McIDAS History and Future

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McIDAS

Man computer Interactive Data Access System

46th anniversary in October 2019, current versions:

- McIDAS-X
  - AIX then X Window System
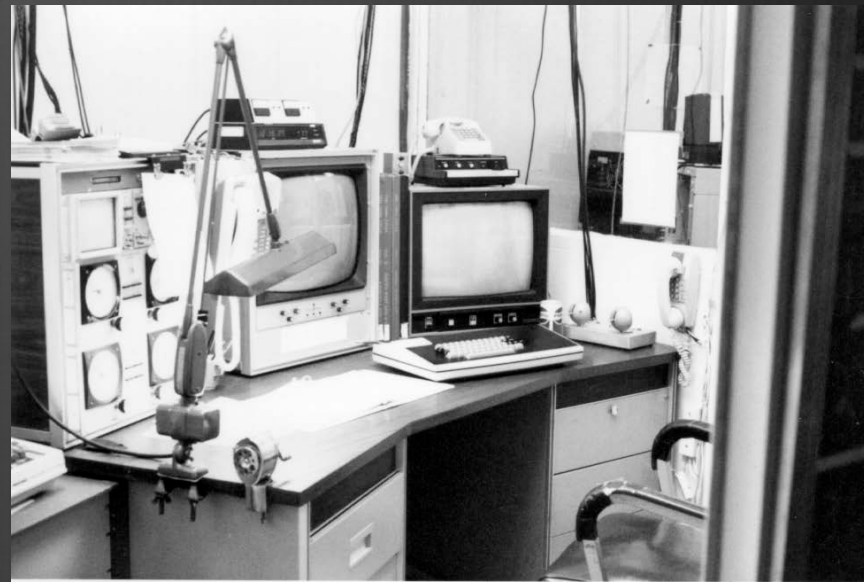
- McIDAS-V
  - Visualization using VisAD

McIDAS History

- 1960s: Prof. Vern Suomi was striving to exploit the geostationary satellites for time domain information

- McIDAS was initially developed with the goal to mass produce the cloud drift winds

- For the last 46 years, McIDAS has evolved through 5 generations of hardware/software as an internationally renowned system
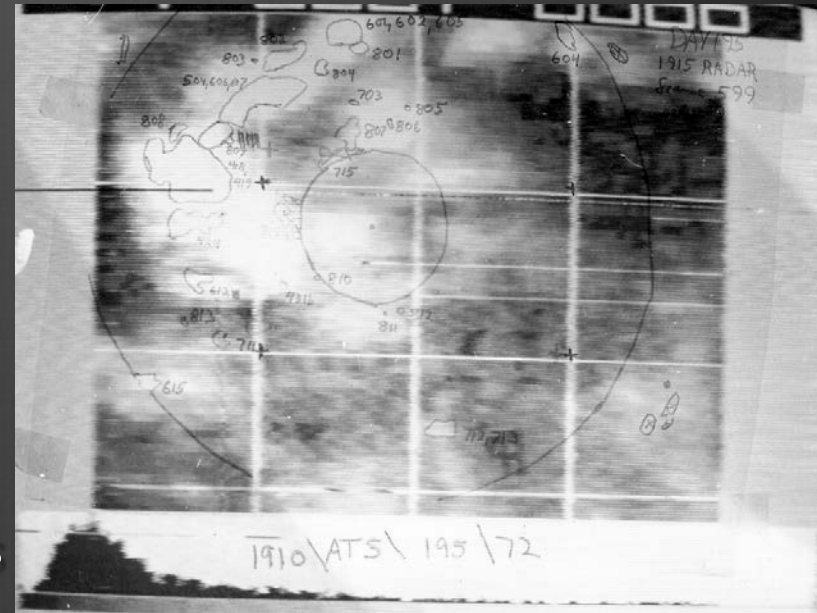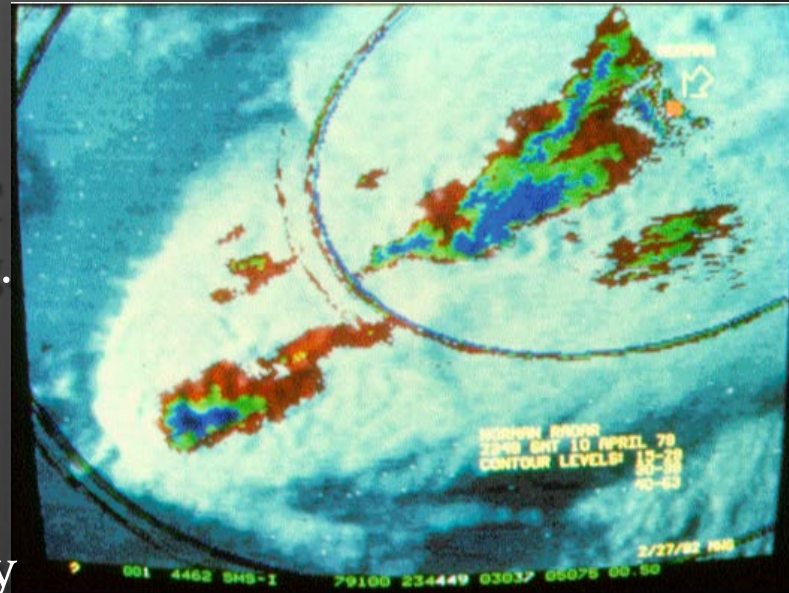
McIDAS
Significant Milestones

