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# **AWIPS Migration Status Review For Unidata Policy and Users Committee**

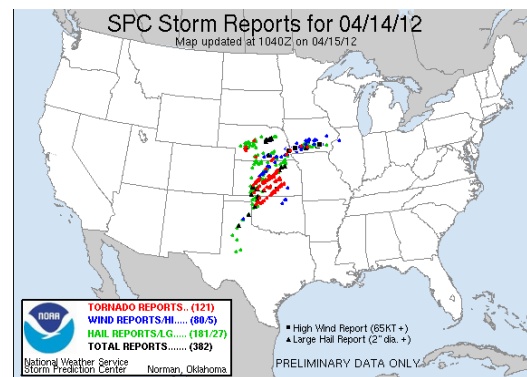
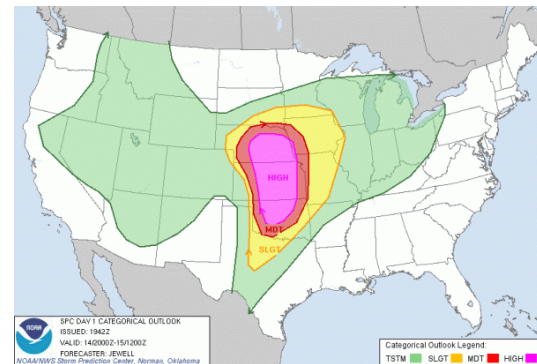
**September 17, 2012**

**National Weather Service**

NCEP Central Operations

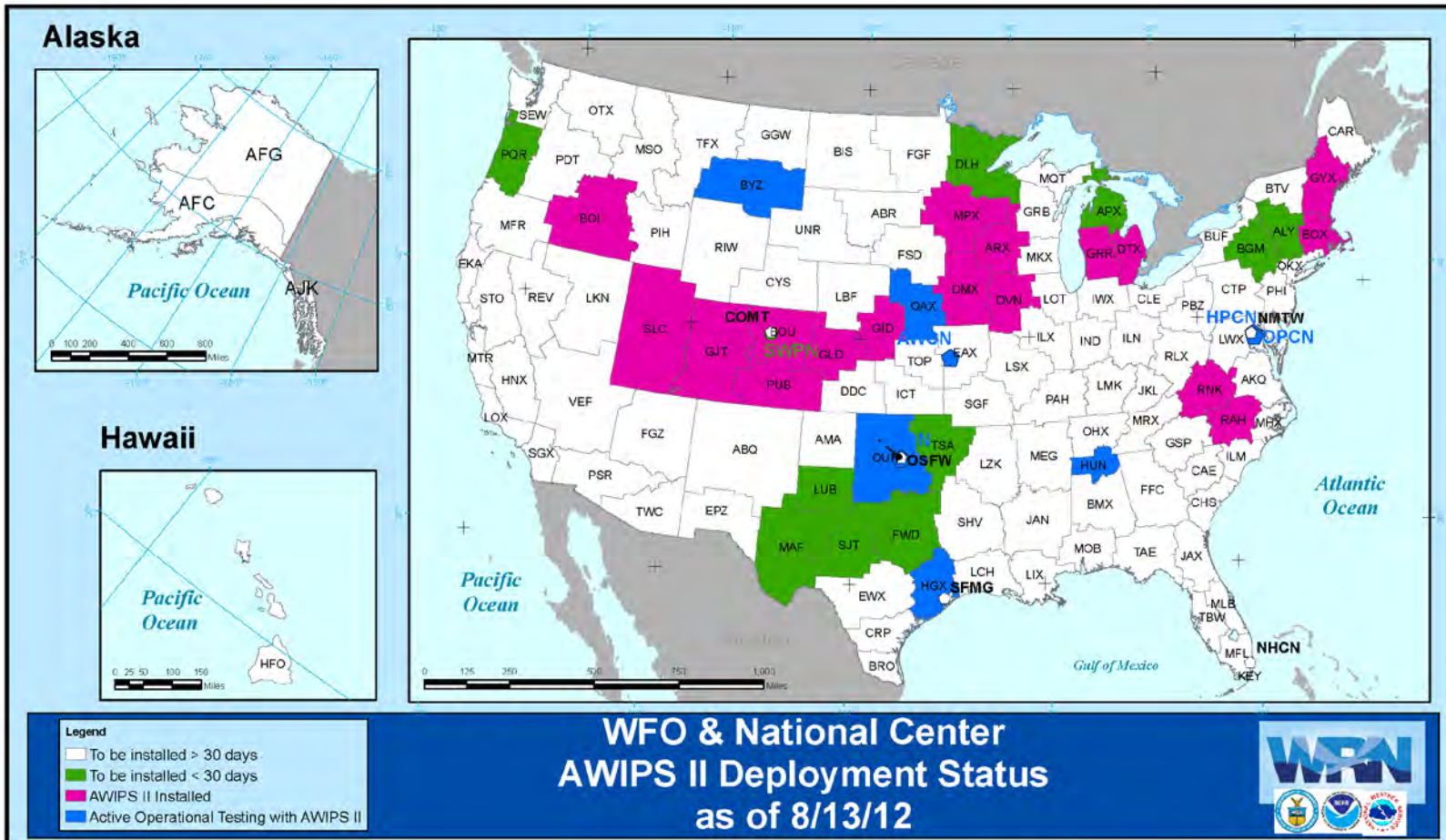
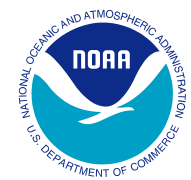
Office of Science and Technology

- Overall Program Status
- Overall NAWIPS Migration Status
- Unidata's Involvement
- Support Model and Governance
- Training and Software Development
- Planned Activities / Extended Projects
  - Near Term
  - Long Term





