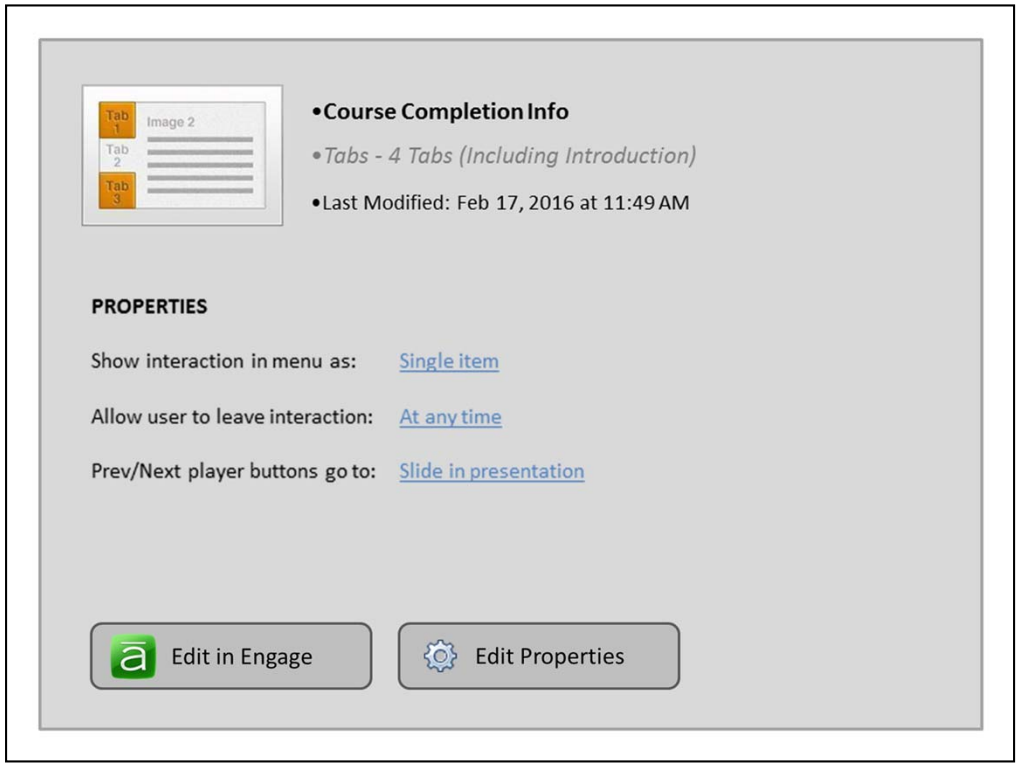
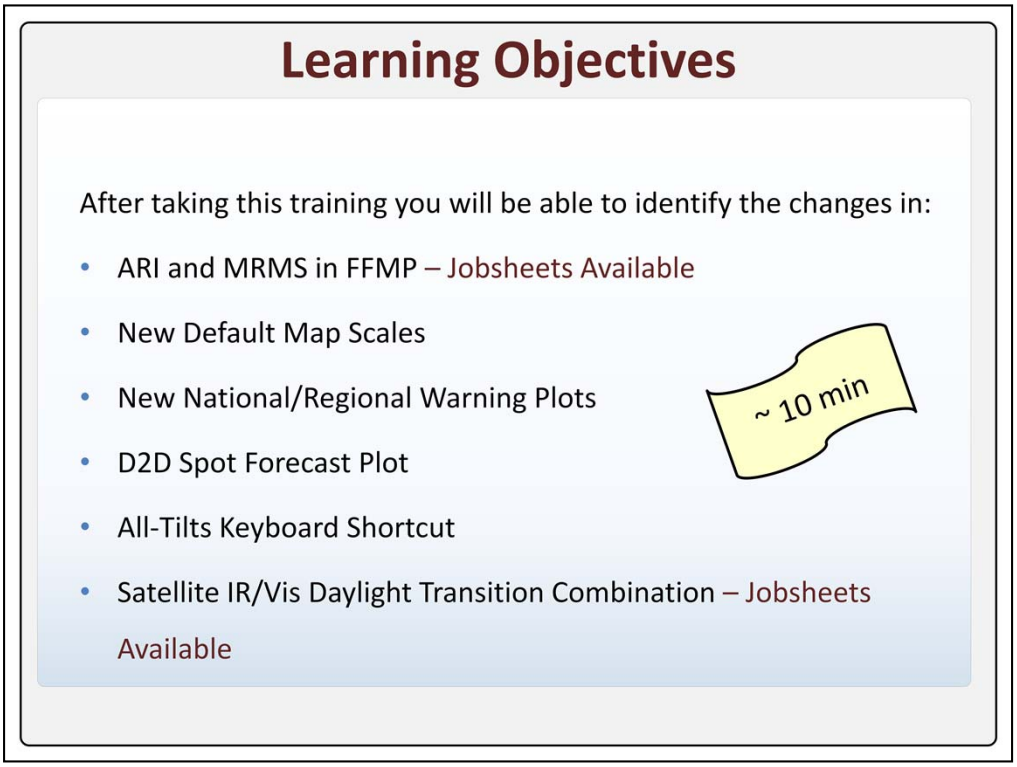
AWIPS Build 16.2.1
Informational Overview

