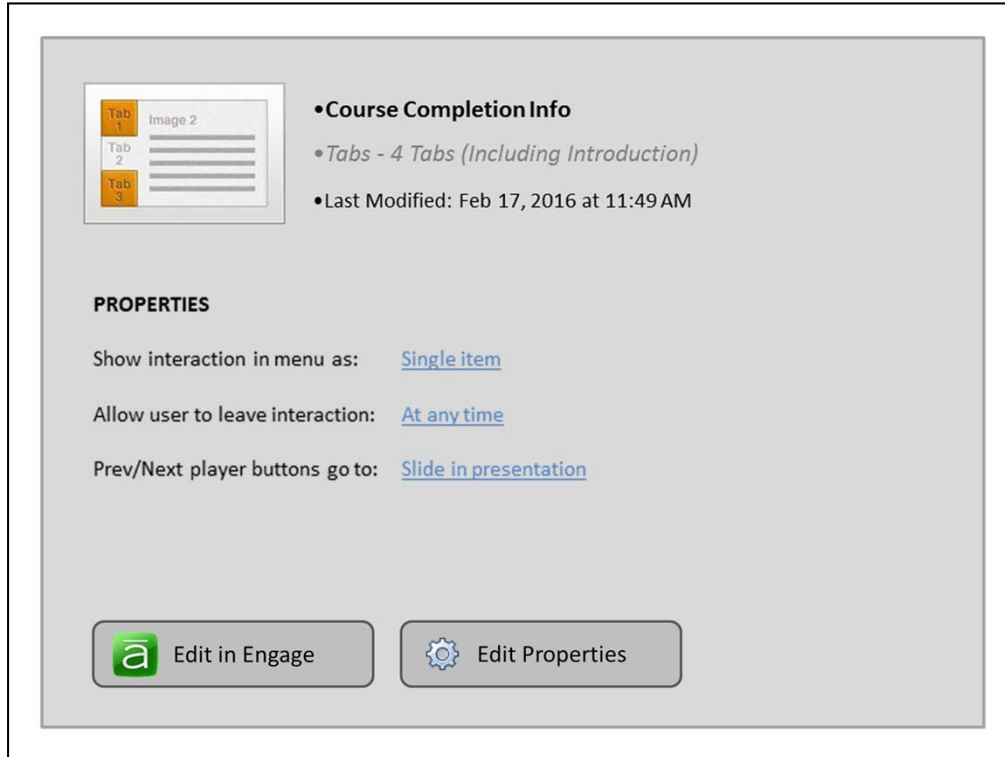


AWIPS Build 16.2.1 Informational Overview

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Welcome to the AWIPS Build 16.2.1 Informational Overview. I'm Mike Magsig from WDTD, and I will be introducing you to some of the significant changes in 16.2.1.



The screenshot displays a software interface for editing a slide. On the left, there is a preview of a slide with three tabs labeled 'Tab 1', 'Tab 2', and 'Tab 3'. The main content area is titled 'Course Completion Info' and contains the following information:

- **Course Completion Info**
- *Tabs - 4 Tabs (Including Introduction)*
- Last Modified: Feb 17, 2016 at 11:49 AM

Below this information is a section titled 'PROPERTIES' with the following settings:

- Show interaction in menu as: [Single item](#)
- Allow user to leave interaction: [At any time](#)
- Prev/Next player buttons go to: [Slide in presentation](#)

At the bottom of the interface, there are two buttons: 'Edit in Engage' (with a green 'a' icon) and 'Edit Properties' (with a gear icon).

Click through the tabs on this slide to learn more about how to take the training.

Learning Objectives

After taking this training you will be able to identify the changes in:

- ARI and MRMS in FFMP – ARI Jobsheets Available
- New Default Map Scales
- New National/Regional Warning Plots
- D2D Spot Forecast Plot
- All-Tilts Keyboard Shortcut
- Satellite Combination Daylight Transition – Jobsheets Available



The goal of this training is to provide a general awareness of the following new 16.2.1 capabilities in around 10 minutes and provide some job sheets for forecasters to get some practice for some of the more involved applications.