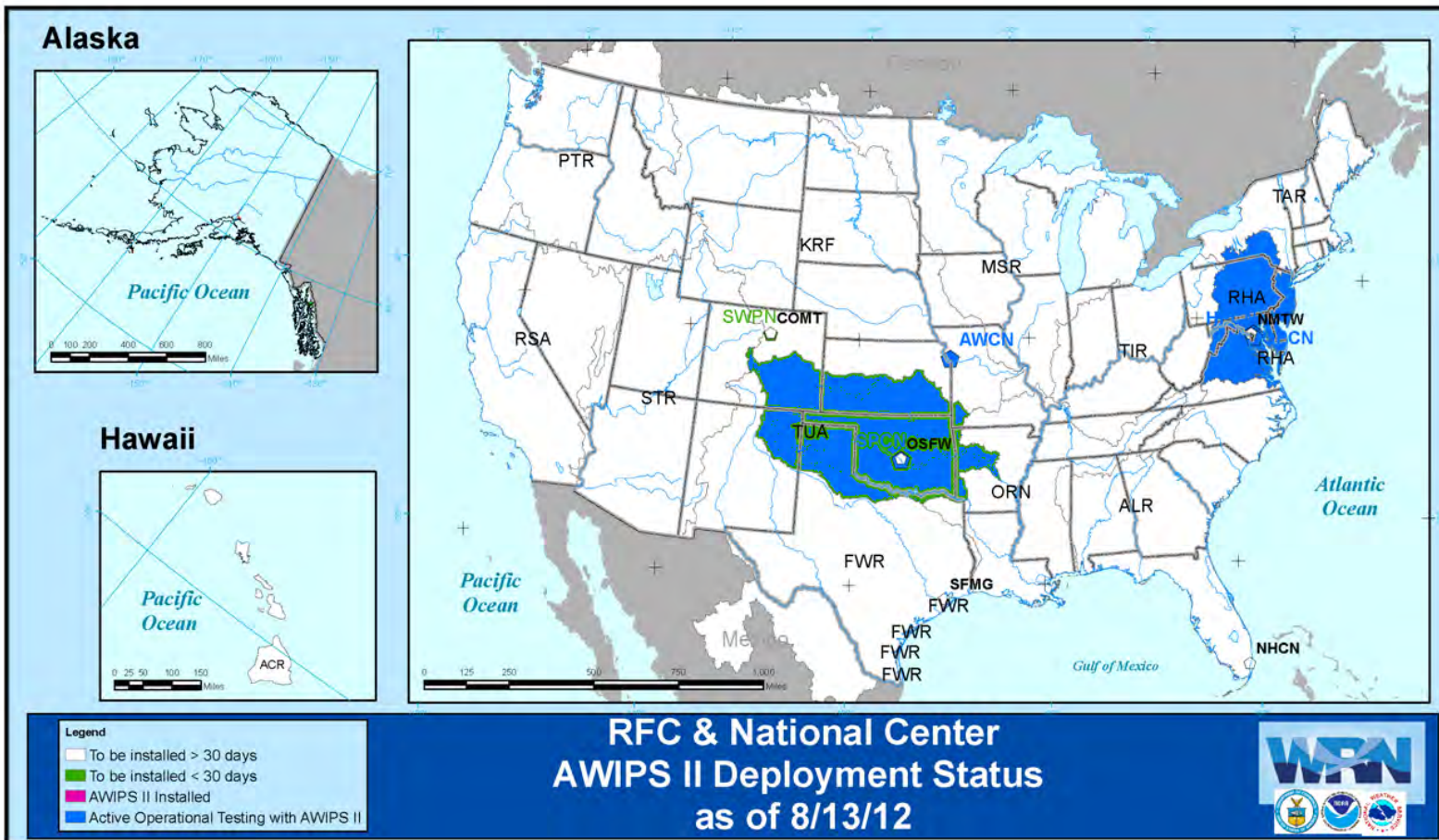
# AWIPS II Migration Site Deployment Status As of Sept 1



	WFO	NC	HQ
Active Operational Testing with AWIPS II	5	5	6
AWIPS II Installed	16	0	0
To be Installed within Next Month	10	0	0



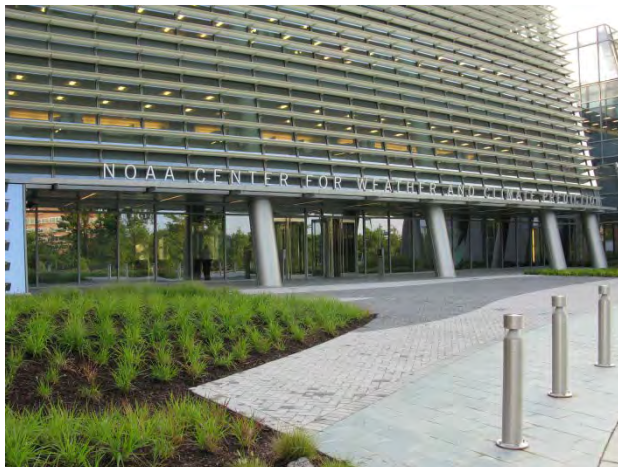
# AWIPS II Migration RFC Deployment Status As of Sept 1



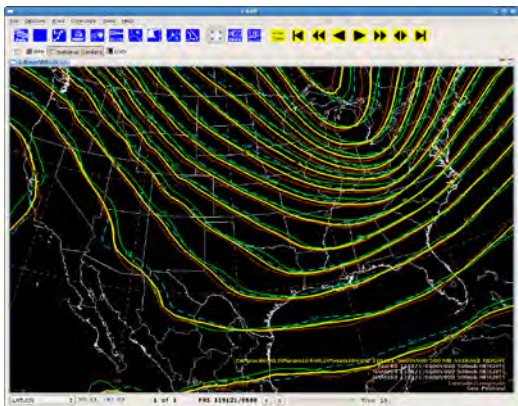
	RFC
Active Operational Testing with AWIPS II	2
AWIPS II Installed	0
To be Installed within Next Month	0