- **12 October 1973**: McIDAS was first used in a research project by Dave Martin

- **1977**: McIDAS installed at WTVT in Tampa, FL; active site until 2013!

- **1978**: Cloud-drift winds were manually generated from five geostationary satellites for a year as part of the First GARP Global Experiment (FGGE)
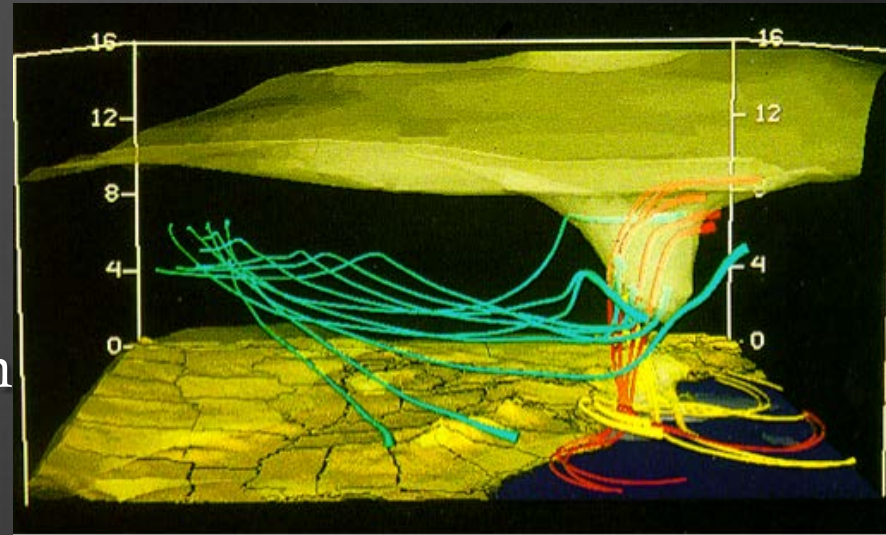
McIDAS
Significant Milestones

- **1979**: Congressional delegation visited SSEC to learn about advances in severe storm forecasting in wake of tornadoes in Wichita Falls, TX

- **1982**: McIDAS installed at NSSFC to aid in severe weather forecasting.
  - Mesoscale Discussions began in 1986, partly in response to the availability of timely analyses

- **1982**: Port to mainframe; funded by People's Republic of China

McIDAS
Significant Milestones

- 1982: Interactive Flash Flood Analyzer (IFFA) based on McIDAS installed at NOAA

- 1989: McIDAS Users' Group formed

- mid-1980s: McIDAS installed at Cape Canaveral and Johnson Space Center in support of the space shuttle