Average Recurrence Interval Data in D2D and FFMP

- Average period (in years) between exceedances of a precip magnitude
- Implemented as guidance source in FFMP
 1. Spatial displays
 2. FFMP table displays
 3. FFMP basin trend overlays

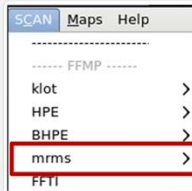
[Take Training in CLC](#)
 Part 1: Introduction to Average Recurrence Intervals (ARIs)
 Part 2: Using ARIs in AWIPS

One of the major enhancements in 16.2.1 is the inclusion of Average Recurrence Interval data in D2D and FFMP. ARIs are a rainfall recurrence dataset based on NOAA Atlas 14 analysis of rain gauges over a large part of the continental US.

These static ARIs have been ingested into FFMP as a guidance source, kind of like RFC FFG, only rainfall recurrence really doesn't say anything about the hydrological conditions on a given day, only how rare the rainfall is. You can look at spatial plots of a set of fixed ARIs ranging from 1 to 1000 years for rainfall durations of 30 min, 1hr, 3hrs, 6hrs, 12hrs, and 24hrs. You can also use the FFMP table to show basin averaged ARI values and compare to QPE ratio and differences in the table and the linked D2D display. Further you can quickly step through all the ARIs for a particular basin in the basin trends to be able to quickly see how the QPE durations have exceeded the ARI thresholds.

For everything you need to know about ARIs, please see the two ARI lessons in the Commerce Learning Center and the reference materials and job sheets in the VLab. As you will learn in the training there are significant strengths and limitations with the data, and you really should to take the training before using this in operations.

MRMS (SPR) in FFMP



- Generated from Surface Precip Rate (SPR)
- *Must configure MRMS and ARI in FFMP
 - Extra guidance on ARI VLab page

FFMP Source	Radar /Mosaic	Res	Dual Pol	Bias Factors	Z-R
DHR	Single Radar	1km x 1° 4-7min	N	Mean field (usually not applied; set at RPG)	Single set at RPG
DPR (bug fixed)	Single Radar	250m x 1° 4-7min	Y	None	Spatially varying - HHC (rain/hail, hvy rain, lt rain/big drops, graupel, wet/dry snow, ice crystals, non-met)
HPE	DPR (**default) Mosaic	1km x 1km 5min	Y**	None	Inherited in DPR for each radar
Bias HPE (bugs)	DPR (**default) Mosaic	1km x 1km 5min	Y**	Mean field each radar, default from RFCs , RFC biases can have bugs	Inherited in DPR for each radar; bias corrected
MRMS (SPR)	Mosaic	1km x 1km 2min	N*	N*	Spatially varying - SPT (conv, hail, trop-strat/conv, warm/cool-strat, snow)

FFMP has also been modified to ingest the MRMS Surface Precipitation Rate product, so you now have another precipitation source to use in FFMP. MRMS and ARIs do not show up by default in 16.2.1, and your ITO will need to follow the FFMP configuration instructions with the build release before these new features will be visible in FFMP. To make this easier we have some guidance instructions in the VLAB we will talk about at the end of this presentation.

So now that you have 5 sources to choose from instead of 4, how does MRMS compare to the others? MRMS's strength is that it is a high-resolution 1km by 1km 2min mosaic product covering your whole CWA, so you only need to load one thing in FFMP. MRMS doesn't use Dual Pol variables to compute rain rates, it only uses Dual Pol for QCing reflectivity data used in identifying non-meteorological data. Another limitation of the 2min data is that there is no bias corrected information for the SPR in FFMP. MRMS has bias corrected products, but they are not timely enough for real-time flash flood use. Lastly one of the main strengths of MRMS is the spatially varying rain rate relationships that are a function of precipitation type, which features Z/Rs for convective, hail, tropical stratiform, tropical convective, warm stratiform, cold stratiform, and snow. On a given day your best two sources to start out with are probably going to be the reflectivity-based MRMS mosaic and the Dual Pol HPE mosaic.

It is important to point out that the DPR bug in FFMP has been fixed in the 16.2.1 patch 1 released after 16.2.1. The Bias HPE product, though, can be buggy due to problems with the biases being sent over from the RFCs, so only use Bias HPE if you carefully analyze and agree with the bias factors used.