Mike Magsig
Warning Decision Training Division

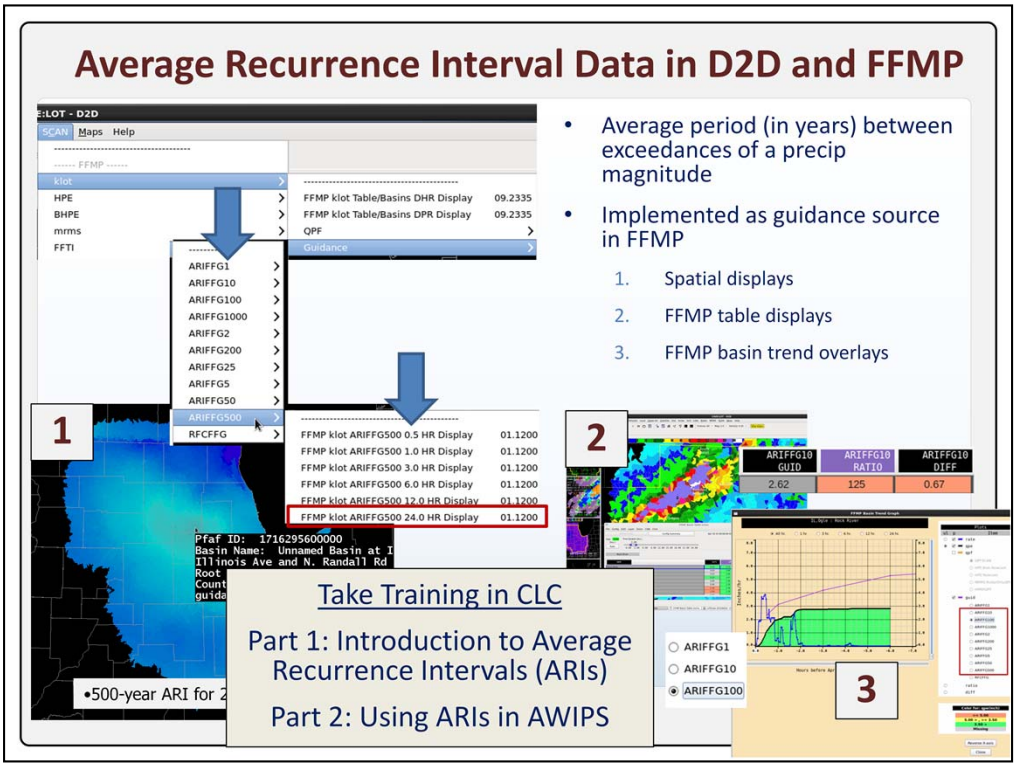
Welcome to the AWIPS Build 16.2.1 Informational Overview. I'm Mike Magsig from WDTD, and I will be introducing you to some of the significant changes in 16.2.1.