## We Moved!

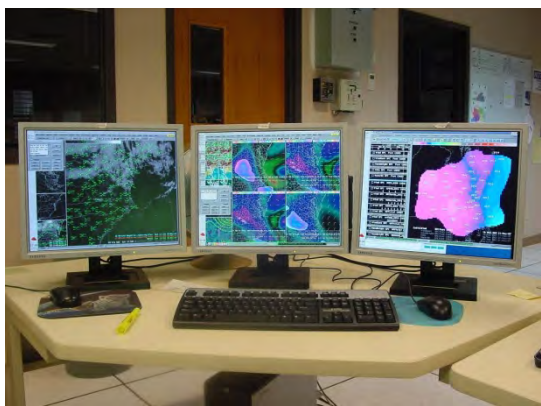
### Phase II-b FIT Prep work Performance Improvements



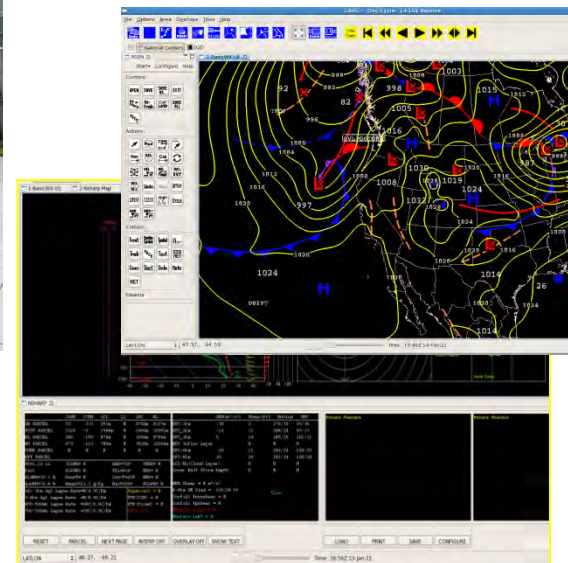
### GUI Migration Code Integration



### FOTE AWIPS I to AWIPS II



### GEMPAK 6.7

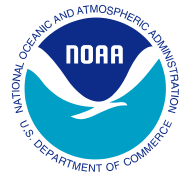


### 64-bit wkstn





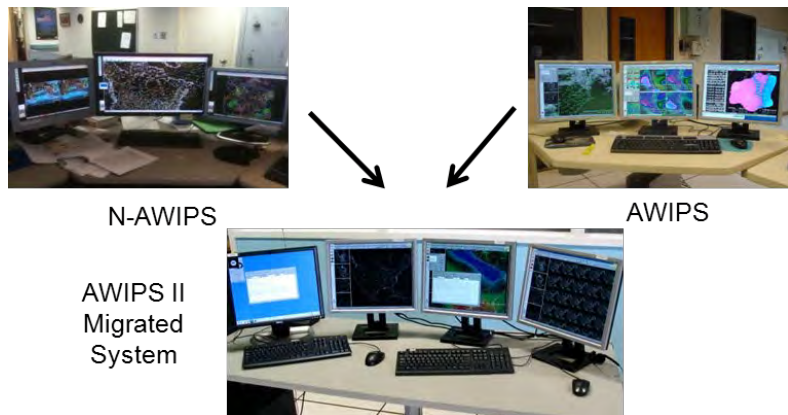
# AWIPS I / NAWIPS Migration Schedule



NWS AWIPS II including NCP	Schedule
<b>National Field OTE including National Centers</b>	<b>Nov 2011 – June 2013</b>
Unidata Users to Receive AWIPS II	Spring 2013
<b>FIT - Phase Two / Two-B @ NTBN Phase Three @ NCEP Centers</b>	<b>Nov 2011 &amp; Sep/Oct 2012 Jan 2013</b>
<b>Establishing Non-SBN Data Flow to AWIPS II</b>	<b>Oct 2011 (NTBN) / Dec 2012</b>
GEMPAK DB Capability (SFFILE, SNFILE, SAT/RAD, XML/GeoTIFF driver, misc data sets)	March 2013
NTRANS Metafile Display Capability	March 2013
Begin AWIPS II FOTE at NCEP for NAWIPS	<b>March 2013</b>

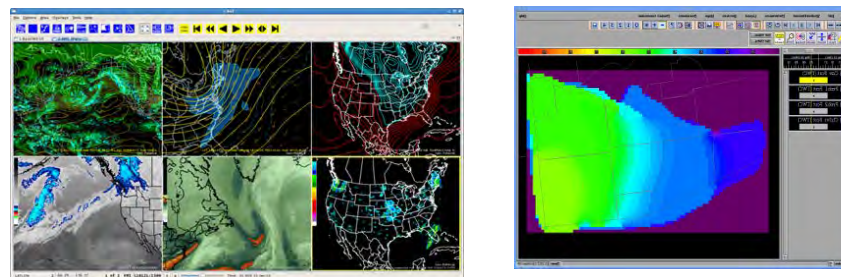
**\* Bold indicates task completed/started, Red indicates delay**

# NAWIPS Migration Challenges and Mitigation (same as May)



- The overall migration effort has taken significantly longer than originally planned at both the NWS and NCEP levels
- Delays in the National Migration Program have resulted in delays in the NCP migration and integration of the code by Raytheon

- **32-bit vs. 64-bit** requirement lies mostly with NCP data set size and usage, and the Gridded Forecast Editor



## NCP Performance



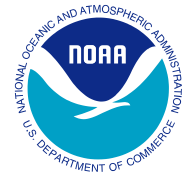
NCP startup / Data selection **(FIXED)**  
Database acquisition/display of some data types



