McVCast

McIDAS-V for Analysis and Visualization of EUMETCast data

Getting Started Guide

Spring, 2013
Rev. 1.0

Table of Contents

Introduction

- The McVCast software is based on the McIDAS-V program
- We have chosen a non-standard installation to avoid “permission” issues with Windows machines
- The installation programs and sample data are distributed via EUMETCast and other means.
- This User Guide will get you started, but you will want to explore all the power of the program by reading the McIDAS-V User Guide, accessed through the “Help” menu.

Installation of McIDAS-V

1) Locate the McVCast installer

   - **McVCast32.exe** for 32-bit
     (use only on 32-bit machines)
   - **McVCast64.exe** for 64-bit
     (always use on 64-bit machines)

2) Run the appropriate file.

3) Select a directory (or create a new one) for the installation – be certain you have “write” permission.

- The installer will create a “McVCast32” or “McVCast64” directory and put the installation files there.

- Note: if you are updating a previous installation DO NOT USE these installer files!!! (See the next page.)

Updating of McIDAS-V

1) Locate the McVCast updater

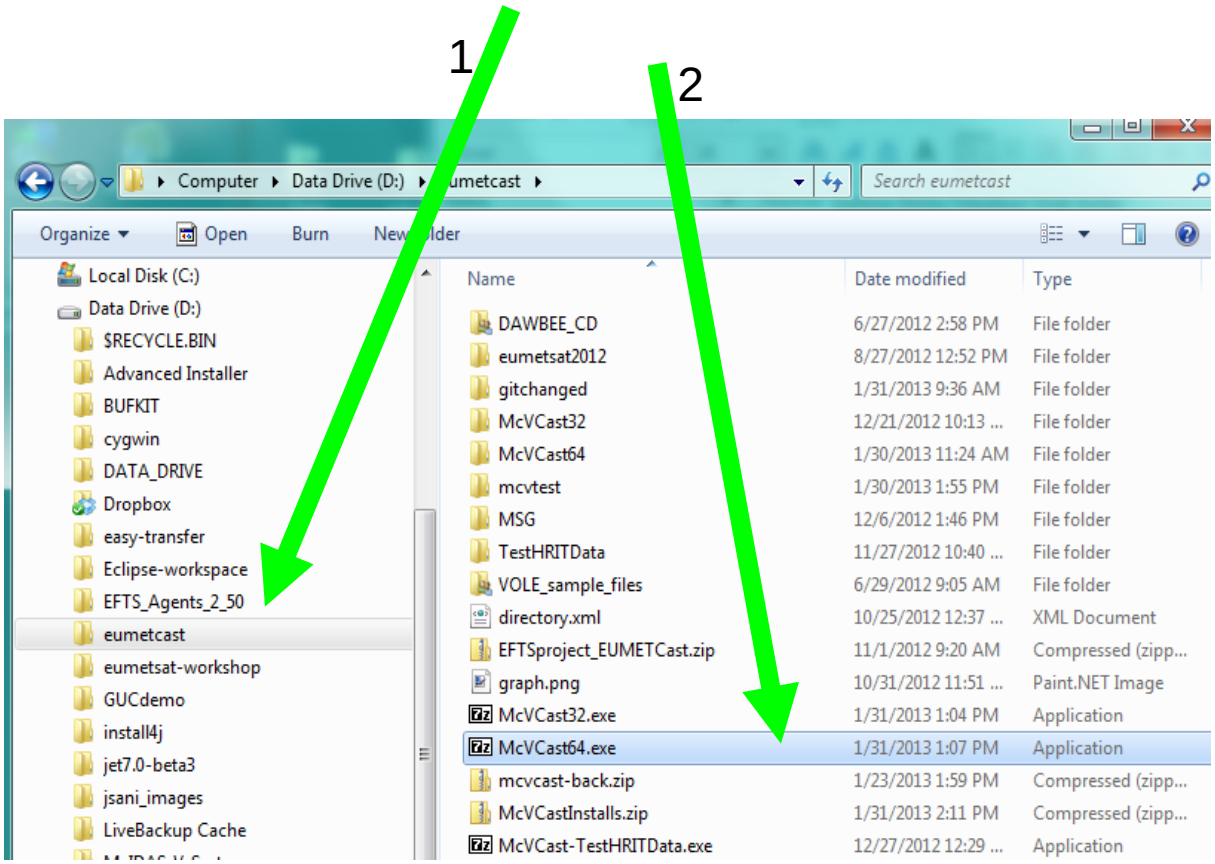
   - **McVCast32update.exe** for 32-bit (use only on 32-bit machines)
   - **McVCast64update.exe** for 64-bit (always use on 64-bit machines)

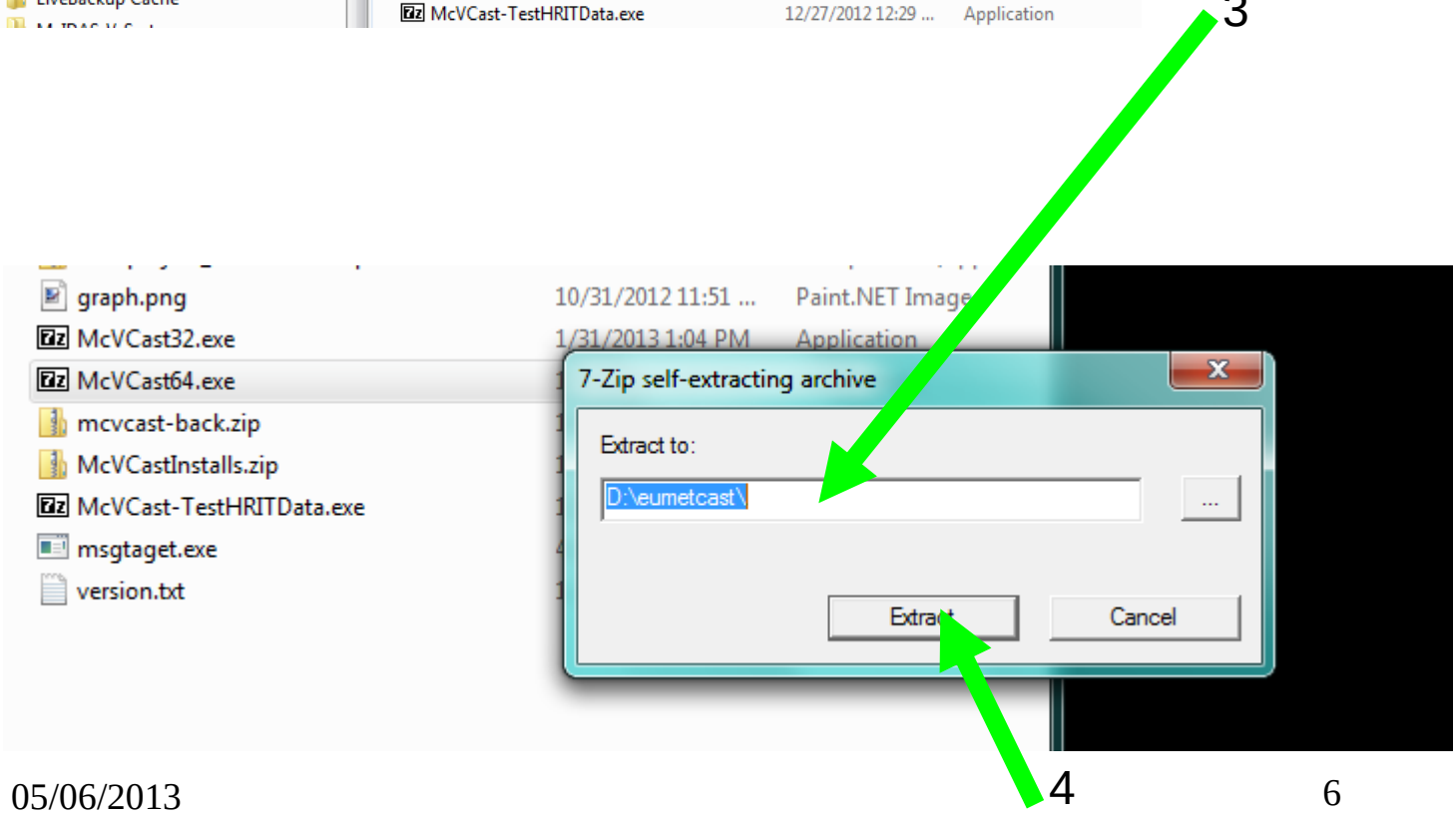
2) Run the appropriate file.

3) Select the same directory for the update that you used for the original installation.

- The “updater” code will overwrite all files, except those in the McIDAS-V directory (where your preferences, etc., are kept).

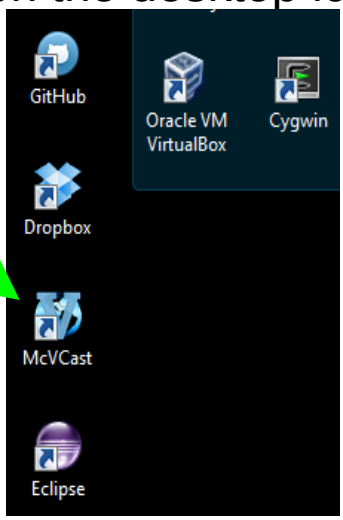
On the desktop



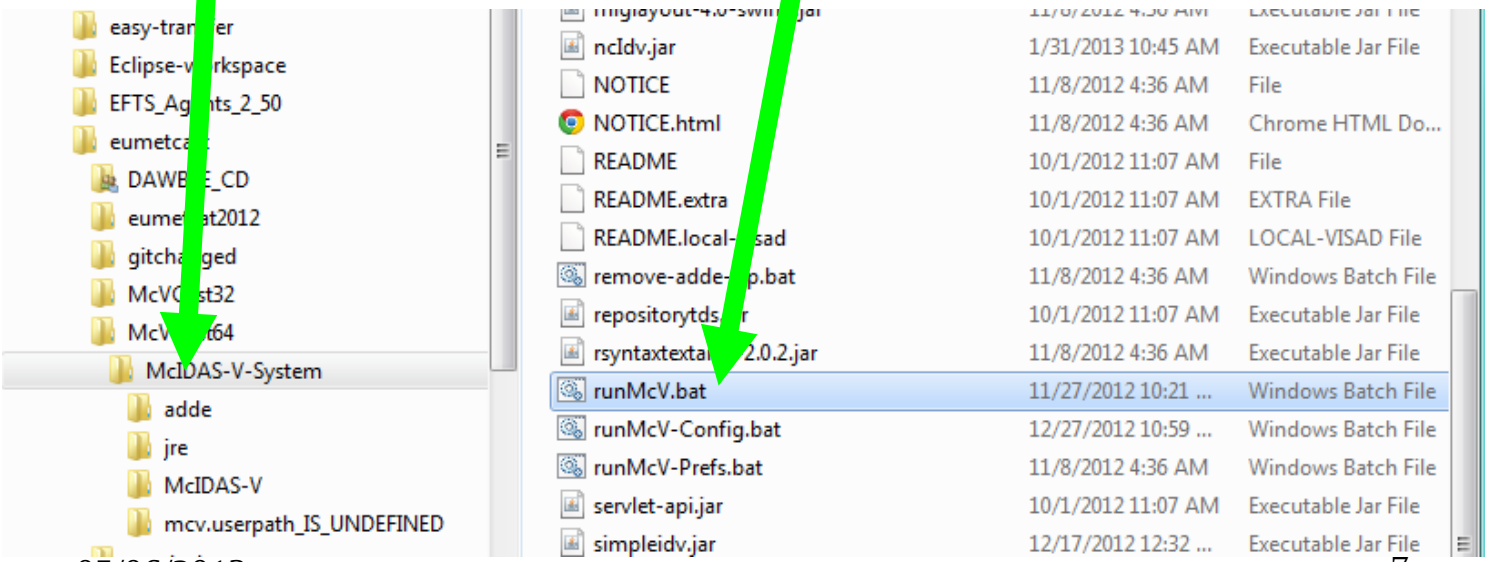


Run McIDAS-V for EUMETCast

- Method one: just click on the desktop icon that was created during install



- Method two:
  - In the install directory, locate the `McIDAS-V-System` directory
  - In that directory, run the `runMcV.bat` file.

