Preparing NASA SPoRT Data Sets for the Next Generation of AWIPS

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The Existing Paradigm (AWIPS I)

- AWIPS I offers limited flexibility
  - Experimental data that do not match an existing data type (i.e., models, satellite) require heavy modification
    - Example: Total lightning & convective initiation as “models”
  - Even some that do match require significant changes (i.e., NASA Land Information System)
  - SPoRT is likely one of the best at “gaming the system”
- Data flow is complex and has multiple points of failure
AWIPS II

- Short-term: looks much like AWIPS I
- Modular, Java-based software ("plug-ins")
  - Everything—including items in the core—is a plug-in
  - Can develop new plug-ins—or modify/extend existing ones—to process and visualize many data types (NetCDF, Grib2, McIDAS AREA, KML, etc.)
  - Existing framework can be easily modified to accept non-baseline data
SPoRT and AWIPS II

- SPoRT chartered an AWIPS II Transition Team in Spring 2010 to prepare for the impending upgrade
  - 2-4 SPoRT team members, HUN ITO & AIM
  - Two testing & development machines at SPoRT, two at WFO HUN (plus HUN ADAM)

- Short-Term Goal: Have all data sets currently in AWIPS I ready for AWIPS II when it is launched

- Long-Term Goal: Leverage enhanced flexibility in AWIPS II to develop new data products and visualizations
Current Progress

- SPoRT has 3 functional plug-ins (working with OB11.7)
  - Total lightning (North Alabama LMA, KSC LDAR, etc.)
  - UAHuntsville Convective Initiation product
  - MODIS/GOES-derived hot spots and smoke plume polygons
  - All were ready for 2011 Hazardous Weather Testbed

- Current project: satellite decoder for MODIS, MODIS-GOES hybrid, RGB & SST composites, etc.

- Some modeling efforts can use the existing AWIPS II decoders as-is with minor adjustments
Project Benefits

• Total lightning plug-in has been the “guinea pig” -- enhancing understanding of plug-in structure, database & storage functions, and visualization options

  – Accepts new ‘lightning variables’ with minimal adjustment
  – Easily modified to ingest and visualize UAH-CI
  – Source/flash rates are not smoothed like in AWIPS I (instead “interpolated” as an option) leading to better data fidelity
Benefits (continued)

- Hot spot/smoke plug-in became a proof of concept—AWIPS II really can ingest/process many different data types (KML, CSV)
- Visualization plug-ins require a lot of “overhead” (in other words, much must be done from “scratch”)…but this allows for a lot of options not previously permitted by AWIPS I
- Data flow becomes much simpler (at least on the WFO side) in AWIPS II

![Diagram showing data flow and plug-ins]

*LDM* Still subject to OB installs
Challenges

• Agency administrative & security regulations occasionally have made it difficult to update the AWIPS development environment running at SPoRT
  – This has created inconsistent version problems
  – Also, software designed to track code does not work across firewalls (thus creating inconsistent version issues with the plug-ins as well)

• “2 steps forward, 1.5 steps back”—each new build features new/changed code within the system, requiring an overhaul of each plug-in each time
AWIPS II OT&E*
* Operational Test & Evaluation

- Two SPoRT partners (Huntsville & Houston) are Tier II OT&E sites
  - These installations have been pushed back until at least November
- The delay has allowed SPoRT to get a better handle on satellite issues...but the versioning issue continues to create problems
transferring unique NASA data and research technologies to operations

Questions?

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Types of AWIPS II Programmers

• Core (a handful of Raytheon employees)
  – The guts of AWIPS II

• EDEX/Ingest
  – Data Handler plugins

• Viz
  – “Resource” developers

• Dialog writer
  – Python

• GFE
  – Scripts