ABI and AIRS Retrievals in McIDAS-V

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Intro. to McIDAS-V

- Free
- Open source software
- Powerful visualization & data analysis tool
- Build on SSEC's VisAD and Unidata's IDV
- "Bridge" software enables McIDAS-X users to run commands/tasks in McIDAS-V environment

Some features of McIDAS-V

- Use of Java and Jython for platform independence.
- Access to remote servers through firewall.
- General display model supports 2D and 3D displays.
- Versatile visualization and data analysis toolkit.
- Numerous data formats supported (netCDF, AREA, GINI, EUMETCast LRIT, AVHRR L1b, ASCII etc).
- Great support team with an online forum.

Intro. to GOES-R ABI

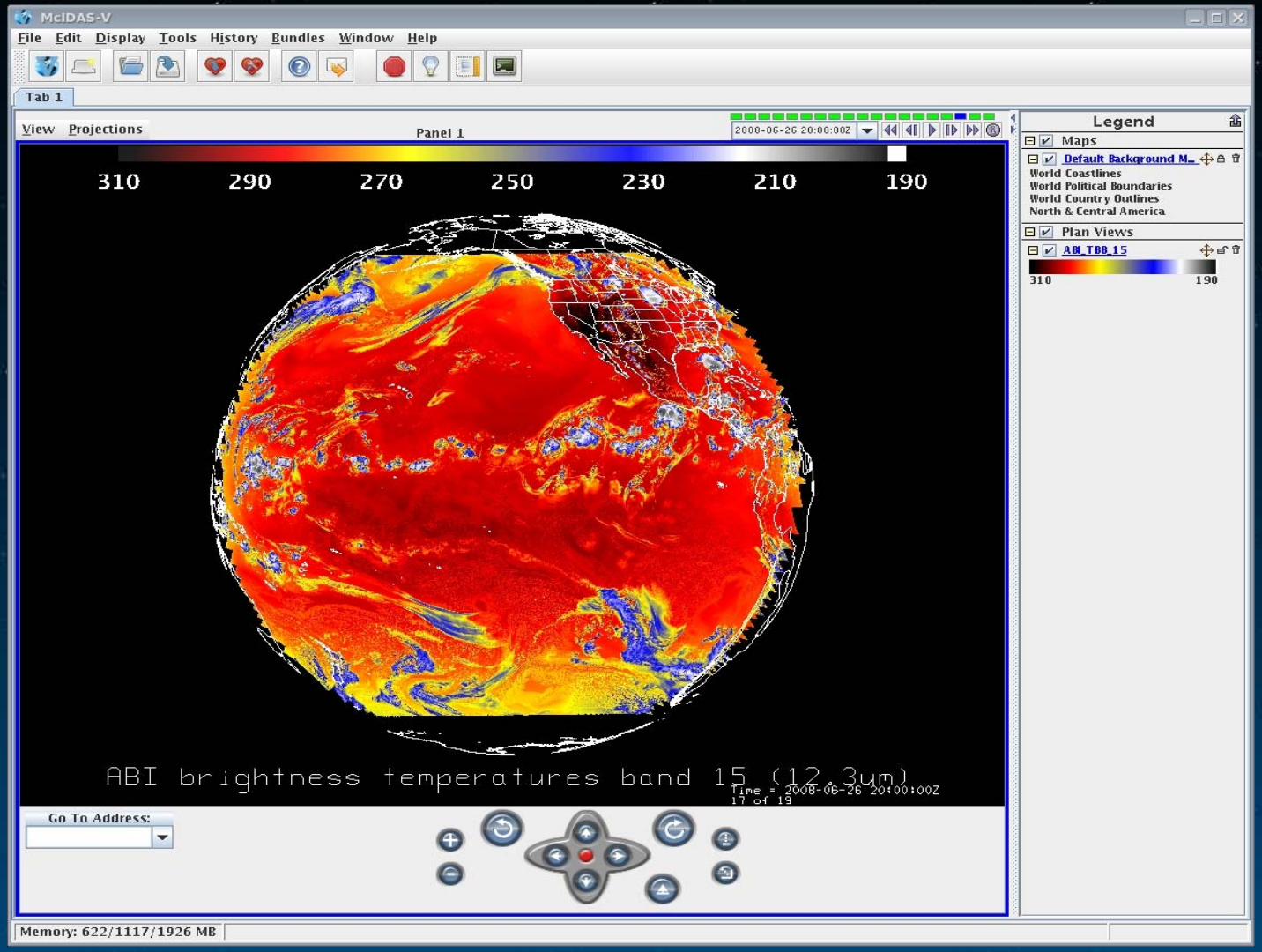
- **16 channel imaging radiometer that covers the visible, near-IR and IR Spectral regions.**
- **Spatial Res.**
  - **IR = 2KM**
  - **Near-IR = 1KM**
  - **0.64um =0.5 KM**
- **Temporal Res.** (flex scan mode, [1hr])
  - **Full disk = 4**
  - **CONUS = 12**
  - **Mesoscale (1000x1000KM) =120**
- **Spectral Res.**
  - **Current GOES = '6 Bands'**
  - **GOES-R = 16 Bands.**