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



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



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

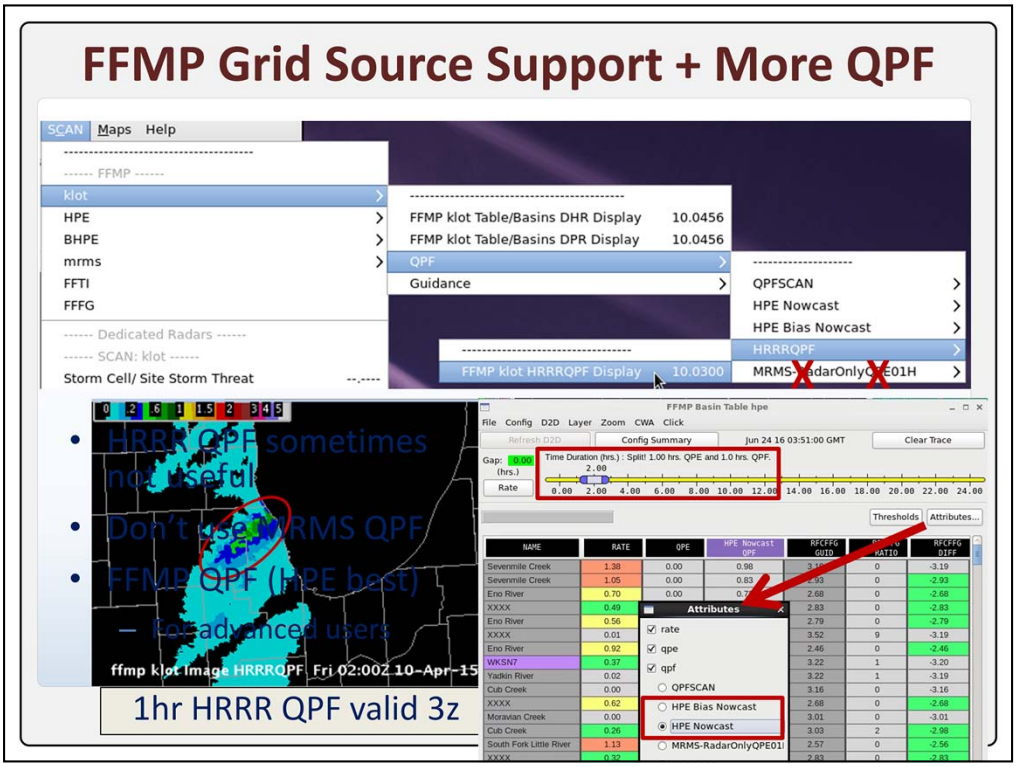
- Generated from Surface Precip Rate (SPR)
- *Must configure MRMS and ARI in FFMP
  - Extra guidance on ARI VLab page

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.

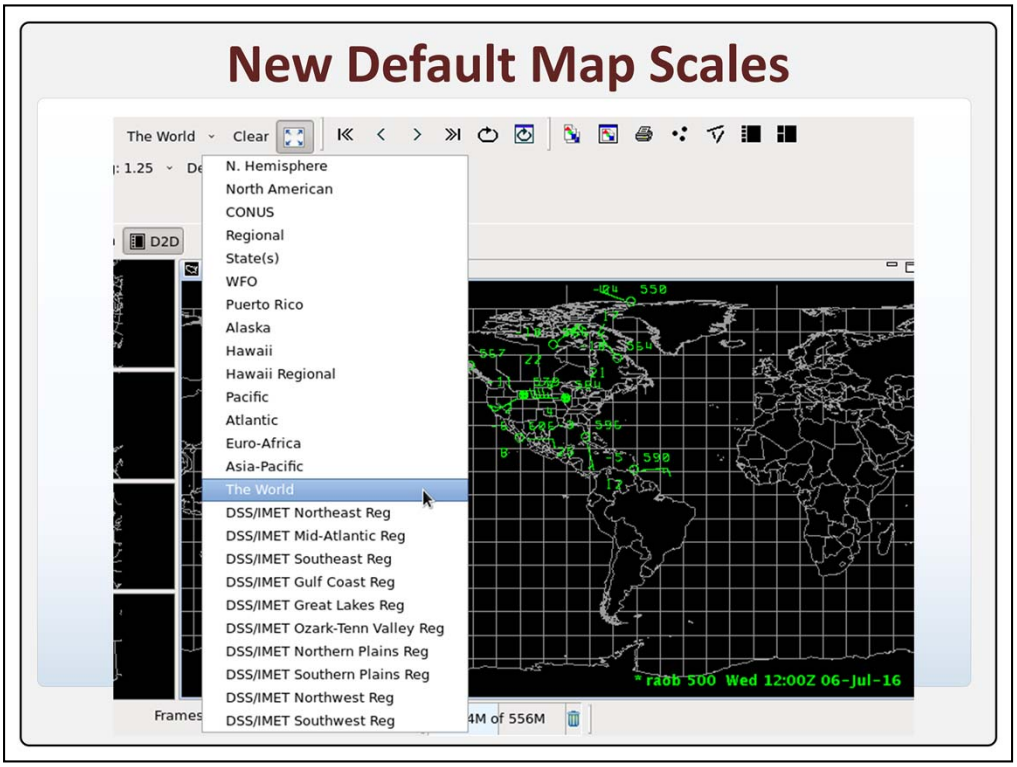
So now that you have 5 sources to choose from instead of 4, how does MRMS compare to the others? MRMS's strength is that it is a high-resolution 1km by 1km 2min mosaic product covering your whole CWA, so you only need to load one thing in FFMP. MRMS doesn't use Dual Pol variables to compute rain rates, 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.

