

Hazard Services AWIPS Fundamentals

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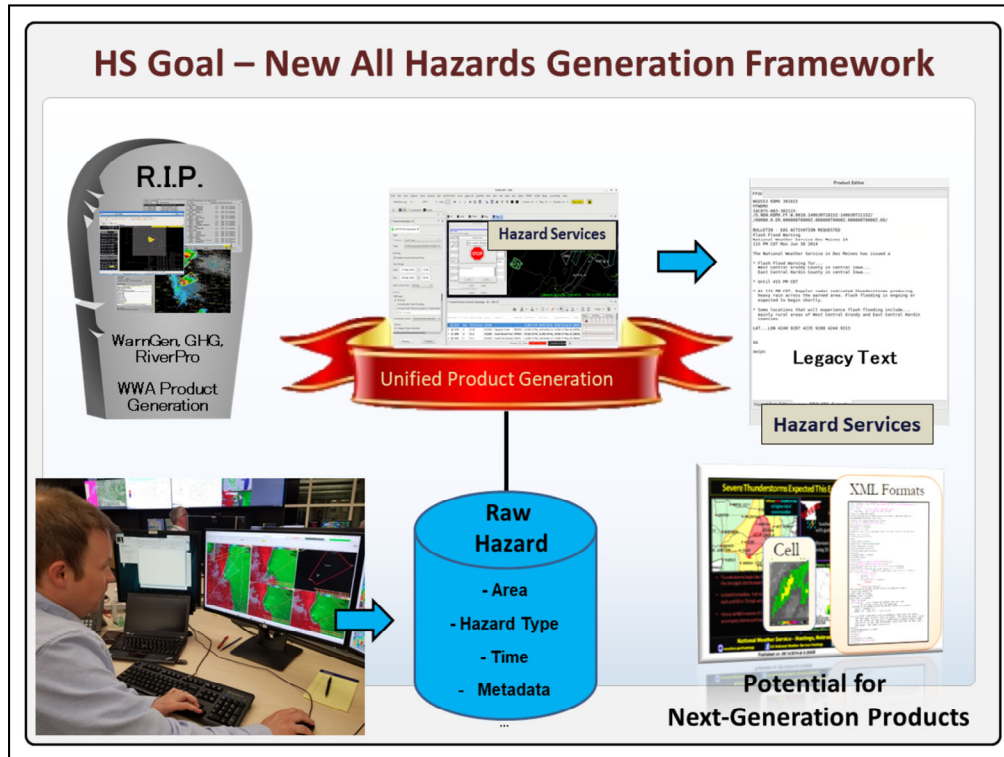
Welcome to the Hazard Services training for the AWIPS Fundamentals Course. I'm Mike Magsig from WDTD, and I will be introducing you to the AWIPS watch, warning, and advisory generation software called Hazard Services.

Learning Objectives

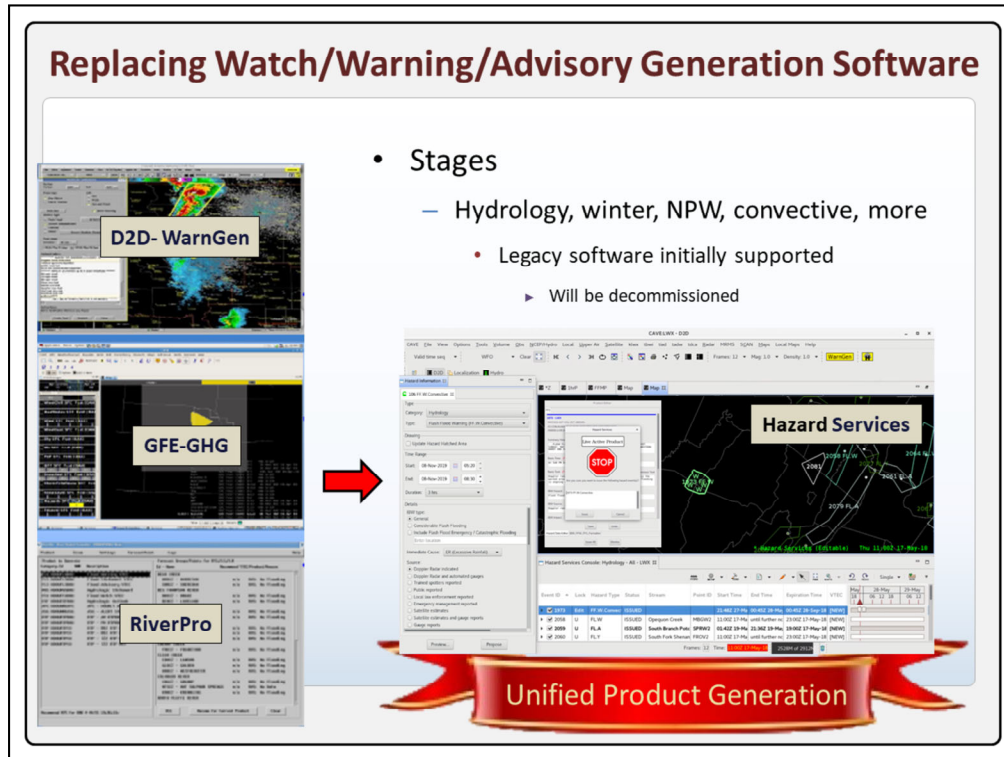
Without reference you will be able to:

- Start Hazard Services and issue hazards
 - Non-river watch, warning, advisory
 - River watch, warning
 - Corrections, follow-ups, extensions in area and time

Here are the learning objectives for this training. After taking this module you will be able to start Hazard Services and use it to issue hydrological hazards and follow up statements.



In the initial operating capability, Hazard Services established a **new** hazard generation framework that unified **WarnGen**, GHG, and RiverPro product generation into one common platform for all types of hazards. The new philosophy is for the forecaster to interact with the **raw** hazard information such as area, hazard type, time, and other metadata, and allow the software to generate products which will include today's **legacy** text formats and has the potential to one day drive the **next** generation products when they are defined.



The initial operating capability **replaced** hydro watch, warning, and advisory generation capability, and it will take years to migrate all hazard generation to this new unified framework. While the order isn't necessarily fixed for the **remaining** hazards, the relative priority will be winter, non-precipitation weather, convective and more. When Hazard Services is deployed, **initially** the legacy software will be supported, but in most cases, the previous watch/warning/advisory generation will be decommissioned shortly after full deployment.

W-A-Y-S Of Hydro IOC

- **FF.W** (Flash Flood Warning)
- **FF.A** (Flash Flood Watch)
- **FFS** (Flash Flood Statement)

- **FA.W** (Flood Warning)
- **FA.A** (Flood Watch)
- **FA.Y** (Flood Advisory)
- **FLS** (Flood Statement)