- **NCWCP Move (slowed down our migration/DR fix rate)**



# Status of Performance Issues Gridded Display



- Baseline performance metric\* is 10 sec
- Performance Progress on NTBN (with > 3.5M database records)
  - February – over 1 minute
  - May – 40 sec, reduction primarily due to multi-threading
  - June – 14 sec, reduction due to RTS database tuning efforts
  - July 12 – 11.5 sec, reduction due to RTS unified grid plugin
  - Sept 10 – 10.6 sec, reduction due updated RTS unified grid plugin
- Further improvements to the performance still need to occur

\* *250mb Heights, Isotachs, Wind barbs, Divergence for 20 times*





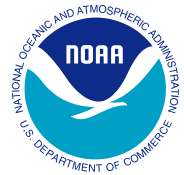
# NSHARP Migration Status



- Addressed the following requirements in OB12.9.1:
  - *Progressive disclosure of graph background*
  - *Code not baselined in OB 12.9.1 due to connection issues to Dimensions*
- Addressed the following requirements in OB12.10.1:
  - *Raytheon Work Assignment to integrate new NSHARP API into D2D*
  - *Code not baselined in OB 12.10.1 due to connection issues to Dimensions*
- Future work
  - *Remaining Discrepancy Reports of WFOs*
    - Map locator inset
    - N-hr temperature change (24-hr, 12-hr, 6-hr, etc.)
    - New graphical insets: SHIP Stats, STP Status, WINTER, FIRE, HAIL, SARS
  - *Additional NCEP features*

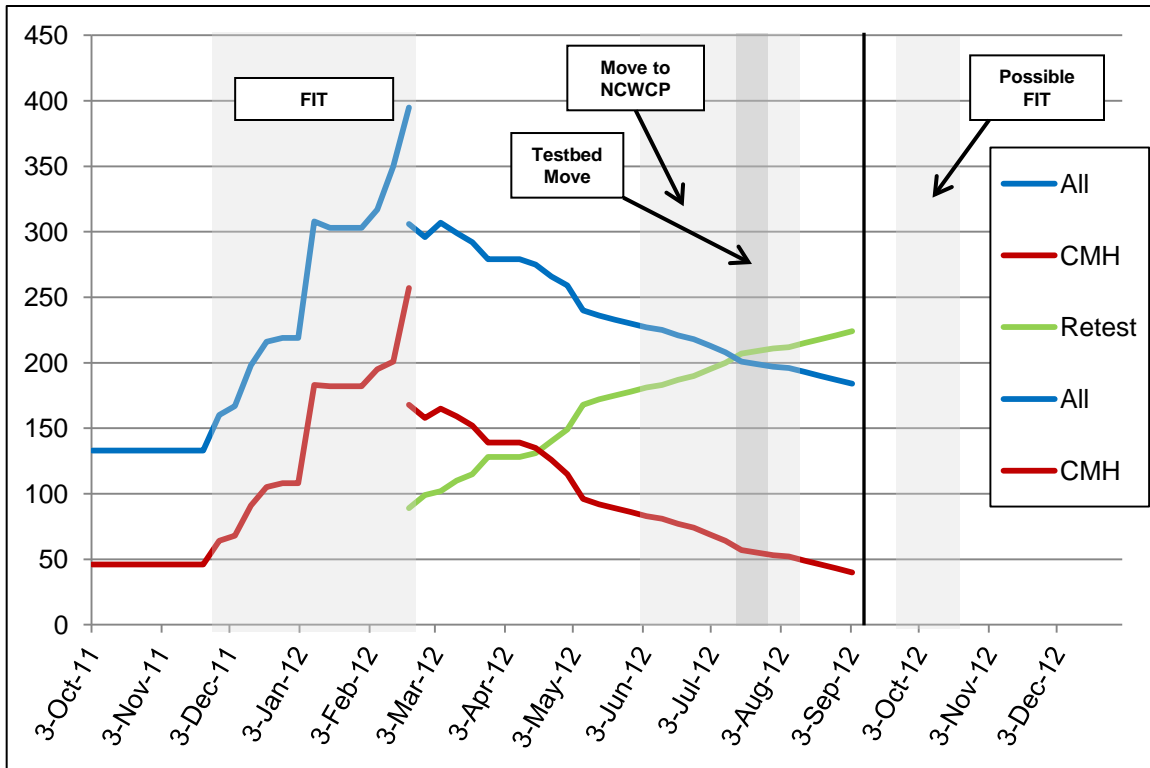


# Status of Trouble Ticket Reports



## TTRs Classified as Critical / High/ Major (CHM)

Repeatable problem that prevents or compromises the delivery of products or services



## As of 7 September 2012

- 404 TTRs Open
- 259 CHM - Critical (74), High (74), Major (111)
- 224 Ready for Retest
  - 212 ready on 8/6
- 0 Not adjudicated
- Projected “fix rate” of 10 per week, 5 per week during move to NCWCP