Visualizing simulated ABI in McIDAS-V

- With data from the AWG group, we created CF 1.4 compliant netCDF files for:
  - **Full Disk (2km res.)**
  - **CONUS (2km res.)**
  - **Mesoscale (1km res.)**
  - **Katrina (2km res.)**
- Used McIDAS-V data explorer to ingest files.
  - **NetCDF files.**
- Displayed images in McIDAS-V map display.
  - **Full disk, CONUS, Mesoscale, Katrina, Analysis.**

Full disk simulation

ABI band 15 (12.3um) June 26 2008 **at 20:00UTC.**



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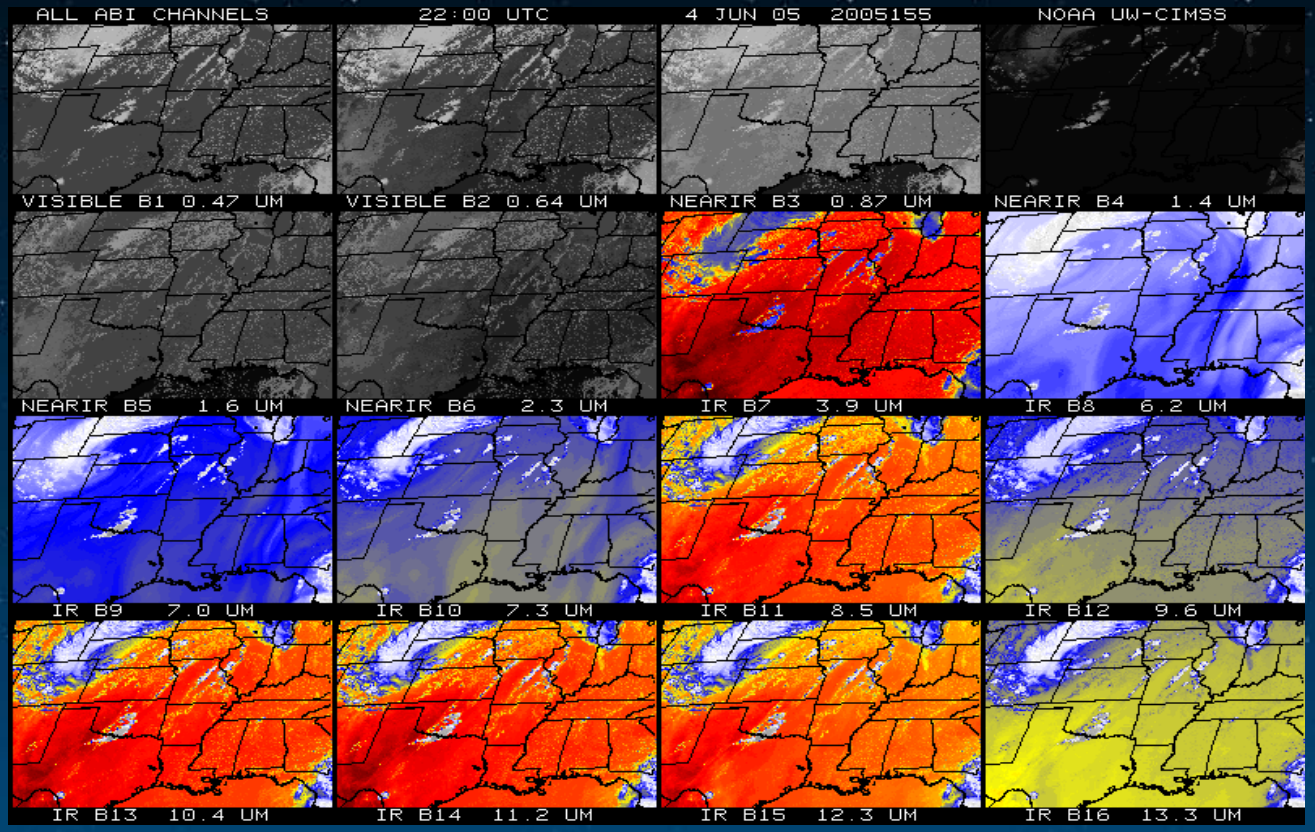
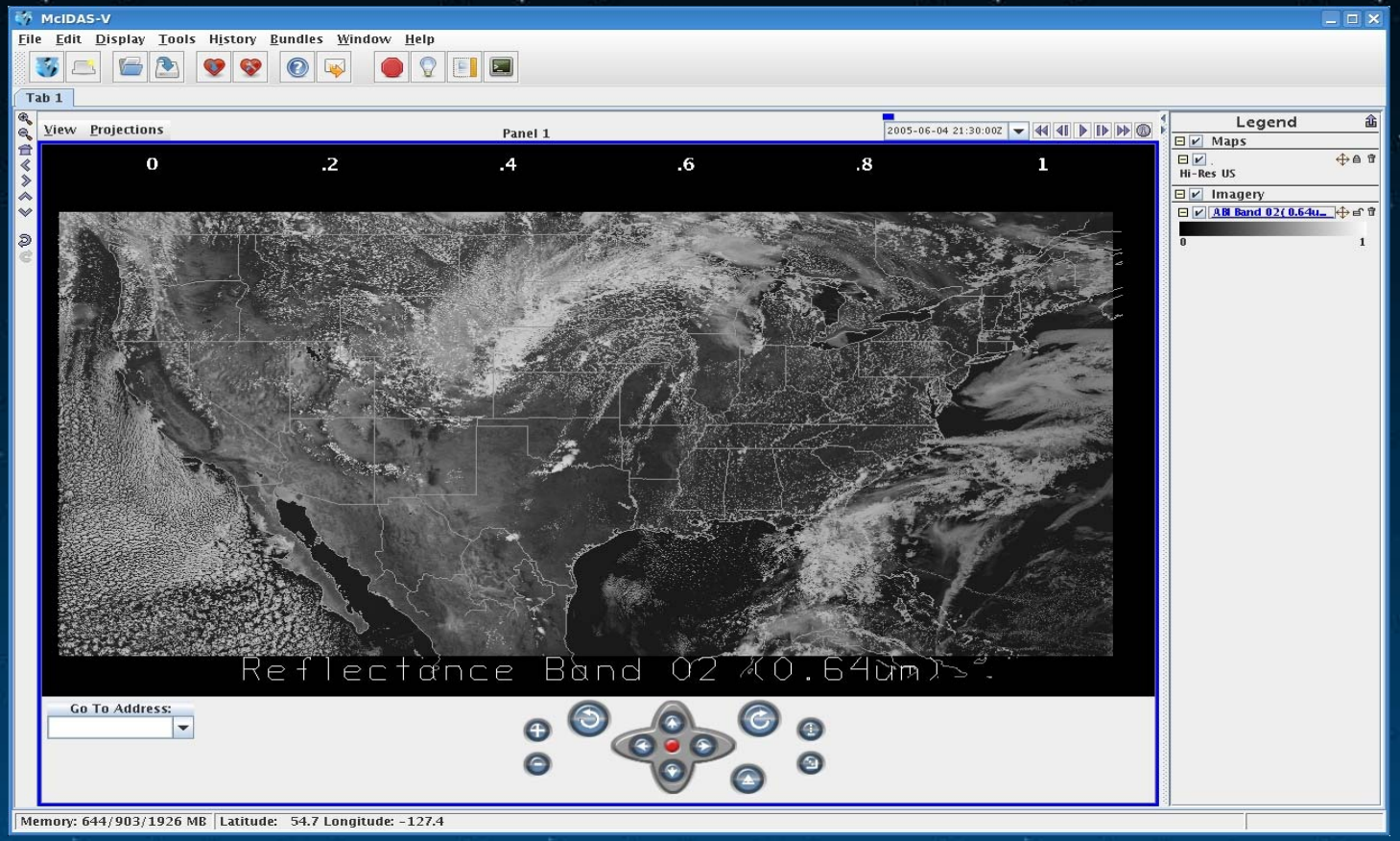
CONUS Simulations