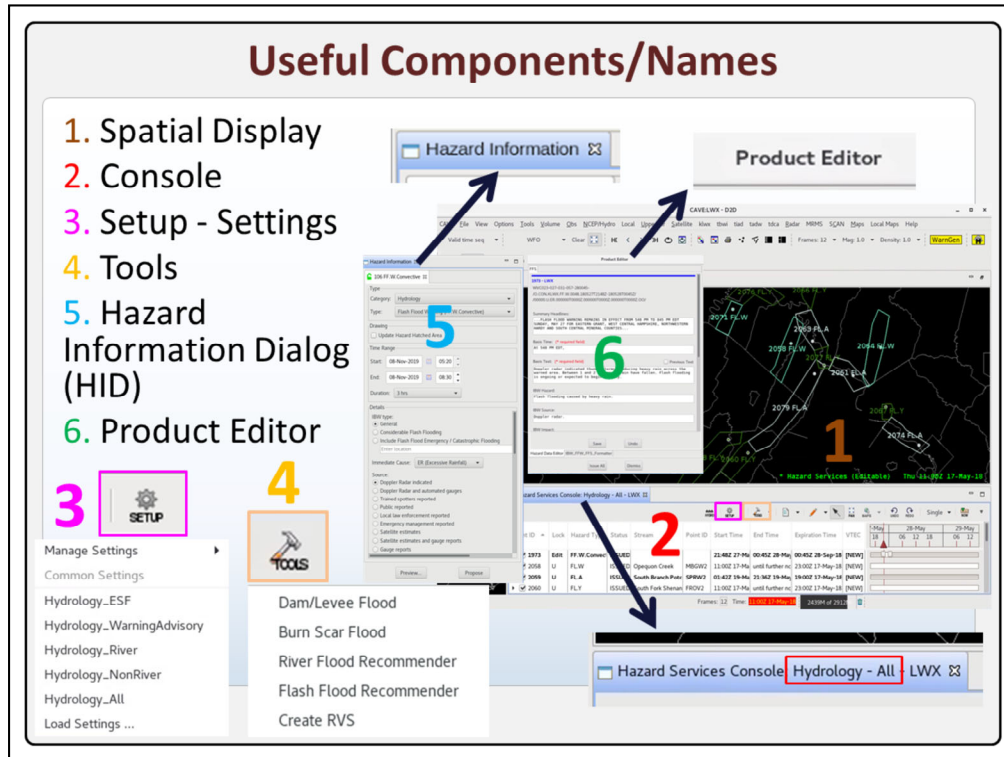
- **FL.W** (River Flood Warning)
- **FL.A** (River Flood Watch)
- **FL.Y** (River Flood Advisory)
- **FLS** (River Flood Statement)

- **HY.S** (Hydrologic Statement)
- **HY.O** (Hydrologic Outlook; Extended Streamflow Forecast ESF)
- **RVS** (River Forecast Statement)

Note: does not include coastal flood

Here is a list of all the products supported by hydro IOC. The four main Types of hydro hazards in Hazard Services are **flash** flood, flood, **river** flood, and **misc** hydrologic routine products. **The 3** letter VTEC code, including the W, A, and Y terminology, is used extensively in Hazard Services labeling to reference the warning, watch, and advisory hazards respectively. This is also extended to the **Hydrologic Statements** and Outlooks even though technically they don't use VTEC. Other **statements** like FFS, FLS, and RVS product PILs are labeled in the tabs without the "." in the name.

Note that coastal flooding is not included in hydro IOC.



There are six main elements in Hazard Services that you need to be familiar with. This vocabulary will be used a lot in Hazard Services, and it will be the basic language you will need to speak.

The first element is the Spatial Display. This is simply the CAVE editor you load Hazard Services into, in either the D2D, Hydro, or GFE perspectives. This is where the spatial information is displayed.

The **second** element is the Console. This is the table full of hazards that is technically referred to as a CAVE view, like GFE's grid manager, and it's dockable within CAVE, so you can pull it out of CAVE if you want. The Console has lots of buttons that manage the product generation and also what goes on in the Spatial Display. Note that the **tab** name contains Console, which can help you get these names down.

The **third** main element is the settings icon in the Console with the label SETUP. Settings are really important in Hazard Services because they allow you to filter the display of different hazard types and the tools you have access to. For example there are different settings for river flooding and non-river flooding, and the Hydrology_All setting works on all hazards. Hazard Services is inherently customizable, and you can create your own settings. Note that the current **Setting**

name is also reflected in the Console tab name.

The **fourth** main element is the TOOLS icon. The TOOLS icon provides access to recommenders and other tools that are used to generate initial hazards and create products. Some of the hydrology recommenders and tools include dam/levee flood, burn scar flood, river flood, and flash flood.

The **5th** main element is the Hazard Information Dialog, or HID. This is where you define all the core components of the hazard event. From the HID you can Preview the hazard text or Propose the hazard for someone inside or outside your office to access and collaborate on. Note the text, Hazard Information, is in its tab name.

Once you preview your text, the **Product** Editor launches. This is where you modify and send text. It also has a convenient Product Editor label in its tab name.

Foundational Concept of a Hazard Event

- Unique “Event ID” similar to ETN
 - Not used in product
- Assemble hazard event to issue products

The screenshot shows the 'Hazard Services Console: Hydrology - All - DMX'. It features a table with columns: Event ID, ETNs, Lock Status, Hazard Type, Status, and Stream. The first row shows Event ID '96', ETNs '[6]', Lock Status 'U', Hazard Type 'FF.W.Convective', and Status 'ISSUED'. Below this is a section titled 'Full Name' with a table showing 'Event IDs' as '[HZ-2018-DMX-DMX-96]', 'Issue Time' as '03:47Z 08-May-18', 'PIL' as 'FFW', 'VTEC' as '[NEW]', and 'User' as 'awips'.

Hazard Event

Area

Time

Hazard Type:
- FFW, etc.

Metadata:
- CTAs
- etc.

In Hazard Services the hazard event is a foundational concept. The hazard event is composed of an **area**, **time**, **hazard type**, such as flash flood warning and specified **metadata** such as calls to action and immediate cause.

Every hazard event has what's called an **Event ID**, similar to the Event Tracking Number in VTEC. The Event ID is **only** used within Hazard Services to organize the hazard events, and it is not distributed in any products. The actual Event IDs are quite long, but you will generally see just the integer value, like 96 in the example shown here.

With Hazard Services, forecasters assemble a **hazard** event in order to issue products, and we will step through that process in the next slides.

Life Cycle Status

- Indicate workflow stage
 - Potential:** initial status from recommender
 - Pending:** starting to edit
 - Proposed:** saved for sharing
 - Issued:** sent (new and follow up)
 - Ended:** end by forecaster
 - Elapsed:** end by itself
 - Ending:** forecaster started end
 - Elapsing:** end by itself and in time window for EXP

Filtered From Display Unless Toggle on in Setting

Event ID	ETNs	Lock Status	Hazard Type	Status	Stream	Point ID	Start
2157		U	FL.W	PENDING	Opequon Creek	MBGW2	12:03
2158	[31]	U	FL.W	ISSUED	Cacapon River	GCPW2	04:00
2159		U	FL.A	POTENTIAL	Goose Creek	LEEV2	23:41
2160	[3]		FF.A	ISSUED / PROPOSED			11:57
2162	[64]	U	FF.W.Convective	ELAPSING			08:54
2163	[9]	Edit	FA.W	ENDING			12:03

The life cycle statuses of Hazard Services takes some getting used to. They reflect the different states of the hazards which can control their visibility and indicate relative position in workflow.

When you first initiate a new hazard with a recommender, it starts as **potential** only on your workstation. If you have lots of potential events, you can **right** click in the Console and “**remove** all potential events” which is a handy way of cleaning up from an overly generous recommender.

Once you start to edit a hazard, it changes to **pending**, so you can keep track of what hazards you have started to work with on that workstation.

If you **propose** a hazard in the HID, that status is clearly reflected in the consoles on other machines to assist in collaboration. If you **issue** a new product or a follow up, they share a single status called Issued.

There are two main types of ending states, elapsed and ended. Hazards canceled by the **forecaster** are labeled as ended, while hazards ending on their **own** are labeled as elapsed. Both Ended and Elapsed hazards are filtered from the Console and Spatial Display by default, though you can edit your settings to toggle them back on.

Ending reflects when a forecaster has started down the path of ending the hazard.

Elapsing is for the special time window after a product ends where it can still be updated with an expiration VTEC message.

Few Notes

- WES-2 Bridge has a newer version of Hazard Services (“ATAN version”)
 - Slight differences (e.g. persisting paint by MAPS)
- Your #s will be different
 - Event IDs, time, data values, order of tabs
- Forecaster initials
 - Can be configured to be automatic
- Right clicks in D2D generally right click and hold

Before we get started with the videos there are a few things to note. The WES-2 Bridge has a newer version of Hazard Services, the so-called ATAN version being used in field testing some newer capabilities. Most of the behavior should be what sites will experience on their live AWIPS, but there can be some slight differences, like the paint by MAPS capability will persist once used in this version, and in the live AWIPS you will need to reselect the MAPS button each time you want to use it.