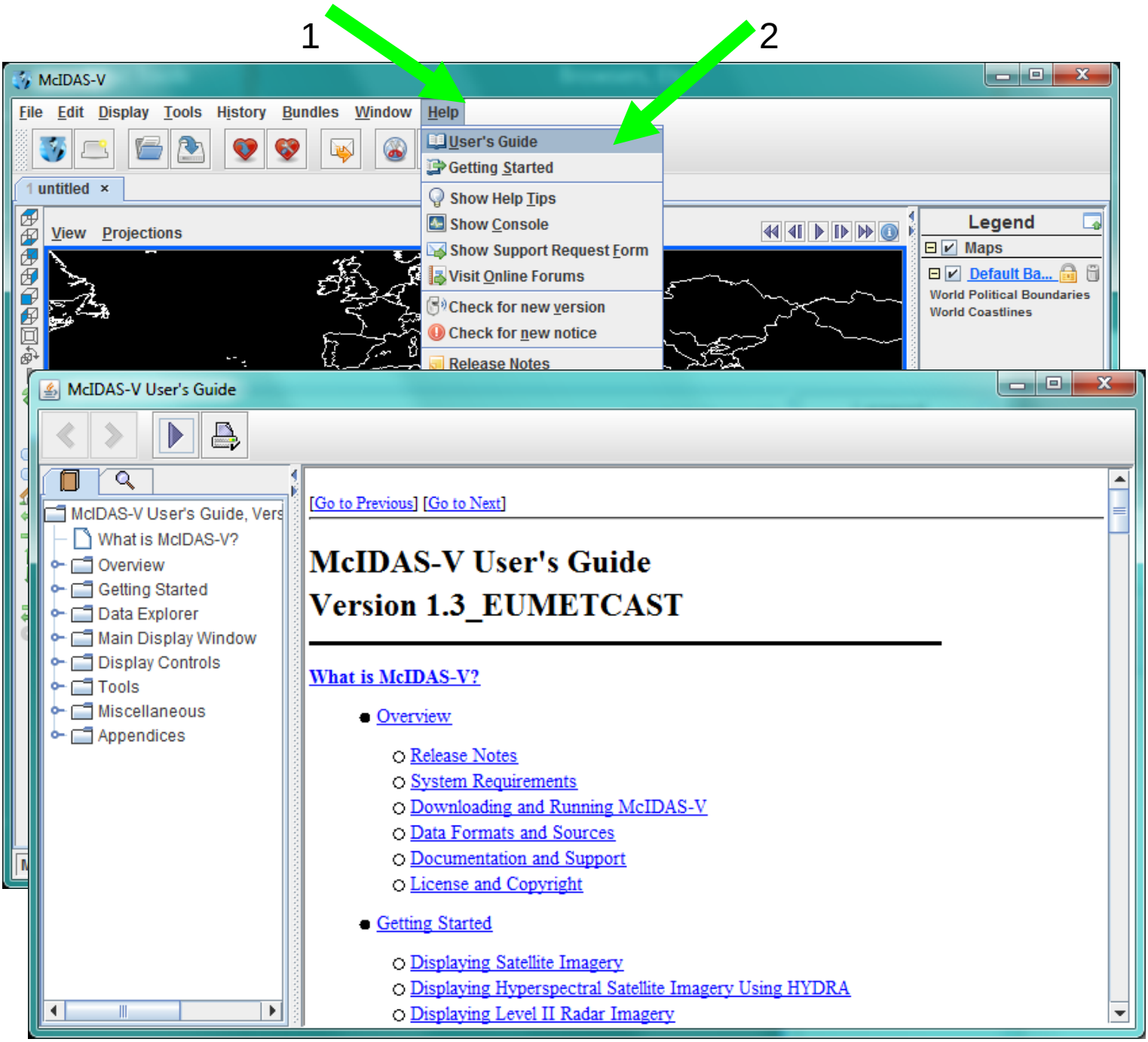


Before you go any further

1) Click on the **Help** menu
2) Click on the **User's Guide**
    1. Read through the “Overview” of McIDAS-V
    2. Read the “Getting Started” sections
    - Plan on referring back to this Guide as we walk through the initial steps of displaying data
    - There is a lot more to McIDAS-V than we will present here!

- Note that we have set many “Preferences” for you!
- You should, however, make memory adjustments (see the following pages)

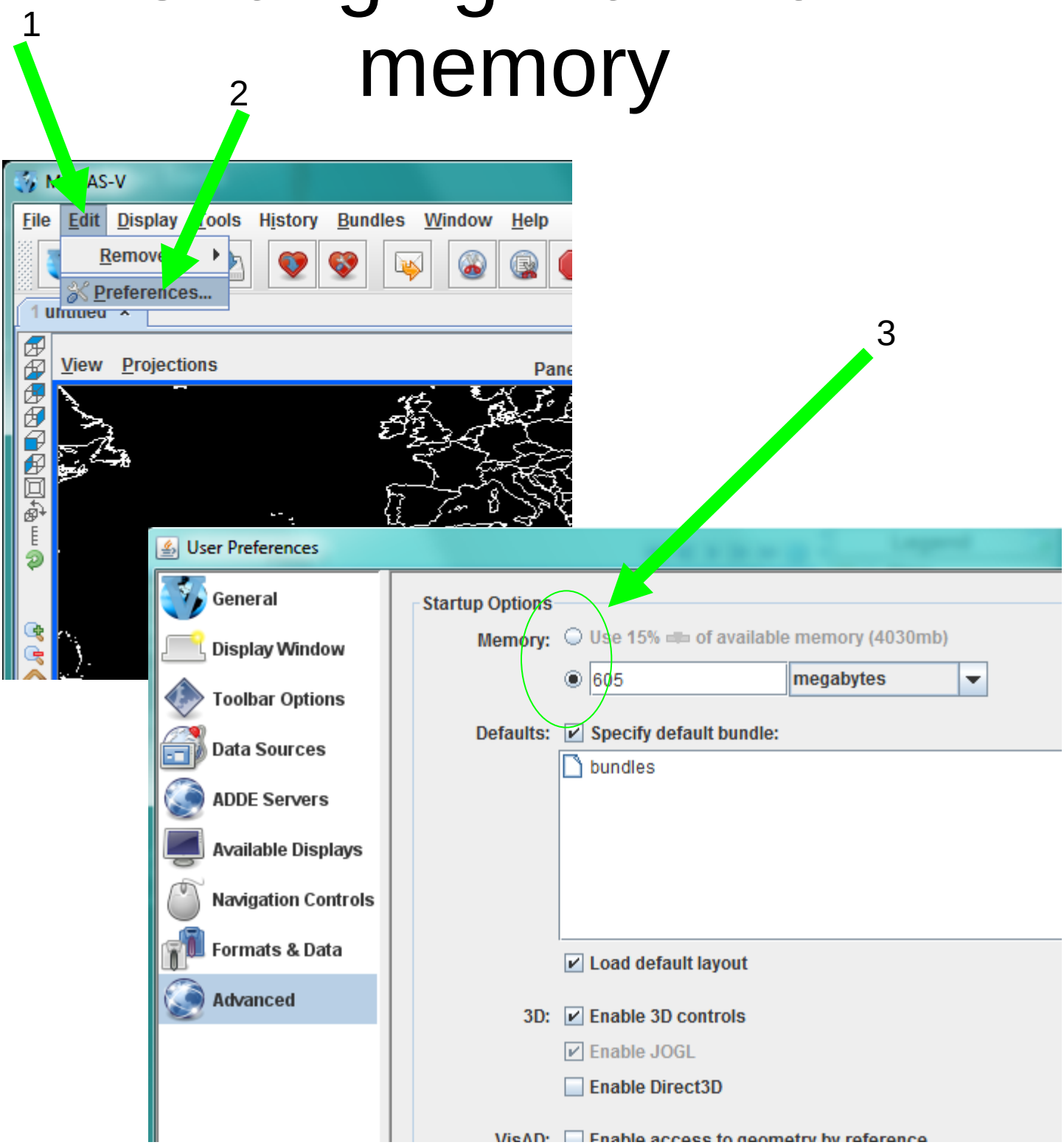
The McIDAS-V User Guide and Tutorial



Important note about memory use

- Initial configuration is set up for only 600MB maximum...
  - Issues with certain graphics cards can cause display to malfunction if too high a value is specified...
- This is <u>almost never</u> enough for data analysis!
- You should experiment to allocate more:
  1) Increase this value (in 200MB steps for 32-bit computers
     (Edit → Preferences → Advanced)
  2) Upper limits:
     - **1200-1500MB for 32-bit machines**
     - **80% of max for 64-bit machines**
  3) Restart McVCast and make certain the display is okay
- See illustration on the next page

Changing maximum memory



Installation of Test Dataset

1. Locate the Test Data installation file:

   McVCast-TestHRITData.exe

2. Run this file to install the test HRIT data

3. Pick a disk location that you have read/write permissions

- We suggest using the same directory as for the McVCast installer.

- The installer will create a directory named **TestHRITData** and put the sample data files there

Connect to the Dataset

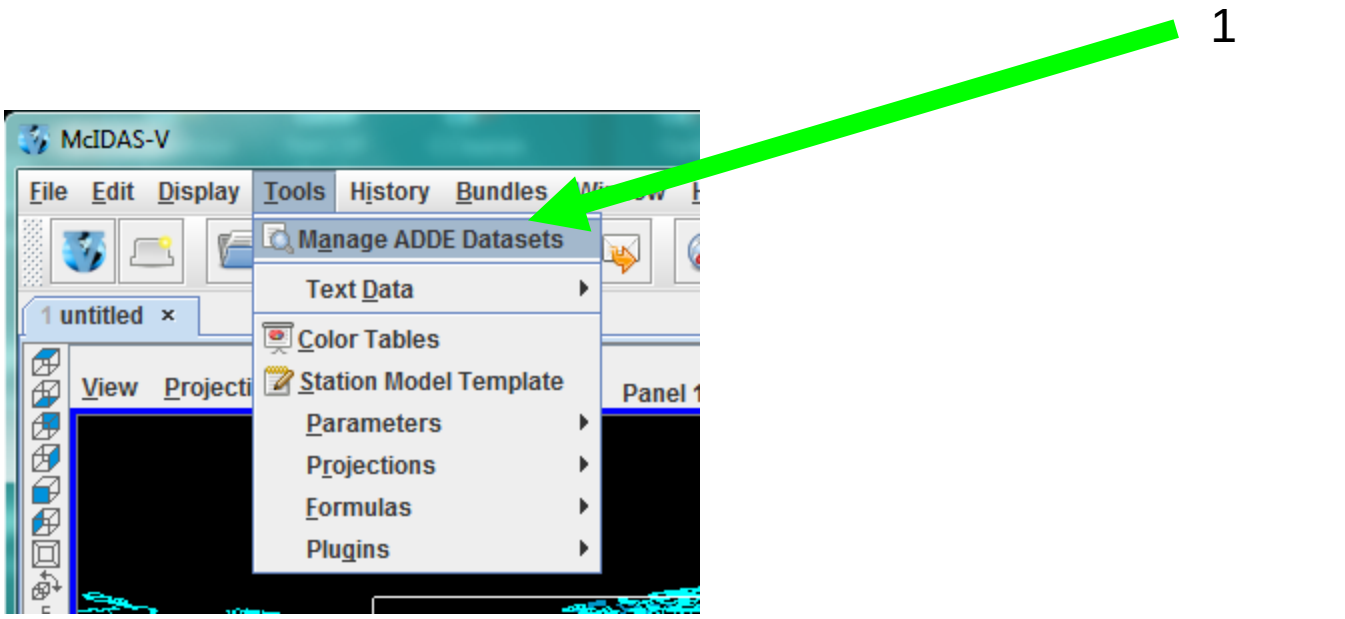
- McIDAS-V can read individuals data files using the generic File Chooser; however setting up an ADDE server connection is much preferred