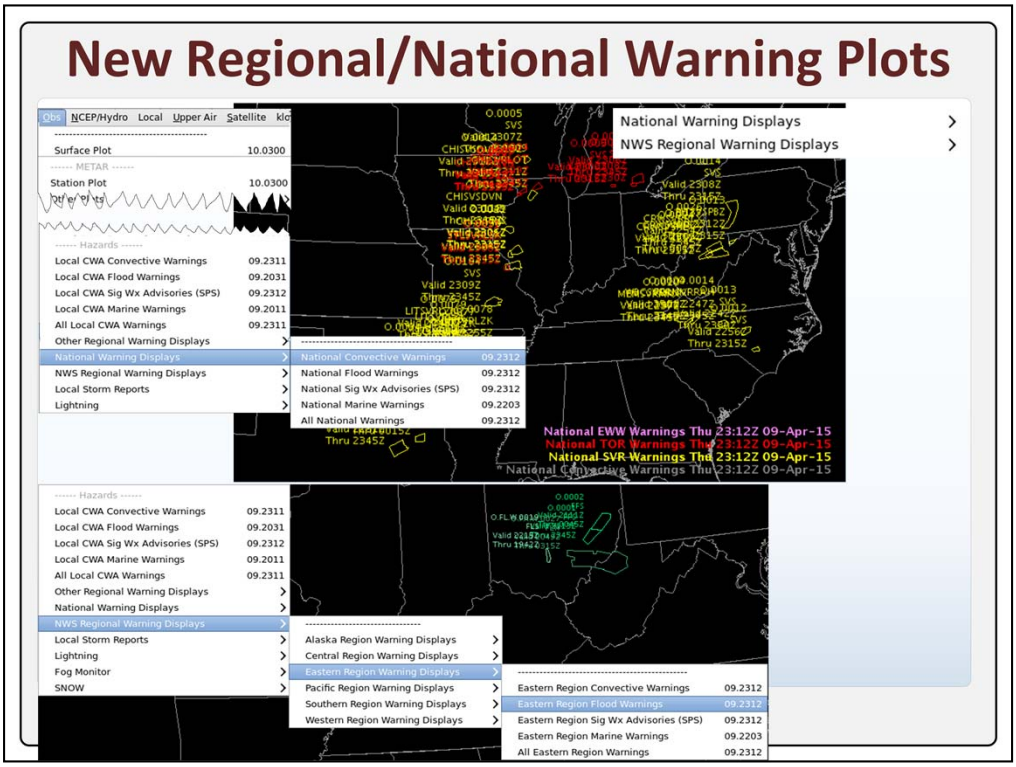


FFMP can now be configured to ingest ANY grid QPE or 1hr QPF data. The HRRQPF is a new default QPF source, though from this example we can see that the spinup issues in the first hour of the HRRR can make this not very useful at times. The MRMS-RadarOnlyQPE01H menu option should be disregarded as it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