Your numbers will be different for the event IDs, time, and data values, and the order of tabs can be different when selecting multiple hazards, so pay attention to your tabs names, and don’t worry about the number differences.

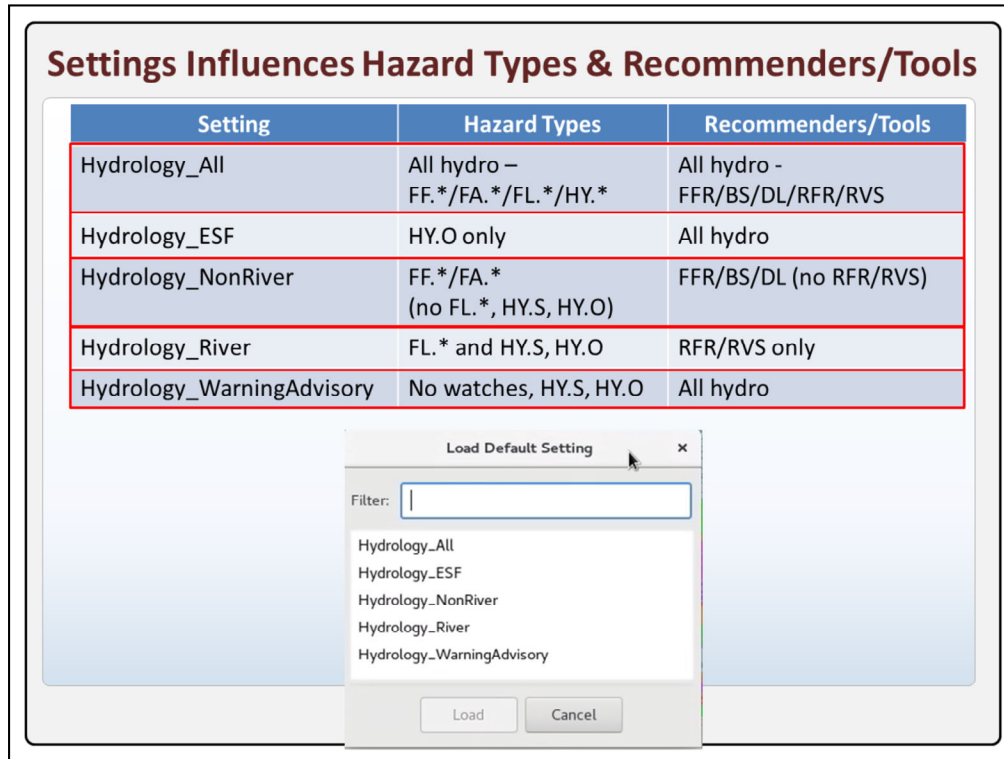
Also, in the following videos using the local WFO customization, the forecaster **initials** are required, but this will be configured to be automatic at many other WFOs.

Lastly, most of the **right** clicks references in the following videos are right click and hold.

Video 1 – Loading and Setup

- [Launch video](#) (11:19)
 - **Practice** with CAVE on other monitor
 - Pause video as needed

Now it is time for the hands-on learning. Just click on the video and drag it to one monitor and launch CAVE on the other monitor to practice the demonstrated steps using the same case. Feel free to pause the video as needed.



Settings control the hazard types you see in the spatial display and console, as well as the type of recommenders. The **Hydrology_All** setting allows you to work with all hydro hazards and see all the recommenders and tools, including the flash flood, burnscar, dam/levee, river flood and Create RVS.

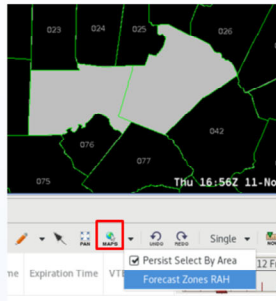
The **Hydrology_ESF** setting allows you to only see the HY.O hazards, but still allows you to see all hydro recommenders and tools.

The **Hydrology_NonRiver** setting allows you to see the flash flood and areal flood hazards but not the river flood and other misc hydro products, and the recommenders and tools visible are the flash flood, burn scar flood, and dam/levee.

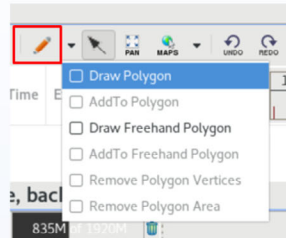
The **Hydrology_River** setting allows you to see all river flood hazards and the misc hydrologic products, but the only recommenders and tools visible are the river flood recommender and RVS.

The **Hydrology_WarningAdvisory** setting has no watches or misc hydro products, but all the hydro recommenders and tools are visible.

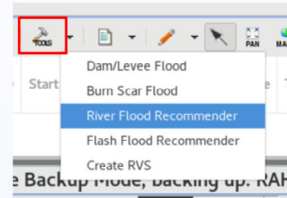
3 Ways to Start Hazard Generation



**Maps
(select by area)**



Drawing Tools

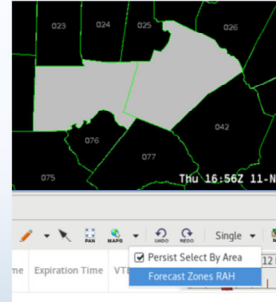


Recommenders

There are 3 ways to start generating hazards in Hazard Services: 1. paint by maps, 2. the drawing tools, and 3. running a recommender. We will practice each approach in the coming videos.

Video 2 – Issuing Single Segment FA.A

- Draw polygon by maps
 - Load map and select map from Maps button
 - Left click to select maps shapes & right click to convert to a polygon
 - **Note:** D2D perspective used in video but GFE perspective is frequently used
- [Launch video](#) (9:32)

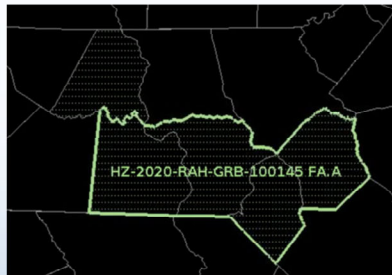


To use paint-by-maps to create a single-segment flood watch, we will just load a map and select the map from the maps button in the console. Then just left click on maps features to select and right click to convert to a polygon.

Note that the D2D perspective is used in the following FA.A videos, but the GFE perspective is frequently used in operations for this purpose.

Video 3 – EXA FA.A

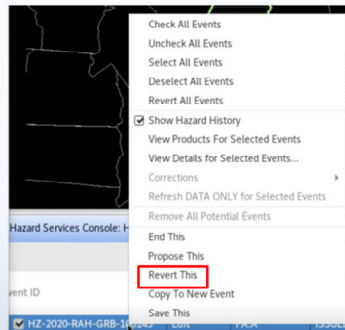
- Add and cancel zones in the flood watch
 - Select hazard & right click zones in spatial display
- [Launch video](#) (3:53)
 - Note: this video starts in D2D



Adding and removing zones from a single segment flood watch is real easy. Just select the hazard and right click on the zone to remove or add and pay attention to the hatching.

