Update on NAWIPS/GEMPAK Migration to AWIPS II

Unidata Policy Committee Meeting
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15 April 2010
Topics

- NAWIPS/AWIPS Team
- Migration Goals
- FY10 Activities
- GEMPAK 6.0
- User Perspective: NAWIPS vs AWIPS II
- Hardware Configuration
- Unidata Involvement & Benefits
- Key Takeaways
- Training resources
NAWIPS/AWIPS II Team

• Develop meteorological app. software to meet NCEP requirements
• Transition NAWIPS functionality to AWIPS II environment
• 18.5 members - Increased from 11-12 members prior to migration
• Roughly 60-40 split between IT and earth science backgrounds, some overlap
  – All new hires have significant experience in Java (OOAD), SOA, XML, PostgreSQL, Eclipse, Subversion, JUnit, GeoTools
• Almost 250 yrs experience in software design & development
Migration Goals

• NWS Hardware and Software consolidation

• Migration to AWIPS II must include:
  – All functionality in current NAWIPS GUI programs
    – Product generation, multi-panel display, obs & product display
  – Data Decoders
    – Raw and GEMPAK formats to AWIPS II format
    – Archived data will be accessible
  – GEMPAK
    – Legacy command line interface
    – Forward capability
Hardware Consolidation

N-AWIPS

AWIPS

AWIPS II System With N-AWIPS (will include large monitors)
Software Goals

• No changes to the forecaster workflow
  – Some visual differences may be unavoidable

• Adopt and/or adapt new technology
  – e.g., GeoTools, integrated pan and zoom

• Challenges
  – Concurrent Raytheon development
  – Development Environment
    – Eclipse, Java
FY10 Activities

• Software development is on schedule

• Hardware configuration determination in progress

• Anticipate software ready for OT&E to begin by Q1FY11

• Migration activities continue in the following areas:
  – GUI integration & Interactive Product Generation & GEMPAK
  – Decoder migration is complete

• Continue to work closely with the NWS/OST AWIPS Program

• Testing & Test Plans - Periodic drops of RTS baseline w/ NCEP integration
• Official GEMPAK 6.0 release scheduled for April

• Modify GEMPAK to access the AWIPS II database
  – Allows users to continue to use their legacy batch scripts with the new database
  – Data management (DM) library extended to make AWIPS II service requests via http
  – Server-side microEngine scripts
  – Applies to all GEMPAK / NAWIPS applications

• Porting of images, sfc data completed
  - Model & upper-air data next

• GEMPAK will be supported until full replacement is ready
  – GUIs deprecated eventually
Integrates \textbf{NMAP2}, \textbf{NTRANS}, \textbf{NWX}, \textbf{NSHARP}

- Multiple tabbed loops
- Flexible timeline
  - Includes single time resource collections
- Flexible extended attribute assignment for displayable resources
  - e.g., multi-color displays
- Procedure, Bundle and Resource selection and management
- Multi-panel displays, spatially and temporally synchronized (or not)
- GUI FOS bulletin select and display
- SKEW-T / Hodographs
# National Centers Perspective

## User View – CAVE Top Buttons

<table>
<thead>
<tr>
<th>NAWIPS Button Type</th>
<th>Functionality in CAVE Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Map</td>
<td>Yes - replaced with pull-down Area &amp; Overlays</td>
</tr>
<tr>
<td>PGEN</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Print</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Seek</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Cloud Height</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>AODT</td>
<td>Yes - unchanged</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NAWIPS Button Type</th>
<th>Functionality in AWIPS II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Update</td>
<td>Still under investigation</td>
</tr>
<tr>
<td>Wipe</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Reload</td>
<td>None at this time – AWIPS reloads data automatically</td>
</tr>
<tr>
<td>Loop</td>
<td>Replaced w/tabs, hotkeys unchanged</td>
</tr>
<tr>
<td>Animation Controls</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Stop</td>
<td>No</td>
</tr>
<tr>
<td>Zoom/Unzoom</td>
<td>Available in CAVE; however, unneeded</td>
</tr>
</tbody>
</table>
MAP dialog replaced by pull-downs
Multiple tabbed multiframe sequences replaces pull-down
National Centers Perspective
## National Centers Perspective