- Rapidly developing severe convection, June 04/05 2005.
- High res. WRF model cooperated with CIMSS forward radiate transfer model.



CONUS band 02(0.64um) 2005-06-04 21:30UTC

- Daytime detection of fog, snow and ice cover
- Estimation of solar insolation
- Smoke, volcanic ash and hurricane analysis



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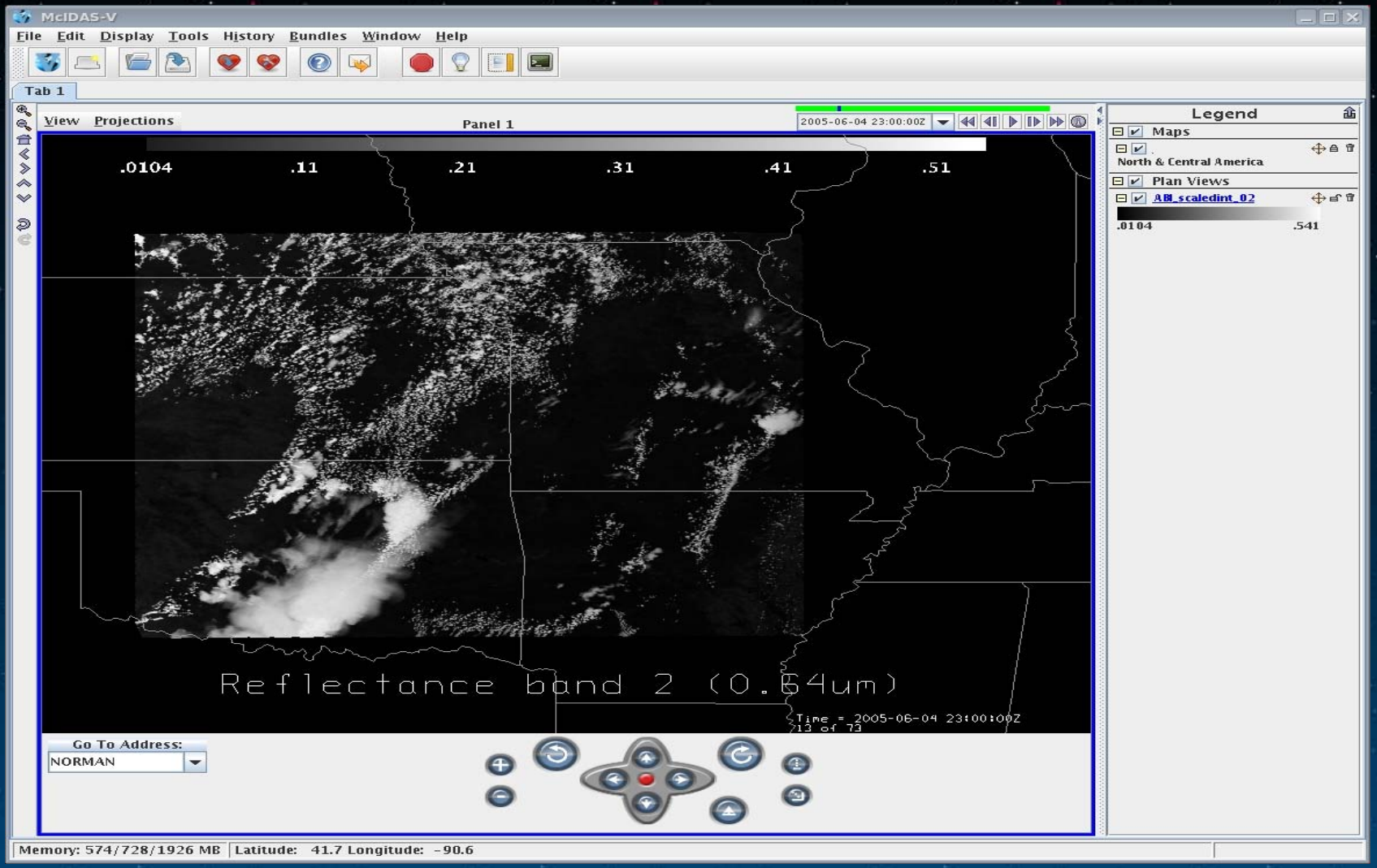
ABI simulated 1Km res. Mesoscale.



