Why you need McIDAS-V

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Introduction

- What is McIDAS-V?
- Why I want it?
- Why you will want it!

What is McIDAS-V

McIDAS-X → VisAD + IDV + HYDRA = McIDAS-V

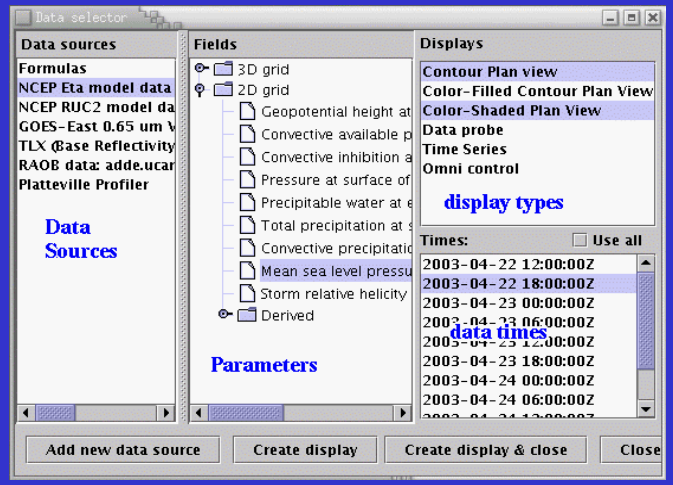
VisAD

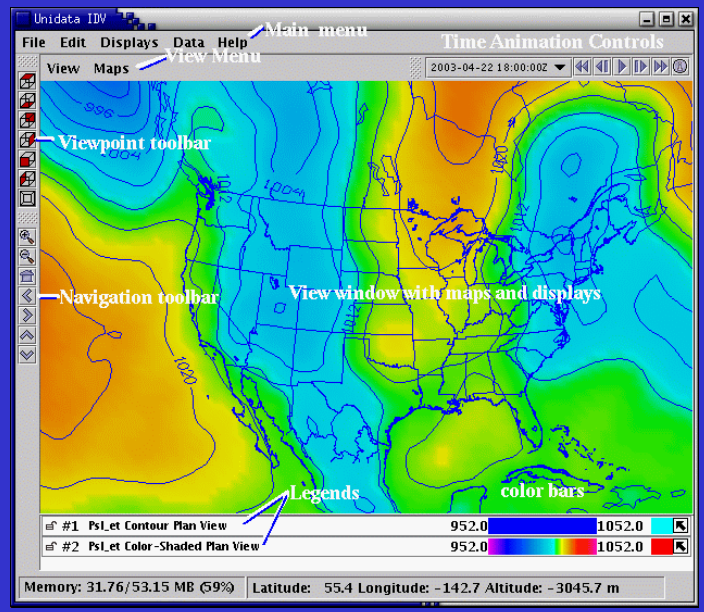
Developer: Bill Hibbard, UW SSEC

- Open-source, Java library for building interactive and collaborative visualization and analysis tools
- Features include:
  - Powerful mathematical data model that embraces virtually any numerical data set
  - General display model that supports 2- and 3-D displays, multiple data views, direct manipulation
  - Adapters for multiple data formats (netCDF, HDF-5, FITS, HDF-EOS, McIDAS, Vis5D, etc.) and access to remote data servers through HTTP, FTP, DODS/OPeNDAP, and OpenADDE protocols
  - Metadata can be integrated into each data object

What is the IDV?

- Unidata developed, VisAD-based, scientific analysis and visualization library and toolkit
- Open Source, Java™ framework and reference application
- Provides 2- and 3-D displays of geo-scientific data (plus, of course, animations)
- Stand-alone or networked application





http://www.unidata.ucar.edu/idv

What is the HYDRA?

- HYperspectral-view for Development of Research Applications
- Open Source, Java™ framework
- Used in research to visualize, analyze and combine satellite data and products
- Stand-alone or networked application
- Used as an international satellite remote sensing training tool

http://www.ssec.wisc.edu/hydra/

HYDRA enables interrogation of multispectral and hyperspectral fields of data

- Individual pixel location and spectral band measurements can be easily displayed
- spectral channels can be combined in linear functions and the resulting images displayed
- false color images can be constructed from multiple channel combinations
- scatter plots of spectral channel combinations can be viewed
- pixels in images can be found in scatter plots and vice versa
- transects of measurements can be displayed
- L2 products; e.g. soundings of temperature and moisture as well as spectra from selected pixels can be compared
- integrated data exploration and analysis between GEO and POLAR observing platforms

McIDAS-V Functionality

McIDAS-V will be a collection of software tools, and networked services and data designed to take advantage of a scalable distributed computing environment to meet user needs

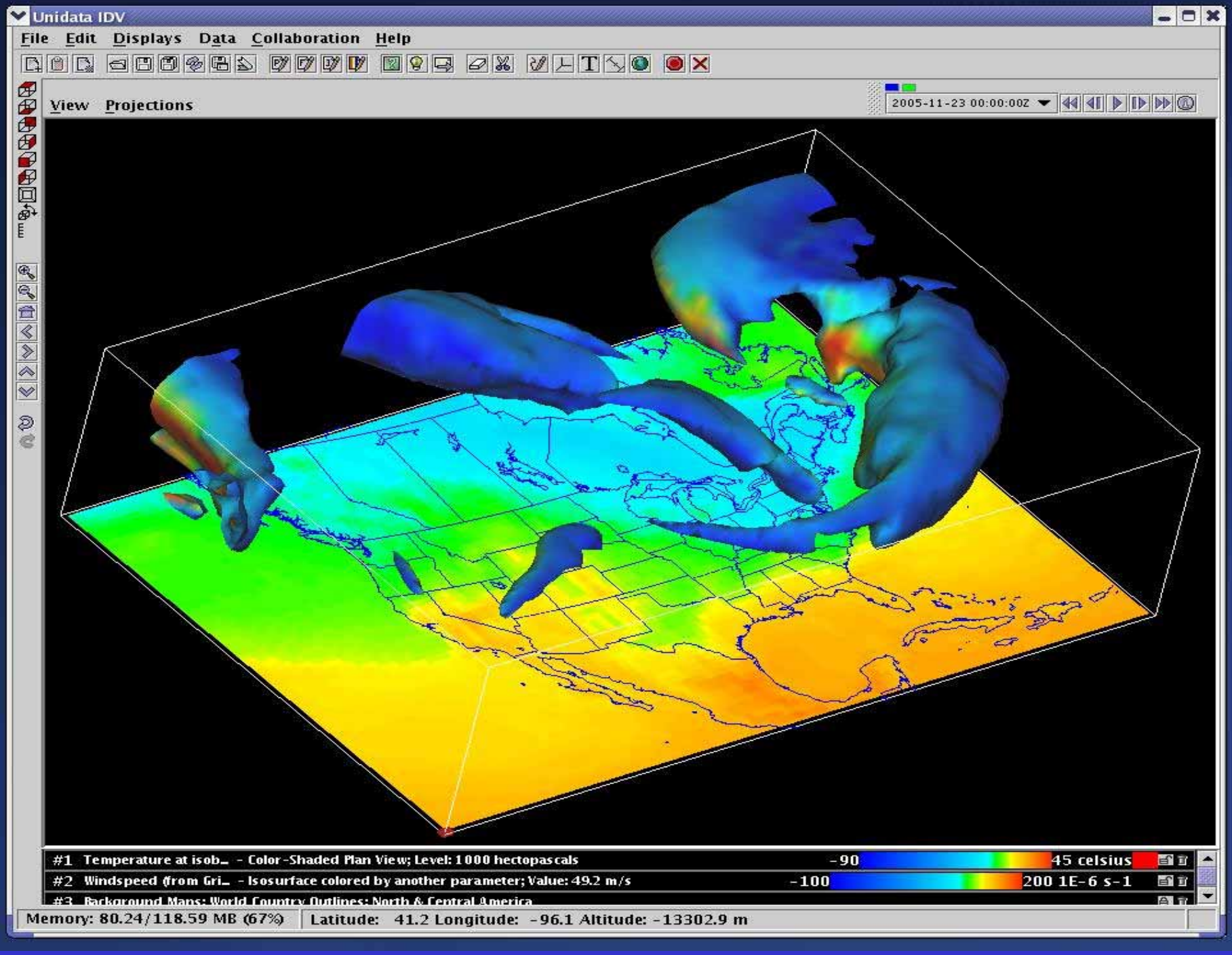
- McIDAS-X
- OPeNDAP / OpenADDE
- Open GIS Consortium
- Database archives
- Cluster computing