FFMP Grid Source Support + More QPF

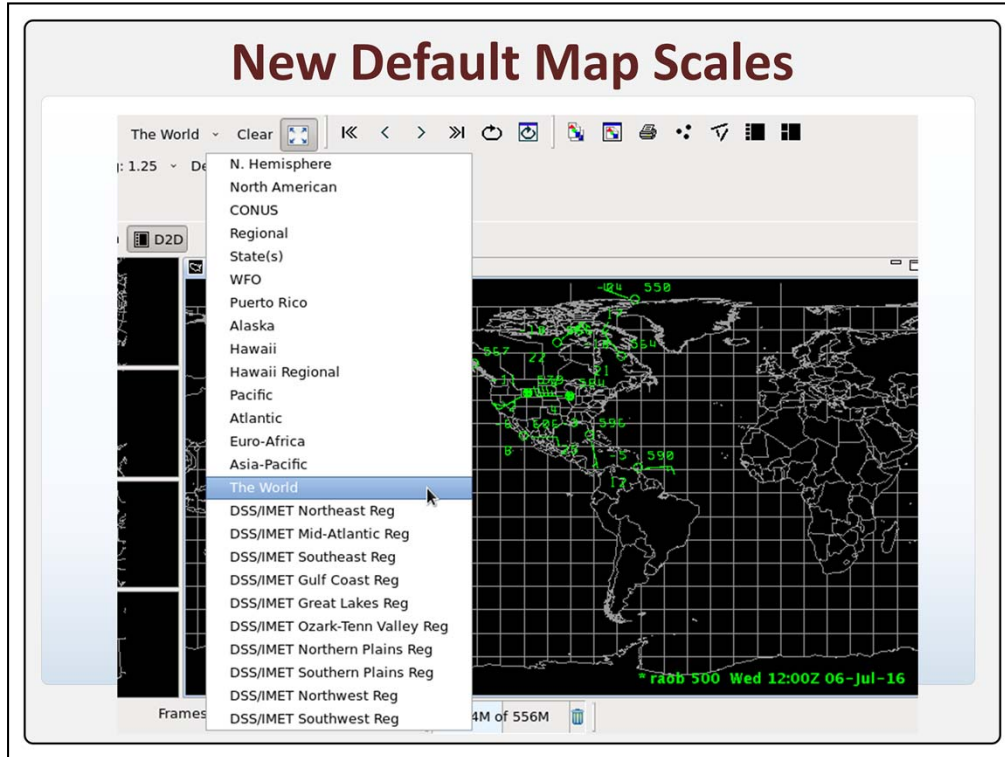
The screenshot shows the FFMP software interface. On the left, a menu lists various data sources: klot, HPE, BHPE, mrms, FFTI, and FFFG. A sub-menu for HPE shows options: FFMP klot Table/Basins DHR Display (10.0456), FFMP klot Table/Basins DPR Display (10.0456), QPF, and Guidance. The QPF sub-menu is open, showing options: QPFSCAN, HPE Nowcast, HPE Bias Nowcast, HRRRQPF, and MRMS-RadarOnlyQPE01H. The HRRRQPF option is highlighted. Below the menu, a map displays a 1-hour HRRR QPF valid for 3z. A text box on the map reads: "HRRR QPF sometimes not useful", "Don't use MRMS QPF", "FFMP QPF (HPE best) - for advanced users", and "1hr HRRR QPF valid 3z".

On the right, the "FFMP Basin Table hpe" window is open, showing a table of basin configurations. The table has columns: NAME, RATE, QPE, HPE Nowcast QPF, RCFEFG GOLD, RCFEFG RATIO, and RCFEFG DIFF. The "Attributes" window is also open, showing options for rate, qpe, and qpf. The "HPE Nowcast" option is selected.