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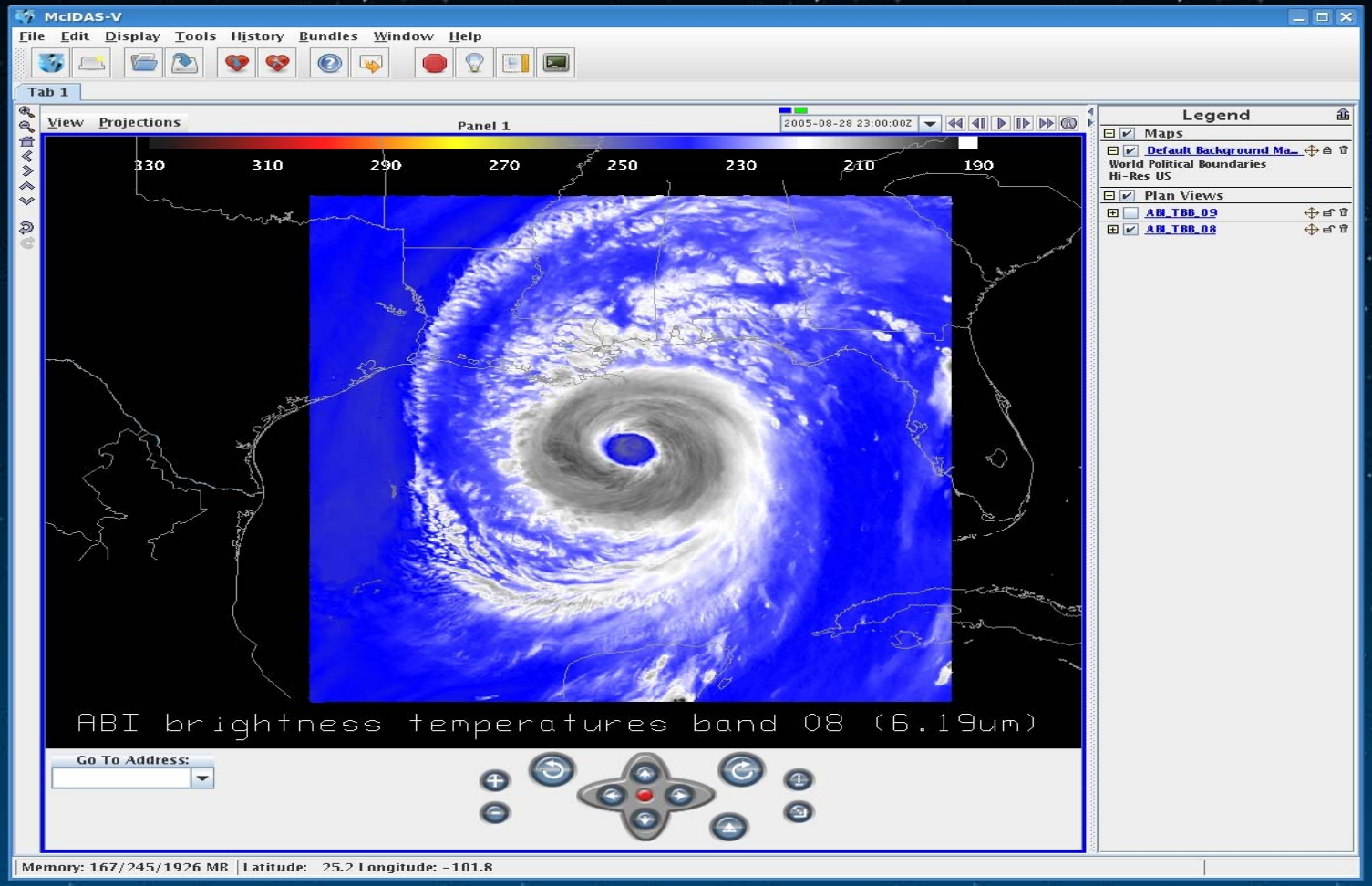
Simulated ABI for Hurricane Katrina