1) From the toolbar menu, select **Tools → Manage ADDE Datasets**

2) In the pop-up window, click on the **Local Data** tab

3) Click on the **Add New Dataset** button

- See illustrations on the next page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Manage ADDE Datasets
Text Data
Color Tables
Station Model Template
Parameters
Projections
Formulas
Plugins
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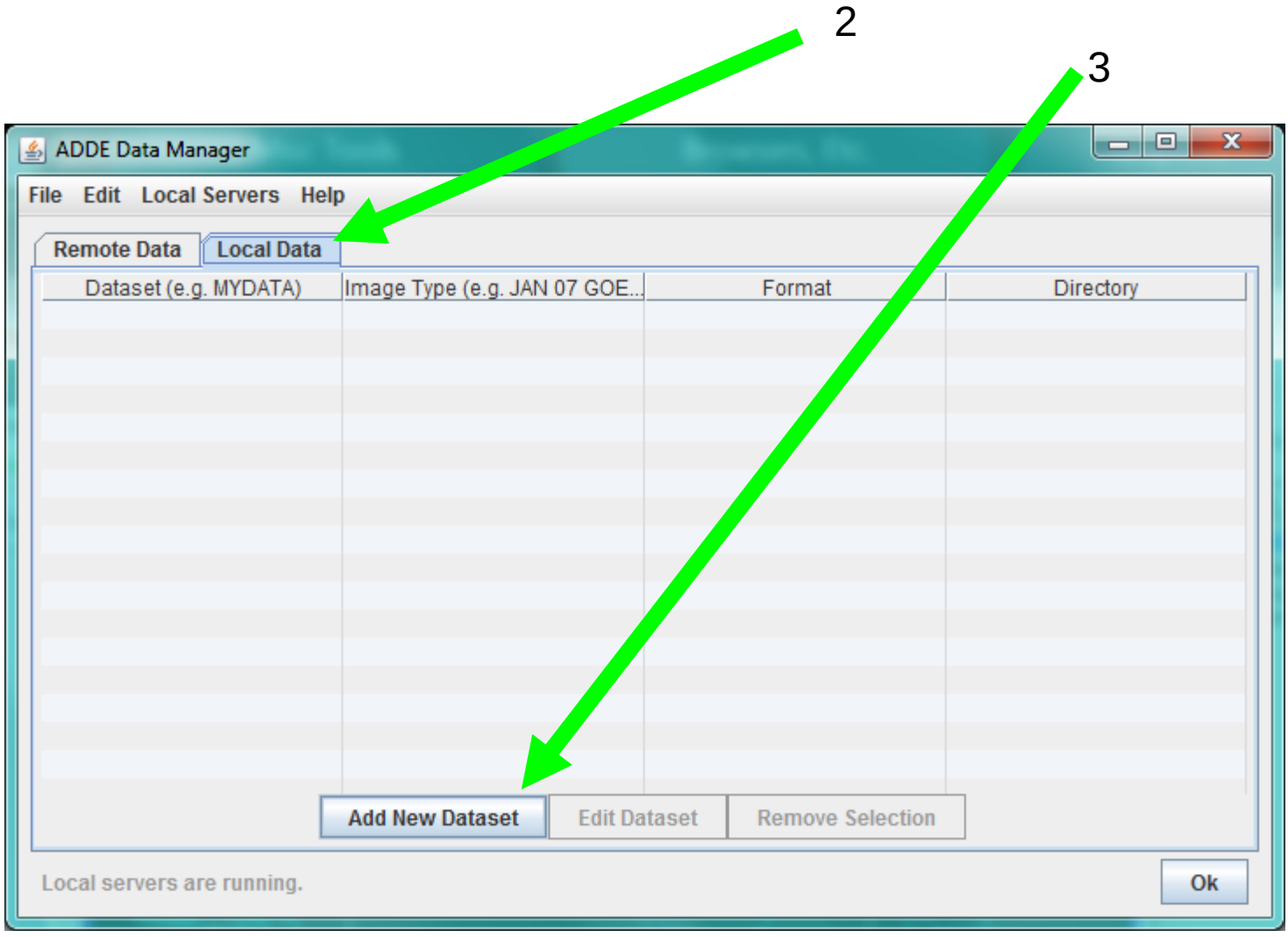
View Projecti
Panel 1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ADDE Data Manager
File Edit Local Servers Help
Remote Data
Local Data
Dataset (e.g. MYDATA)
Image Type (e.g. JAN 07 GOE...
Format
Directory
Add New Dataset
Edit Dataset
Remove Selection
Local servers are running.
Ok

Connect to the Dataset (continued)

1) Next, fill in the following fields, using the values

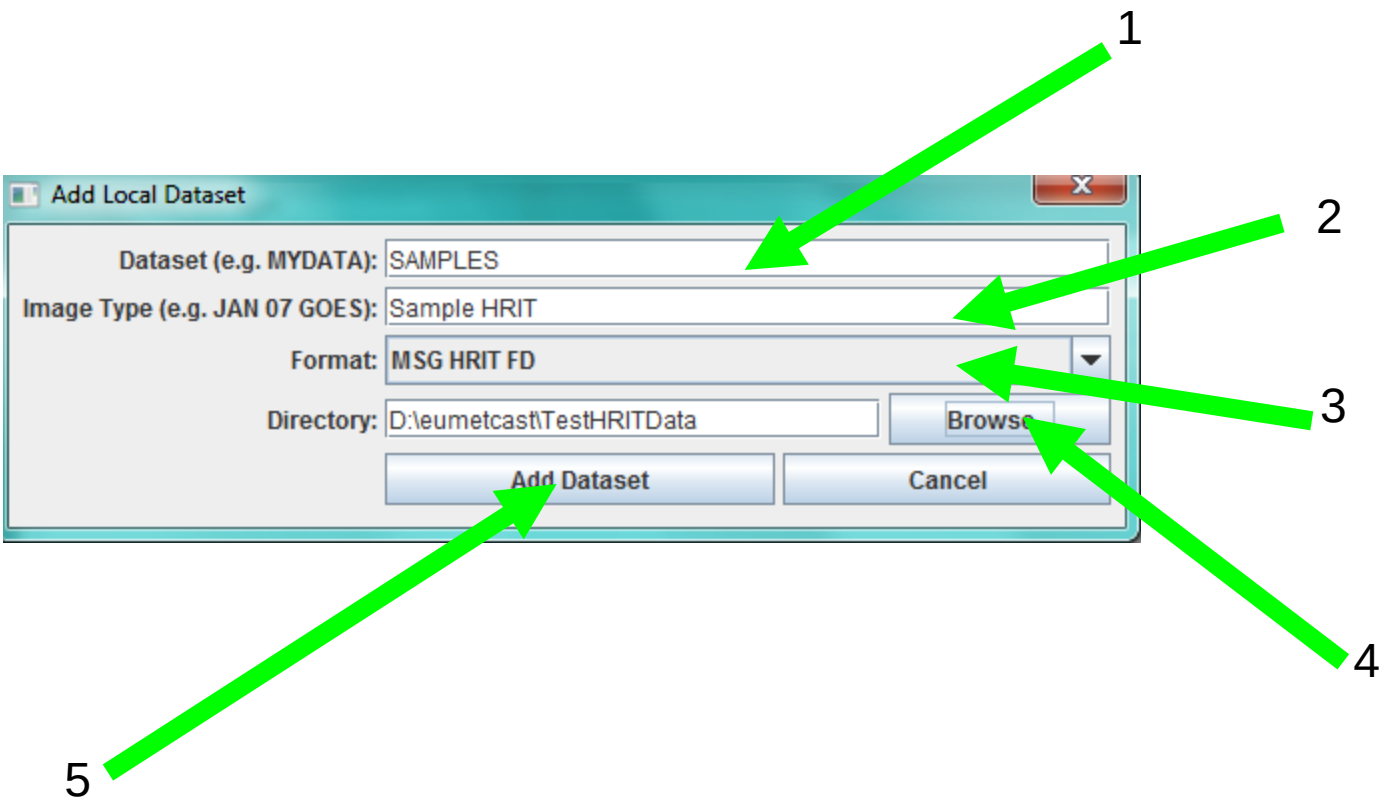
   - **Dataset → *SAMPLES***
   - **Image Type → *Sample HRIT***
   - **Format → *MSG HRIT FD***
     from pull-down menu

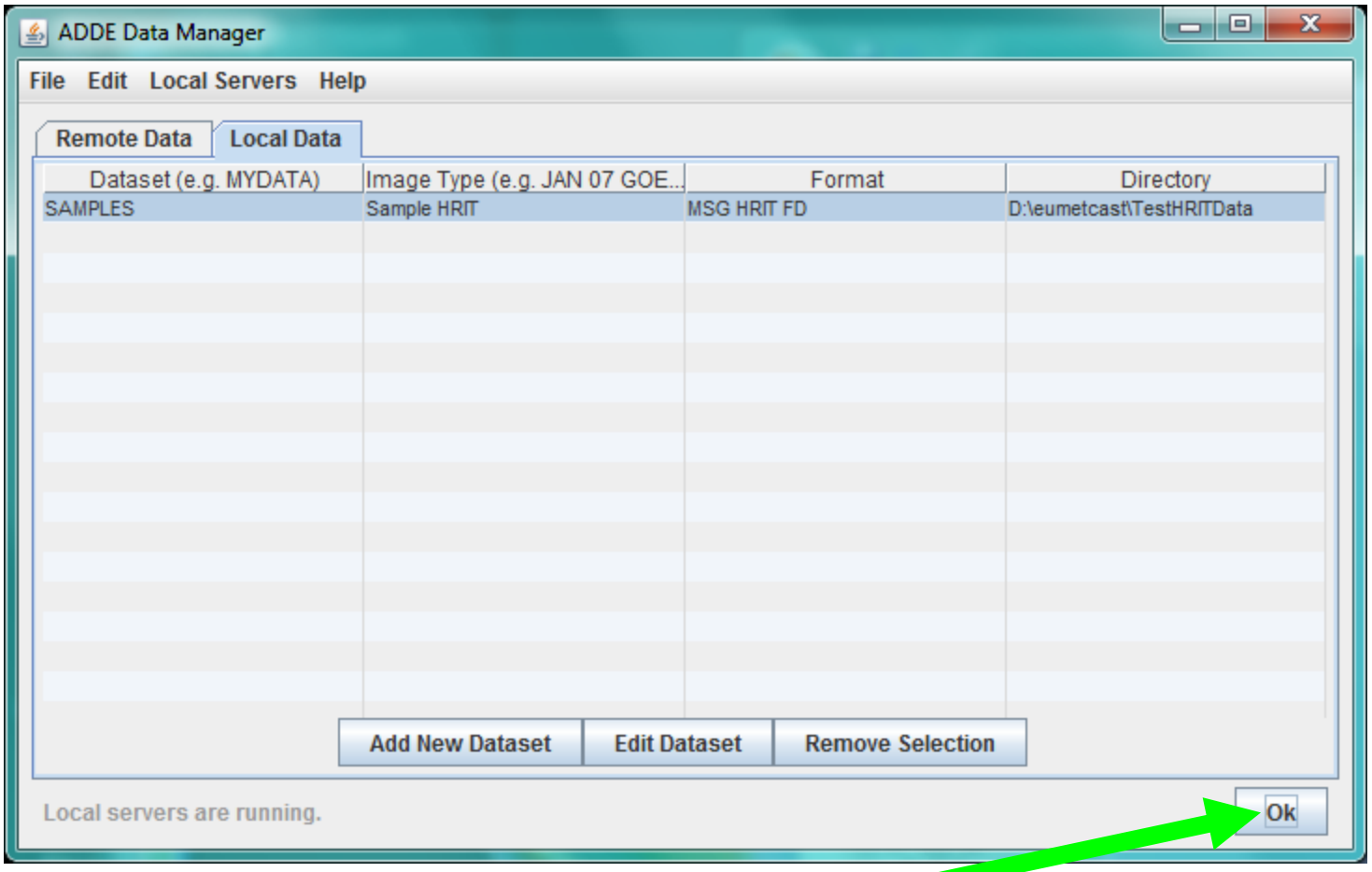
2) Click **Browse**

   1. Locate the directory where you installed the sample dataset
   2. Click **Add Dataset**

3) Back in the Data Manager Window, click **OK**

- See illustration on next page


1
2
3
4
5
Add Local Dataset
Dataset (e.g. MYDATA):
SAMPLES
Image Type (e.g. JAN 07 GOES):
Sample HRIT
Format:
MSG HRIT FD
Directory:
D:\eumetcast\TestHRITData
Browse
Add Dataset
Cancel


ADDE Data Manager
File
Edit
Local Servers
Help
Remote Data
Local Data
Dataset (e.g. MYDATA)
Image Type (e.g. JAN 07 GOE...
Format
Directory
SAMPLES
Sample HRIT
MSG HRIT FD
D:\eumetcast\TestHRITData
Add New Dataset
Edit Dataset
Remove Selection
Local servers are running.
Ok
6

Your first display!!