NAME	RATE	QPE	HPE Nowcast QPF	RCFEFG GOLD	RCFEFG RATIO	RCFEFG DIFF
Severnile Creek	1.38	0.00	0.98	3.15	0	-3.19
Severnile Creek	1.05	0.00	0.83	2.93	0	-2.93
Erio River	0.70	0.00	0.7	2.68	0	-2.68
XXXX	0.48			2.83	0	-2.83
Erio River	0.56			2.79	0	-2.79
XXXX	0.01			3.52	9	-3.19
Erio River	0.92			2.46	0	-2.46
WKSNT	0.37			3.22	1	-3.20
Yadkin River	0.02			3.22	1	-3.19
Cub Creek	0.00			3.16	0	-3.16
XXXX	0.62			2.98	0	-2.98
Moravian Creek	0.00			3.01	0	-3.01
Cub Creek	0.26			3.03	2	-2.98
South Fork Little River	1.13			2.57	0	-2.56
XXXX	0.52			2.83	0	-2.83

FFMP can now be configured to ingest ANY grid QPE or 1hr QPF data. The HRRRQPF is a new default QPF source, though from this example we can see that the spinup issues in the first hour of the HRRR can make this not very useful at times. The MRMS-RadarOnlyQPE01H menu option should be disregarded as it doesn't make any sense to treat QPE as QPF and MRMS doesn't have 1hr QPF.

The 1hr extrapolations of HPE Nowcast and HPE Bias Nowcast are likely going to be your best 1hr QPF to consider using in FFMP in more steady state situations. Given the complexity of the FFMP QPF split-window approach, coupled with the remaining bugs where ratio and diff do not use QPF, WDTD advises FFMP QPF be left for more advanced users.



When 16.2.1 was installed, the scaleInfo.xml was moved into a backup file and a new set of map scales were installed which include map scales for other parts of the world and a set of DSS/IMET regional US scales. Your ITO is responsible for merging these with any local scales, so you may or may not see all these depending on what you ITO decides to do.

New Regional/National Warning Plots

The screenshot displays a software interface for monitoring weather warnings. On the left, a menu lists various data sources and warning types. The central area features a map of the United States with several warning polygons overlaid, each labeled with a station ID and validity period. A detailed list of warning types and their corresponding times is shown in a central panel. On the right, a smaller map shows a zoomed-in view of a specific region with a warning polygon. Text overlays on the map provide specific warning details, such as 'National EWW Warnings Thu 23:12Z 09-Apr-15'.

In 16.2.1 under the Obs menu there are new warning display options for All National Warnings and Regional Warnings. These can be useful to monitor events throughout the US.

Ctrl+Shift+Up/Down -> Top/Bottom of Latest Complete VS

shortcut	behavior
up arrow	higher tilt
down arrow	lower tilt
left arrow	older time
right arrow	newer time
Cntrl+up arrow	top current VS
Cntrl+down arrow	bottom current VS
Cntrl+right arrow	most recent tilt
Cntrl+left arrow	oldest tilt
Cntrl+Shift+up arrow	top latest complete VS
Cntrl+Shift+down arrow	bottom latest complete VS

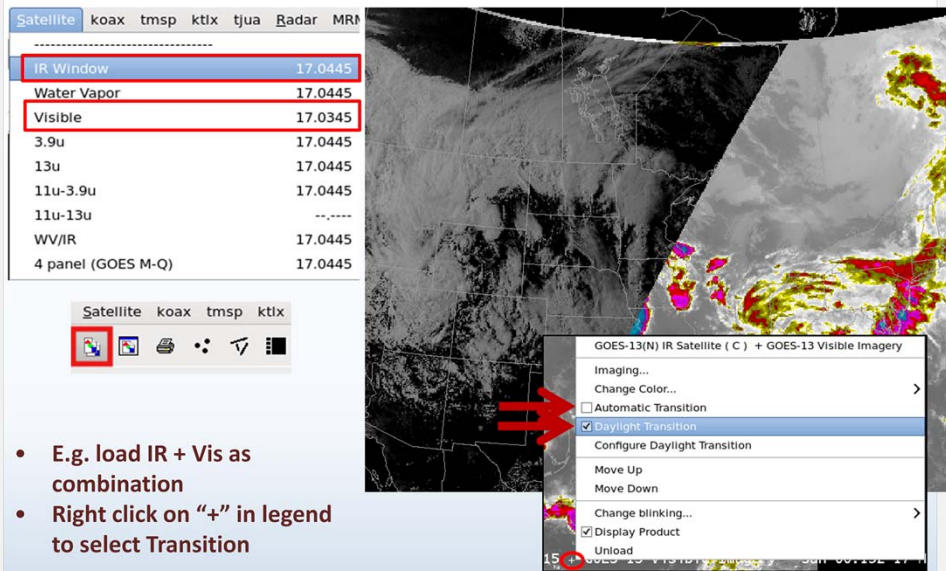
Following the major 16.1.1 All-Tilts SAILS navigation changes, in 16.2.1 the Cntrl+Shift+Up or Cntrl+Shift+Down keyboard shortcuts will now advance to the top or bottom of the most recent completed volume scan, so you can directly advance to the latest full volume of radar data to analyze no matter which volume scan you are on.

