Preparing NASA SPoRT Data Sets for the Next Generation of AWIPS

Brian Carcione (NWS), Matt Smith (UAH),
Jason Burks (NWS), Kevin McGrath (Jacobs)

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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
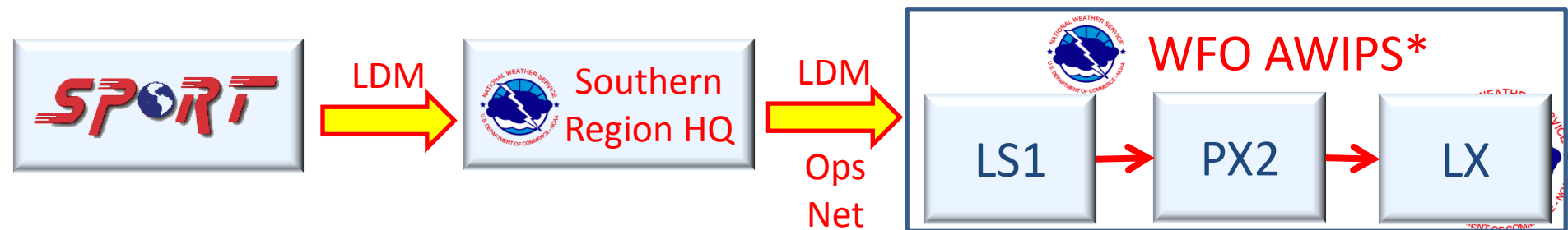
SPoRT →LDM→ Southern Region HQ →LDM / Ops Net→ WFO AWIPS* LS1 → PX2 → LX

* Subject to OB installs

SPoRT

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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
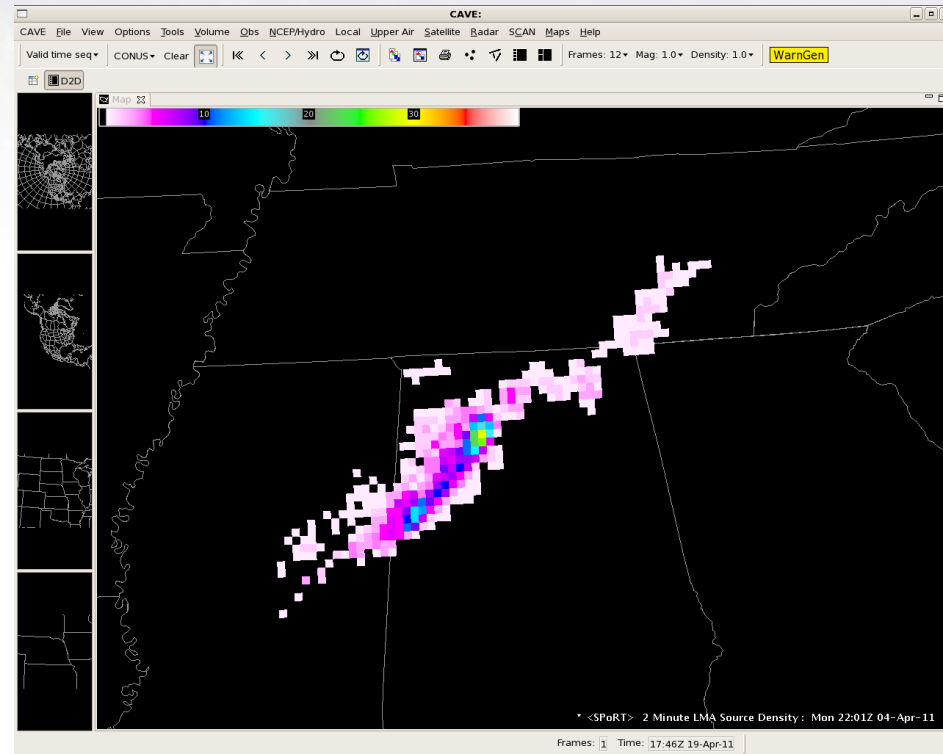
SPoRT and AWIPS II