Why I want McIDAS-V

- Education
- Research
- Presentations

Why I want McIDAS-V

- Education
  - Ease of use
  - 3-D interaction and overlays
  - Batch processing
  - Free software
- Research
- Presentations


Unidata IDV
File Edit Displays Data Collaboration Help
View Projections
2005-11-23 00:00:00Z
#1 Temperature at isob... - Color-Shaded Plan View; Level: 1000 hectopascals
-90
45 celsius
#2 Windspeed (from Gri... - Isosurface colored by another parameter; Value: 49.2 m/s
-100
200 1E-6 s-1
#3 Background Maps: World Country Outlines: North & Central America
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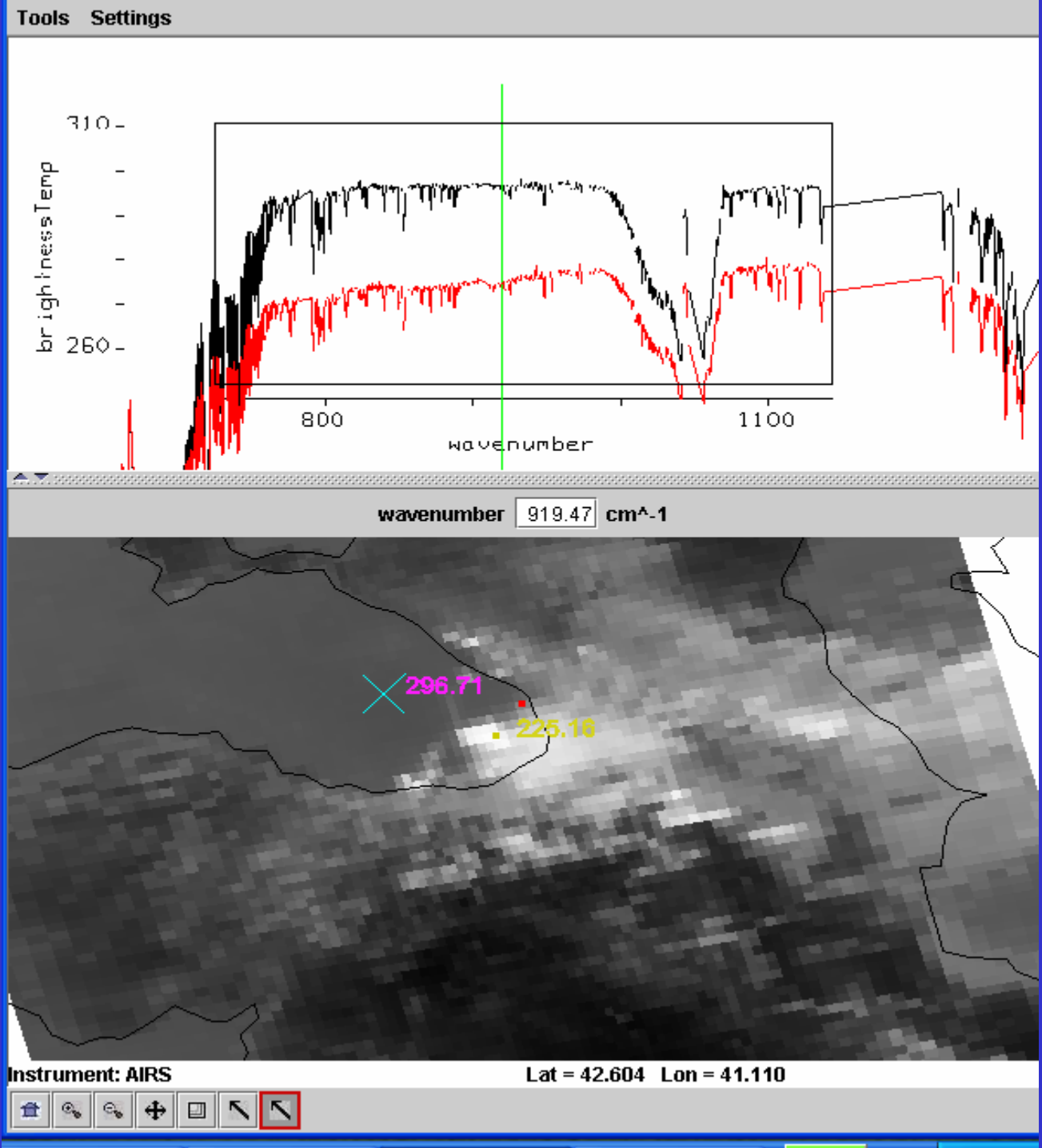
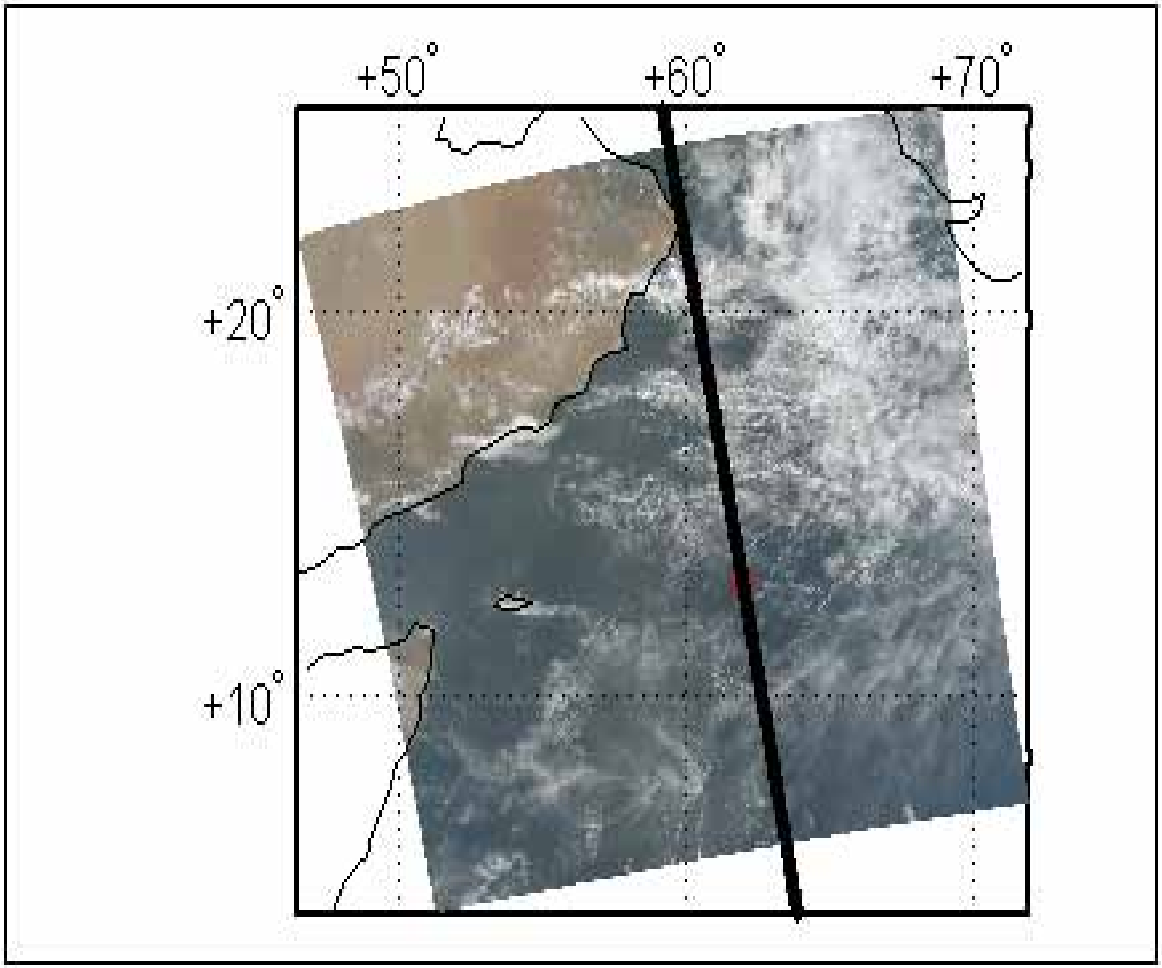
Latitude: 41.2 Longitude: -96.1 Altitude: -13302.9 m