**Critical** - No alternate solution is available.

**High** - A temporary workaround is available, but is too cumbersome or workload intensive to sustain operations.

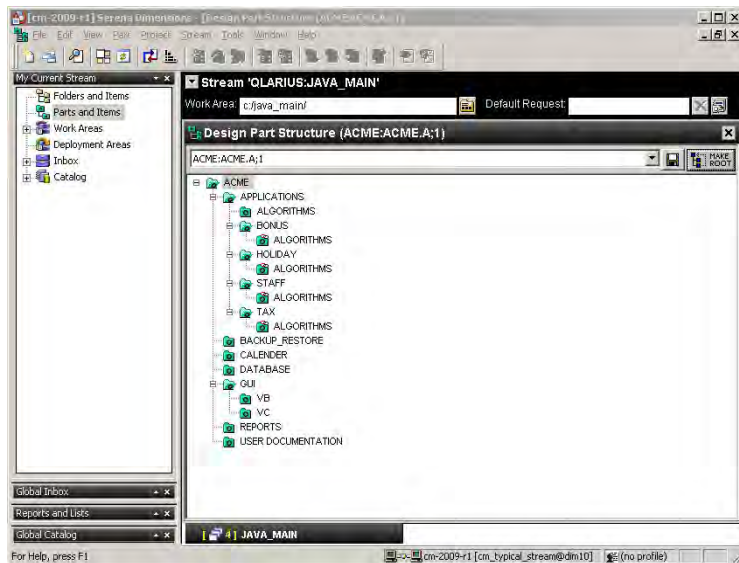
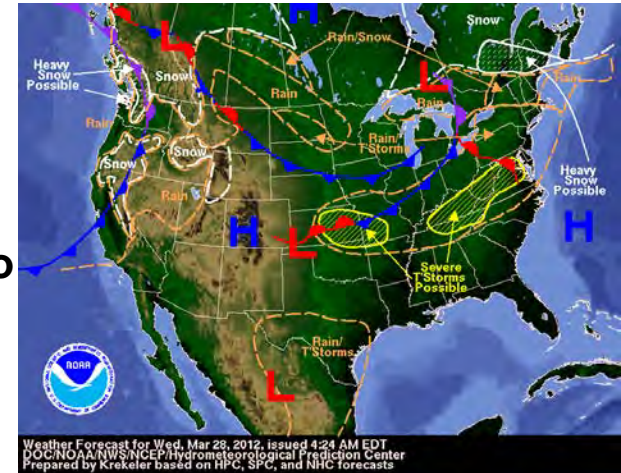
**Major** - A workaround is available to allow continuation of operations; however, workaround not acceptable for software acceptance.

## GEMPAK will be considered a “local application” for AWIPS II

NCO will continue to support GEMPAK code indefinitely /until further notice

Limited additions to the baseline – only when they can also be applied to AWIPS II, e.g., grid diagnostics

Routines are being reworked to ensure the GEMPAK libraries can read data from either the AWIPS II Data Base or GEMPAK format files



NCO will be uploading NCP to the AWIPS II baseline on a monthly basis

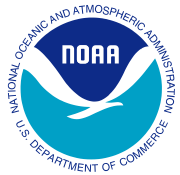
NCO mirrors RTS code from Dimensions (CM Tool) in Silver Spring \*\*\* We have had a six week delay in getting our code merged into the baseline due to security concerns between APO and NCWCP. \*\*\*

- Impact: missed OB12.9.1 and OB12.10.1 merge

Typically the NCP code will lag about 6 weeks



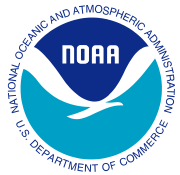
# Partnership between NWS and Unidata



- **Unidata is our link to the University Community!**
- **NCO** is committed to assisting in AWIPS software configuration and training key personnel at **Unidata** ~ “train the trainers”
- **Unidata** will continue to partner with NCEP to get university developed applications into the AWIPS baseline (AWIPS and NAWIPS)
- **Unidata** and the **Universities** are participating in beta testing AWIPS II features, prior to delivery to the NWS sites
- **NCEP** and **Unidata** working together to extend Unidata services to the space weather research community
- **NWS** is committed to enabling a collaborative AWIPS II environment to effectively incorporate new science and technology (capabilities) from universities



# Support Model and Governance

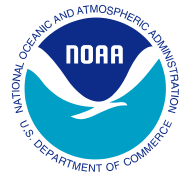


- **Why are we Governing?**
  - Preserve operational system integrity (performance)
  - Ensure software quality (functionality, science)
  - Ensure efficient use of the architecture (maintainability)
  - Avoid duplication of effort (resources)
  
- **What are we putting in place**
  - Development Planning - SREC **(in place)**
  - Architecture Team **(in place)**
  - Development Process **(In place)**
  - Development Tools **(in progress)**
  - Development Support **(in place)**
  - Developer training **(in progress)**
  - Governance Advisory Board **(delayed)**
    - Policy, Standards and Guidelines