Video 4 – Revert to Restore Hazard

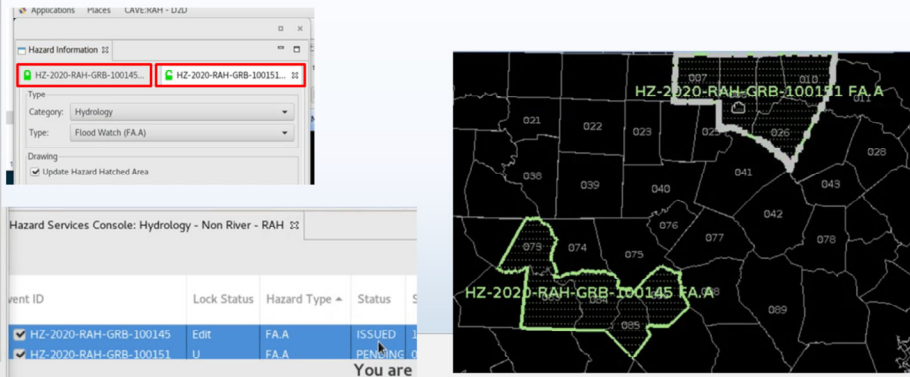
- Right click on hazard in console or spatial display and select “Revert this”
- [Launch video](#) (1:20)



To restore a hazard to its previously issued state, just right click on the hazard to select “Revert this”.

Video 5 – Create 2nd Segment FA.A

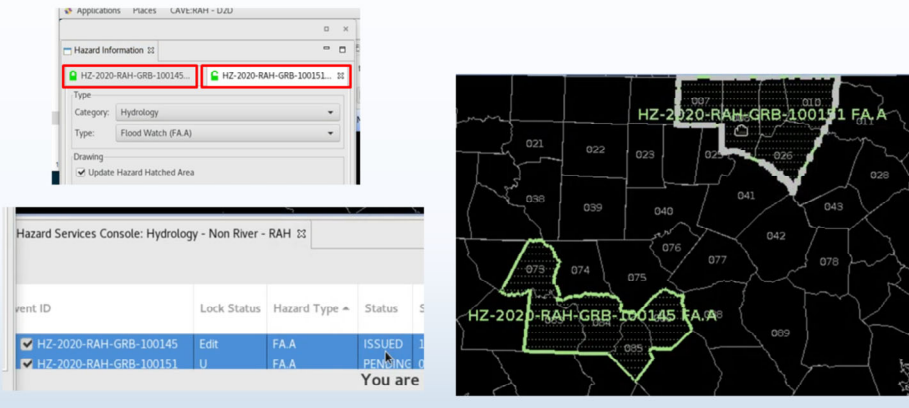
- Create a new hazard and select same type
 - Selected set (multiple hazard selected)
 - Issue All
 - Timeline affects spatial display
- [Launch video](#) (4:46)



Adding a 2nd segment to a flood watch is as easy as creating a new hazard and assigning it the same type. When you are dealing with multiple watch segments they all have to be issued together. So selecting multiple hazards at once creates what is called the selected set, and you will use that to issue all hazards at once. We'll manipulate the timeline in the console to view the different segments in the spatial display.

Video 6 – CAN FA.A

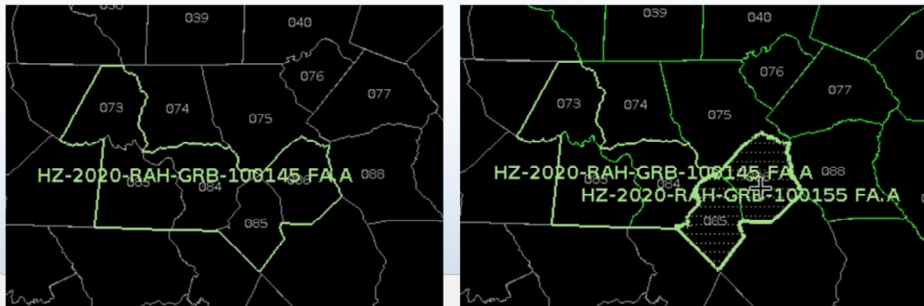
- Right click and “End this”
- [Launch video](#) (2:08)



Canceling a hazard is done by right clicking on a hazard and selecting End this.

Video 7 – Split FA.A Segment

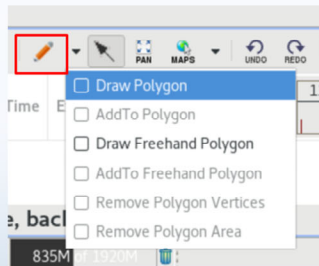
- Philosophy – each segment is a separate hazard
- Remove zones and add new hazard same type
- [Launch video](#) (2:50)



If you need to split up a segment into multiple segments, say to have different end times for a flood watch, the philosophy is to remove zones, and create a new hazard of the same type using those zones. Each segment is essentially managed as a separate hazard event, but they are both flood watches.

Video 8 – Drawing Tools

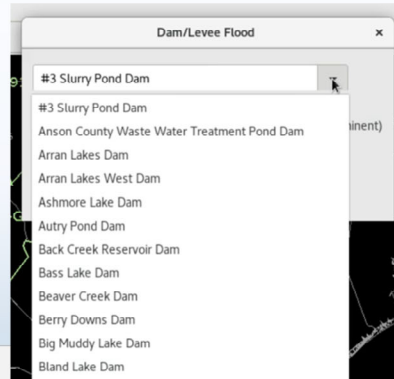
- Click vertices or left-click hold trace polygon
- GFE hazard grids generated from polygon
- [Launch video](#) (5:14)



There are two main types of drawing tools. Draw polygon allows you to click vertices, and draw freehand polygon allows you to left-click and hold to trace a polygon. It is important to note that GFE hazard grids are generated from the polygon drawn even when the polygon is not distributed in today's flood watches.

Video 9 – Dam/Levee Recommender

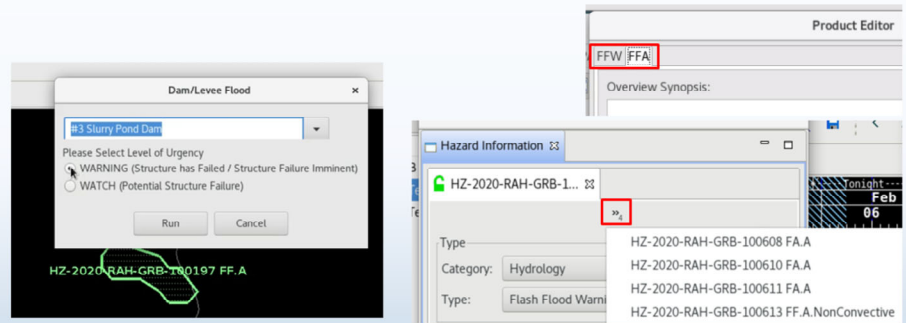
- Pre-defined polygon and metadata
 - Flash flood watch (FF.A.NonConvective)
 - [Launch video](#) (2:49)



The dam/levee recommender allows you to select a dam from a list that will use a pre-configured polygon and hazard metadata to generate a non-convective flash flood watch or warning. We'll practice issuing a watch.

Video 10 – Dam/Levee Recommender

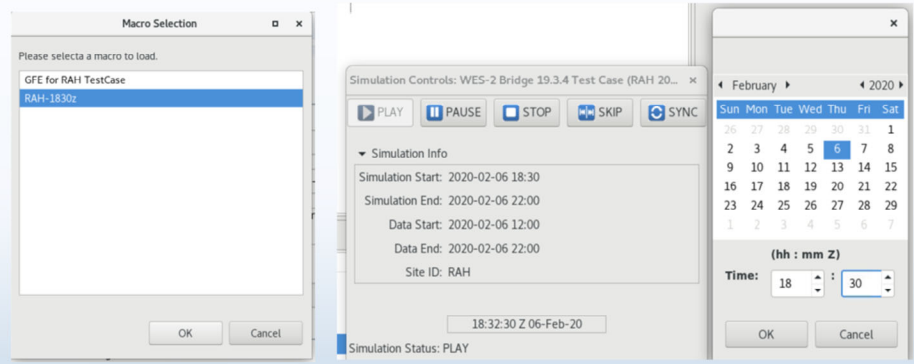
- Flash flood warning (FF.W.NonConvective)
- Cancels watch with new warning
 - Multiple tabs in HID and Product Editor
- [Launch video](#) (3:19)



When we issue a non-convective flash flood warning when a non-convective flash flood watch is out, Hazard Services automatically cancels the watch and issues a new warning for this specific situation.