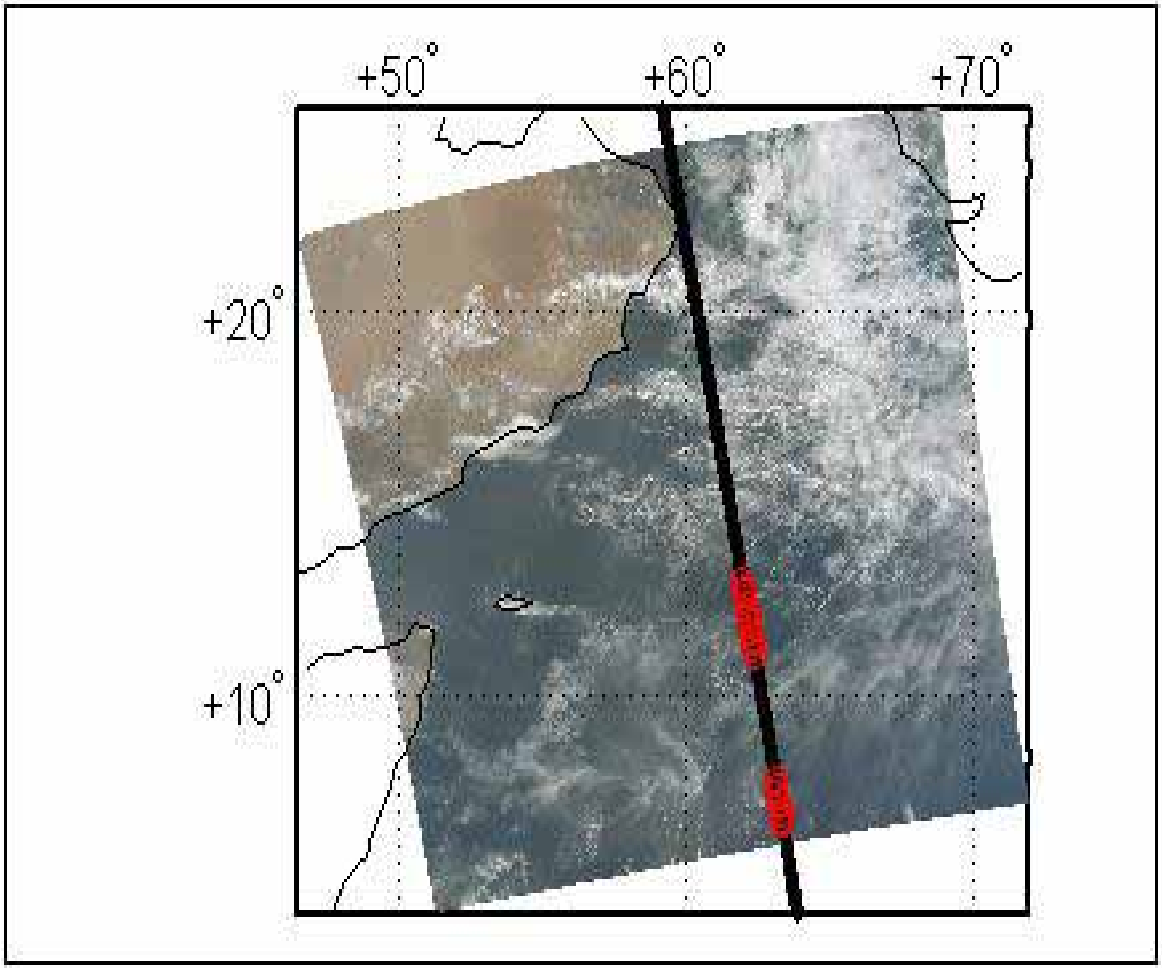
AIRS Cirrus vs Clear Sky Spectra

Why I want McIDAS-V

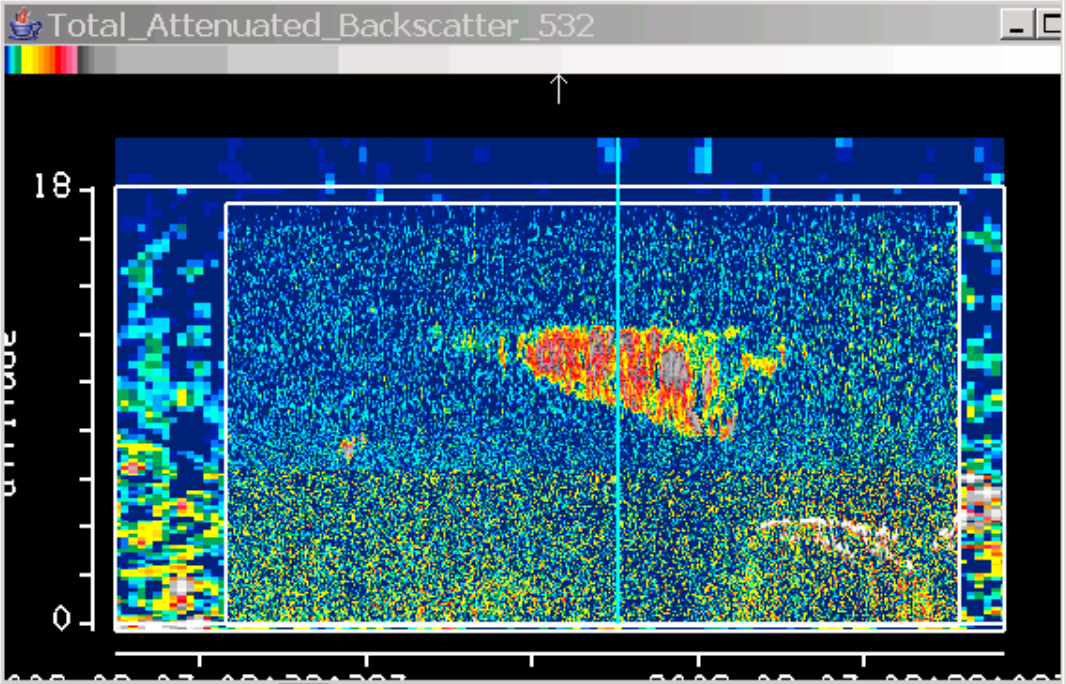
- Education
- Research
  - New data sets easy to handle
  - Quick data analysis and visualization
  - Batch processing
  - Programming capability
- Presentations