- 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
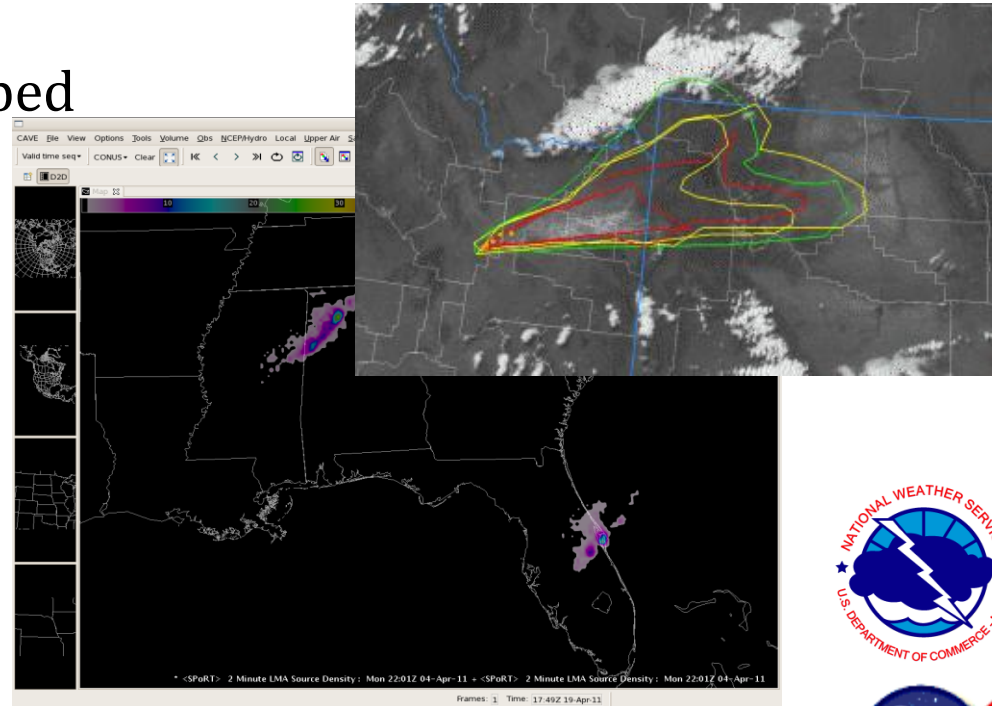
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Current Progress

- 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


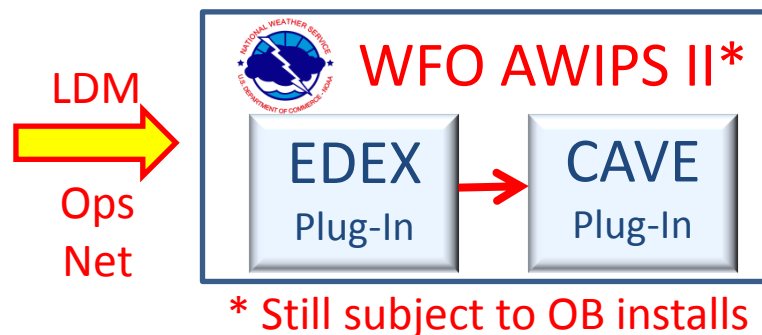**transitioning unique NASA data and research technologies to operations**

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
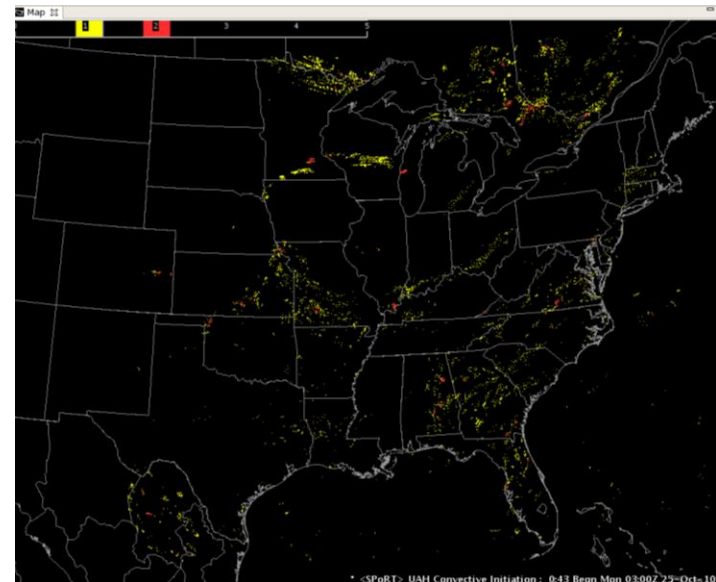
Benefits (continued)

- 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

LDM

Ops Net

WFO AWIPS II*

EDEX Plug-In → CAVE Plug-In

* Still subject to OB installs

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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

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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

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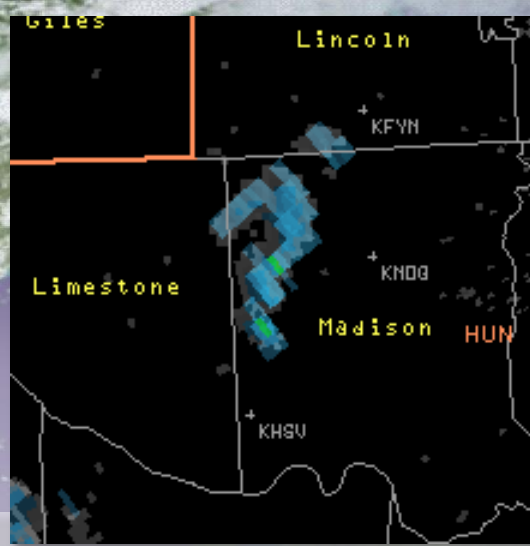
Questions?

Matt Smith - msmith@itsc.uah.edu

Brian Carcione - brian.carcione@noaa.gov

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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