- late-1980s: Installed at NHC

McIDAS
Significant Milestones

- **1992**: McIDAS-X, Unix-based system

- **1994**: CIRA RAMSDIS – GOES satellite data into NWS

- **mid-1990s**: Abstract Data Distribution Environment (ADDE)
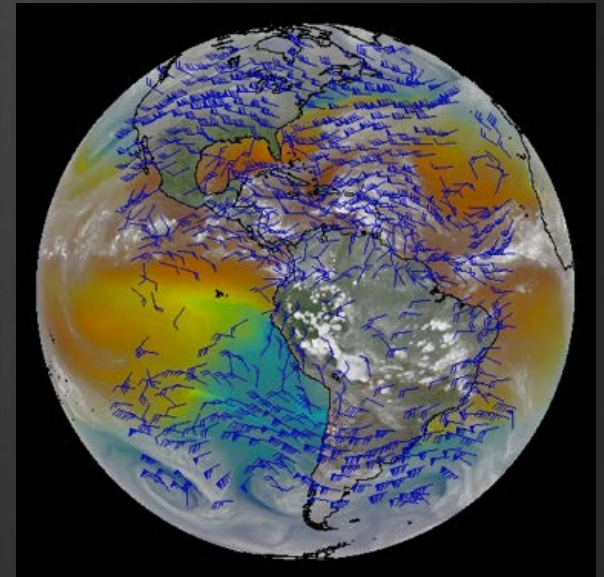
McIDAS-X
Current Chapter

McIDAS-X Introduction

⌗ Ported code from mainframe and DOS- and OS/2-based computers to IBM AIX workstations

⌗ Released April 1992

⌗ A distributed system as opposed to previous mainframe

SSEC Announces

McIDAS-X Version 1.0

McIDAS for the UNIX environment will be available April 15, 1992 for:

- IBM RISC System/6000 workstations
- SGI Personal Iris workstations

Features:
- √ multiple McIDAS sessions
- √ variable frame size
- √ 7-bit image display
- √ image roam
- √ most McIDAS-OS2 applications
- √ animation to 15 frames/second
- √ X Window fonts for text
- √ sharing of UNIX and OS/2 area files, grid files and MD files
- √ X-terminal support

Minimum workstation requirements:

IBM RISC System/6000	SGI Personal Iris
24 MB of RAM	24 MB of RAM
600 MB hard drive	600 MB hard drive
X Windows, Release 3 or later	X Windows, Release 3 or later
AIX operating system, V 3.1.5 or later	IRIX operating system, V 4.0 or later
color display	color display
keyboard and mouse	keyboard and mouse
TCP/IP	TCP/IP
Motif Window Manager	Motif Window Manager

Cost:

Single user	Multiple simultaneous users
$20,000 ($10,000 for Federal Government)	$40,000 ($20,000 for Federal Government)

McIDAS-X will be ready for use on Sun Microsystem workstations later this year!

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McIDAS-X
Keys to Success

⚛ Port to Unix

⚛ ADDE (Abstract Data Distribution Environment)

⚛ McIDAS-X Reglue

Resulted in the longevity of McIDAS-X

Reliability, Stability

Solid infrastructure

McIDAS-V
Motivation in 2006

- McIDAS-X software (currently written in Fortran 77 and C) has a 40-year heritage resulting in limited extensibility potential