# Support Model and Governance Development Planning



SREC Development Portfolio

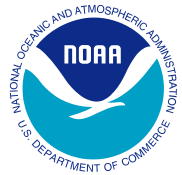
Item #	Title	Priority	Category	Phase	Start	End	Status	Owner	Responsible	Impact	Cost	Notes
020001	2012-2013	High	Strategic	Planning	2012-01-01	2012-12-31	Complete	NOAA	NOAA	High	\$0	
020002	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020003	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020004	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020005	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020006	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020007	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020008	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020009	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020010	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020011	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020012	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020013	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020014	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020015	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020016	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020017	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020018	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
020019	AWIPS Release Plan	High	Operational	Development	2012-01-01	2012-12-31	In Progress	NOAA	NOAA	High	\$0	
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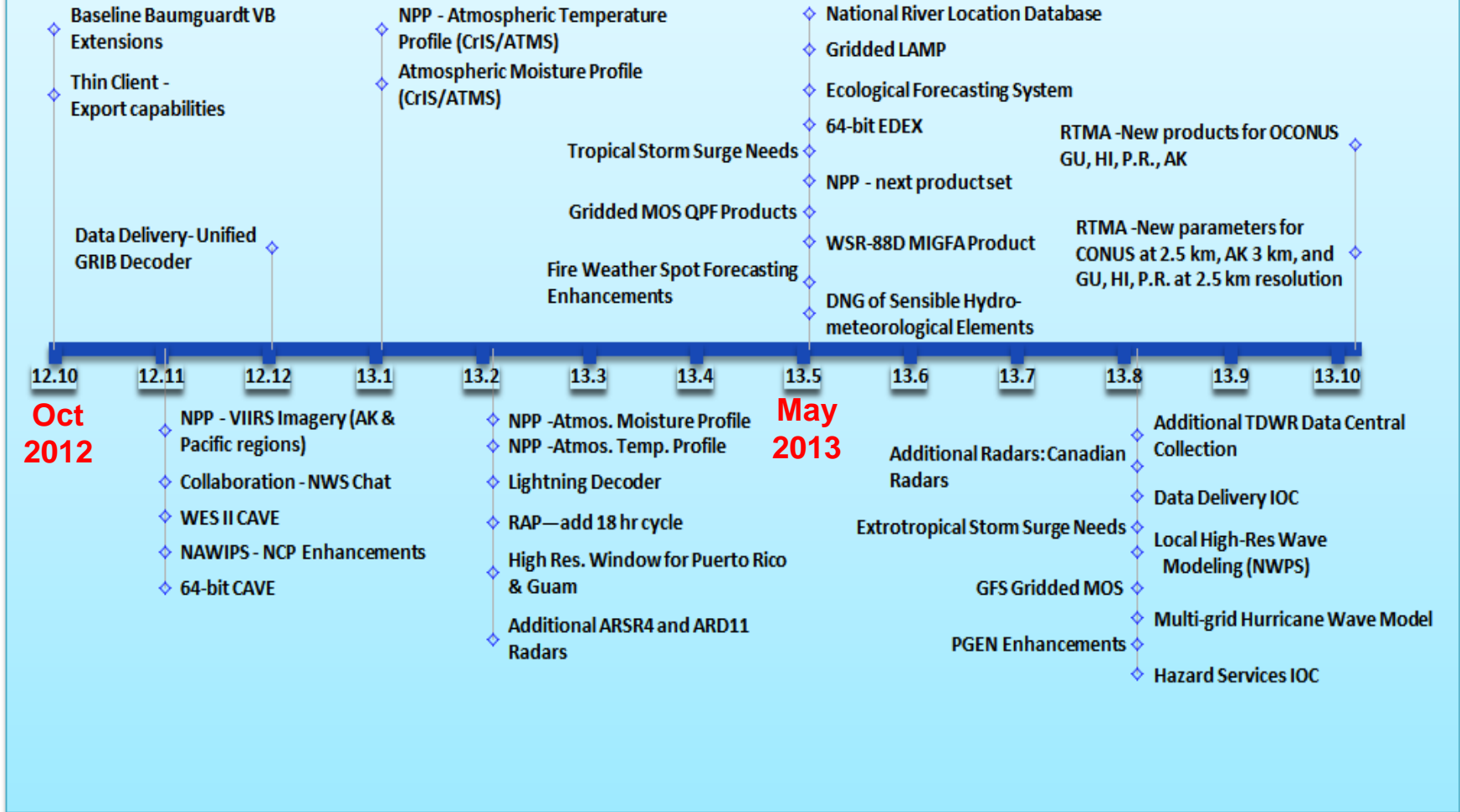
- **Software Recommendation and Evaluation Committee (SREC)**
  - **Who?**
    - Regional Focal Points, NWS HQ, NCEP
  - **How?**
    - Submit a SON and CONOPS/ORD to OSIP
    - Submit a request for new infrastructure capability to SREC
      - **Added potential task for FY13 for COMET to validate AWIPS algorithms - Action Item from May**
    - Submit a small enhancements to NCF
    - Submit a local application for inclusion into the AWIPS baseline
      - **(Local Applications Working Group)**
  - **Activities**
    - Assign rankings (strategic, infrastructure, and operational) tasking
    - Assign development work and development organization builds a development plan
    - Prepare AWIPS Release Plan in coordination with field, testbeds, training, O&M
  - **Artifacts**
    - AWIPS Release Plan (updated monthly)



# Support Model and Governance Development Planning

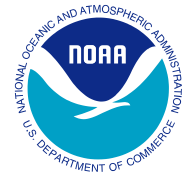


## AWIPS Release Plan





# Support Model and Governance Development Tools



- **Integrate Development and Test Environment**

- ADAM platform (functional and science testing)
- Runtime development/testing systems (performance)
  - Regions, Silver Spring, Training Center, NCEP
  - Virtualization - Looking at different solutions
- Automated testing **(on hold)**
  - Will provide AWIPS Regression Test Procedures for development testing
- Performance testing procedures **(on hold)**

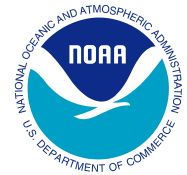






# Support Model and Governance

## Development Support

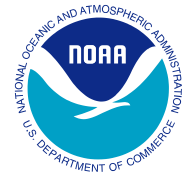


- **Developers Forum (Thursdays at 2:30pm EDT/EST)**
  - **Unidata members now attend these meetings**
- **Documentation (available to all users)**
  - Open Source references
  - Most available via the ADE (Eclipse IDE bundled with source code)
  - Source code and auto generated doc (JAVADOC) to maximum extent possible
  - APIs are documented in source, patterns are found by looking at existing code, ADE provides class hierarchies
  - AWIPS II
    - User Manual, System Maintenance Manual, and System Subsystem Design Document (SSDD)
- **Documentation Location**
  - <https://collaborate2.nws.noaa.gov/partners>
  - Contact John Olsen at [John.Olsen@noaa.gov](mailto:John.Olsen@noaa.gov) to obtain a User ID and Password





# Support Model and Governance Developer Training

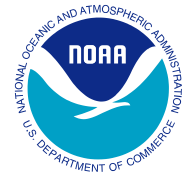


- Training Division has developed a series of modules on AWIPS2 training
- NWSTC offering 8 day System Administrative Courses for NWS ESA & ITOs (Contact James.Poole@noaa.gov)
  - 2 classes Completed / 8 additional classes planned
  - Slots for Unidata delayed until last class (Nov 2012) due to aggressive installation schedule at WFOs
- NASA Sport planning a joint venture with NWSTD for developer training
  - November 13-15, 2012, June 2013?
- NCO Test Bed available for Unidata Community for training purposes
- AWIPS planning loosely scripted webcast sessions of a developer actually developing a function, data ingest to rendering, adding new data (EDEX and CAVE), or other specific areas of needs (i.e., adding new data (EDEX and CAVE))
  - Feb 2013, April 2013