Reset Simulation at 1830z

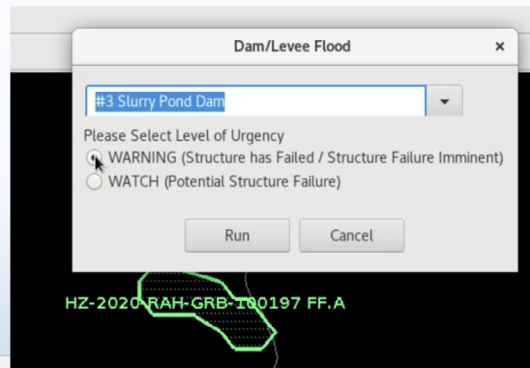
- Will be needing data soon
 - Use WES macro **or** SKIP (faster)



At this time I would like to ask you to restart the simulation at 1830z. We'll be needing some specific data soon, and this is a good point in the training to reset the time. If you don't mind the clutter of the previous hazards, it is faster to use the SKIP button.

Video 11 – Burn Scar Recommender

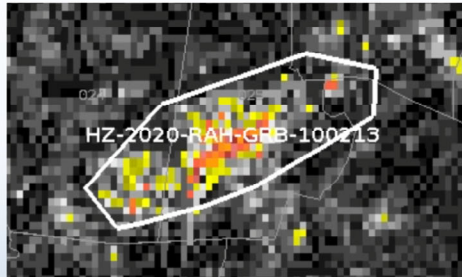
- Flash flood warning (FF.W.BurnScar)
- Similar to Dam/Levee
- [Launch video](#) (3:03)



The burn scar recommender is just like the dam break/levee recommender with loading a pre-configured polygon and metadata. We will practice issuing a flash flood warning for a burnscar.

Video 12 – FFW

- Flash flood warning manually draw over data
- Will skip to 1920z
- [Launch video](#) (4:15)



The most common way to create a flash flood warning is to simply draw a polygon over some data. In this video we will skip to 1920z.

Video 13 – FFS

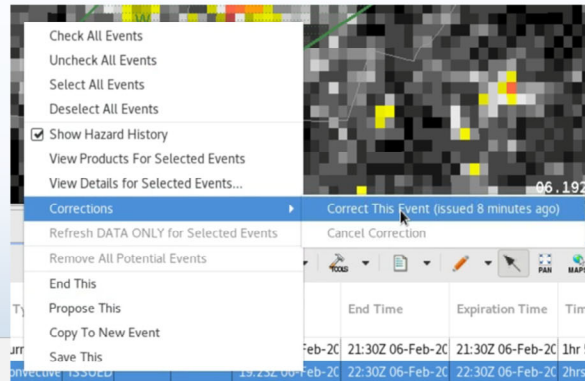
- Flash flood statement
- Grab and go
 - Make a typo for next video (correction)
 - Note: type in “0.5” into precip spinbox for additional rainfall
- [Launch video](#) (4:14)

▶ ☒ HZ-2020-RAH-GRB-100212	U	FF.W.BurnScar
▶ ☒ HZ-2020-RAH-GRB-100213	Edit	FF.W.Convective

To issue a flash flood statement you simply select a hazard, configure the HID, and Preview the hazard. We will make a typo in the FFS for the next video where we will issue a correction.

Video 14 – Correction

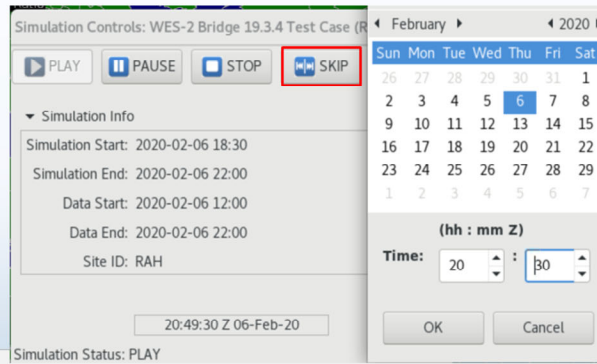
- Right click on hazard -> Corrections menu
 - Console or spatial display
- Correction mode prevents some actions
- Review correction
- [Launch video](#) (3:17)



To issue a correction just select a hazard from the console or spatial display and use the right click Corrections menu. Correction mode prevents some actions in the console. You can review the correction and compare to the previous.

Skip to 2030z

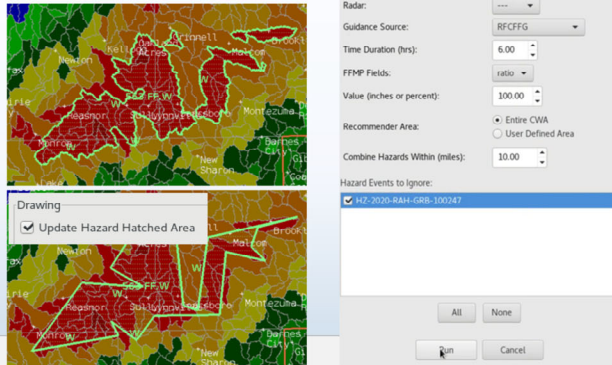
- Click **SKIP** button in WES simulation controls
 - Enter 2030z Feb 6, 2020
 - Click OK



Use the SKIP button in the WES simulation controls to skip the data to 2030z on Feb 6th, 2020.

Video 15 – Flash Flood Recommender

- FFMP-based recommender
 - Need to view FFMP to determine thresholds
- Returns lots of vertices
 - Update Hazard Hatched Area
- [Launch video](#) (12:06)



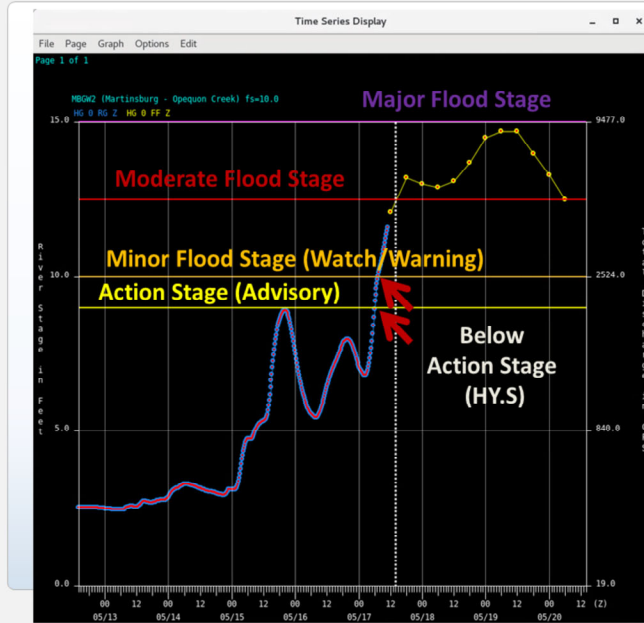
The Flash Flood Recommender is an FFMP-based recommender that returns a massive number of vertices using basin shapefiles. Use the Update Hazard Hatched Area to preview the vertices reduction.

Video 16 – FFW to FAW Transition

- Change Type from FFW to FAW
 - CAN FFW, new FAW with special language
 - Note: FAW in video changed source to radar
- [Launch video](#) (3:31)

To transition a flash flood warning to an areal flood warning, you can change the type from FFW to FAW and then Hazard Services will cancel the FFW and create a new FAW with special language.

Point-Based River Flood Products



- Forecast Point
 - Watch (FL.A)
 - Warning (FL.W)
 - Advisory (FL.Y)
 - Flood statements (FLS)
- HYS
 - Statement for segment below action stage
 - Paired with watch, warning, or advisory
- RVS
 - Non-segment

River flood product issuance varies substantially across the NWS, and the default behavior of the River Flood Recommender and some of the point-based river products will be new to some, so let's review these before the practice.

