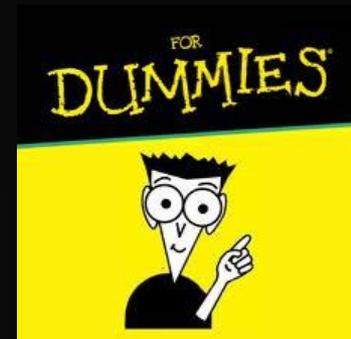


# Gibson Ridge 2 Analyst Program for Dummies!!!

(like me)

Updated for GR2A 2.90

May 2020



Produced by Kevin Skow, NWS Topeka  
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# Introduction

This is intended to be an introduction/refresher to the GR2A program. It doesn't cover every single feature, but hits on those that are the most useful. This manual was made for **GR2A 2.90**. Previous versions of GR2A 2.x, GR2/GR2A 1.x, and GR3 have similar interfaces, but may differ in sometimes substantial ways or be missing features.

Hopefully you can glean some new information and tricks on using GR2A from this presentation. With the right setup, GR2A can be a very powerful program.

**NOTE:** As of May 2020, GR now supports Level II TDWR data. However, the nationwide data feed is not fully implemented. Data will not be available for all sites until this is completed. GR has the option to check for live data availability and will highlight which TDWR sites are available—see [this section](#) for more info.

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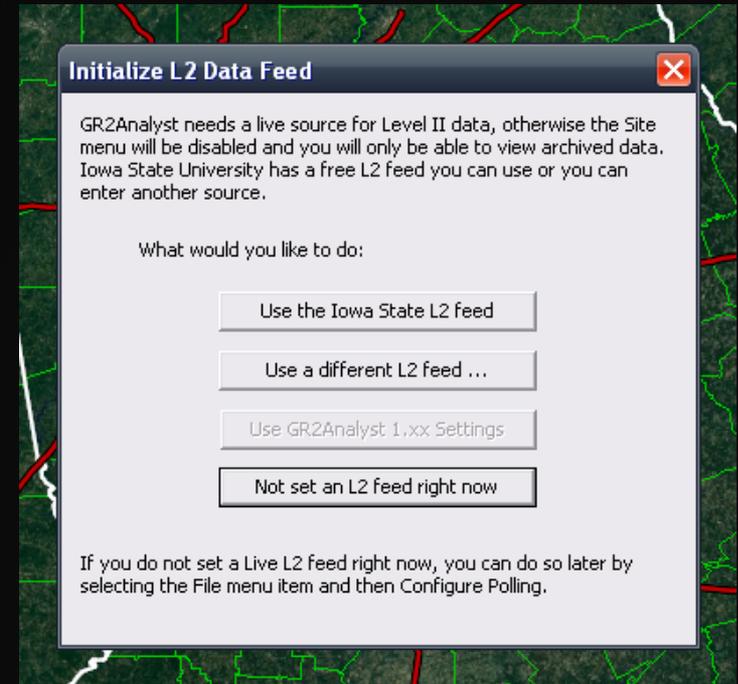
Upgrading

# First Time Use

## Level II Data Feed

If you are installing GR2A for the first time on your computer, you will likely see a pop-up box appear when you first launch the program asking which Level II data feed to use (see screen capture below).

Unless you have a different feed to use, it is easiest to choose the Iowa State L2 feed (first option). You can always change these settings later in the *File -> Configure Polling* menu item.





# Program Layout

## Component Descriptions

---

- **Menu Bar**

Access to almost all of the settings for GR2A

- **Toolbar**

Shortcuts to the most common options (polling, animation, viewing options, storm motion, icons, and warnings).  
Mousing over each button gives its description.