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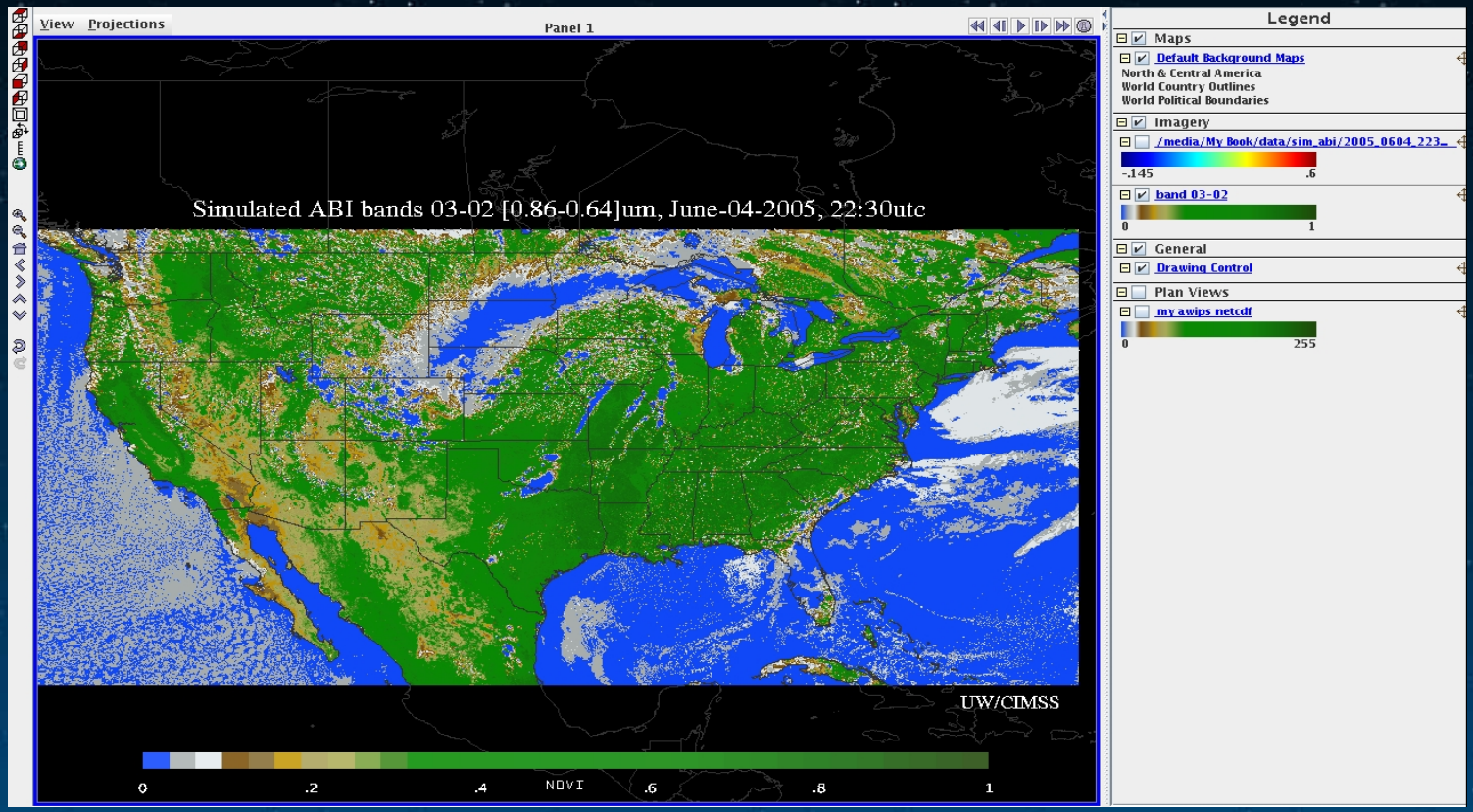
McIDAS-V data analysis toolkit.

- Easily create a simple formula in McIDAS-V to compute (NDVI) on the fly.
- Use McIDAS-V for scatter analysis of two fields.
- Data transect using McIDAS-V.

Band difference (NDVI)