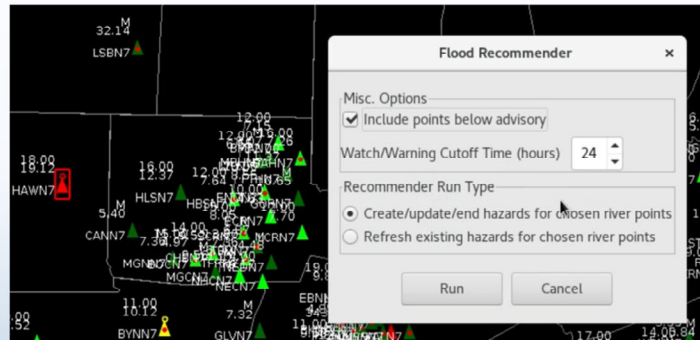
When the observed or forecast stage values rise above **minor** flood stage, that satisfies **watch** or warning criteria depending on the time it rises above flood stage. When the stage values rise above **action** stage but below minor flood stage, that satisfies **advisory** criteria. **Flood** statement FLS's are used for advisories and for following up warnings.

For a forecast point **below** action stage, the **HY.S** allows a river segment below advisory criteria to be included with other watch, warning, or advisory segments.

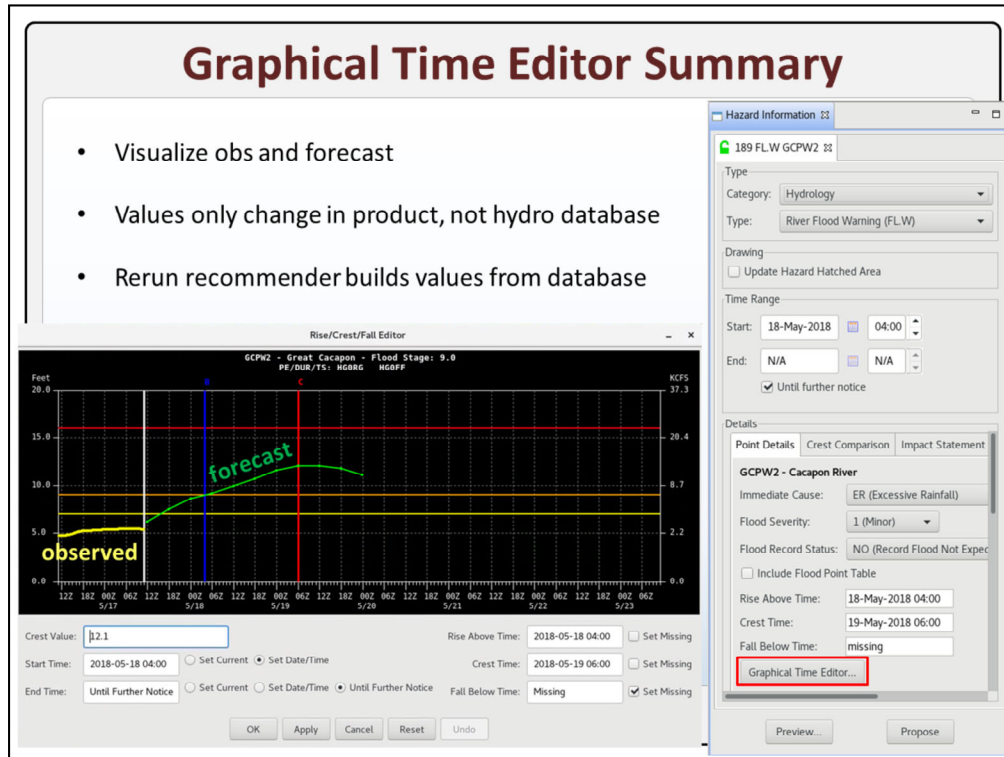
Otherwise the **RVS** river statement is the other non-segmented product that provides observed and forecast stages along with flood stage values at forecast points.

Video 17 – FLW Single Forecast Point

- Right click on forecast point in hydro perspective
- Uses river stages and forecasts
- [Launch video](#) (6:03)



To issue a river flood warning for a single forecast point, right click on the forecast point in the hydro perspective to run the river flood recommender for the selected forecast point. This will use the river stages and forecasts from the hydro database.

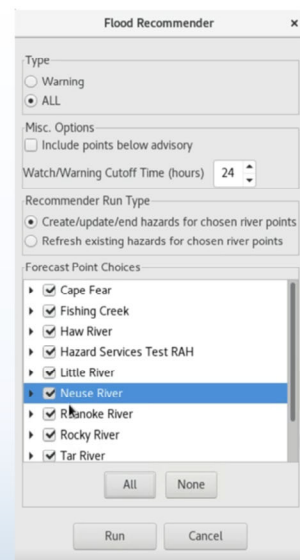


As displayed in the previous video, the Graphical Time Editor is a handy tool in the HID to visualize the **observed** stage values and **forecast** for a forecast point. It can also be used to tweak settings like the end time where you might want to extend a warning a little longer if the forecast is hovering very near flood stage after it first drops below flood stage.

Just remember that if you change some of the settings like the end time or the crest value, that will change the numbers **only** in the text product, and NOT the hydro database. Each time the recommender is run, it will **update** all values from the hydro database, so the next time the recommender is run, any values modified in the Graphical Time Editor will not be carried forward.

Video 18 – All Forecast Points

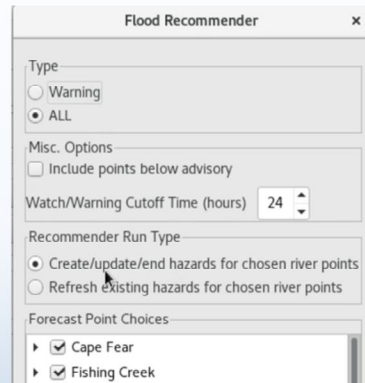
- River Flood Recommender
- Can choose forecast points
- [Launch video](#) (4:07)



The River Flood Recommender launched from the Tools menu is the main way to issue river flood watches, warnings, and advisories. You can choose to run it for multiple river forecast points.

Video 19 – FLS

- River flood statement
 - **Important:** must run recommender to get latest hydro database info into product
- [Launch video](#) (3:35)



The screenshot shows the 'Flood Recommender' application window. It has a title bar with the text 'Flood Recommender' and a close button. The window contains several sections: 'Type' with radio buttons for 'Warning' and 'ALL' (selected); 'Misc. Options' with a checkbox for 'Include points below advisory' (unchecked) and a 'Watch/Warning Cutoff Time (hours)' spinner set to '24'; 'Recommender Run Type' with radio buttons for 'Create/update/end hazards for chosen river points' (selected) and 'Refresh existing hazards for chosen river points'; and 'Forecast Point Choices' with a list box containing 'Cape Fear' and 'Fishing Creek', both of which are checked.

To issue a river flood statement update you need to remember to run the River Flood Recommender before issuing to get the latest hydro database information into the product.

Video 20 – HY.S

- HY.S used for forecast points below criteria
 - Can be used to force a warning
- [Launch video](#) (2:31)

The hydrologic statement is used to include forecast points below criteria. It can also be used to force a warning.