1) Back in the Data Explorer, in the Data Sources panel, select: **Satellite → Imagery**

2) In the **Server** menu, select the **<LOCAL-DATA>** item

3) Verify the **Dataset** menu says **SAMPLES**

4) Click **Connect**

   - This will then use the local ADDE server to scan the directory and produce the listing of data and times shown (see next page)

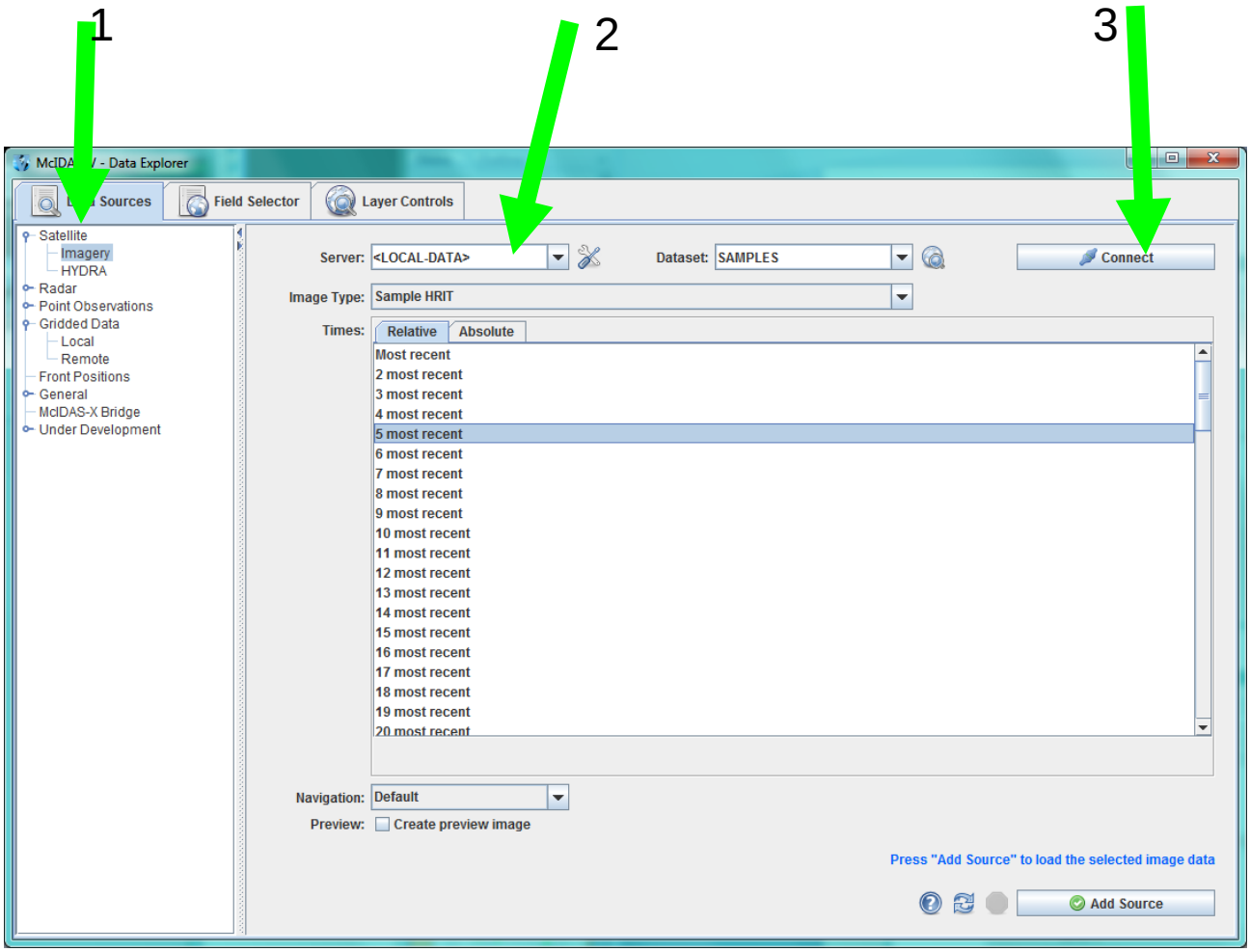
5) Pick ***Sample HRIT*** from drop-down list in **Image Type**

6) Click on the **Absolute** time tab and pick a few times (refer to the User Guide to use the graphical widget, or just pick times from the listing)

7) Then click **Add Source**

8) In a few seconds, you will be switched to the **Field Selector**

- See illustration on the next page


1
2
3
McIDAS-V - Data Explorer
Data Sources
Field Selector
Layer Controls
Satellite
Imagery
HYDRA
Radar
Point Observations
Gridded Data
Local
Remote
Front Positions
General
McIDAS-X Bridge
Under Development
Server: <LOCAL-DATA>
Dataset: SAMPLES
Connect
Image Type: Sample HRIT
Times:
Relative
Absolute
Most recent
2 most recent
3 most recent
4 most recent
5 most recent
6 most recent
7 most recent
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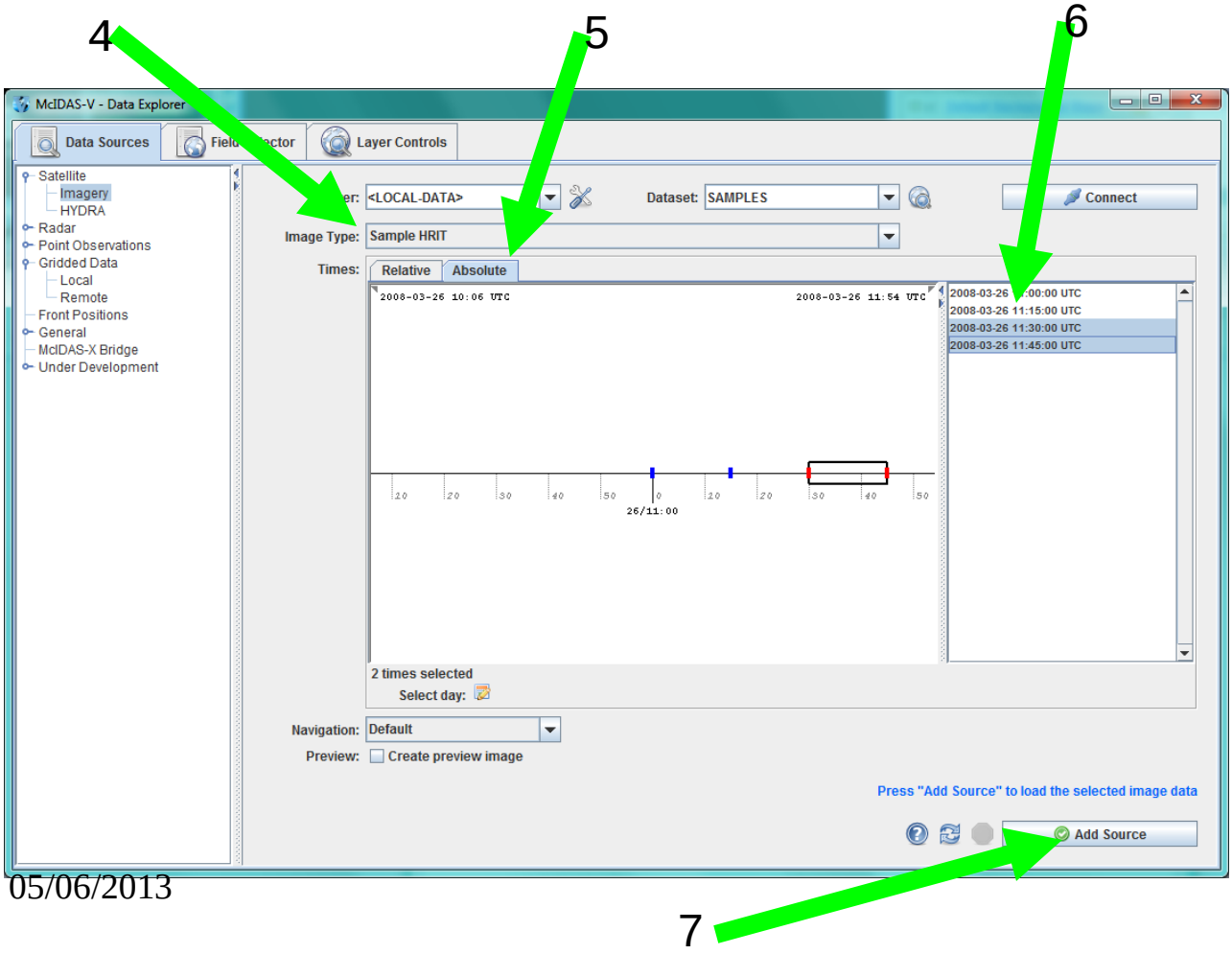
19 most recent
20 most recent
Navigation: Default
Preview: Create preview image
Press "Add Source" to load the selected image data
Add Source


4
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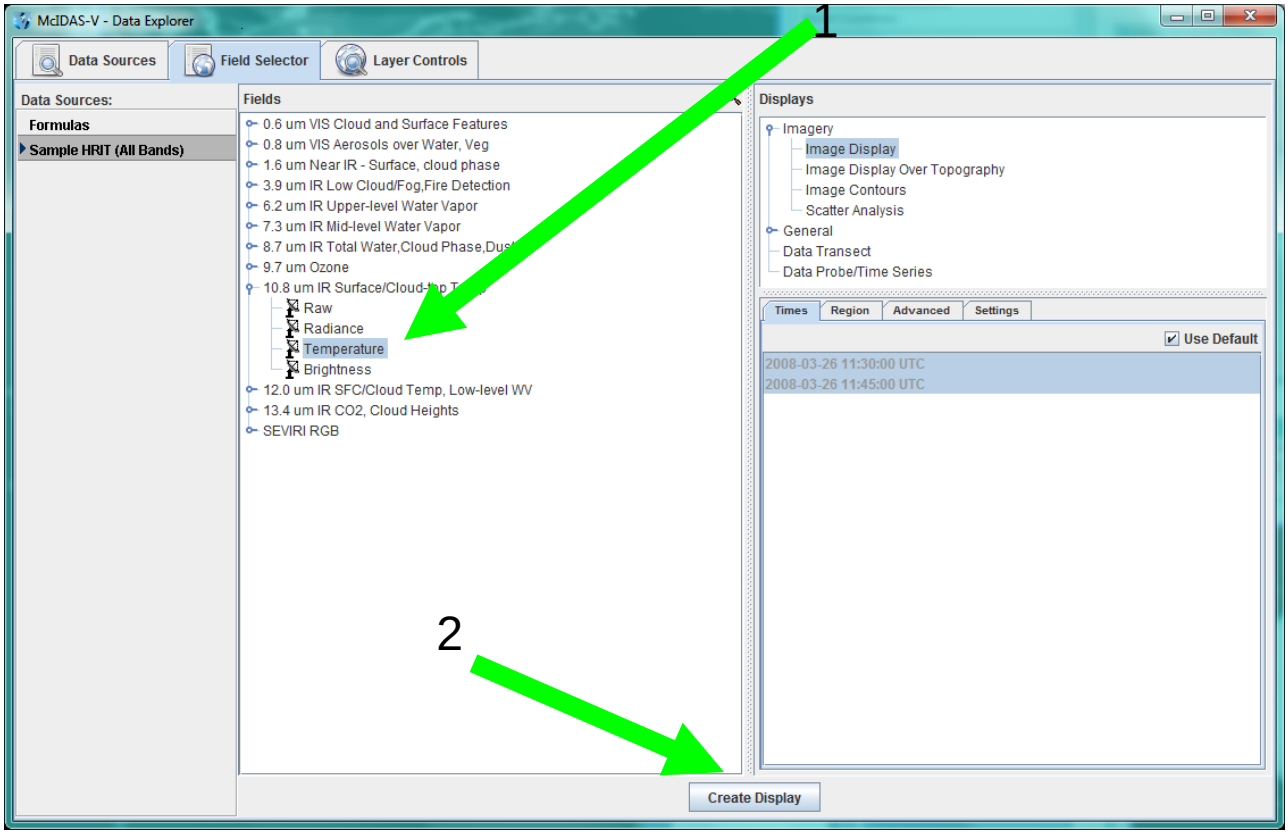
7
McIDAS-V - Data Explorer
Data Sources
Layer Controls
Satellite
Imagery
HYDRA
Radar
Point Observations
Gridded Data
Local
Remote
Front Positions
General
McIDAS-X Bridge
Under Development
Dataset: SAMPLES
Connect
Image Type: Sample HRIT
Times:
Relative
Absolute
2008-03-26 10:06 UTC
2008-03-26 11:54 UTC
2008-03-26 11:15:00 UTC
2008-03-26 11:30:00 UTC
2008-03-26 11:45:00 UTC
26/11:00
2 times selected
Select day:
Navigation: Default
Preview: Create preview image
Press "Add Source" to load the selected image data
Add Source