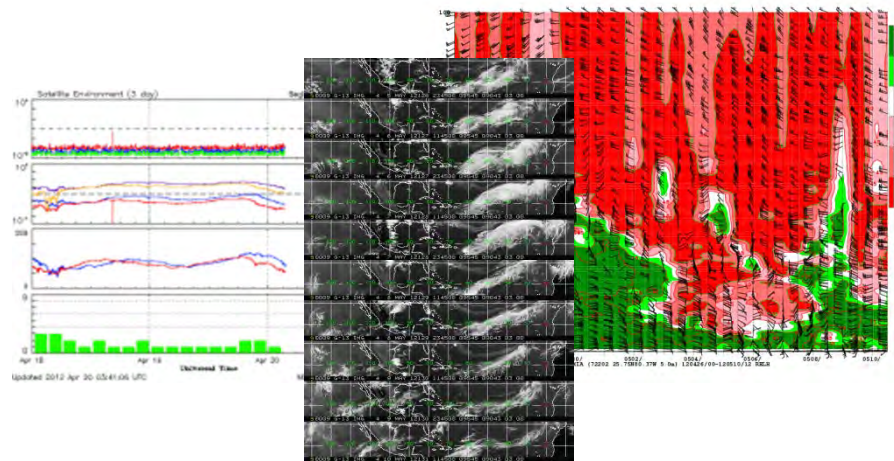


# Support Model and Governance Governance Policy



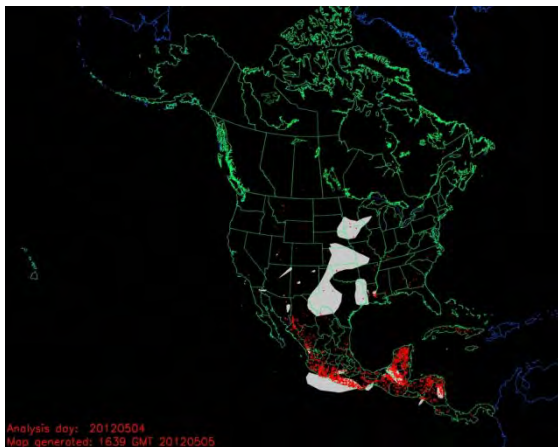
- Short term
  - Establish tasking for Raytheon support to the Architecture team – **completed**
  - Gather feedback on development documentation gaps and correct - **completed**
  - Complete development tools (Distributed CM) - **available**
  - Complete 1<sup>st</sup> phase of Integrated Work Plan – **available**
- Continue to foster training of developers – **in progress**
- Establish Governance Advisory Board to complete governance policies (directives) – **not started**
  - Members: OST/SEC (Mandel, Rivera, Rood, Calkins), OST/APO (Schotz), NCEP, MDL, OHD, ASM, GSD, SpORT, Unidata, NSSL, LAWG, NPI, RTS
  - Schedule
    - Present outline of policy and issues (September 30, 2012)
    - Walk through each area (October 2012)
    - Complete draft directive (October 31, 2012)
    - Complete directive (February 2013)

## Spatial/Temporal Sections & Series



**NESDIS**

## Hazard Mapping System



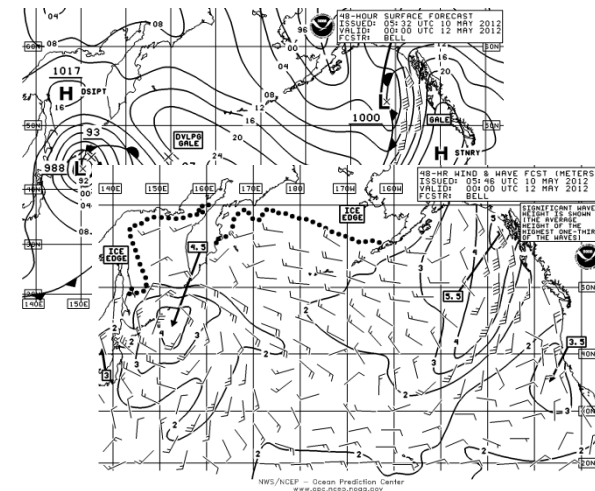
**N-Flow**



## Space Weather Requirements

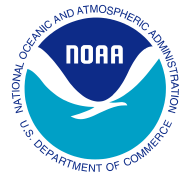


## High Seas Graphic to Text





# AWIPS II Extended Thin Client Project Overview



- **Key Benefits:**

- Allows AWIPS remote access
- Provides ability to provide impact-based decision support services from any location
- Provides first time use of AWIPS for CWSUs
- Provides additional options for COOP scenarios at NCs and RFCs

- **Status:**

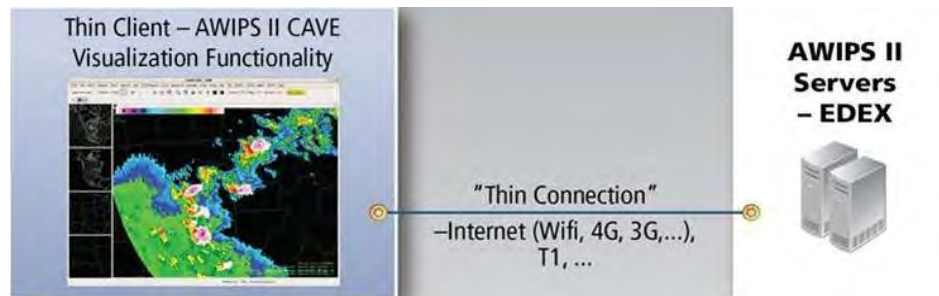
- Prototyping and system analysis of AWIPS II SOA: Completed
- Production development: In progress, testing being conducted
- Deployment to be staged with AWIPS II deployment