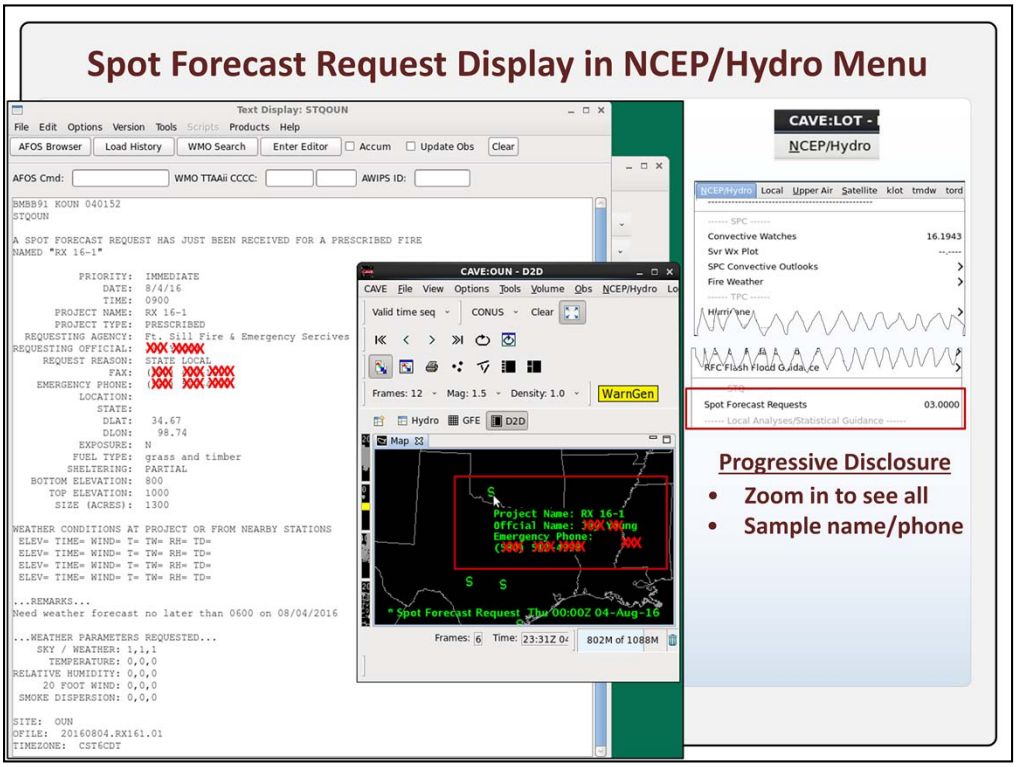
The 1hr extrapolations of HPE Nowcast and HPE Bias Nowcast are likely going to be your best 1hr QPF to consider using in FFMP in more steady state situations. Given the complexity of the FFMP QPF split-window approach, coupled with the remaining bugs where ratio and diff do not use QPF, WDTD advises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



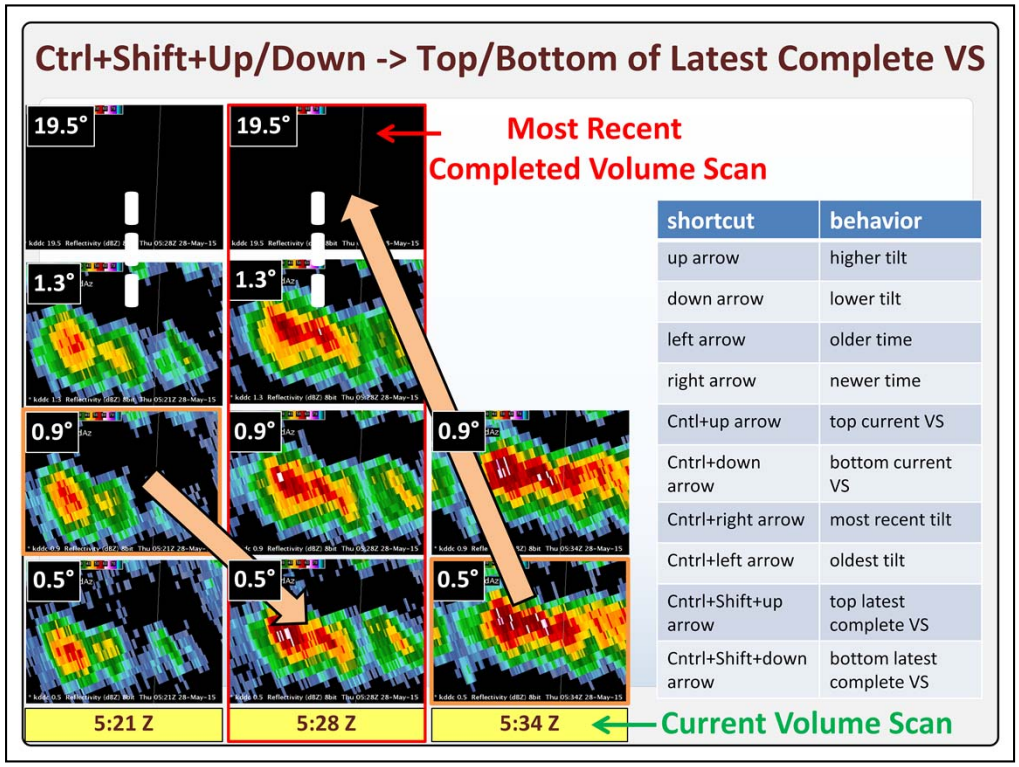
When 16.2.1 was installed, the scaleInfo.xml was moved into a backup file and a new set of map scales were installed which include map scales for other parts of the world and a set of DSS/IMET regional US scales. Your ITO is responsible for merging these with any local scales, so you may or may not see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