- New visualization concepts cannot be incorporated

- Forthcoming environmental satellite data cannot be utilized efficiently (GOES-R & JPSS operational systems)
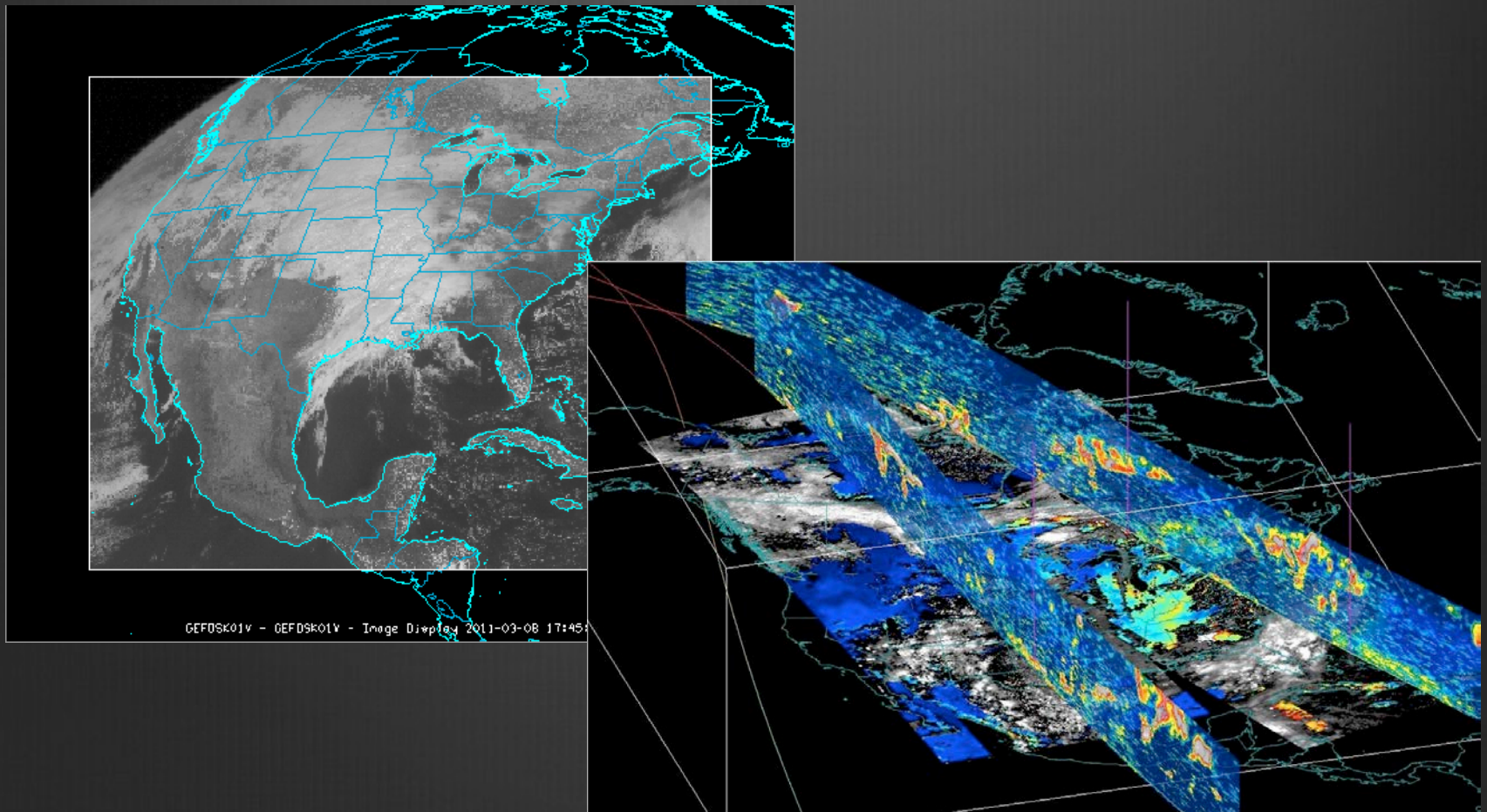
McIDAS-V
Goals

- McIDAS-V shall be a powerful and versatile software system for environmental data processing, analysis and visualization

- McIDAS-V shall support existing and evolving needs of scientific research and algorithm/applications development for new programs, such as NPOESS and GOES-R as well as for retrospective data, such as that from GOES and POES

- McIDAS-V shall support data fusion and algorithm interoperability from existing and future sources

- The McIDAS team shall continue to fully support the MUG and McIDAS-X functionality as users transition to McIDAS-V

- McIDAS-V shall support operational users by providing tools and interfaces that enable a natural transition path for research results into operations

- McIDAS-V shall be used to educate students in remote sensing and physical sciences, and students must be integrally involved in its development, evolution and use

McIDAS-V
Innovative

Develop new capability in visualization and data analysis
Move beyond 2D to 3D

McIDAS-V Milestones

- **2003**: Whittaker and Santek present a McIDAS-V plan to the SSEC Directors

- **2006**: Investigations of a "new approach" to data analysis and visualization

- **2007**: Collaboration with Unidata to advance VisAD and IDV as the basis of McIDAS-V

- **2008**: McIDAS-V becomes an "alpha"

- **January 2009**: beta 1

- **January 2010**: beta 5

- **September 2010**: V1.0

McIDAS-X
Future

- More support and compatibility with Python
  - Fewer Fortran and C programmers
  - Important for new ADDE servers to incorporate many more data types
  - Keep current with changes in Python and migrations to languages of the future

- Keep an eye future graphics (visualization) packages
  - X Window Systems is 30-year old technology
    - McIDAS-X dependency is isolated

- Cloud computing

McIDAS-V
Future

⊛ Stay true to mission and goals

⊛ Continue to investigate unique functionality for visualizing and fusing data

⊛ Improve interface to data

⊛ Stay relevant with changing technology

⊛ Replacement for Java3D: Ardor3D

⊛ Cloud computing

⊛ Interoperability with other software and systems