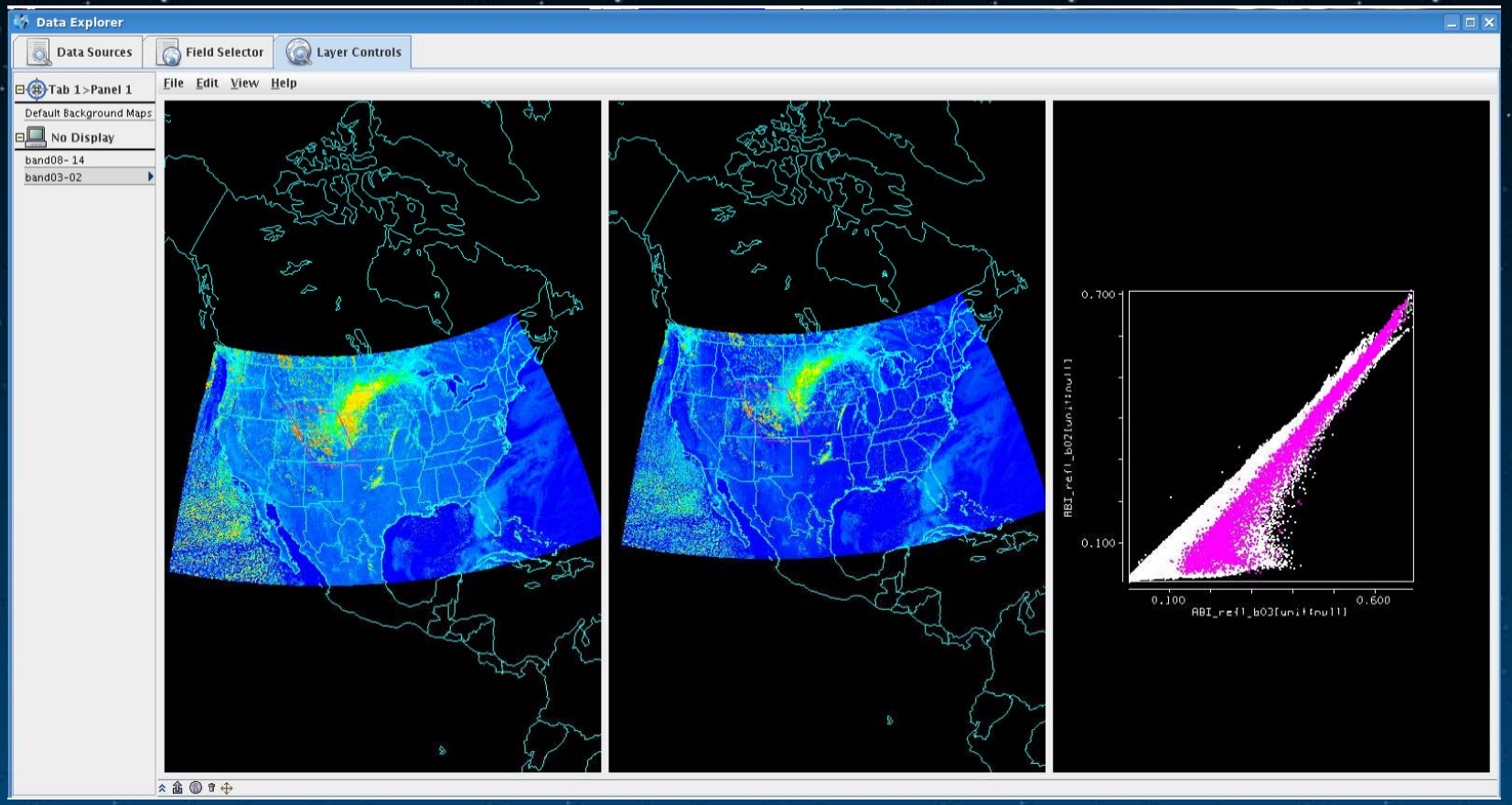
Band03(0.86um) – Band02(0.64um)

- Can compute band difference on the fly.
- Band 03 (0.86um) - Band 02 (0.64um)



Scatter Analysis

Band 03 (0.86um) and Band 02 (0.64um)