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.



Another new enhancement is the Spot Forecast Request D2D overlay available under the NCEP/Hydro menu. As these requests come in, as in this STQ product from OUN, they are automatically displayable as D2D overlays with an S icon that can be sampled to read out the Project Name, Official Name, and Phone number. The overlay uses progressive disclosure like surface obs, mPING, etc., so make sure and zoom in to see all requests and sample the values out for supplemental information.



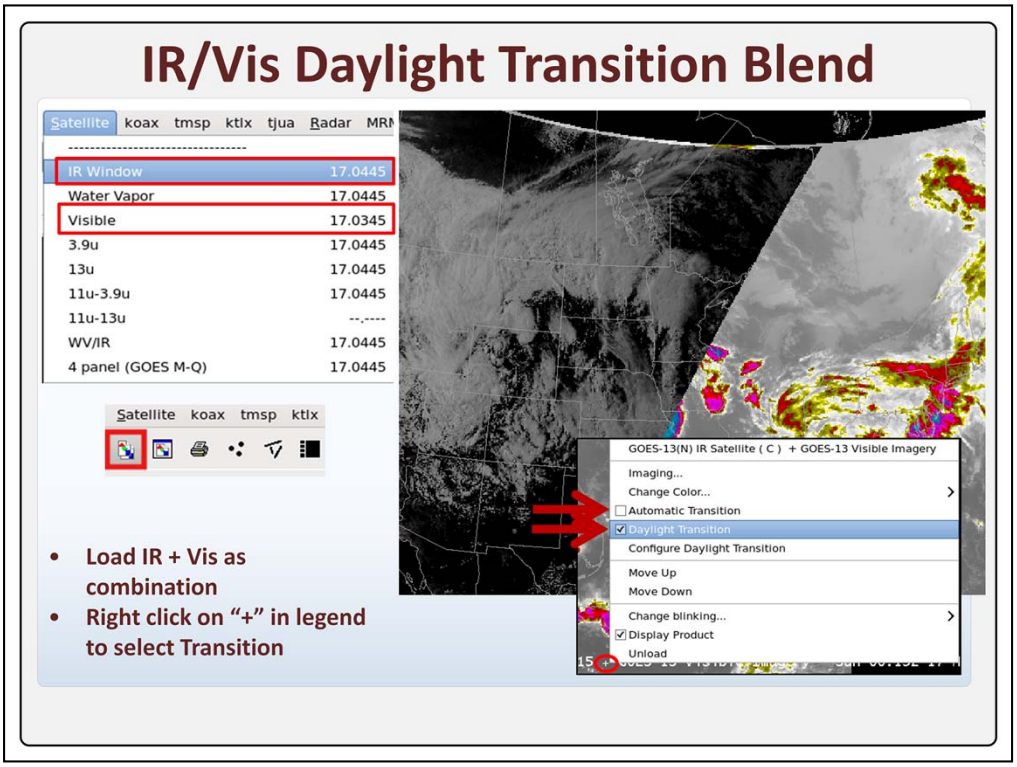
shortcut	behavior
up arrow	higher tilt
down arrow	lower tilt
left arrow	older time
right arrow	newer time
Cntl+up arrow	top current VS
Cntrl+down arrow	bottom current VS
Cntrl+right arrow	most recent tilt
Cntrl+left arrow	oldest tilt
Cntrl+Shift+up arrow	top latest complete VS
Cntrl+Shift+down arrow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