AIRS
MODIS
CALIOP
Cirrus study



AIRS
MODIS
CALIOP
Cirrus
study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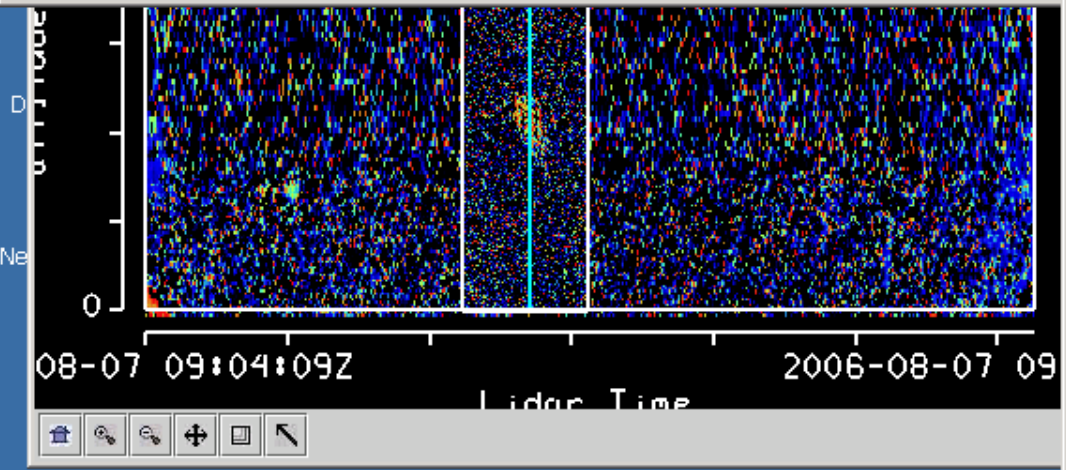
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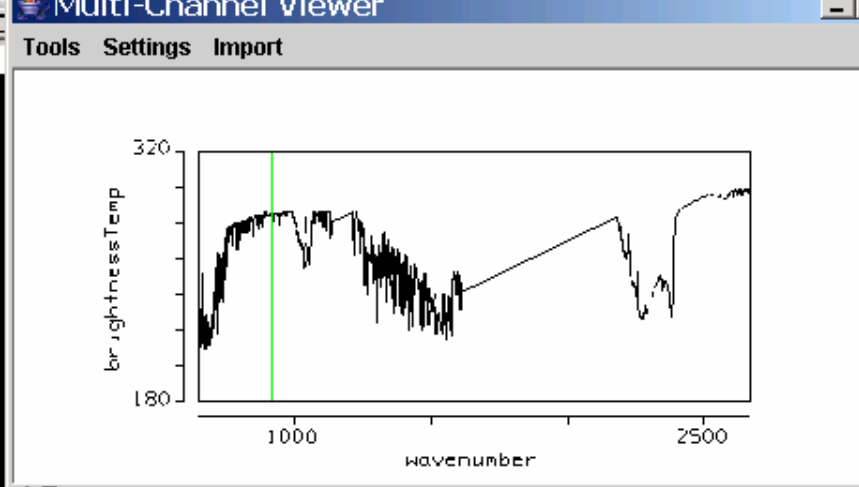
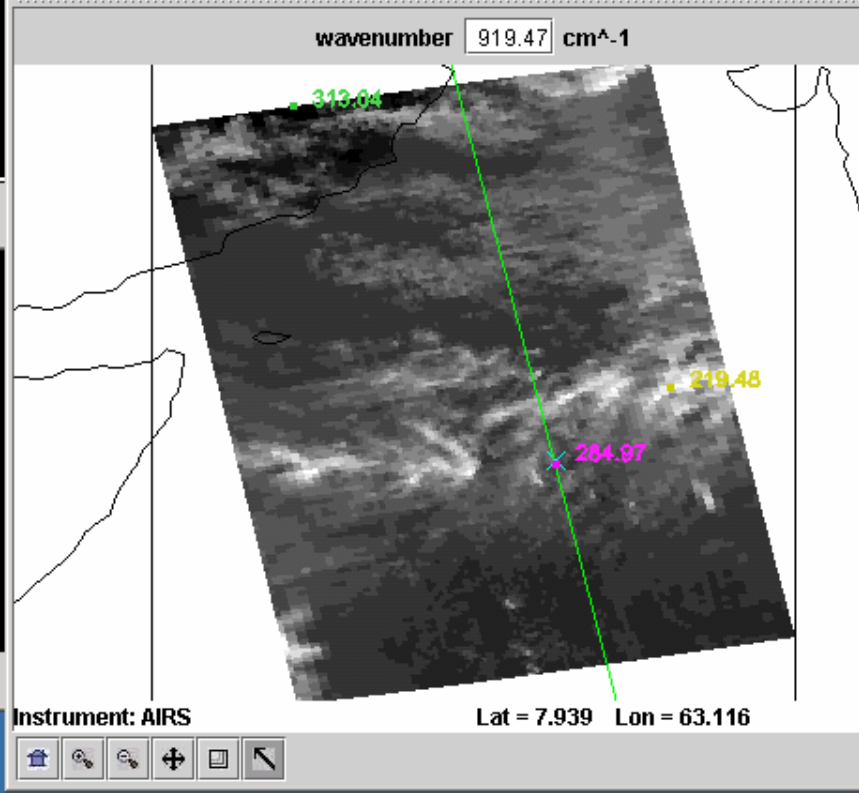
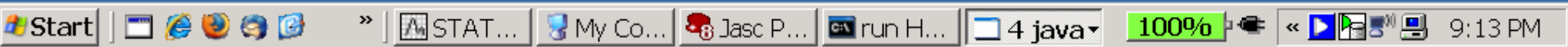
Lidar Time


Multi-Channel Viewer
Tools
Settings
Import
320
180
brightnessTemp
1000
2500
wavenumber


wavenumber
919.47
cm^-1
313.04
249.48
284.97
Instrument: AIRS
Lat = 7.939
Lon = 63.116

