#### McIDAS-V Demo

#### Bob Carp 2025 McIDAS Users' Group Meeting



Space Science and Engineering Center University of Wisconsin-Madison

## Outline

- McIDAS-V introduction
- Kanlaon Volcano VIIRS RGB, GEMS, TEMPO, HYDRA2
- Cyclone Zelia VIIRS Rayleigh Correction, MIRS, Sandwich RGB, HYDRA2
- 3D Gridded display over Hurricane Milton
- Additional enhancements and new functionality in McIDAS-V
- How to download the 2.0beta1 nightly build



## Introduction

- McIDAS-V is composed primarily of two windows, the Main Display window and the Data Explorer window.
- Main Display window Where most displays appear
- Data Explorer window What and how to display.
  - Data Sources tab Select the type of data
  - Field Selector tab Select the variable and display type
  - Layer Controls tab Modify the display



## Main Display Window





#### Data Explorer Window Data Sources Tab

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<ul> <li>Satellite</li> <li>Imagery</li> <li>HYDRA</li> <li>Orbit Tracks</li> <li>Radar</li> <li>Point Observations</li> <li>Gridded Data</li> <li>Local</li> <li>Remote</li> <li>Front Positions</li> <li>General</li> <li>Under Development</li> </ul>	Server; Image Type, Times:	adde.ucar.edu 2. CONUS - GOES-East CONUS all bands Relative Absolute Number of times: 5 6.	5.	Dataset: EAST 3.		Connect 4.	
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## Data Explorer Window Field Selector Tab

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## Data Sources Window Layer Controls Tab

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## Display





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#### Example 1: Kanlaon Volcano Steps to Create to Follow





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#### Panel 1 – Ash RGB

• Load VIIRS data containing M14, M15, and M16 through the JPSS Chooser. In the Field Selector:





## Panel 2 – GEMS SO2

 Load GEMS data through the General>Files/ Dir chooser as a gridded data source. Field Selector:





## Panel 3 – TROPOMI SO2

 Load TROPOMI data through the General>Files/ Dir chooser as a gridded data source. Field Selector:





#### Add HYDRA2 Button to Main Display

 From the Main Display window, select Edit > Preferences. Add HYDRA2 button to toolbar:





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#### Start HYDRA2

• From the Main Display window, click the HYDRA2 button.

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## Load CrIS Data in HYDRA2

• Start HYDRA2. In the HYDRA Control Window, select File>Files. Select file. Click Display





## Subtract 2 Channels to Show SO2

 In the HYDRA display window, choose Tools>Four Channel Combine. Enter 1345.0-1325.0 and click Create. Channel 1345 is SO2 sensitive, 1325 is not. Both channels are similarly sensitive to water vapor.









## **Display Channel Subtracted Data**

 In the HYDRA Control Window, display the Combination in a new window. The dark area circled represents likely SO2 detection.







#### Example 2: Tropical Cyclone Zelia Steps to Create to Follow





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## Panel 1 – Rayleigh-Corrected RGB

• Load VIIRS data containing M3, M4, M5, and M15 through the JPSS Chooser. In the Field Selector:





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## Panel 1 – Water Vapor Profile

• Use the same VIIRS file from the RGB. In the Field Selector (min/max=180/270; VIS=M4Rad; IR=M15T):

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	(ii) VIIRS EDR Day Fire RGB											
	(ii) VIIRS EDR Day Snow-Fog I-Band RGB											
	(iii) VIIRS EDR Day Snow-Fog M-Band RGB											
	(iii) VIIRS EDR Dust RGB											
	(iii) VIIRS EDR Fire Temperature RGB											
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## Panel 2 – GEMS SO2

 Load GEMS data through the General>Files/ Dir chooser as a gridded data source. Field Selector:





#### Start HYDRA2

• From the Main Display window, click the HYDRA2 button.

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#### Load CrIS Data in HYDRA2

• Start HYDRA2. In the HYDRA Control Window, select File>Files. Select file. Click Display





## **Convolve CrIS Bands**

 In the HYDRA display window, choose Tools>Convolve. Enter a range of 1517.5 to 1726.875 and click Create. This range can be used to simulate ABI upper-level water vapor band 8.

🍯 Convolve	_		$\times$	
1517.5 1726.875	Kernel	Create	Dis	play





## **Display Convolved CrIS Data**

 In the HYDRA Control Window, display the Combination in a new window. After inverting the enhancement, this looks like ABI band 8.





## **Other New HYDRA2 Functionality**

- In the MultiSpectral display, probes can be added over the highest and lowest pixel locations.
- The Transect Display is now possible than VIIRS data.
- Multi-variate transect displays are now possible.
- Scatter Analysis displays can be colored by density.
- Note The goal is to have HYDRA2 replace the existing HYDRA in McIDAS-V.



#### Example 3: Hurricane Milton GFS Data Steps to Create to Follow





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## Layer 1 – MSLP

 Add forecast model data through the Gen>Files/Dir or Gridded>Remote chooser. In the Field Selector:





## Layer 2 – 3D Grid Trajectory

• Display Grid 3D Trajectory data. In the Field Selector:

🍯 McIDAS-V - Data Explorer		- 🗆 X
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Data Sources:	Fields show variables Q Displays	
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## Layer 2 – 3D Grid Trajectory

• Change some of the display characteristics. In the Layer Controls:

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Line Width/Point Size: 1			



## Layer 3 – Wind Speed Isosurface

 Display an isosurface of 3D wind speed data. In the Field Selector:

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## Layer 3 – Wind Speed Isosurface

 Change some of the display characteristics. In the Layer Controls Select Edit>Change Display Unit to set the unit to mi/hr.





# Additional New Functionality in McIDAS-V

- More RGB and channel combos for different instruments, including the NGFS RGB for VIIRS/ABI.
- ProbSevere data can be displayed via local and remote data.
- Layer label updates to make things more consistent and descriptive across data types.
- New enhancements.
- Ability to specify lat/lon corners of wireframe box.
- Faster movie capturing.



## Additional New Functionality in McIDAS-V (Continued)

- Updated and improved location labels.
- Polling notifications When new data is available a popup window will appear letting the user know.
- Globe rotation is smoother, especially at low speeds.
- In scripting, ADDE Imagery can now be centered over a station instead of a lat/lon or line/element point.
- Many other bug fixes and enhancements.



## Nightly Build

 Much of the new functionality is currently in the 2.0beta1 nightly build. This is automatically created every day with all of the previous day's programming changes, and therefore not everything has been fully tested. To download the nightly, go to:

https://www.ssec.wisc.edu/mcidas/software/v/unstable/

• The username and password are both: mcv