Video 21 – HY.O

- Hydrologic Outlook
- Free-form “ESF” text product
 - Set of forecast zones
 - Expiration time (next update)
 - 12hrs, 24hrs, monthly, etc.
- [Launch video](#) (4:46)

```

000
FGUS73 KDVN 301705
ESFDVN
IAC011-019-031-045-055-057-061-087-095-097-101-103-105-107-111-113-
115-117-163-177-183-ILC011-015-067-071-073-085-109-131-155-161-177-
183-195-NOC045-199-151800-

Probabilistic Hydrologic Outlook
National Weather Service Quad Cities IA IL
115601 CDT Sat Oct 30 2021

...Advanced Hydrologic Prediction Service Probabilistic Outlook...

This outlook provides long-range probabilistic river outlooks for
river basins in the NWS Quad Cities service area. This outlook is
divided into three parts, the first part for the probabilities of
minor, moderate and major flooding, the second part for high water
and the final part for low water.

In Table 1 below, the current (CS) and historical (HS) or normal
probabilities of exceeding minor, moderate and major flood stages
are listed for the valid time period.

CS values indicate the probability of reaching a flood category
based on current conditions.

HS values indicate the probability of reaching a flood category
based on historical or normal conditions.

When the value of CS is greater than HS, the probability of
exceeding that level is higher than normal. When the value of CS
is less than HS, the probability of exceeding that level is lower
than normal.

...Table 1--Probabilities for minor, moderate and major flooding...
Valid Period: 11/01/2021 - 01/30/2022

: Current and Historical
: Chances of Exceeding
: Flood Categories
: as a Percentage (%)
:
Categorical
:
Flood Stages (ft) : Minor Moderate Major
Location Minor Mod Major : CS HS CS HS CS HS
-----
:Mississippi River
Dubuque LD11 16.0 17.0 20.5 : <5 <5 <5 <5 <5 <5

```

The hydrologic outlook is a simple “ESF” free-form text product used to describe hydro events on a wide variety of time scales. This non-VTEC product header consists of a set of **forecast** zones and an **expiration** time for when the product will be next updated. It is updated routinely every 12hrs, 24hrs, or even monthly.

Video 22 – Create RVS Tool

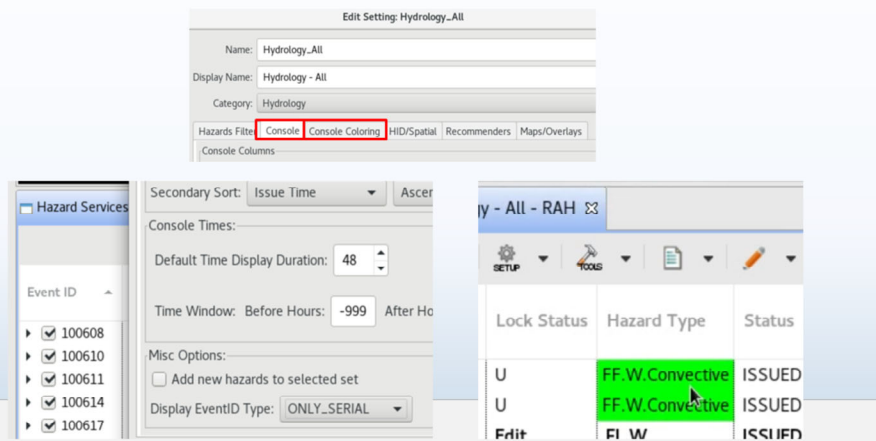
- River Statement bypasses HID
- [Launch video](#) (1:50)

Product Editor								
RVS								
FGUS82 KRAH 062135								
RVSRH								
NCC001-037-051-085-105-070545-								
Hydrologic Statement								
National Weather Service Raleigh NC								
Issued by National Weather Service Green Bay WI								
435 PM EST Thu Feb 6 2020								
Location	Fld Stg	Observed Stg	Day/Time	Forecasts (7 pm EST)				
Haw River				Fr1	Sat	Sun	Mon	
Haw River	18.0	19.1	Thu 4 pm EST	18.1	10.9	8.1	6.5	
Bynum	11.0	10.1	Thu 4 pm EST	14.2	9.6	7.8	6.5	
Cape Fear River								
Fayetteville	35.0	15.6	Thu 4 pm EST	28.2	44.6	38.0	30.9	
Lillington	14.0	3.9	Thu 4 pm EST	18.8	13.1	9.9	7.1	
Deep River								
Moncure	9.0	5.1	Thu 4 pm EST	11.7	8.8	6.7	5.0	
\$\$								

The Create RVS Tool will issue a river statement with the current stage value and forecasts in a way that bypasses the HID.

Video 23 – Settings With Hazards

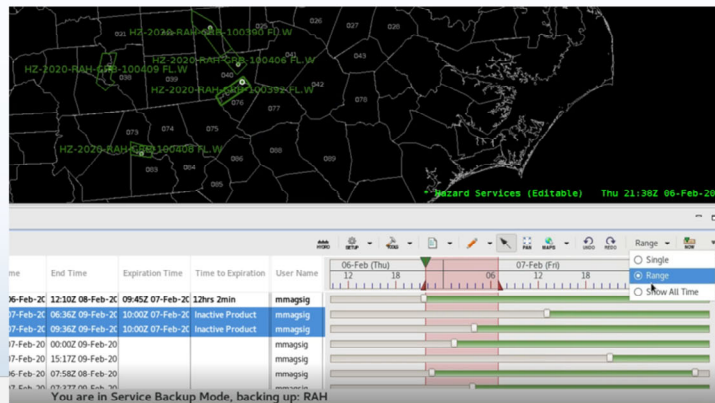
- Console coloring, Console hazard ID format
- [Launch video](#) (2:55)



Now that we have some hazards created, we are going to try changing some of the settings like the console coloring and changing the formatting of the hazard ID.

Video 24 – More Timeline

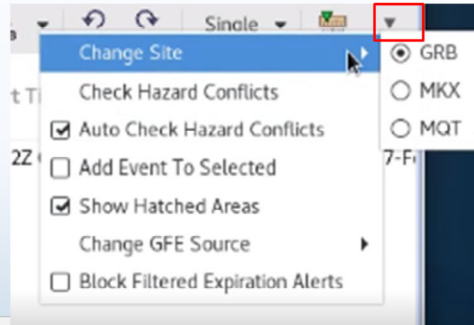
- Console timeline controls hazard visibility in spatial display
- [Launch video](#) (1:25)



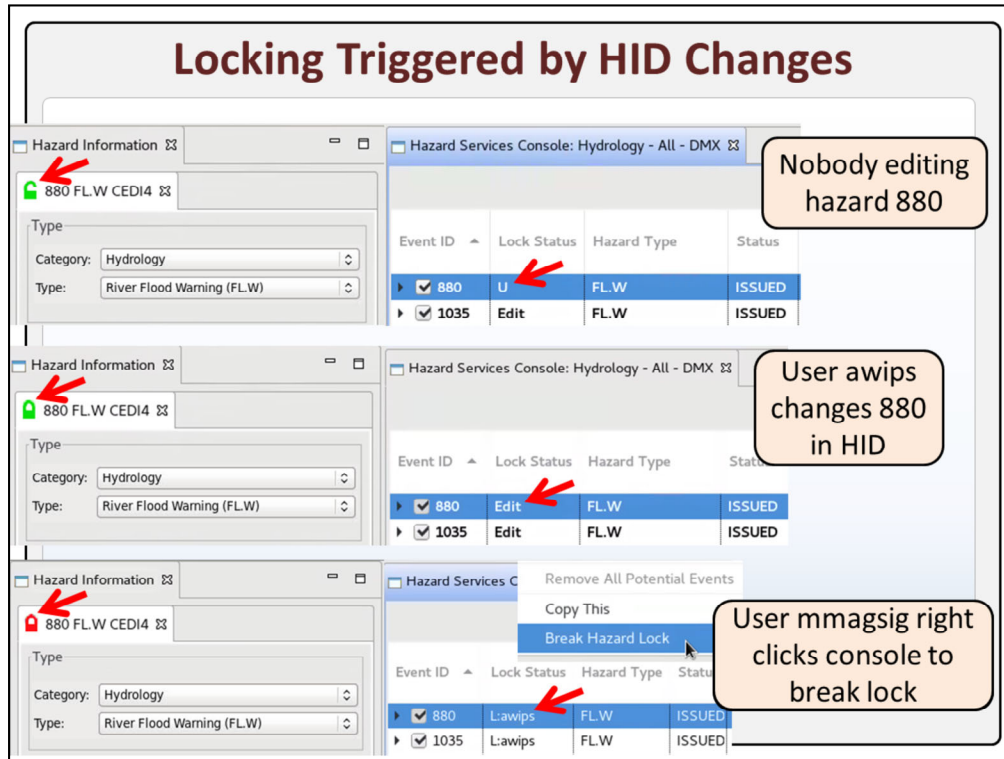
Since we have a lot of hazards in the console at this stage, let's review all the elements of the timeline in the console.