Adobe Illustrat...
NoteTab Pro
readme.html
QuickTime Player
Mozilla Thunderbird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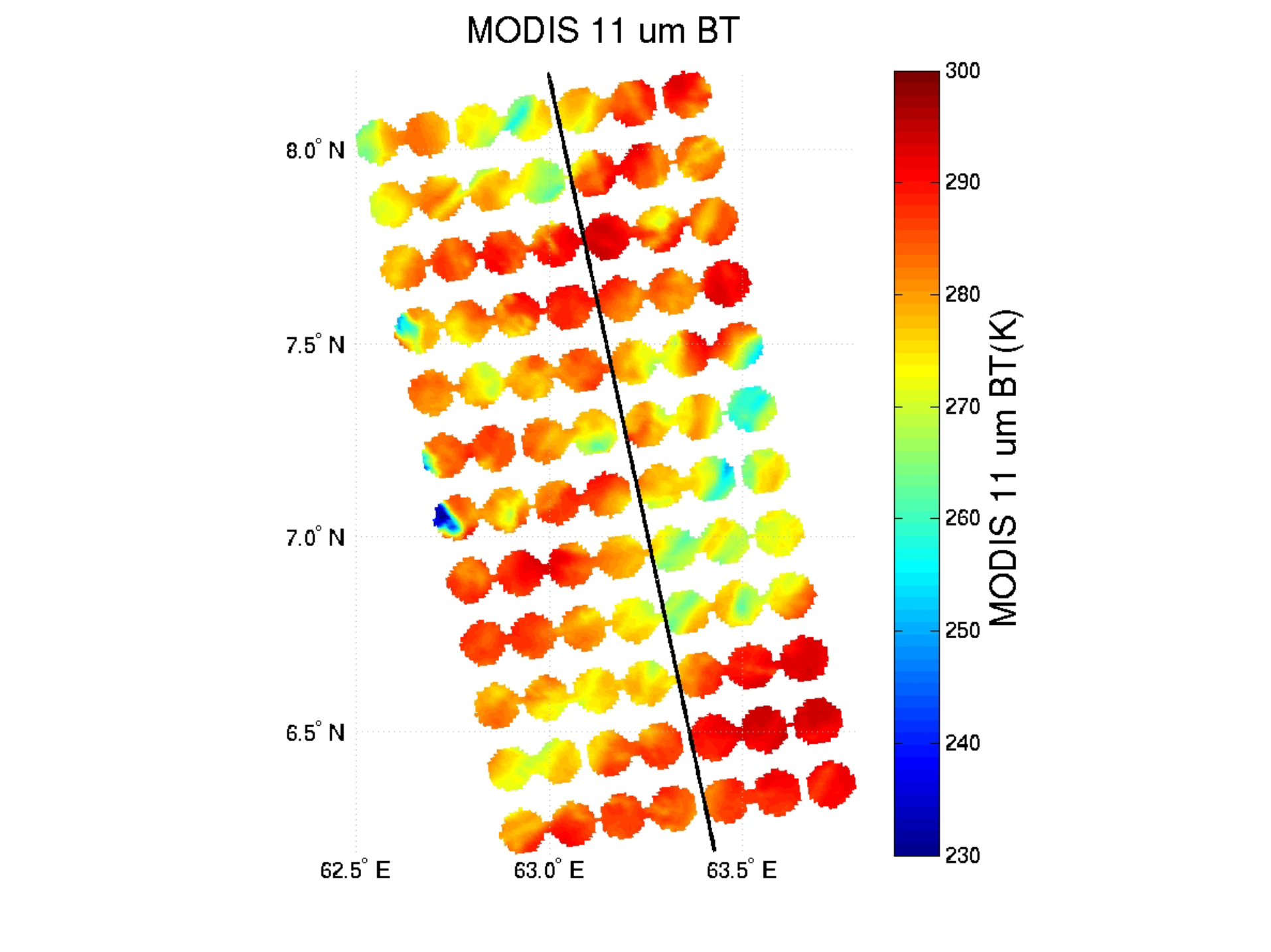
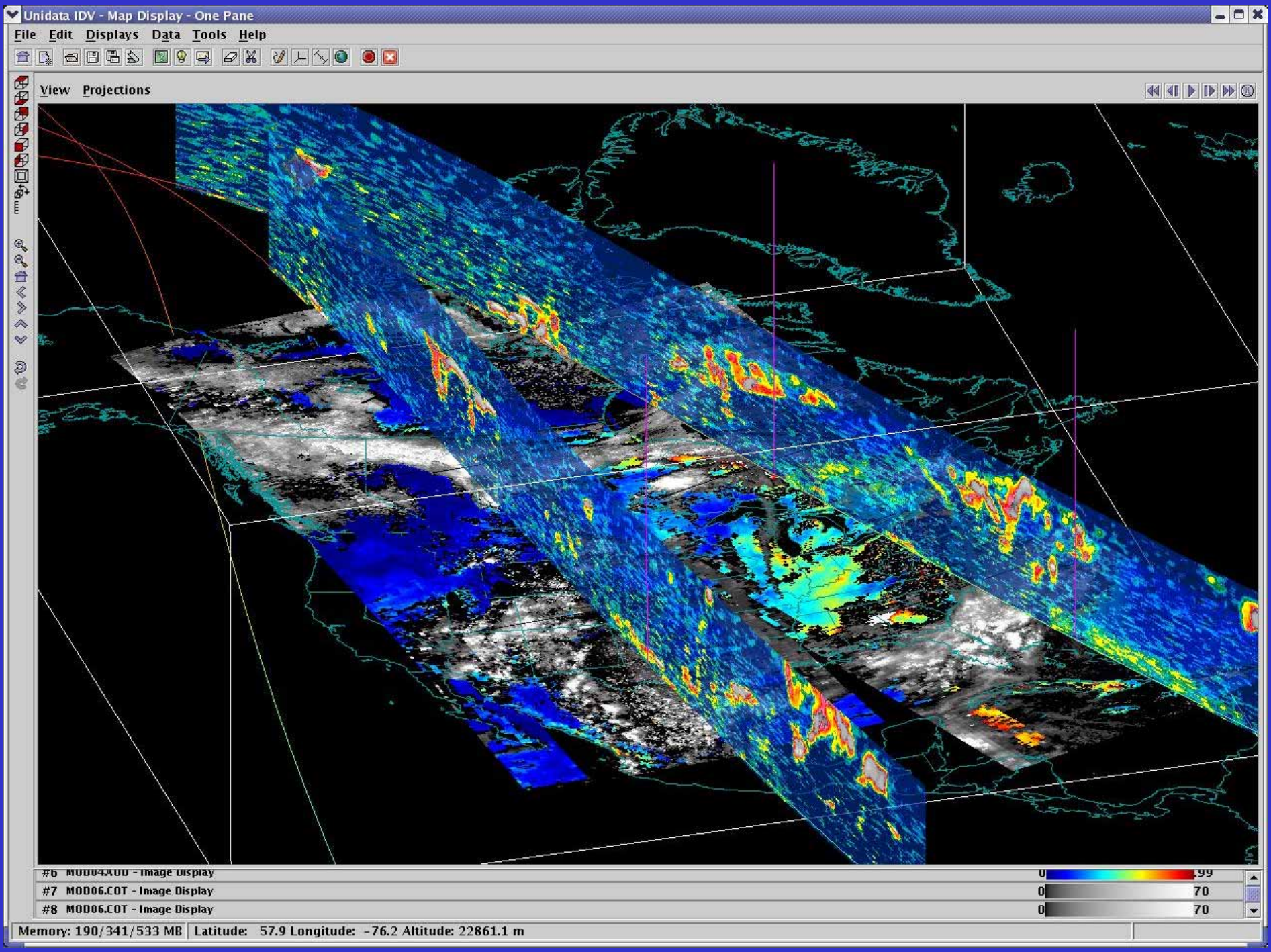
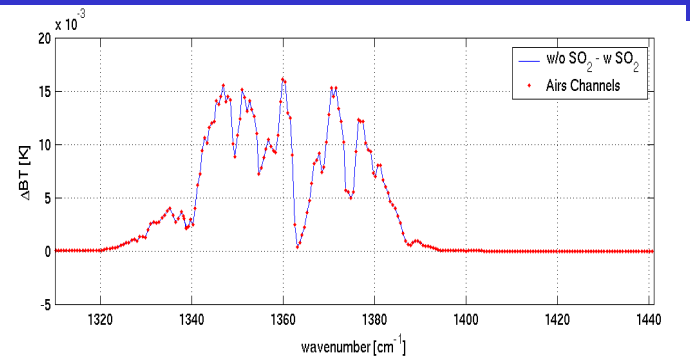
9:13 PM

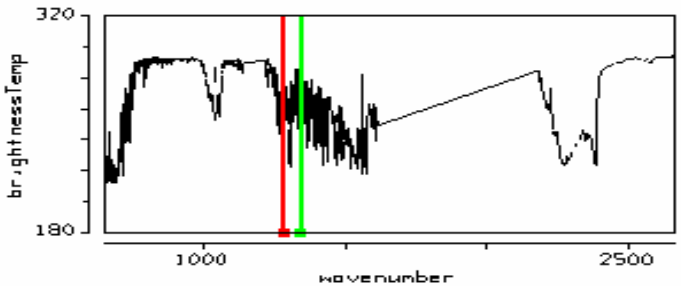

MODIS 11 um BT
8.0° N
7.5° N
7.0° N
6.5° N
62.5° E
63.0° E
63.5° E
300
290
280
270
260
250
240
230
MODIS 11 um BT(K)


Unidata IDV - Map Display - One Pane
File Edit Displays Data Tools Help
View Projections
#6 MOD04.AOD - Image Display
#7 MOD06.COT - Image Display
#8 MOD06.COT - Image Display
Memory: 190/341/533 MB
Latitude: 57.9 Longitude: -76.2 Altitude: 22861.1 m