### User View – CAVE Bottom Buttons

<table>
<thead>
<tr>
<th>NAWIPS Button Type</th>
<th>Functionality in CAVE Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Time</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Locator / Lat/Lon Readout</td>
<td>Moved from lower right corner to lower left</td>
</tr>
<tr>
<td>PGEN hints</td>
<td>Still under investigation</td>
</tr>
<tr>
<td>Fade</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Error</td>
<td>Functionality in AWIPS</td>
</tr>
<tr>
<td>Loop Counter</td>
<td>Yes - unchanged</td>
</tr>
</tbody>
</table>
New ERROR display provided by RTS

Locator moved from lower right to lower left (RTS reserved lower right)

Valid times now shown continuously on resource legend (legend immune to pan/zoom)
NTRANS Capabilities

Multipanel (any M x N configuration)
Hardware Configuration

• National Center configuration TBD ASAP
  – Separate HW Configuration Project between NCO and OST
  – SIB testing NAWIPS migrated software on a RFC test bed, NHDA
  – Government engineering analysis completed by end April 2010
  – Finalize configuration/proposal with RTS & submit procurement June 2010
  – Test bed at NCO by August 2010

• HW will arrive at NCs for OT&E beginning Fall 2010
  – Phased to arrive at Centers based on seasonal requirements

• Minimum Configuration
  – CAVE (workstation) requires a video card that supports OPEN GL w/ 256M video RAM
  – EDEX (Data server) requires 2G RAM
    • Each Center will most likely require 2 EDEX

Unidata Policy Committee Meeting – NAWIPS/AWIPS-II Status
Unidata Involvement

- Weekly status telecons - Periodic migration telecons
- IV&V, OT&E (baseline + NAWIPS extensions)
  - Test plans, cases and execution
- User training (limited) – web based
- Design and development collaboration
- Liaison with University community
- Developers conference scheduled late FY10
- NCEP continues to view Unidata as a very important partner for NCEP’s total mission.
Benefits for Unidata Users

• Facilitate Research => Operations
• Classroom tool / training
  – Weather Event Simulator ~ 2012
• NWS operational system
  – Simulates a fully operational forecasting system
• Less data processing required
• Run your own EDEX to create database
• Modern development environment/platform
  – Flexible & expandable architecture
  – Object oriented languages such as Java and Python
Key Takeaways

- NAWIPS/AWIPS II software migration on schedule
- NC transition highly dependent on Raytheon development
- GEMPAK supported until a full replacement is ready
- Hardware configuration finalized – June 2010
- Unidata OT&E involvement – early 2011
- First NC operational release – Fall 2011
- Unidata support of GEMPAK extends 18 months after 1st delivery – Spring 2013
- GEMPAK is free to anyone who wants to use it
- Once NWS implemented, AWIPS II will have open software policies
Training Resources

- **Training Portals:**
  http://www.nwstc.noaa.gov/AWIPS/ADE/ADE_resources.html

- **NCEP Central Operations – AWIPS II Wiki Site:**
  http://wiki.ncep.noaa.gov/nco/sib

- **AWIPS Migration training and resources:**
  http://www.nwstc.noaa.gov/nwstrn/awips.htm
  - Includes new AWIPS II SOA module

- **Suggested training:**
  - Java, Advanced Java (best practices)
  - Please note that Java allows “wrapping” of C and FORTRAN
    - Best implemented when performance is an issue
“From the Sun to the Sea… Where America’s Climate, Weather, Ocean and Space Weather Services Begin”
Software Strategy

- Studied AWIPS-II system as delivered by Raytheon
- Break down existing functionality into small pieces
- Trac wiki and ticketing system
- Employ “agile scrum” development environment
- Use Eclipse Rich Client Platform
  - CAVE is an Eclipse application made of various plugins
- Hudson continuous integration