Your first display!! (continued)

1) In the **Fields** panel, click key icon in front of channel/band **10.8...** and then the calibration type **Temperature**

2) Then click **Create Display**

- At this point, the data files are now read using the ADDE server on your machine.
  - The server will apply the calibration and can geographically sub-section the data before giving it to the program for display
  - *Don't panic over the rather dark image!*
- Once the images are displayed, you may use the **Animation Controls** to animate (loop) the images.
  - Click the little **i** icon to set the rates, etc.
  - Refer to the User's Guide for more details!
- See illustrations on the next page


McIDAS-V - Data Explorer
Data Sources
Field Selector
Layer Controls
Data Sources:
Formulas
Sample HRIT (All Bands)
Fields
0.6 um VIS Cloud and Surface Features
0.8 um VIS Aerosols over Water, Veg
1.6 um Near IR - Surface, cloud phase
3.9 um IR Low Cloud/Fog,Fire Detection
6.2 um IR Upper-level Water Vapor
7.3 um IR Mid-level Water Vapor
8.7 um IR Total Water,Cloud Phase,Dus
9.7 um Ozone
10.8 um IR Surface/Cloud-Top T
Raw
Radiance
Temperature
Brightness
12.0 um IR SFC/Cloud Temp, Low-level WV
13.4 um IR CO2, Cloud Heights
SEVIRI RGB
Displays
Imagery
Image Display
Image Display Over Topography
Image Contours
Scatter Analysis
General
Data Transect
Data Probe/Time Series
Times
Region
Advanced
Settings
Use Default
2008-03-26 11:30:00 UTC
2008-03-26 11:45:00 UTC
Create Display
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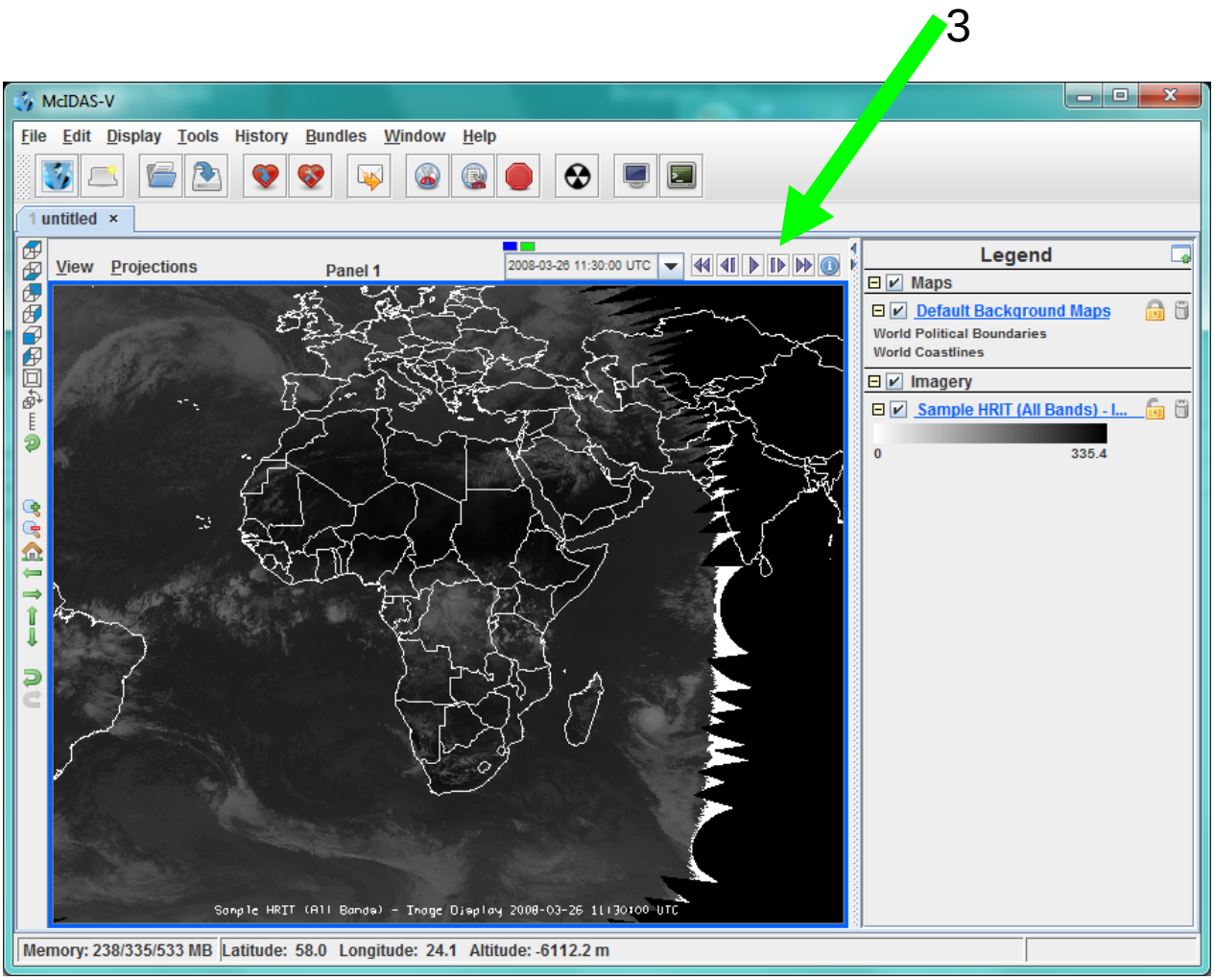
McIDAS-V
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View Projections
Panel 1
2008-03-26 11:30:00 UTC
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Maps
Default Background Maps
World Political Boundaries
World Coastlines
Imagery
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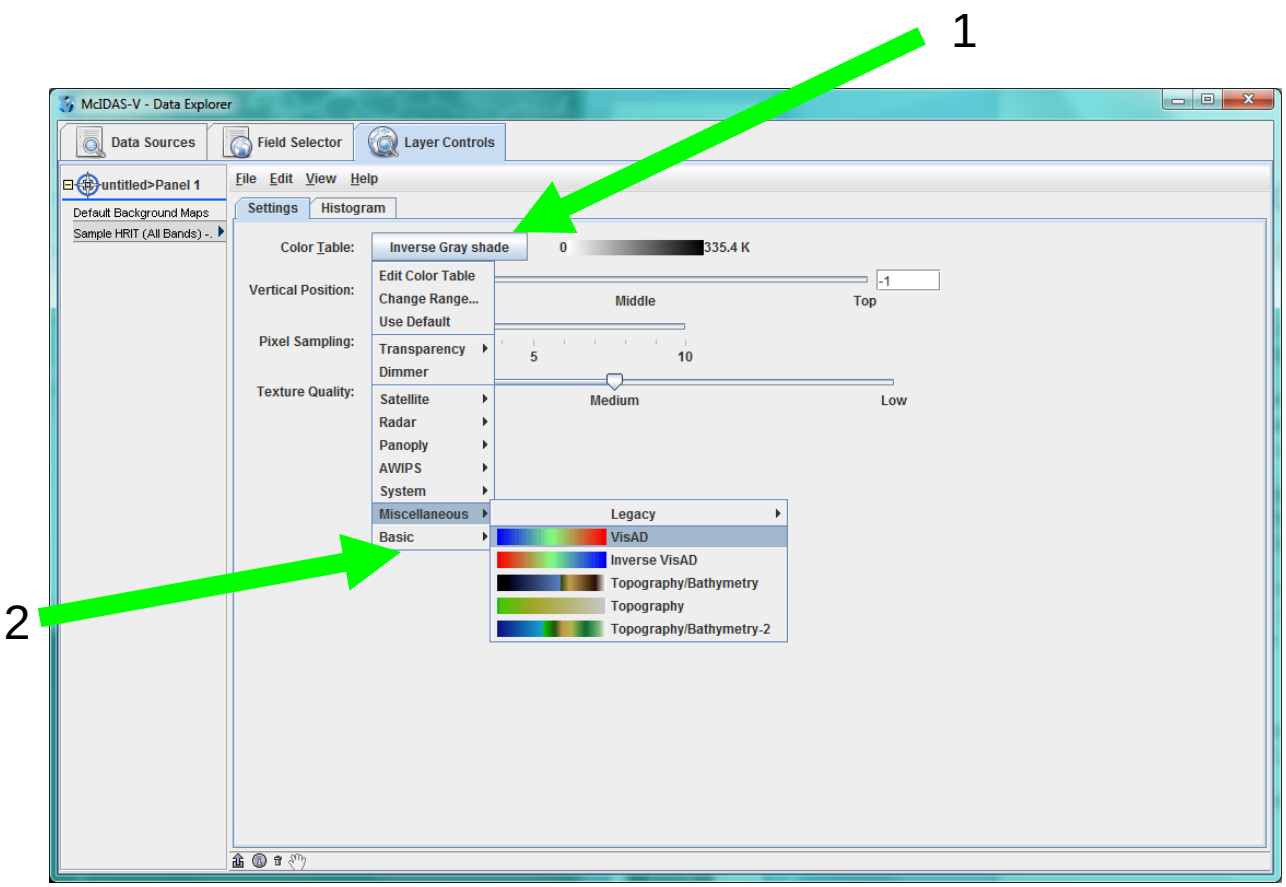
0
335.4
Sample HRIT (All Bands) - Image Display 2008-03-26 11:30:00 UTC
Memory: 238/335/533 MB
Latitude: 58.0 Longitude: 24.1 Altitude: -6112.2 m
3

Doing more – changing colors

- Each Display has an associated **Control** that can be used to control aspects of the display
- Let us use the **Control** for the “Image Display” (shown on next page) to change the “color enhancement” of our images:

1) Click on the button next to the **Color Table** (the button label will show the name of the current color table – probably “Inverse Gray Scale” to start with)

2) As shown on the next page, find the **Miscellaneous** color table group, click on it, and then click on the **VisAD** color table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McIDAS-V - Data Explorer
Data Sources
Field Selector
Layer Controls
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Sample HRIT (All Bands) -...
File Edit View Help
Settings
Histogram
Color Table:
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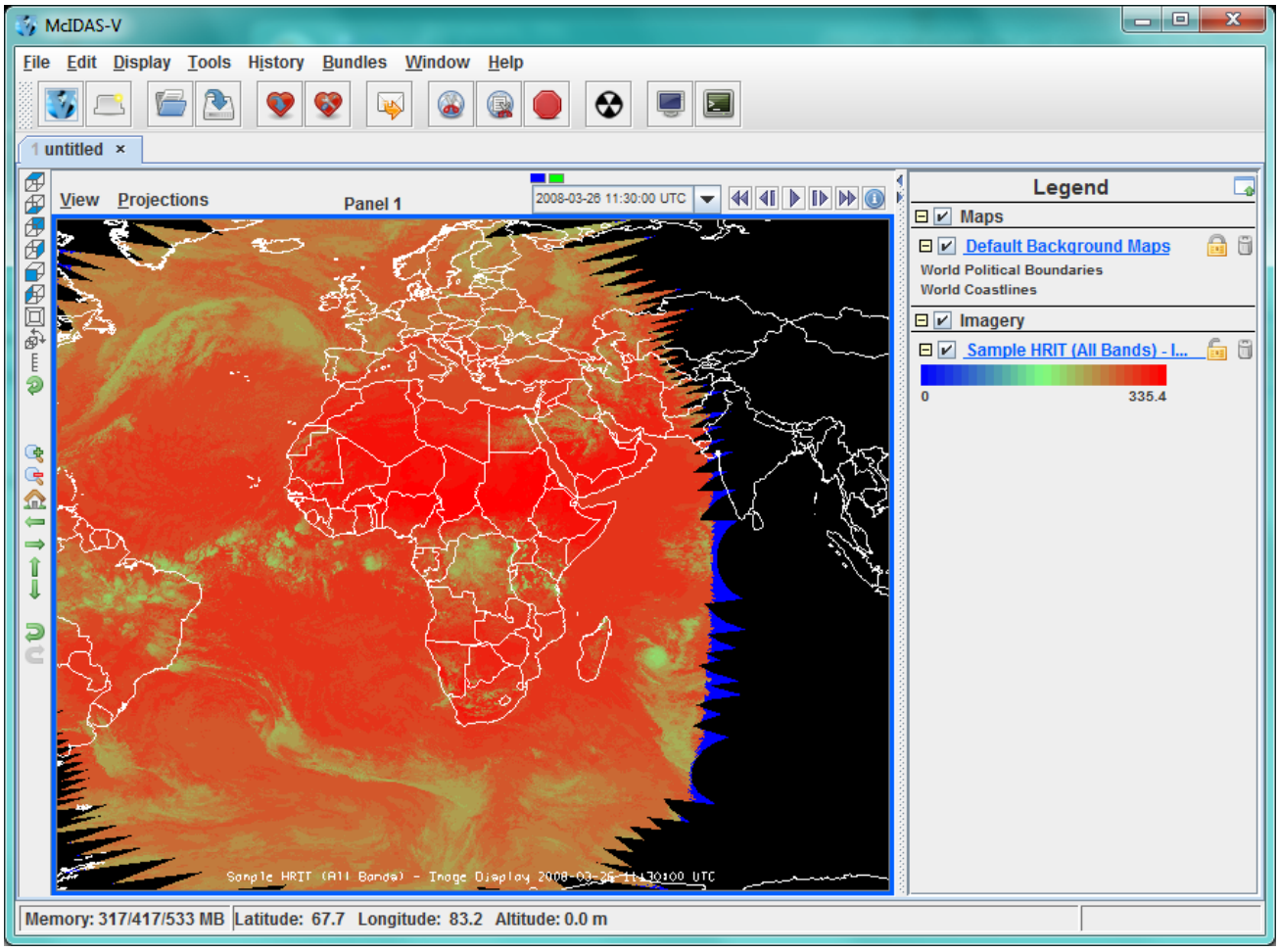
Edit Color Table
Change Range...
Use Default
Vertical Position:
-1
Middle
Top
Pixel Sampling:
Transparency
Dimmer
5
10
Texture Quality:
Satellite
Radar
Panoply
AWIPS
System
Miscellaneous
Basic
Medium
Low
Legacy
VisAD
Inverse VisAD
Topography/Bathymetry
Topography
Topography/Bathymetry-2