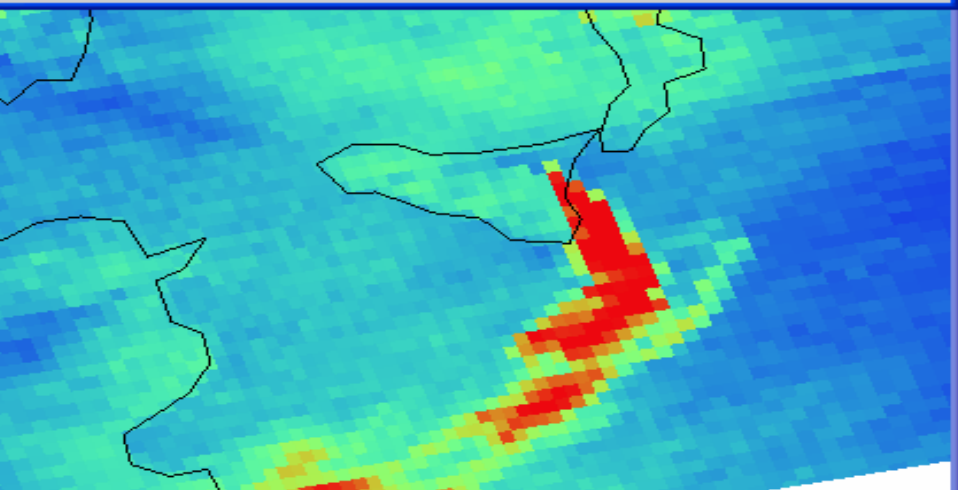


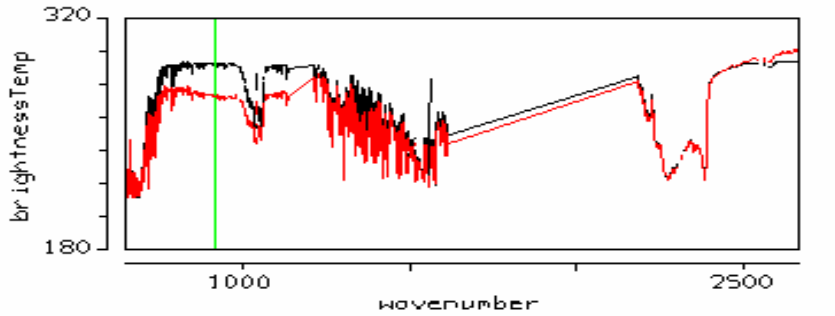
Mt Etna viewed by AIRS 28 Oct 2002

SO2 signal 1284-1345 cm-1

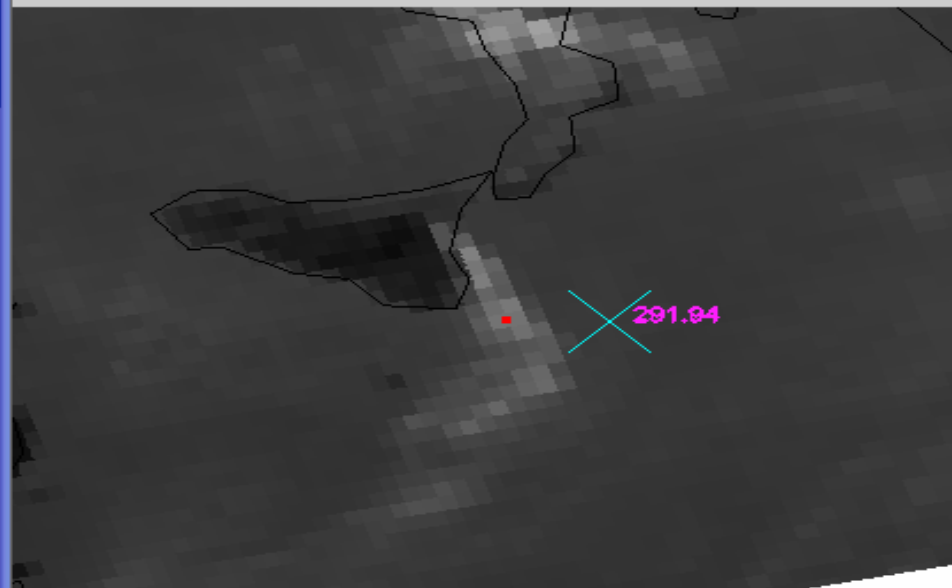


(1.0 1284.348 - 1.0 1344.799)