- **Schedule/Milestones:**

- Thin Client Testing at Boulder CWSU: February, 2012 (Complete)
- IOC Deployment Target: 3QFY12 (Achieved)
- FOC Deployment Target: Q1FY13

## Highlight

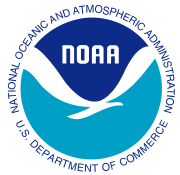
**Thin Client  
Successfully Used to  
Support Hurricane  
Isaac at 4 Venues  
Houston and Boulder  
CWSUs using  
Thin Client for  
Operations**





# Thin Client Hurricane Isaac Deployment

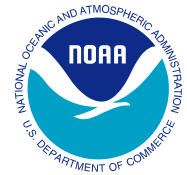
(Extracted from Report Submitted by Angel Montanez, Slidell WFO)



- Six meteorologists deployed at four venues
  - Louisiana Governors Office of Homeland Security and Emergency Preparedness
  - Orleans Parish EOC at City Hall in New Orleans
  - Mississippi Crisis Action Center in Gulfport
  - SWERV (Van) in support of St. Tammany Parish Emergency Management for Pearl River
- Linux laptop with latest version of TC used by each of four teams
  - 1<sup>st</sup> day: Connected to NWSH server – Radar Data for LIX data not available
  - 2<sup>nd</sup> day – day 7: Connected to BCQ server with LIX localization. Forecasters able to see radars with maps centered across warning area
- Performance
  - Forecasters quite impressed with TC performance and stability during many hours of use
    - Thin Client used for at least 12 hours per day for several days
- Issues (Minor in nature)
  - Occasional errors with radar precipitation values
    - Unable to reproduce thus far
  - Laptop occasionally would lose connection with server; could be Verizon service, not a Thin Client issue per se
- Conclusion
  - “Thin Client was a great success and it has definitely proved to be the main tool needed for any meteorologists that is to be deployed”



# AWIPS II Extended Data Delivery Project Overview



- **Objective:**
  - Develop operational robust infrastructure to support “intelligent” access to non-local data provider datasets
- **Status:**
  - Testing of development releases in progress
  - Currently development release has the following functionality:
    - Discovery of NWS-NOMADS Data Sets
    - Adhoc/Subscription to NOMADS Data Sets
    - Sub-setting by space/time and parameters
- **Schedule/Milestones:**
  - Initial Development Release: April, 2012
  - IOC Deployment Target: Q4FY13
  - FOC Deployment Target: Q1FY15
- **NOTE: Unclear at this time where DD functions will be enabled for Non-NWS users given security considerations**

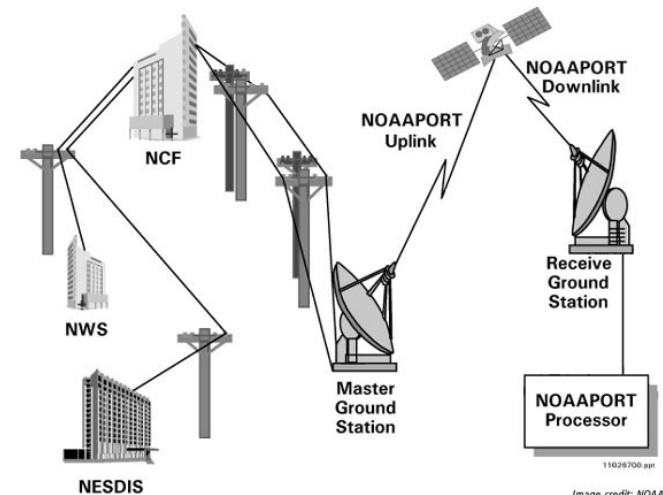
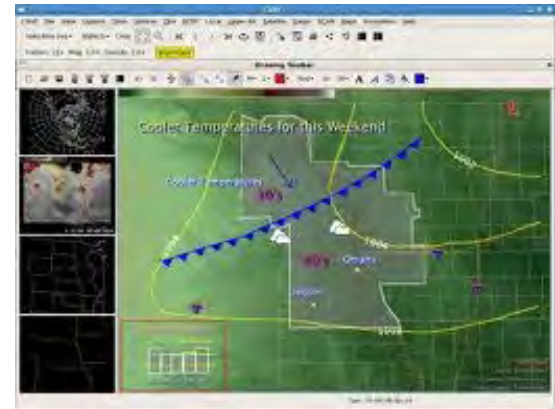


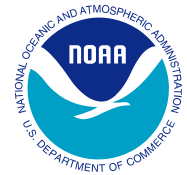
Image credit: NOAA

# AWIPS II Extended Collaboration Project Overview

- Objective:
  - Improve our ability to communicate NWS forecasts to customers and partners so that the appropriate response is generated
- Status:
  - Requirements and prototyping for internal collaboration: Complete
  - Production design and development (Phase I): In progress
  - Phase II (External Collaboration) requirements definition: In progress
- Schedule/Milestones
  - Initial Resource Plan and Schedule: January, 2012 (Complete)
  - IOC Deployment Target: Q4FY12 – IOC Collaboration Capabilities currently being tested. Scope is internal AWIPS to AWIPS site only
  - FOC Deployment Target: Q1FY15
- **Note: This functionality could be set up for Unidata if a collaboration server was set up somewhere for Universities to have access**







# Final Thoughts...

- Strides in performance made over the last three months...and we are very close in meeting our performance metric for the FIT
- FIT schedule
  - Week of September 24th for local (NCWCP) NCEP Centers
  - Week of October 22nd for remote (AWC, NHC, and SPC) NCEP Centers & Unidata
- NWS is committed to our partnership with Unidata and the entire Unidata Community
- NCEP Central Operations will remain your primary conduit / POC for software development questions/requirements
- NWS/OST will be your primary POC for obtaining software releases
- Despite slips in our migration schedule, NWS is focused on delivering software that is reliable, stable, and expandable to meet the needs of our partners for the years to come