McIDAS-V
File Edit Display Tools History Bundles Window Help
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View Projections
Panel 1
2008-03-26 11:30:00 UTC
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Maps
Default Background Maps
World Political Boundaries
World Coastlines
Imagery
Sample HRIT (All Bands) - I...
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335.4
Memory: 317/417/533 MB
Latitude: 67.7 Longitude: 83.2 Altitude: 0.0 m

Change the range and projection

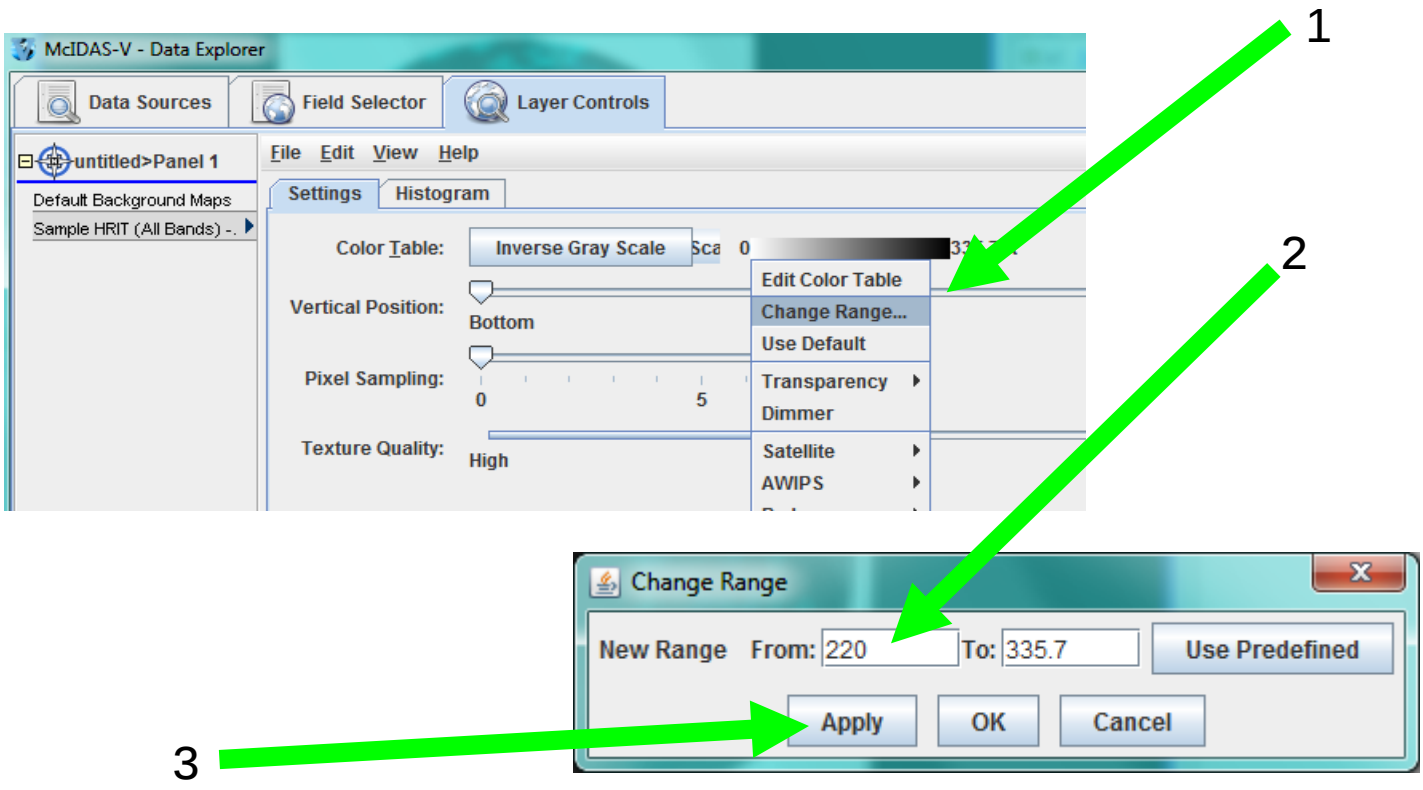
- After the color has changed, we need to “stretch” the display colors out a bit...

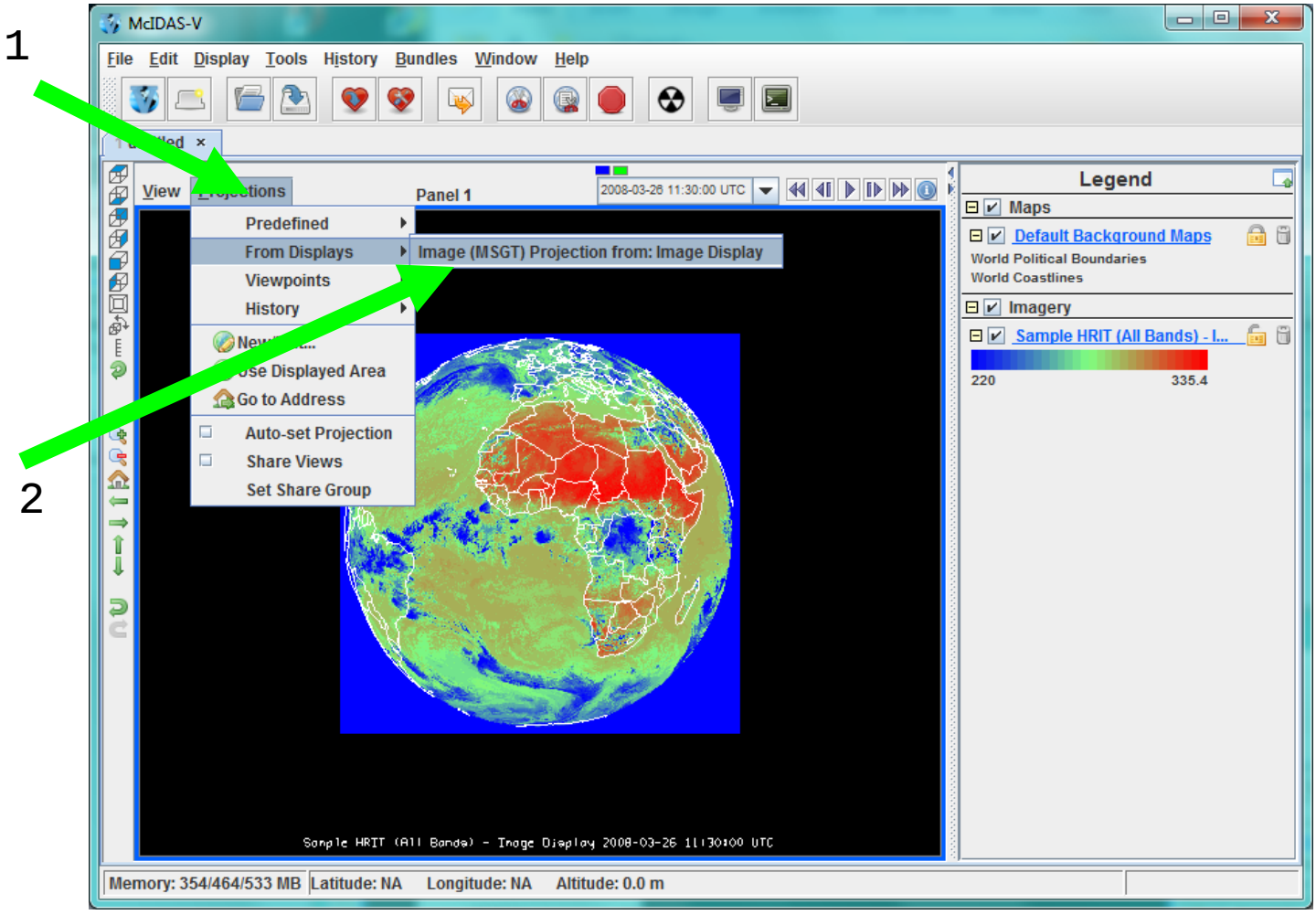
    1. Right-click on the color-bar and select **Change Range**
    2. Change the lower value from 0 to 220
    3. Click **Apply**

- Now let’s change the projection

    1. In the Main Display Window, click on **Projections**
    2. Then select **From Displays** and then **Image (MSGT)…**

       (Note that selecting the **History** and then **Default** will return to the original projection.)


McIDAS-V - Data Explorer
Data Sources
Field Selector
Layer Controls
untitled>Panel 1
Default Background Maps
Sample HRIT (All Bands) -.
File Edit View Help
Settings
Histogram
Color Table:
Inverse Gray Scale
Vertical Position:
Bottom
Pixel Sampling:
0
5
Texture Quality:
High
Edit Color Table
Change Range...
Use Default
Transparency
Dimmer
Satellite
AWIPS
1
2
3
Change Range
New Range
From: 220
To: 335.7
Use Predefined
Apply
OK
Cancel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2
McIDAS-V
File Edit Display Tools History Bundles Window Help
View
Projections
Panel 1
2008-03-26 11:30:00 UTC
Predefined
From Displays
Viewpoints
History
Go to Address
Auto-set Projection
Share Views
Set Share Group
Image (MSGT) Projection from: Image Display
Legend
Maps
Default Background Maps
World Political Boundaries
World Coastlines
Imagery
Sample HRIT (All Bands) - I...
220
335.4
Sample HRIT (All Bands) - Image Display 2008-03-26 11:30:00 UTC
Memory: 354/464/533 MB
Latitude: NA
Longitude: NA
Altitude: 0.0 m

Explore and Discover

- At this point, you might sit back and refer to pages in the User's Guide
- Experiment on your own; e.g.
  - change temperature range
  - geographical sub-section and geometrical resolution
- Be certain to **hover** the mouse pointer over items to see what they do
- Also, **right-click** on widgets often brings up more options!!
- When you are ready, let's go on with RGBs and plug-ins!!