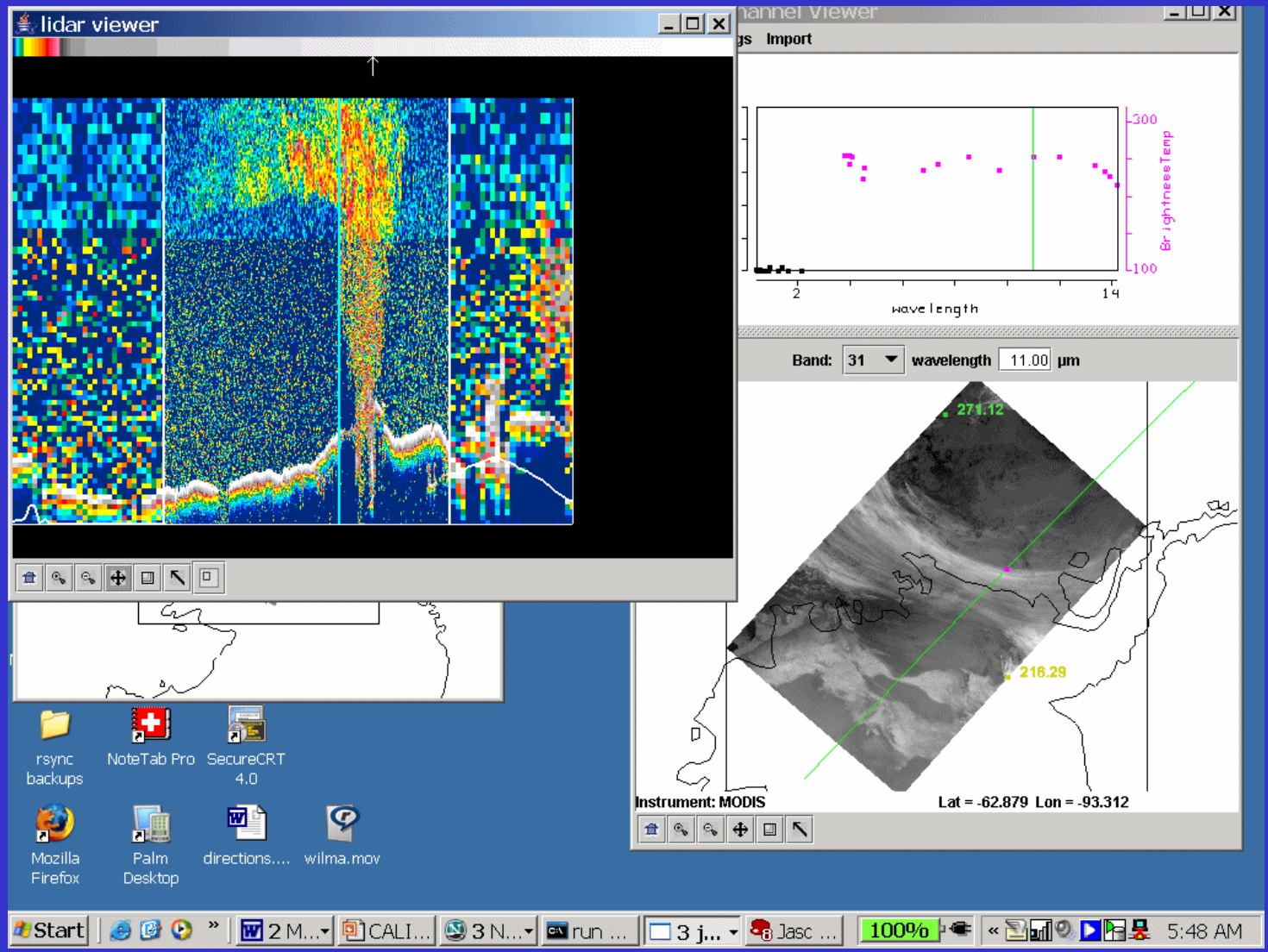
wavenumber 919.47 cm^-1



Why I want McIDAS-V

- Education
- Research
- Presentations
  - Publication quality images

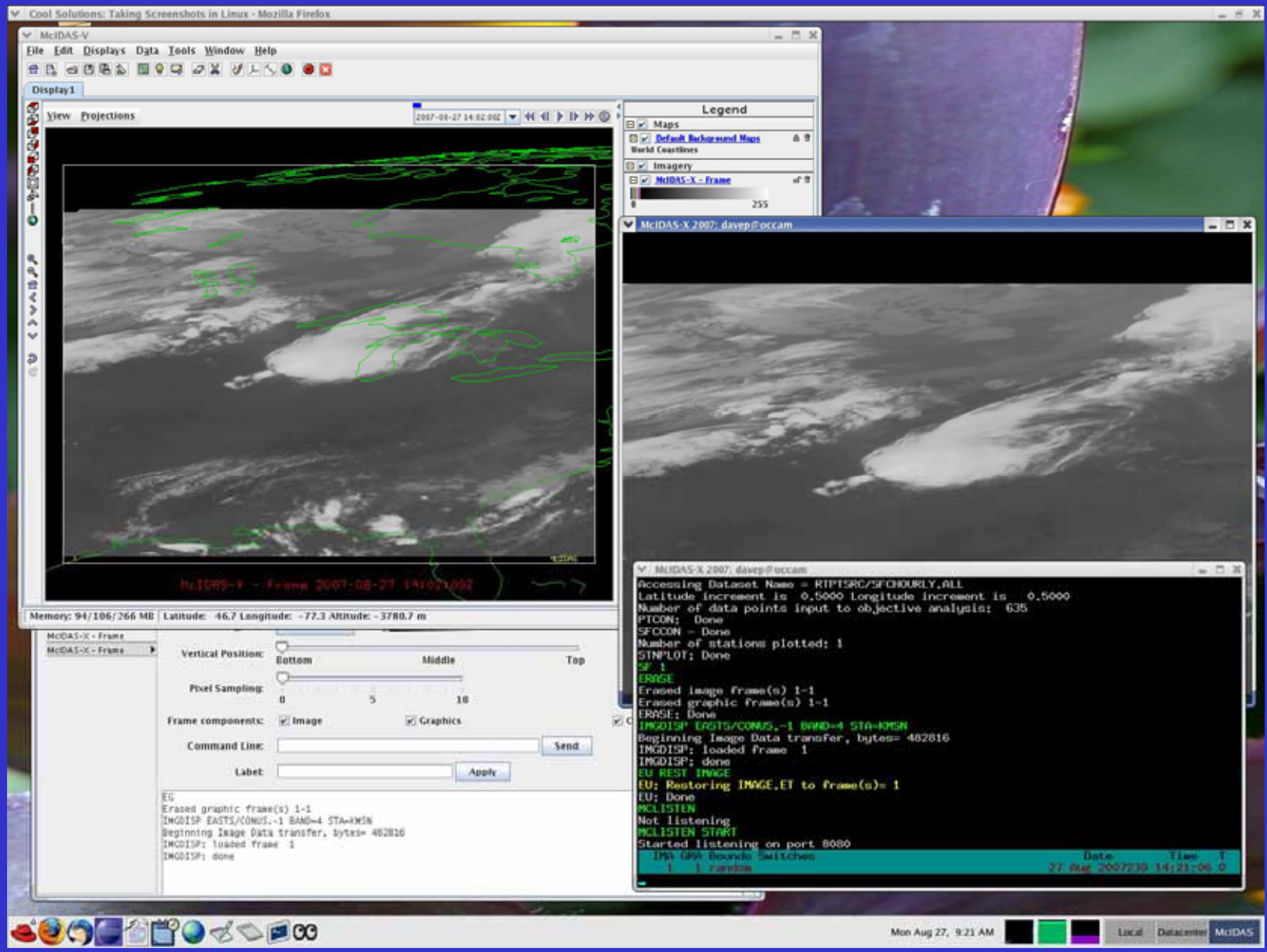
Live Presentation



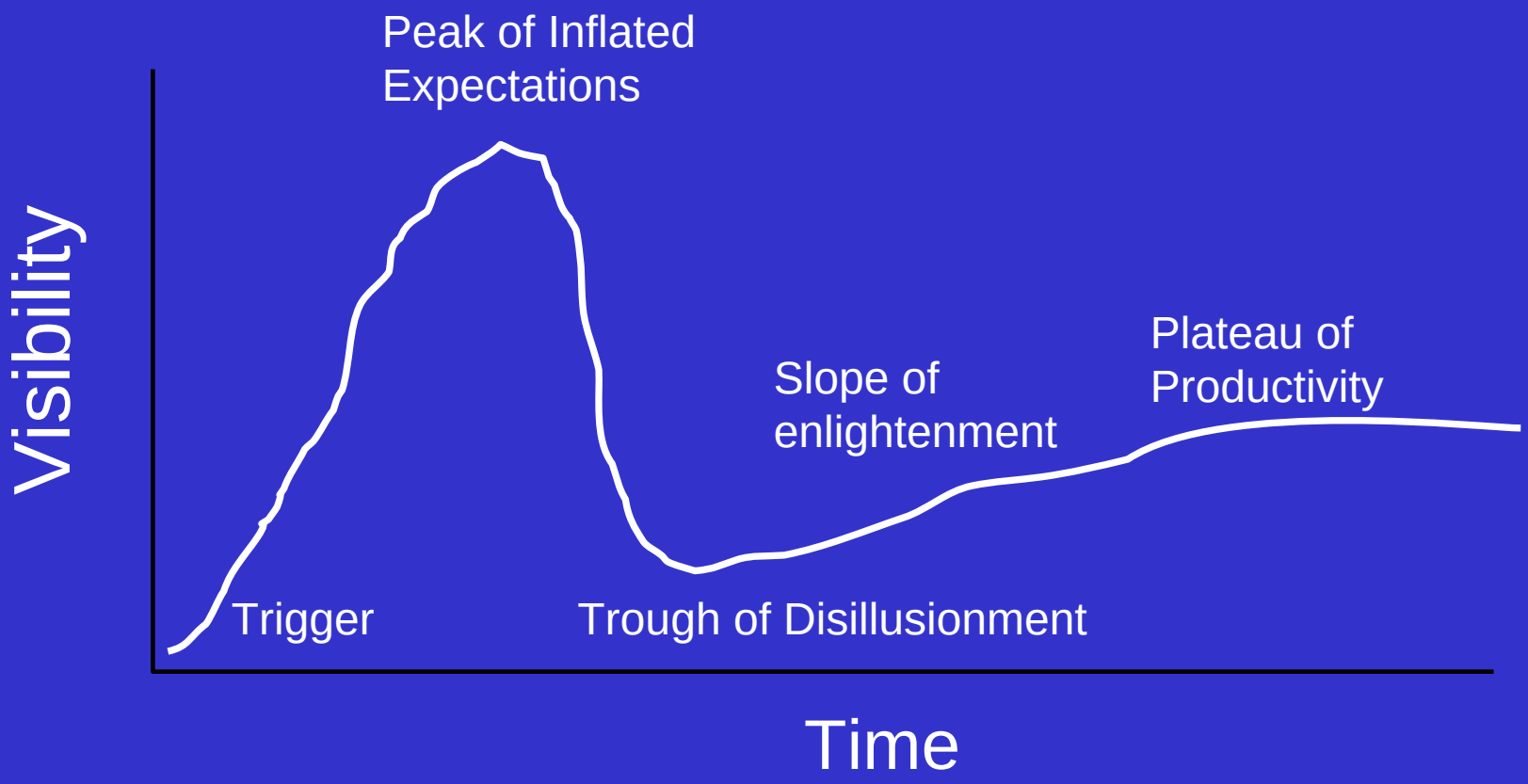
Why you want McIDAS-V

- Training (Education)
- Weather System Analysis (Research)
- Presentations (Presentation)