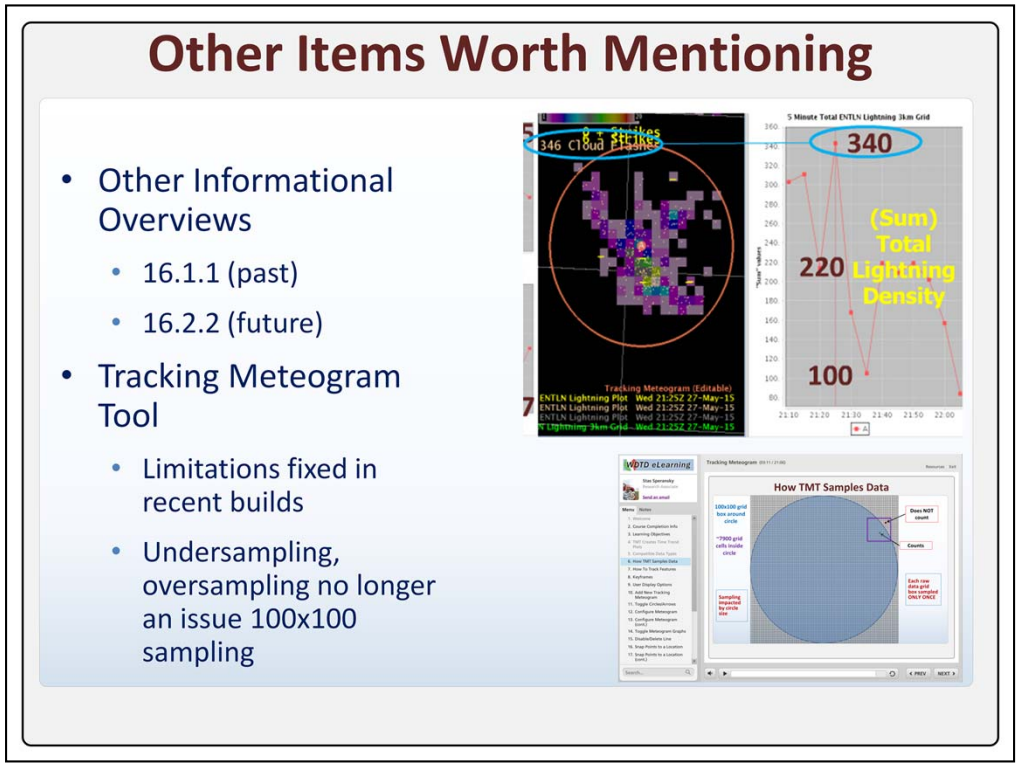
In this example we have an All-Tilts loaded for complete volume scans at 5:21z and 5:28z, and the current volume scan is 5:34z, with the latest tilt being 0.9 degrees. If we were on the 0.5 degree tilt of the 5:34z volume scan, Ctrl+Shift+Up would jump to the 19.5 degree tilt at 5:28z.

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.