Video 25 – Service Backup

- Select backup site from console
 - Going to restart CAVE as GRB to see Change Site menu on WES
- [Launch video](#) (5:02)



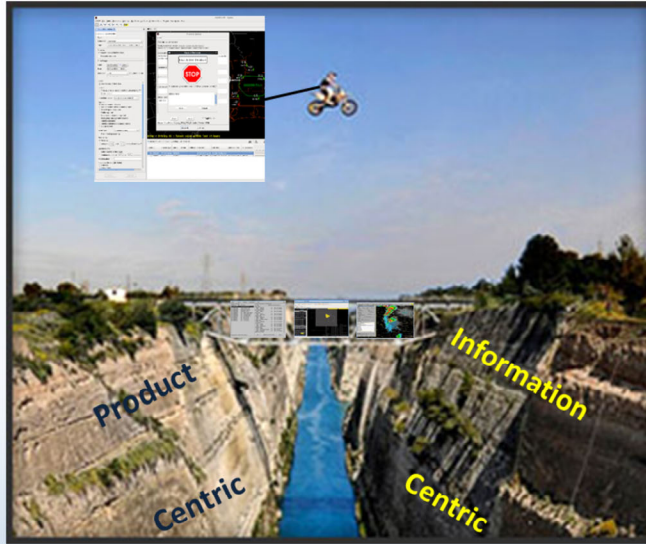
To enter service backup in Hazard Services you need to select your backup site from a menu in the console.



Hazard Services has implemented hazard locking, and the lock icon in a hazard's tab in the HID will initially display a **green** open lock when the Lock Status is **U** in the console and the hazard is unlocked. When someone starts **editing** a hazard by changing the HID, the Lock Status changes to **Edit** and the **green** lock becomes closed. When user mmagsig **selects** hazard 880 locked by user awips. the HID then displays a closed **red** lock and the console displays an **L** in the Lock Status column and the username awips. To break the locked hazard, mmagsig can **right** click in the console and select Break Hazard Lock.

Interoperability & What's Important

- Hazard Services must co-exist with legacy software
- Can switch between legacy and Hazard Services
 - Really should **not**



Interoperability is the ability for Hazard Services to be able to **work** along with the existing Legacy product generation tools prior to them being discontinued. Since RiverPro and WarnGen hydro watch, warning, and advisory capability has been discontinued, this is mainly regarding GFE hydro watch generation.

Under the hood there is a pretty large gap between today's product-centric approach and the information-centric approach of Hazard Services. And although you **can** switch between legacy apps and Hazard Services, you really **shouldn't** do that if you don't have to as some minor differences can happen.

EXT/EXP/CAN/CON Differences

- Automatic or right click in Console
- EXT just change end times
 - NEW: *Right click* Copy to New Event in Console
- EXP (e.g. FF.W)
 - Automatic in -5min to +10min EXP time window
 - -10min to -5min CAN or CON and *right click* Expire This
- CON (e.g. FF.W)
 - Default select and go until -5min
- CAN shrink polygon or *right click* End This

End This

Expire This

Propose This

Copy To New Event

**Console
Right Click**

A lot of the special logic of handling extensions, expirations, cancellations, and continuations with the different time windows specified by policy or adopted in the previous software have been implemented similarly in Hazard Services either automatically or with simple right clicks in the console.

For **EXTs**, just change the **end** time of any hazard in the HID and the VTEC Action will be an EXT. For the special circumstance of creating a **NEW** hazard from an existing one, like you might do if a hazard ended before you issued the EXT, you can just right click in the console and select “**Copy to New Event**”. Note that to access an ended event you would need to turn on ENDED hazards in your settings filter.

For issuing expiration messages, the logic will automatically assign an **EXP** VTEC Action. For example, in the **5min** prior to a flash flood warning ending and the 10min extension window after ending, an EXP would be assigned. In the **10** to 5min prior to ending, the default is CAN and/or CON, but if you want an EXP you can right click in the Console and select “**Expire This**”.

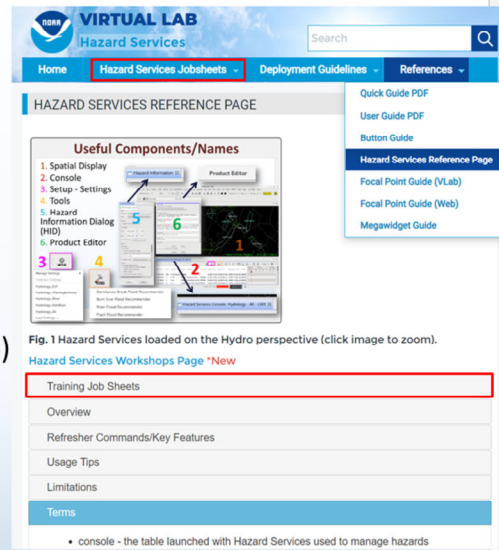
CANs and CONs follow a similar logic as before. For flash flood, **CON** is the default VTEC in Previewing an Issued Hazard until 5 min before ending if there are no changes in polygon. If you **shrink** a short fused polygon and remove a county, then

a CAN is generated for that segment. Otherwise if you want to issue a full CAN, you can select a hazard and right click in the Console and select “**End This**”.

In practice Hazard Services takes care of most of the logic for you, and for just about everything else you simply right click in the Console.

Hazard Services References

- Hazard Services Reference Page (VLab)
 - Right click Hazard Services text legend
 - Reference on Product
 - Jobsheet links (page and menu)
 - Training summary references
 - GSD HS references (DRAFTS)
 - Quick Guide
 - User Guide
 - Focal Point Guide

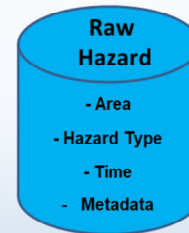


<https://vlab.noaa.gov/web/hazard-services/hs-ref>

All the references you need from this training are at your fingertips in CAVE. All you have to do is right click on the Hazard Services text legend and select Reference on Product. From the **main** VLab page you will find the links to the jobsheets as well as other **quick-reference** information such as refresher commands and usage tips. We also have **links** to other useful reference guides for Hazard Services.

Summary

- Goal: unify hazard generation and replace legacy software
 - Information centric
 - Hydro first
 - More hazards in future AWIPS builds
- Intro to mechanics
 - Draw polygons
 - Paint by maps
 - Run recommenders
- Proficiencies [reference](#)
 - Exam prep
- RAC FFWs



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In summary, the goal of Hazard Services is to unify hazard generation in AWIPS and replace legacy software in a way that leads to a more information-centric approach.

Hydro has been the first hazard, but **more** hazards are on the way in future AWIPS builds.

This training has provided a basic **intro** to the mechanics for managing hazard metadata and creating hazards. Ultimately you need to practice issuing hazards using the polygon **drawing** tools, paint by **maps**, or by **running** recommenders.

The videos and available jobsheets have been mapped out to the Hazard Services **proficiencies** as a refresher reference on this VLab page. Use these to review some of the areas that take a little more practice to **prepare** for taking the Hazard Services proficiency exam.

The **Radar** and Applications Course this course is geared toward supporting will only require basic Hazard Services usage and flash flood warnings, but your facilitator will likely want to test out your proficiencies in all areas to get an idea where to go from here.

If you have any **questions** about Hazard Services, don't hesitate to contact me at the following email address. Good luck learning Hazard Services!