

Item 1: What features do you like best about HS software?

It should be noted at the outset that integrating the best features of three different warning software programs into a single, unified platform is unanimously considered a worthwhile goal with significant benefit to forecast operations. Observations about how HS offers improvements in its current form include six general categories. The number in parentheses following the category's description represents the number of participants offering comments about that topic. Quotes that best characterize those opinions are listed in italics.

Ease and Flexibility of Operational Use; Functionally Comprehensive (6)
I like that HS streamlines all the software we currently use into one interface. The Spatial Display and Console make it so much easier to interact with the products, initiate or make changes to them, and stay aware of their status in a neat, compact package. I also like that the product editor comes up on the same screen compared to the current scheme of switching screens for the text editor. That's a huge improvement!

The ability to issue a cancellation and a new hazard at the same time is a major improvement to our current process. The process of completing something like transitioning a flash flood warning to an areal flood warning – something we do fairly regularly – is amazingly easy and efficient in HS.

Maintaining Situational Awareness (3)
The Spatial Display, Console, and toolbars offer many functions that enhance situational awareness and product issuance. They allow the forecaster to know which products are in effect, and present a variety of information associated with those products at a quick glance. The fact that you can interact with a product, either in the Spatial Display or the Console (by preference) is GREAT!

More Efficient Workflow (2)
HS fixes a lot of the issues forecasters struggle with in WarnGen/RiverPro/GHG. The workflow is far smoother with HS than with our existing system.

Customizable Options (2)
The software seems to be highly configurable to meet the needs of the local WFO. The ability to customize so much is a major plus - columns, sorting, colors, recommenders, etc. It should be easy to customize the software as each individual office sees fit.

Training (2)
I liked the combination of instruction, facilitated exercises, job sheets, and hands-on coaching. It accelerated the learning curve for me, and I was able to develop sufficient comfort and proficiency to use the software in a short time.

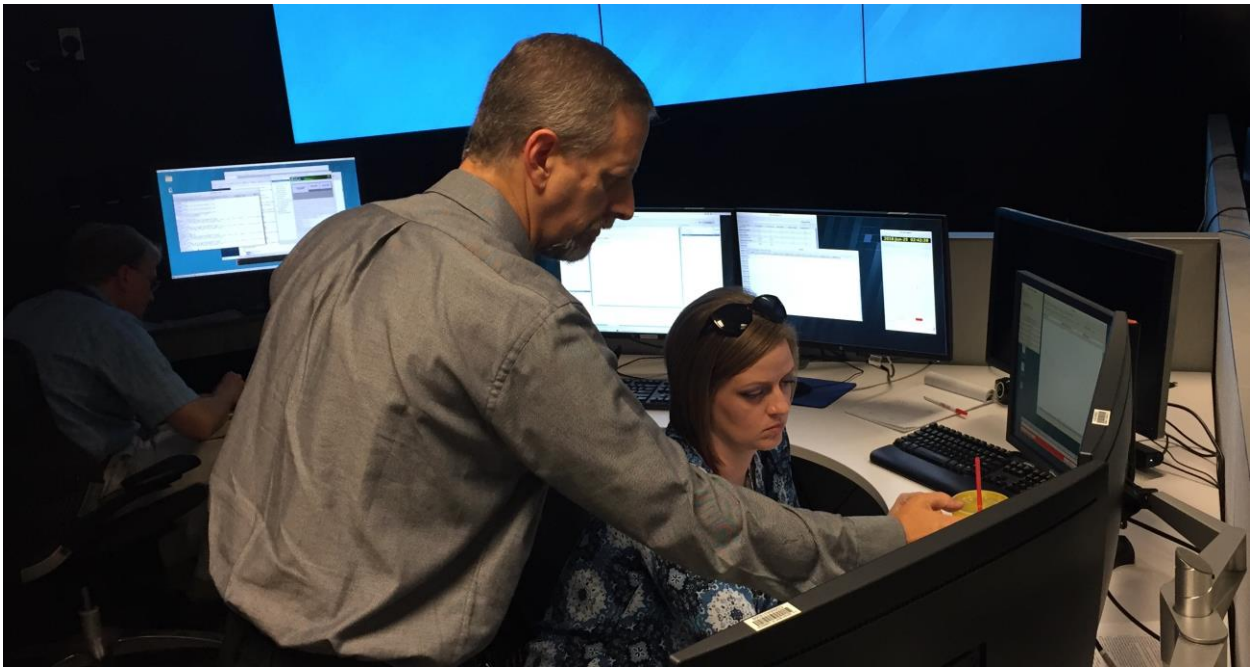
Collaboration (1)
I like the ability to propose hazards for others in the office to see from their workstations, and especially for surrounding offices to see. Adding that same capability to collaborate with neighbors as well would be a significant enhancement!