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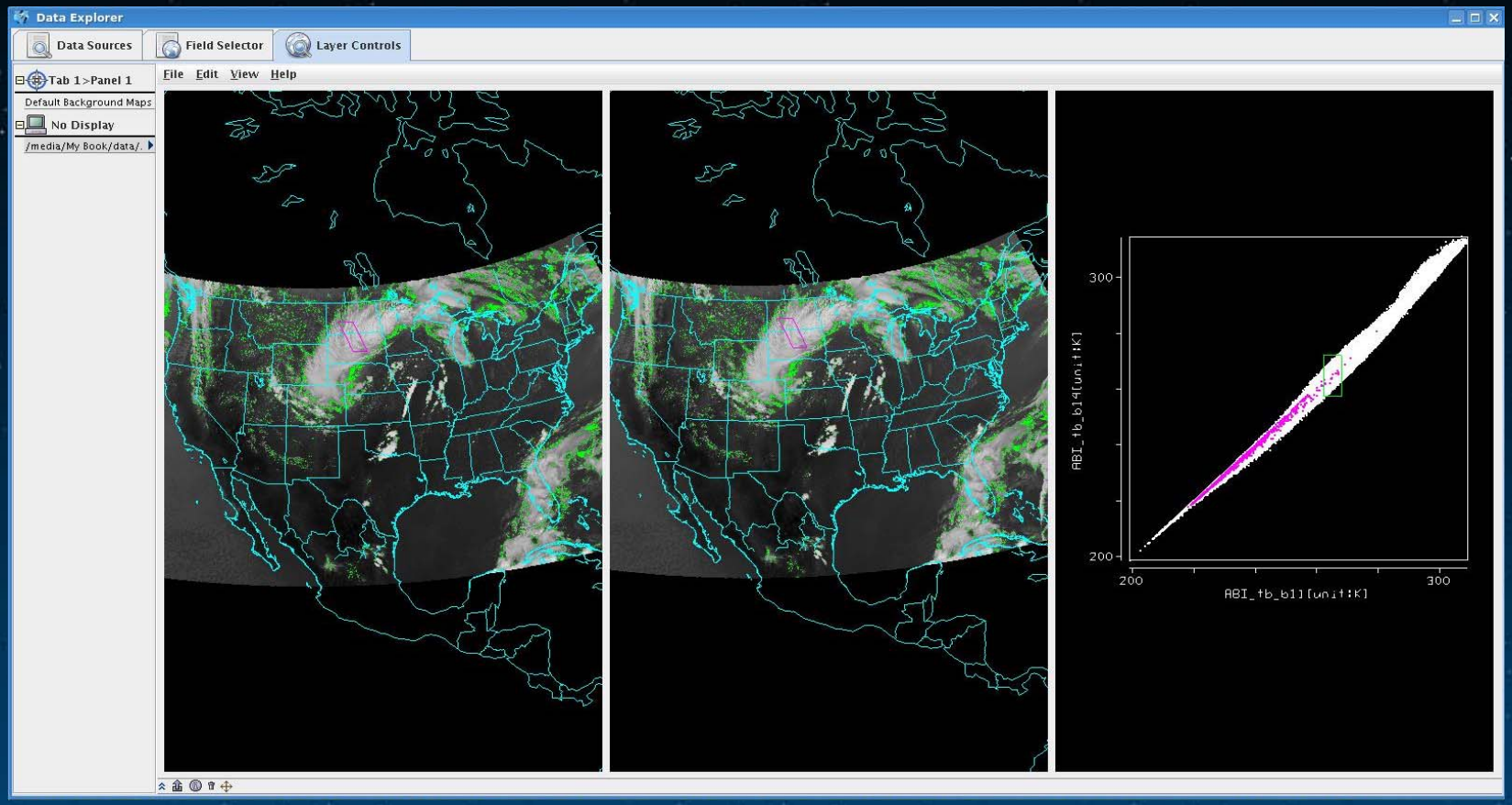
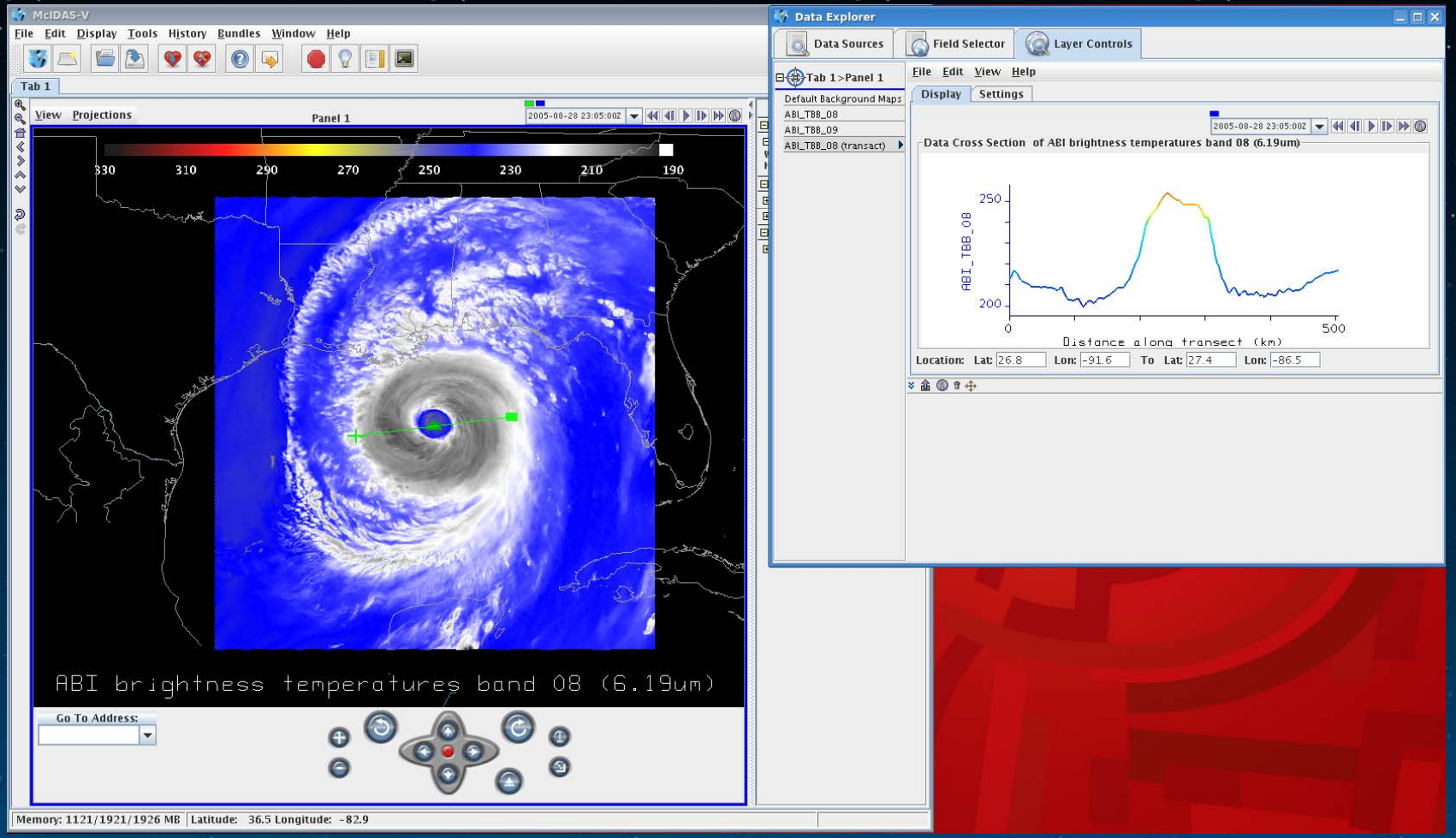
Scatter Analysis