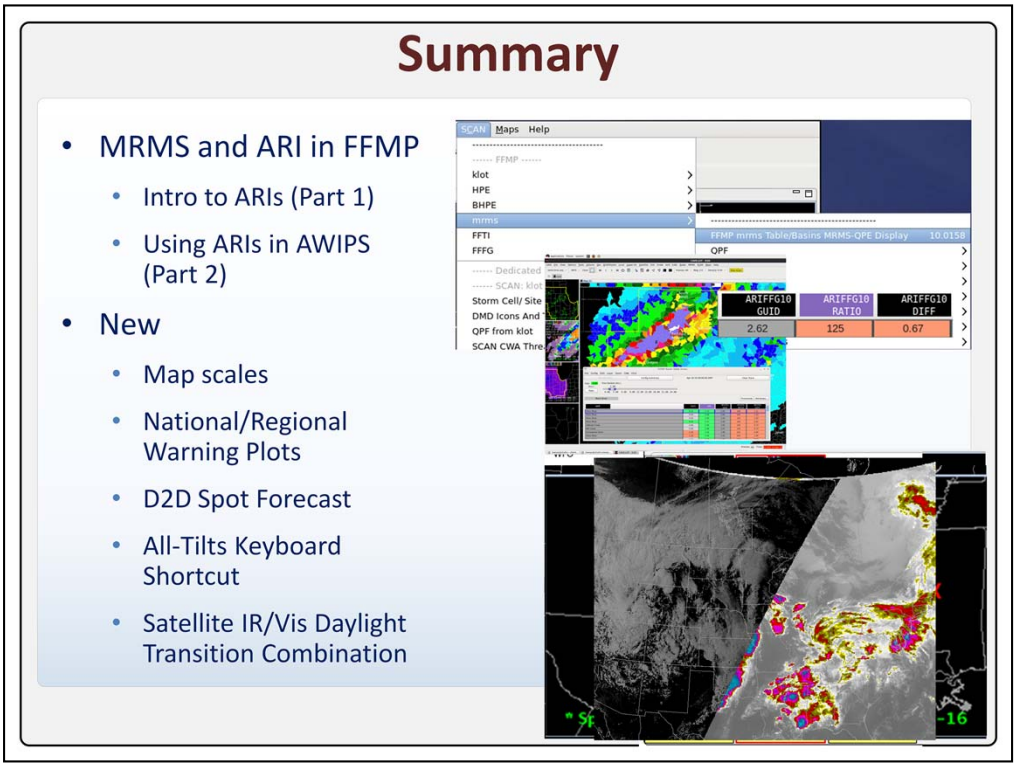


Another interesting enhancement is the IR/Visible daylight transition blend. If you load an IR satellite image and then combine it with a visible image, then you can configure the image combination to blend the IR with the visible image where the sun has set and visible is all black. The trick to this 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.



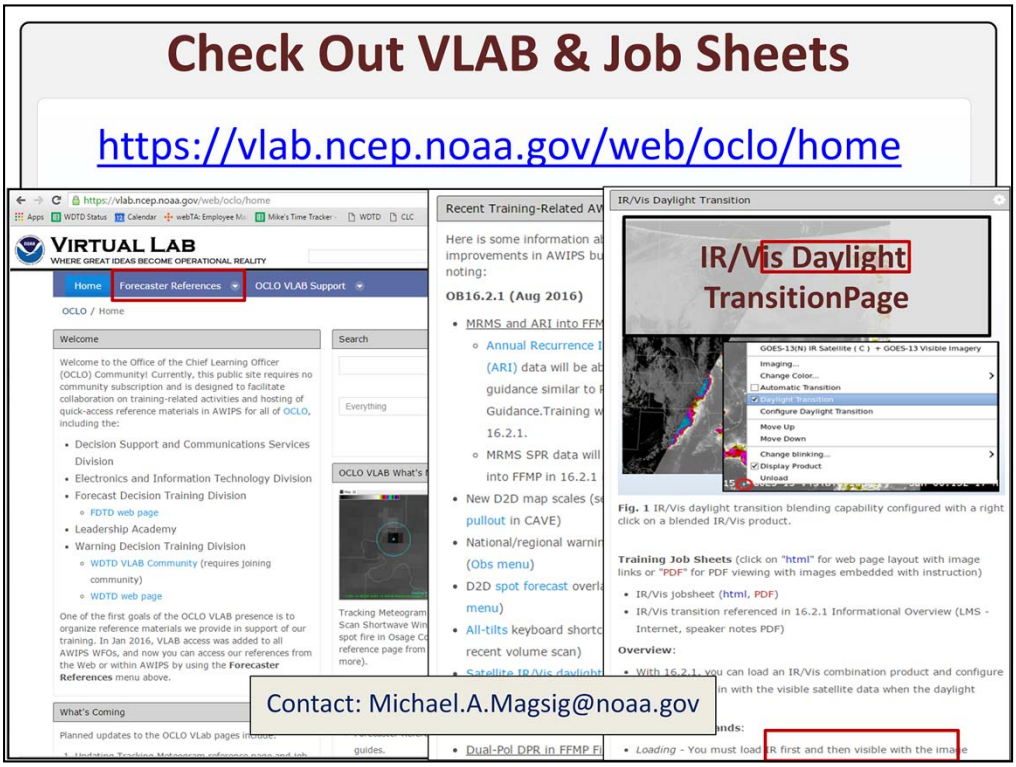
Our first informational overview was posted to the LMS during the 16.1.1 deployment, and we have a 16.2.2 overview planned for after this one. If you haven't checked out the 16.1.1 overview, you can find that in the Commerce Learning Center.

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.



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.

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 of the most recently completed volume scan, and a satellite IR/Vis daylight transition combination capability.



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 IR/Vis 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.