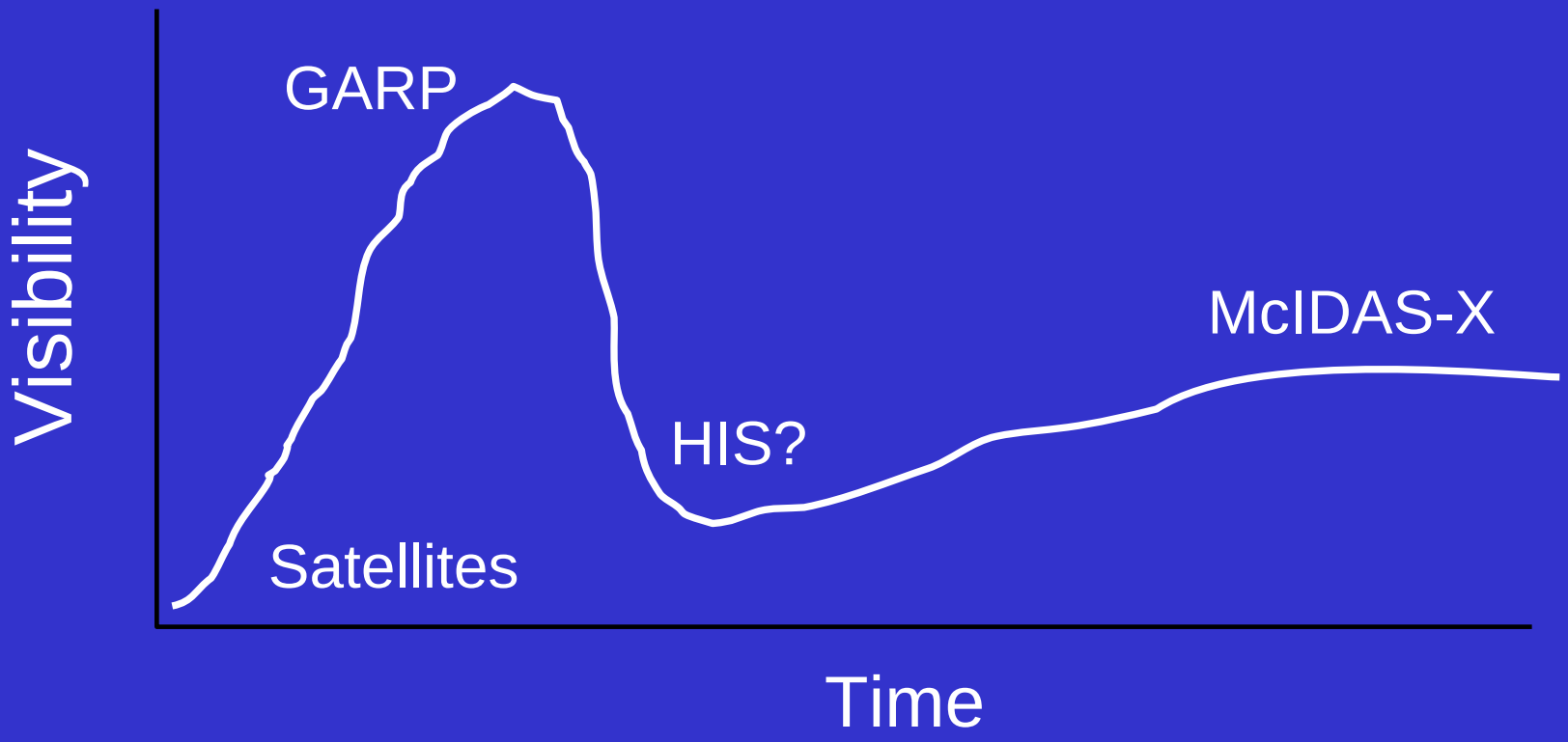
All McIDAS Functionality



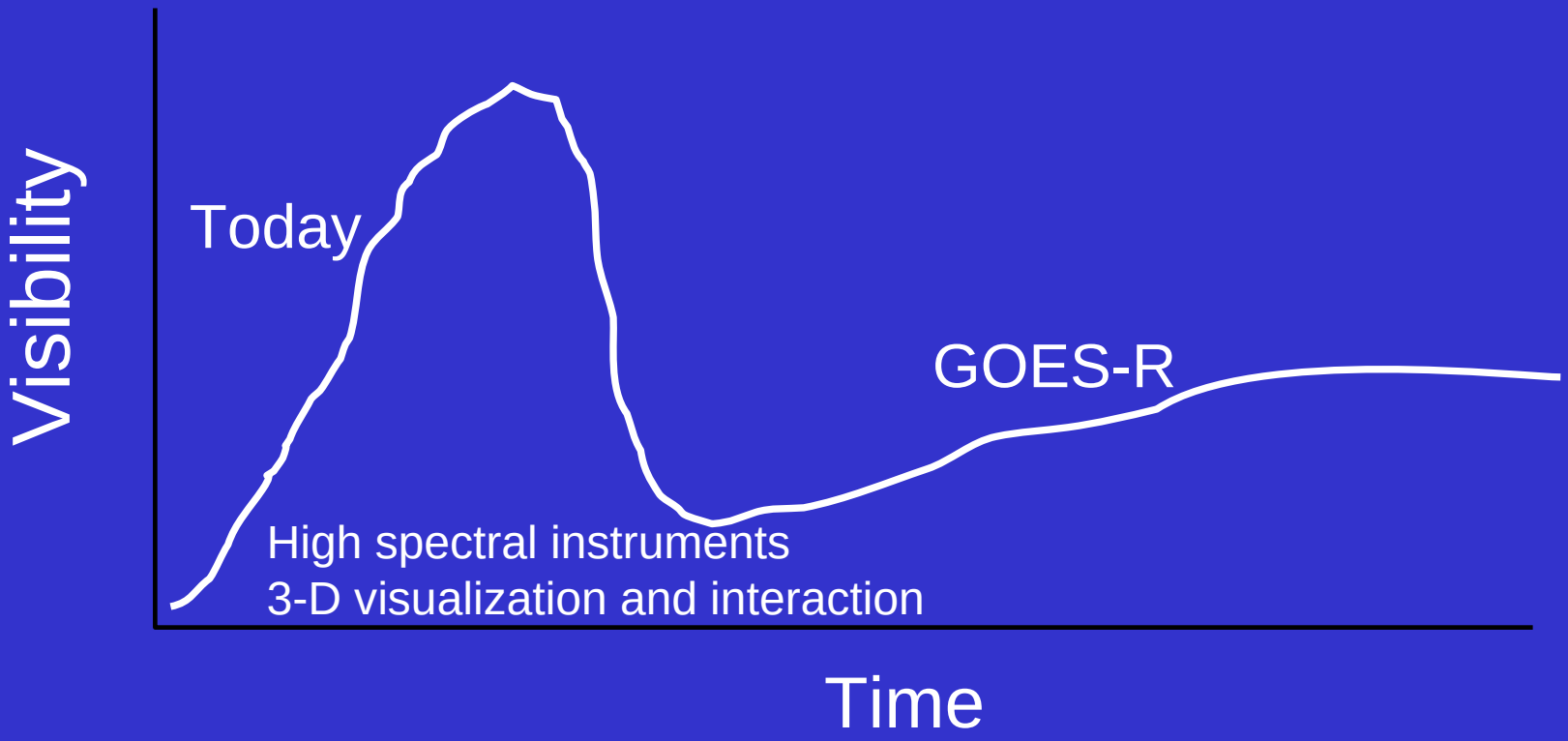
Gartner's Hype Cycle



Gartner's Hype Cycle for McIDAS…



Gartner's Hype Cycle McIDAS-V…



Project Requirements

- Create a powerful and versatile software system for environmental data processing, analysis and visualization
- Support existing and evolving needs of scientific research and algorithm/applications development for new programs
- Support data fusion and algorithm interoperability from existing and future sources
- Continue to fully support McIDAS Users' Group (MUG) and McIDAS-X functionality as users transition to McIDAS-V
- Support operational users by providing frameworks in McIDAS-V, enabling a natural transition path for research results into operations
- Use system to educate students in remote sensing and physical sciences; involve students in its development, evolution and use

SUMMARY

- I'll want it….
- You'll want it…
- Take the workshop on McIDAS-V
  - First hand experience
  - Provide feedback