Item 2: What issues cause you the most concern?

Bugs or Deficiencies in Software Performance Noted (6)
There were several issues that arose which caused me to conclude the software is not quite ready for operations. For example, we "lost" products on multiple occasions, we were unable to issue certain products simultaneously, and sometimes we had problems overriding the recommenders. Admittedly, some problems may have been related to using historical data in displaced real-time mode, so it is difficult to comment on exactly how it might work or what errors might occur in a "normal" operational setting. The River Flood section seemed to have more issues than the Non-River due to the tricky interactions with the Hydro database. One of my major concerns regards the ability and means (or lack of) to override the River Flood Recommenders, which may be needed at times.

Training (6)
The complexity of the software is such that a steep learning curve is nearly guaranteed. While some parts are relatively easy to utilize right out of the box, (e.g., draw a polygon, issue a warning), I feel that there's so much more to this software than just that. There are a lot of quirks to remember and know, and there is a lot of terminology. Example: just knowing the status of "ending" has nothing to do with the ending time of the product isn't intuitive. There are literally TONS of those types of things that will crop up. The only way to remedy that is to provide effective training and then get experience using the software.

Training: will there be a residence course for Focal Points? If not, there NEEDS to be. There's no way I could feel this comfortable with the software without this hands-on session this week. Online training will not suffice. You must conduct residence training for this upcoming software. AT A MINIMUM: Focal Points need a week of teletraining at their local office sitting at their WES following along with training on an instructor-led webinar.



Aldis Strautins provides instruction to Michelle Amin on customizing the Spatial Display and Console layout of Hazard Services software to individual user preference.

Item 3: Based on your experience this week, please rate the Hazard Services software's readiness for field implementation on a scale from 1-10, where
1 means, "The software needs extensive work before being released to the field;"
5 means, "The software has a few issues that need to be fixed but can be released to the field as soon as those are addressed;" and
10 means, "The software can be released to the field as is."

5 - Most of the issues I saw this week were minor and might be addressed with some simple changes to address how the software looks and feels to the end user. Overall, I think the functionality as far as hydro is concerned is quite good. The look and feel may need to be addressed as noted in comments above.

5 - When HS worked smoothly, you see the vision and it is a great one. It is difficult to tell whether some of the issues we encountered earlier this week were with the HS software or the local configuration for this simulation/exercise. Hard to decipher this and it muddles the whole process. Overall, if the roll-out is executed properly with the APPROPRIATE training, the Hydro Community in the NWS and their customers will be well served.

3 - There are many, many good things already in place. However, I feel there is still quite a bit of work to do to make the transition from WarnGen/GHG/RiverPro to Hazard Services less "painful" for field offices. Thanks to everybody for all their work on this thus far! :)

5 - I believe there are more than a few issues that need to be fixed; however it is hard to know exactly what issues are Hazard Services or the fact that we are testing this using time displayed data. This seemed to mess with Hazard Services at times.

5 - Overall, let me say that I really love HS and can't wait for it to be deployed to my office. I rated it a 5 because I feel like it's not 100% ready today, nor is it so terrible that it needs to be thrown out. I think a 5 is a great place to be right now, and then when it's Beta-tested in the field, the rating will increase. HS fixes so many issues in the hydro world right now that a lot of forecasters (and literally every SH or HPM I know complains about). The interaction between the Spatial Display and the Console is my absolute favorite part, and it makes it so much easier to click on warnings and update/edit them (compared to the current process). I feel strongly that some formal training is necessary, though, before this is released to the field. Like I said before, Focal Points need residence training on this software, or at the very least, teletraining for a solid week at their office. You can't just send out new/critical software and not properly show people how to utilize it. We had DLOC/RAC upon entry into the Agency, and this should be no different. I know with budgets the way they are these days, that's easier said than done, but you can't NOT afford to train the forecasters on how to use HS since every other type of hazard (other than hydro) will follow suit.