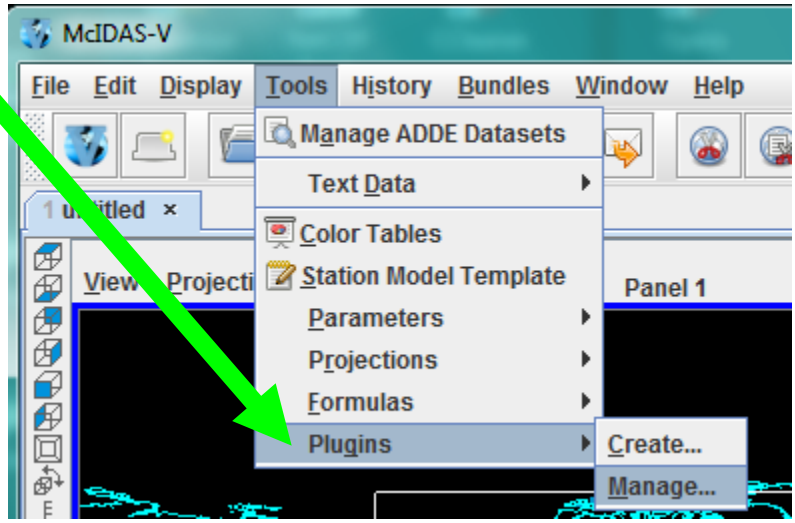
Using the sample data and tutorial

- First, you need to install the EUMETSAT RGB plug-in

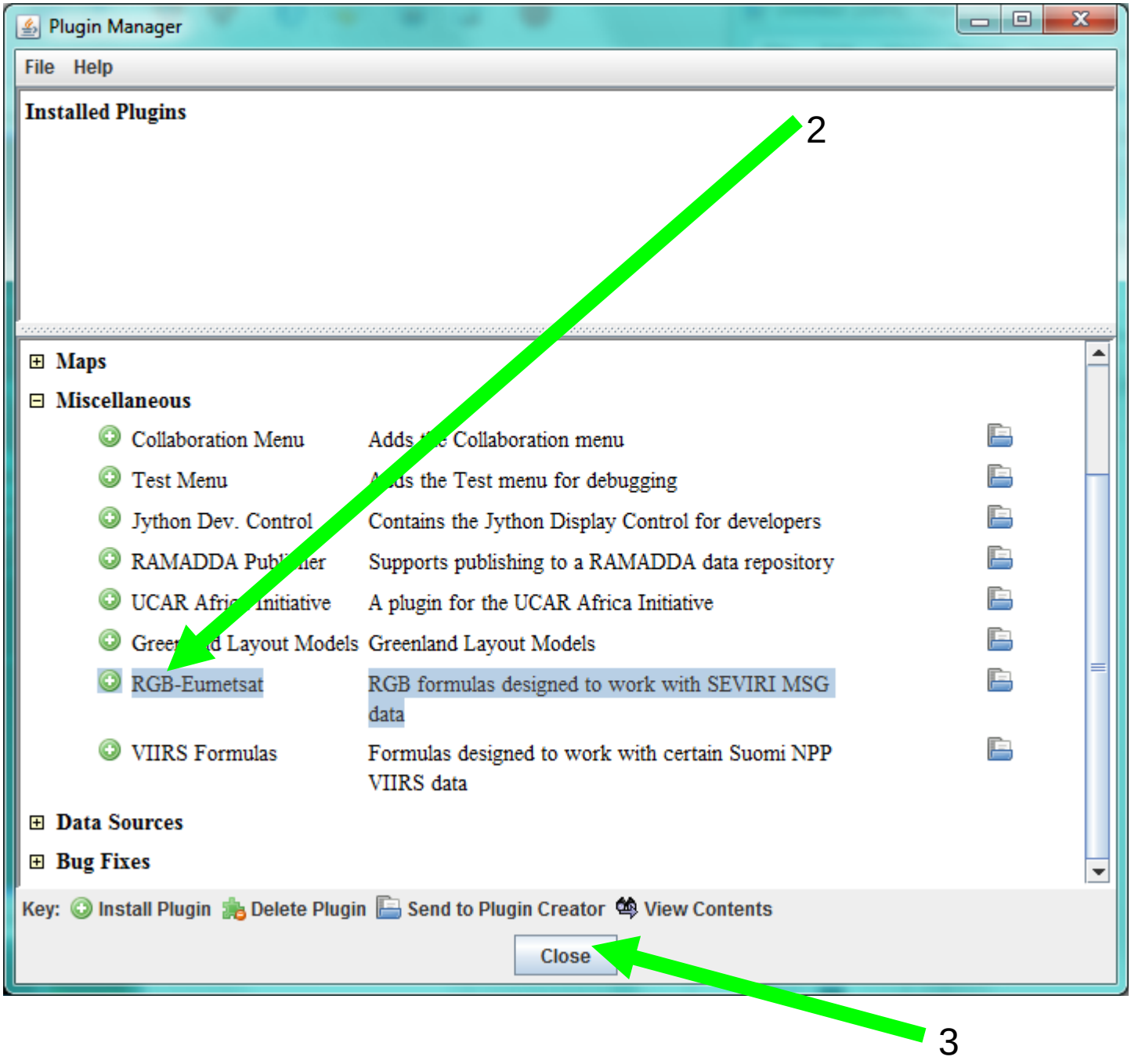
  1. Start the Plug-In Manager:

     – **Tools → Plugins → Manage**

1



  2. Then click on the **+** by the **RGB → EUMETSAT** item (see next page)



3) Then click **Close**

4) After this, you must re-start McIDAS-V to complete the installation.

So, what did that do?

1) Select the test dataset, just as you had before (see the next page)

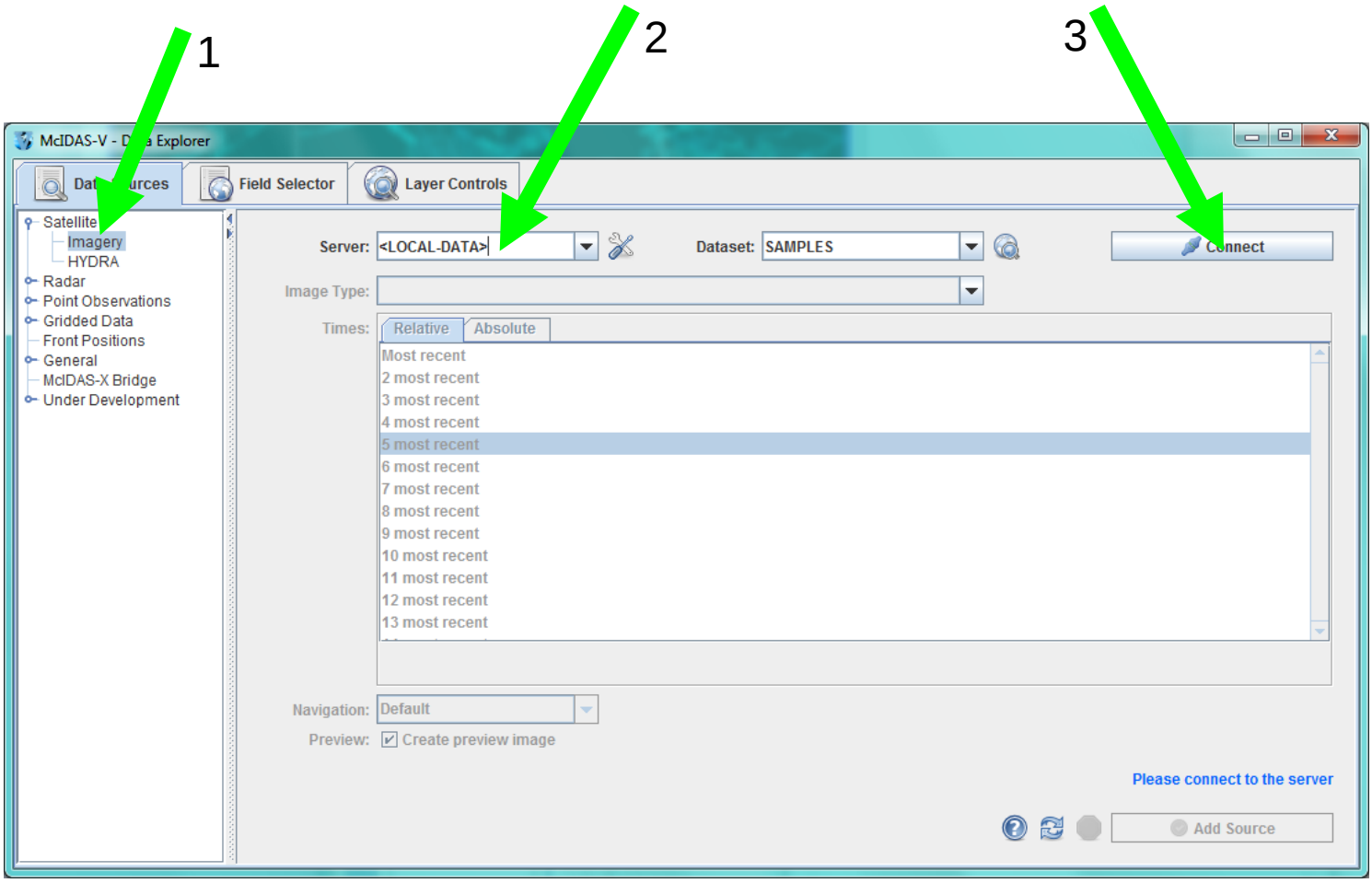
    1. Choose **Satellite → Image**
    2. Select the **<LOCAL-DATA>**
    3. Click **Connect**
    4. Pick some times and **Data Source**
    5. Click **Add Source**
    6. Notice how the **Fields** now lists a new item: **SEVIRI RGB**

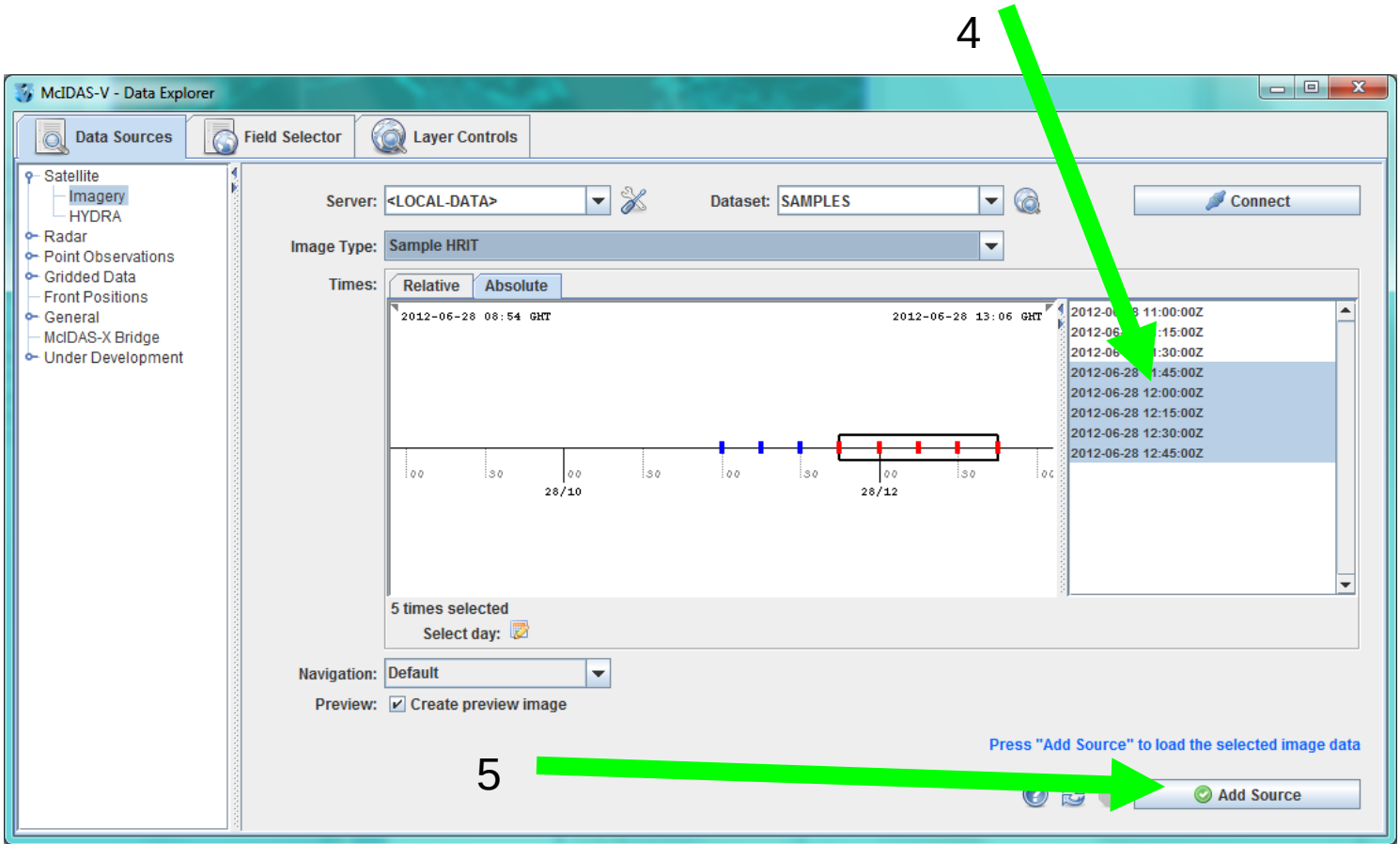
2) Open up that item and click on one of the options...for example: **AIRM (Air Mass)**