In this example we have an All-Tilts loaded for complete volume scans at 5:21z and 5:28z, and the current volume scan is 5:34z, with the latest tilt being 0.9 degrees. If we were on the 0.5 degree tilt of the 5:34z volume scan, Ctrl+Shift+Up would jump to the 19.5 degree tilt at 5:28z.

Likewise if we were on the 0.9 degree tilt at 5:21z, Ctrl+Shift+Down would jump to the 0.5 degree tilt at 5:28z.

Here is a summary of all the keyboard shortcuts.

Satellite Combo Daylight Transition Blend



The screenshot shows a software interface for satellite data. On the left, there is a list of channels with the following data:

Channel	Value
IR Window	17.0445
Water Vapor	17.0445
Visible	17.0345
3.9u	17.0445
13u	17.0445
11u-3.9u	17.0445
11u-13u	--:--
WV/IR	17.0445
4 panel (GOES M-Q)	17.0445

Below the list is a toolbar with icons for various functions. A red box highlights the '+' icon. A red arrow points from this icon to a context menu that is open over the main satellite image. The context menu has the following items:

- GOES-13(N) IR Satellite (C) + GOES-13 Visible Imagery
- Imaging...
- Change Color...
- Automatic Transition
- Daylight Transition
- Configure Daylight Transition
- Move Up
- Move Down
- Change blinking...
- Display Product
- Unload

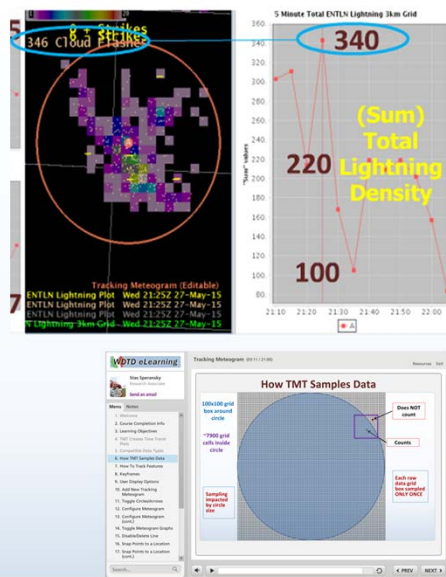
Below the screenshot, there are two bullet points:

- E.g. load IR + Vis as combination
- Right click on “+” in legend to select Transition

Another interesting enhancement is the daylight transition blend for combined satellite products. For instance if you load an IR satellite image and then combine it with a visible image, then you can configure the image combination to blend the IR with the visible image where the sun has set and visible is all black. The trick to this is to right click on the “+” sign in the legend text between the two labels in the product legend, and you can select Automatic Transition to immediately blend the two images at sunset, or Daylight Transition where the IR image progressively fills in the frames based off the sunset changes. You can also configure the time for sunset to make it more liberal or conservative in the blend. See our jobsheets in the Vlab to step through how to do this.