4 - There were enough glitches, hang-ups and minor problems this week that I cannot see HS being fully successful in the field being implemented as is. Many of these were described in more detail in the submissions made on feedback forms. As a final note, it is extremely unfortunate that HS was not able to be developed in tandem with NWS Hazard Simplification. Will changes to the NWS Watch/Warning suite be easily adaptable to HS? This answer to this question is unknown.

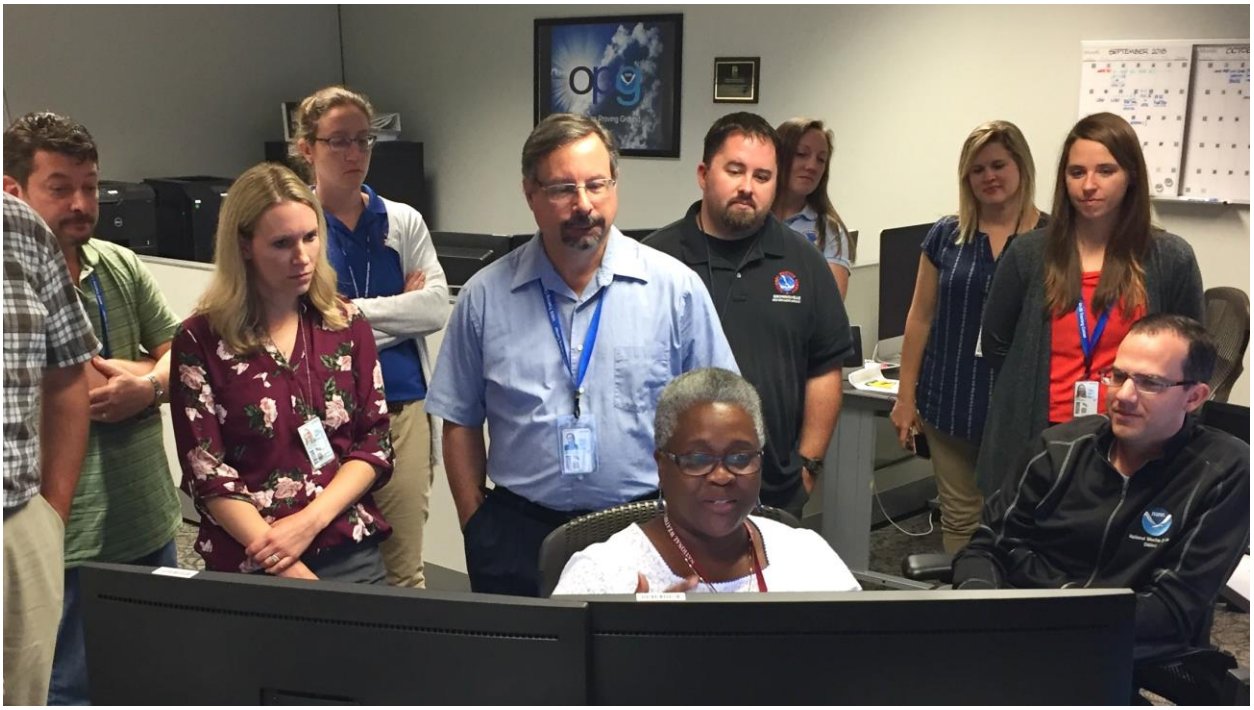
Appendix 1. Roster of Participants and SMEs

Week 1 (September 17-21, 2018)

Amanda Lee	General Forecaster, WFO Grand Forks, ND
Althea Austin-Smith	HAS Forecaster, West Gulf RFC, TX
Mark Faucette	Lead Forecaster, WFO Reno, NV
David Pearson (SME)	Service Hydrologist, WFO Omaha, NE

Week 2 (September 24-28, 2018)

Michelle Amin	General Forecaster, WFO Huntsville, AL
Peter Corrigan	Service Hydrologist, WFO Blacksburg, VA
Pete Geogerian	General Forecaster, WFO Jackson, KY
Aldis Strautins (SME)	Service Hydrologist, WFO Grand Junction, CO



A Hydrology Focal Point class was being held concurrently with the Week 1 HS IOC testing. On Thursday of that week, the class toured the OPG. Here, Althea Austin-Smith and Dave Pearson (seated) provide a brief overview of the Hazard Services graphical user interface design and functional capabilities.