Band 14 (11.2um) and Band 11 (8.5um)



Data Transect in McIDAS-V



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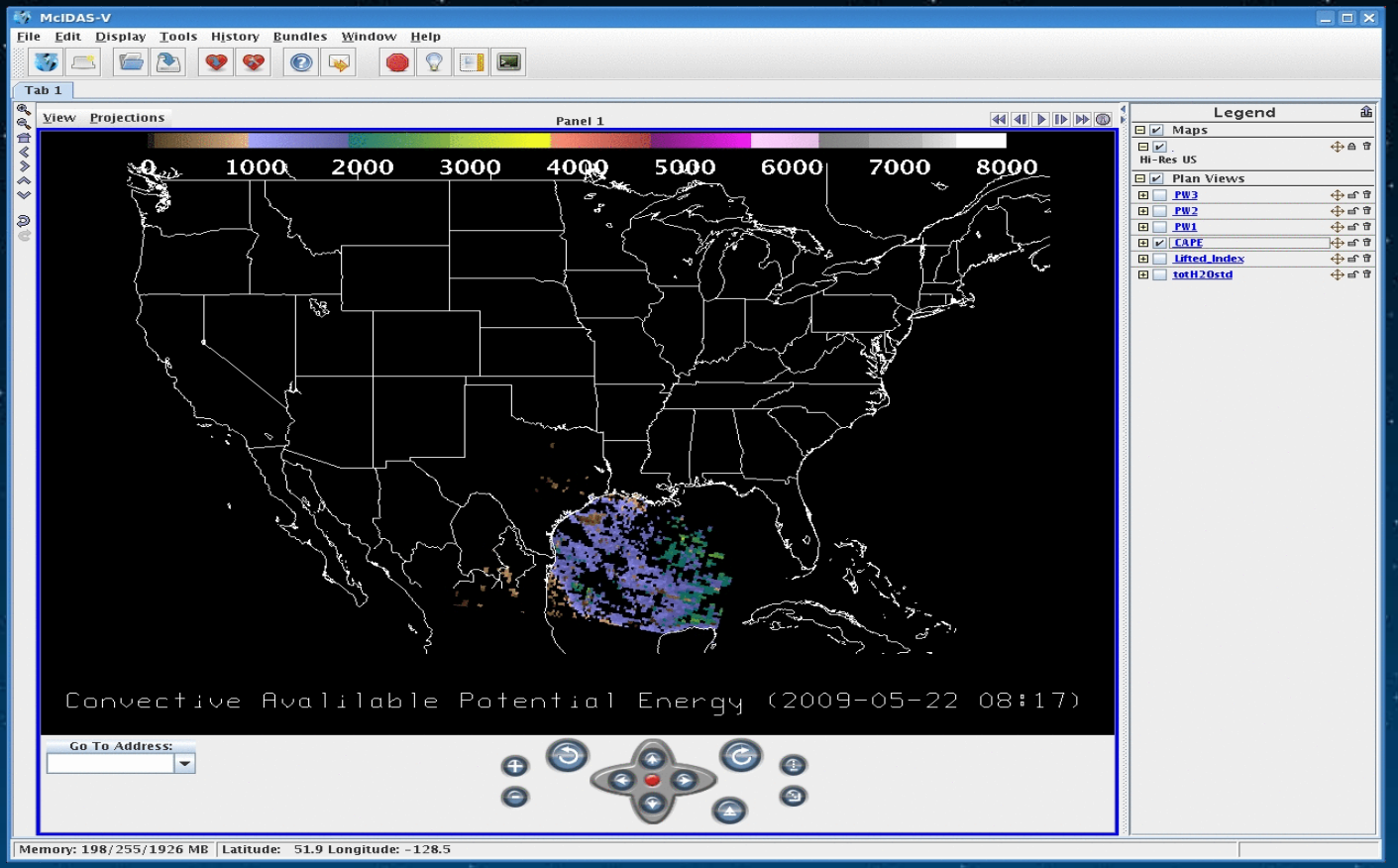
AIRS DPI in McIDAS-V

- Created CF 1.4 Compliant netCDF files for:
  - CAPE, LI, TPW, PW_1, PW_2, PW_3
- Ingested netCDF files using McIDAS-V data explorer and displayed them in the McIDAS-V map display.

Loop of AIRS DPI in McIDAS-V



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Summary

- Pro's
  - Little or no programming skills needed.
  - Very resourceful Users guide.
  - Lots of room for new ideas and improvements.
- Con's
  - Needs lots of memory for large files or loops.
    - Load time
  - Cannot display 16 bands in one frame.
  - Display labels are hard to manipulate.

References

- http://www.ssec.wisc.edu/mcidas/
- http://www.ssec.wisc.edu/mcidas/doc/mcv_guide.html
- http://www.ssec.wisc.edu/~billh/visad.html
- http://www.unidata.ucar.edu/software/idv/
- http://www.ssec.wisc.edu/hydra/

Thank You.

- UW CIMSS/SSEC
  - McIDAS-V Team
  - GOES-R proving ground team.
  - AIRS DPI team
- Everyone for attending and time.

- END