Other Items Worth Mentioning

- Other Informational Overviews
 - 16.1.1 (past)
 - 16.2.2 (future)
- Tracking Meteogram Tool
 - Limitations fixed in recent builds
 - Undersampling, oversampling no longer an issue 100x100 sampling

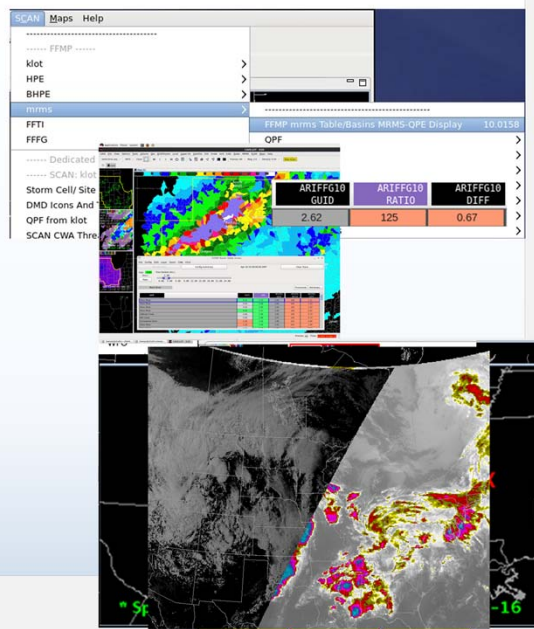


Our first informational overview was posted to the LMS during the 16.1.1 deployment, and we have a 16.2.2 overview planned for after this one. If you haven't checked out the 16.1.1 overview, you can find that in the Commerce Learning Center.

Another item worth mentioning is the Tracking Meteogram has been fixed in recent builds, and now some of the primary undersampling and oversampling issues are no longer a problem with the 100x100 grid sampling inside the circle. So now you can accurately create time trends for things total lightning density. The Tracking Meteogram Training in the CLC and the VLab references have both been updated with the latest changes.

Summary

- MRMS and ARI in FFMP
 - Intro to ARIs (Part 1)
 - Using ARIs in AWIPS (Part 2)
- New
 - Map scales
 - National/Regional Warning Plots
 - D2D Spot Forecast
 - All-Tilts Keyboard Shortcut
 - Satellite Combination Daylight Transition



To summarize MRMS and ARI have been added to FFMP, and FFMP now supports adding new grid sources including QPE and 1hr QPF. To learn about what ARIs are and how to use them, see the two ARI lessons in the CLC and the ARI VLab reference page for more info on ARIs and their configuration.

In 16.2.1 there are also new maps scales, national and regional warning plots, a D2D Spot Forecast overlay, a new All-Tilts keyboard shortcut to jump to the top or bottom of the most recently completed volume scan, and a satellite Combination Daylight Transition capability.

Check Out VLAB & Job Sheets

<https://vlab.ncep.noaa.gov/web/oclo/home>

The screenshot displays the NOAA VLAB website interface. At the top, a header reads "Check Out VLAB & Job Sheets" with a link to <https://vlab.ncep.noaa.gov/web/oclo/home>. Below this, a section titled "Recent Training-Related AWIPS Build Changes" provides information about improvements in AWIPS builds. It lists several items under the heading "OB16.2.1 (Aug 2016)", including references to AWIPS program documents, release notes, and training materials. A contact box for Michael.A.Magsig@noaa.gov is overlaid on the page. To the right, a "Satellite Combination Daylight Transition Page" is shown, featuring a satellite image and a control panel with options like "Daylight Transition", "Configure Daylight Transition", "Move Up", "Move Down", "Change blinking...", "Display Product", and "Unload". A caption below the image reads "Fig. 1 Daylight transition for an IR/Visible satellite combination configured with a right click on the combine image button".

You are now done with the AWIPS 16.2.1 Informational Overview. Next you should try accessing the training reference materials from the Forecaster References menu at the top of our OCLO public VLAB home page. You don't need to log in to the VLab, just enter this address in a browser on AWIPS or on the Web.

The Forecaster References menu on the top is your one-stop shop place to go for OCLO references in AWIPS. You can access the AWIPS Build Changes menu to refresh yourself on the build changes, or you can click on the menu items for the standalone pages, like the ARIs page or the Satellite Combination Daylight Transition Page.

The reference pages contain job sheets, refresher commands, and more for quick access to key information as you integrate the new capabilities into operations.

Let me know if you have any further questions or want to give some feedback on the Overviews and VLab approach. Good luck with the new 16.2.1 capabilities.