3) Click **Create Display...**

- *The first time you do this, we recommend that you select only two time periods; otherwise, the computations will take a long time. Later you should experiment with this!*

- See illustrations on the next two pages (*note we had changed the projection to "From Displays")*


1
2
3
McIDAS-V - Data Explorer
Data Sources
Field Selector
Layer Controls
Satellite
Imagery
HYDRA
Radar
Point Observations
Gridded Data
Front Positions
General
McIDAS-X Bridge
Under Development
Server: <LOCAL-DATA>
Dataset: SAMPLES
Connect
Image Type:
Times: Relative Absolute
Most recent
2 most recent
3 most recent
4 most recent
5 most recent
6 most recent
7 most recent
8 most recent
9 most recent
10 most recent
11 most recent
12 most recent
13 most recent
Navigation: Default
Preview: Create preview image
Please connect to the server
Add Source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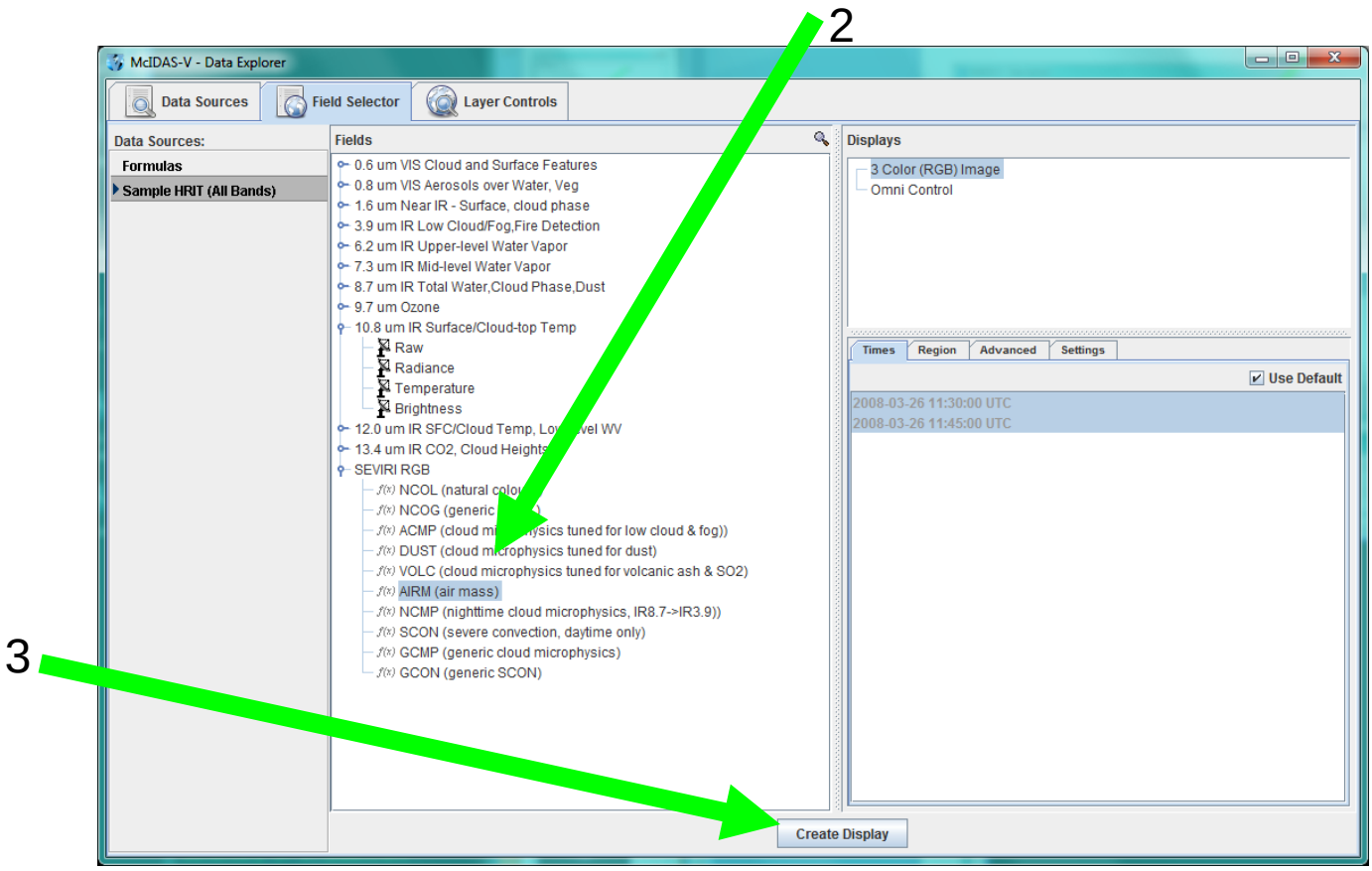
McIDAS-V - Data Explorer
Data Sources
Field Selector
Layer Controls
Satellite
Imagery
HYDRA
Radar
Point Observations
Gridded Data
Front Positions
General
McIDAS-X Bridge
Under Development
Server: <LOCAL-DATA>
Dataset: SAMPLES
Connect
Image Type: Sample HRIT
Times: Relative Absolute
2012-06-28 08:54 GMT
2012-06-28 13:06 GMT
2012-06-28 11:45:00Z
2012-06-28 12:00:00Z
2012-06-28 12:15:00Z
2012-06-28 12:30:00Z
2012-06-28 12:45:00Z
28/10
28/12
5 times selected
Select day:
Navigation: Default
Preview: Create preview image
Press "Add Source" to load the selected image data
Add Source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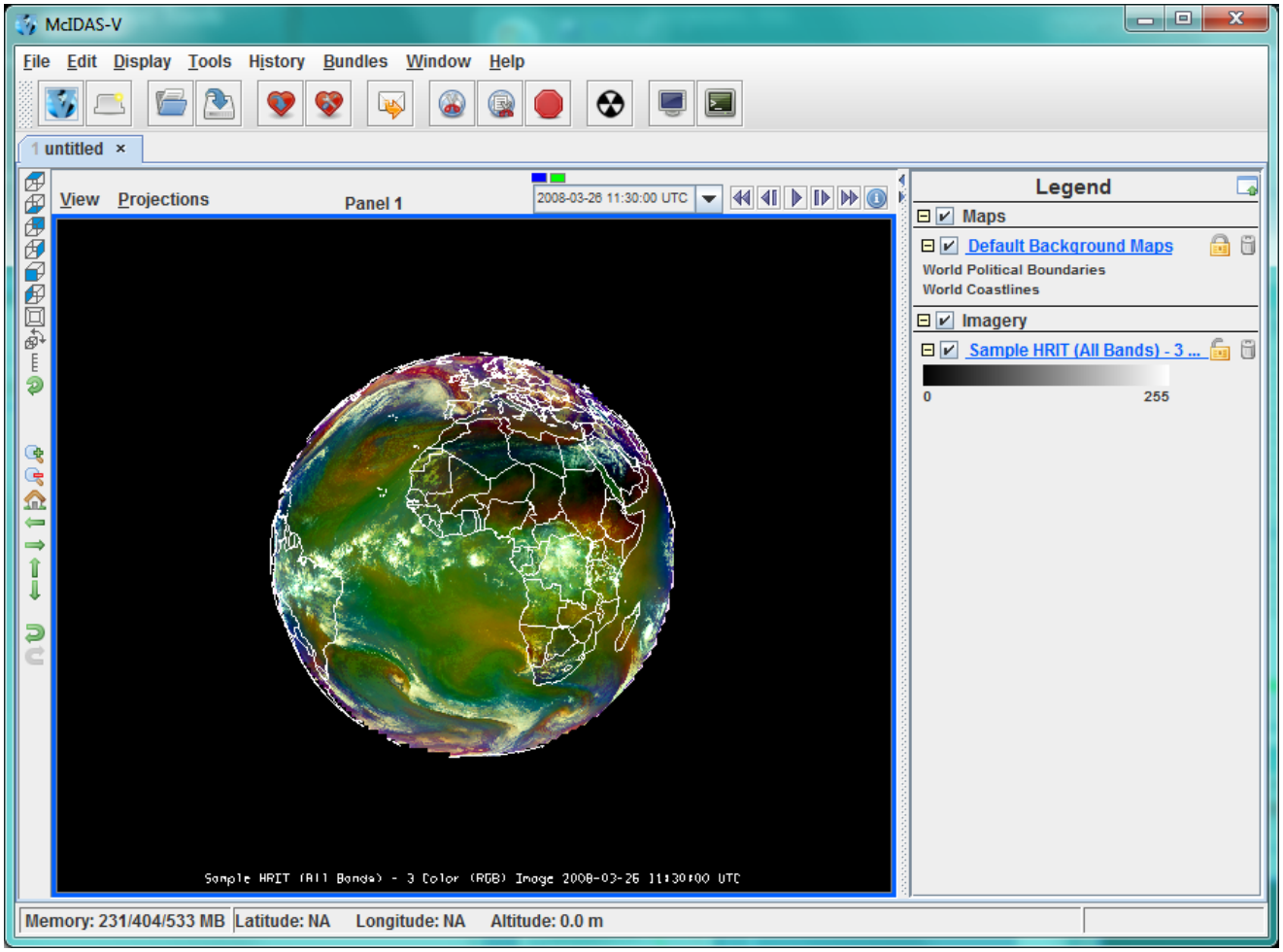
McIDAS-V - Data Explorer
Data Sources
Field Selector
Layer Controls
Data Sources:
Formulas
Sample HRIT (All Bands)
Fields
0.6 um VIS Cloud and Surface Features
0.8 um VIS Aerosols over Water, Veg
1.6 um Near IR - Surface, cloud phase
3.9 um IR Low Cloud/Fog,Fire Detection
6.2 um IR Upper-level Water Vapor
7.3 um IR Mid-level Water Vapor
8.7 um IR Total Water,Cloud Phase,Dust
9.7 um Ozone
10.8 um IR Surface/Cloud-top Temp
Raw
Radiance
Temperature
Brightness
12.0 um IR SFC/Cloud Temp, Lo vel WV
13.4 um IR CO2, Cloud Height
SEVIRI RGB
NCOL (natural colo
NCOG (generic
ACMP (cloud m sics tuned for low cloud & fog))
DUST (cloud microphysics tuned for dust)
VOLC (cloud microphysics tuned for volcanic ash & SO2)
AIRM (air mass)
NCMP (nighttime cloud microphysics, IR8.7->IR3.9))
SCON (severe convection, daytime only)
GCMP (generic cloud microphysics)
GCON (generic SCON)
Displays
3 Color (RGB) Image
Omni Control
Times
Region
Advanced
Settings
Use Default
2008-03-26 11:30:00 UTC
2008-03-26 11:45:00 UTC
Create Display


McIDAS-V
File Edit Display Tools History Bundles Window Help
1 untitled
View Projections
Panel 1
2008-03-26 11:30:00 UTC
Legend
Maps
Default Background Maps
World Political Boundaries
World Coastlines
Imagery
Sample HRIT (All Bands) - 3 ...
0
255
Sample HRIT (All Bands) - 3 Color (RGB) Image 2008-03-26 11:30:00 UTC
Memory: 231/404/533 MB
Latitude: NA
Longitude: NA
Altitude: 0.0 m

Configuration of McIDAS-V for EUMETCast real-time data

- If your real-time EUMETCast data are available on a network drive, then

  1. Start McIDAS-V, if not running
  2. Be sure that the network directory which points to the EUMETCast data is enabled
  3. Select
     T**ools → Manage ADDE Datasets**
  4. Select **"Local Data"**
     - Fill in the appropriate data, as before
  5. Click **"Add New Dataset"**

- If your Real Time data are <u>not</u> available on a network drive, you must move the files...see next pages

Another way to access the real time data

- Set up the EFTS code from EUMETSAT (see documentation for examples), or something similar to move files as they become available automatically from your EUMETCast machine to a fixed directory on your McVCast computer

  1. Put all the same type of data into a single directory; use more than one directory if needed and set up a separate ADDE dataset for each one
  2. Start McIDAS-V, if not running
  3. Select
     T**ools → Manage ADDE Datasets**
  4. Select **"Local Data"**
     - Fill in the appropriate data, as before
  5. Click **"Add New Dataset"**

Getting Help

- EUMETSAT provides assistance with this software and your set-up. Send an email to:

ops @ eumetsat.int