- **Color Table**

Scale for the currently displayed or selected product

- **Radar Display Window**

Displays the currently loaded data

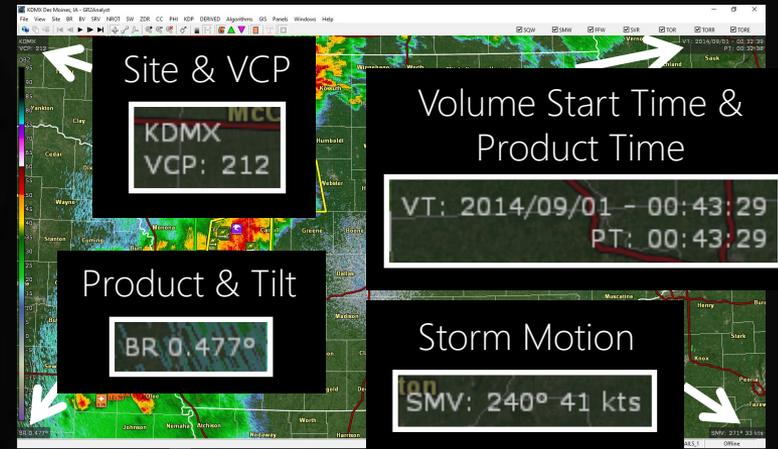
# Program Layout

## Product/Tilt Window

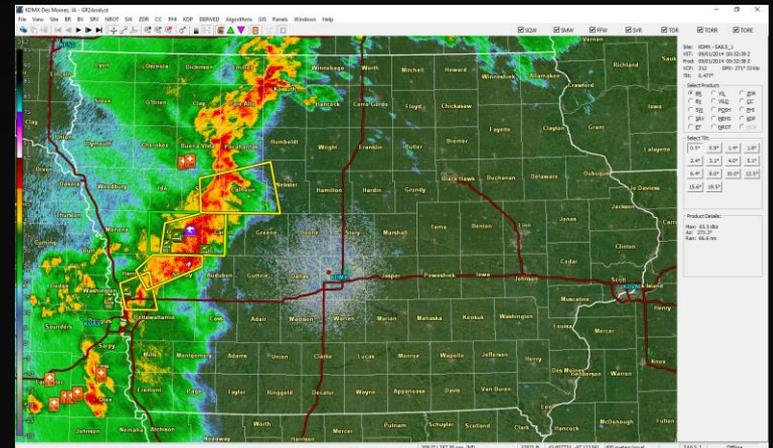
The Product/Tilt Window can be toggled on and off by going to *Windows -> Show Product /Tilt Window*.

The window shows the available radar tilts and other valuable VCP information in one place. When toggled off, much of this info shifts to small boxes in the four corners of the Radar Display Window.

Description of the Product/Tilt Window on Next Page



Product/Tilt Window Toggled **Off**  
"Four Corners Layout"



Product/Tilt Window Toggled **On**  
(Right Side of Window)

# Program Layout

## Product/Tilt Window & Status Bar

### Product/Tilt Window

Site: KDMX - SAILS\_1  
 VST: 06/30/2014 18:07:58 Z  
 Prod: 06/30/2014 18:10:30 Z  
 VCP: 212 SMV: ----  
 Tilt: 0.479°

Select Product:

BR  VIL  ZDR  
 BY  VILQ  CC  
 SW  POSH  PHI  
 SRV  MEHS  KDP  
 ET  NROT  HCA

Select Tilt:

0.5° 0.9° 1.3° 1.8°  
 2.4° 3.1° 4.0° 5.1°  
 6.4° 8.0° 10.1° 12.5°  
 15.6° 19.5°

← Site ID & MESO-SAILS or MRLE scanning strategy in use, start time of the volume scan and product, VCP, and the user-set storm motion

← Available products

← Available tilts to choose from. If a \* appears next to the tilt, the data is from the previous volume scan.

### MESO-SAILS & MRLE Display Notes

When GR displays the text "SAILS\_x", x is the number of *additional* 0.5° slices being scanned. This number ranges from 1 to 3.

For the text "MRLE\_x", x is the number of additional low-level tilts being scanned.

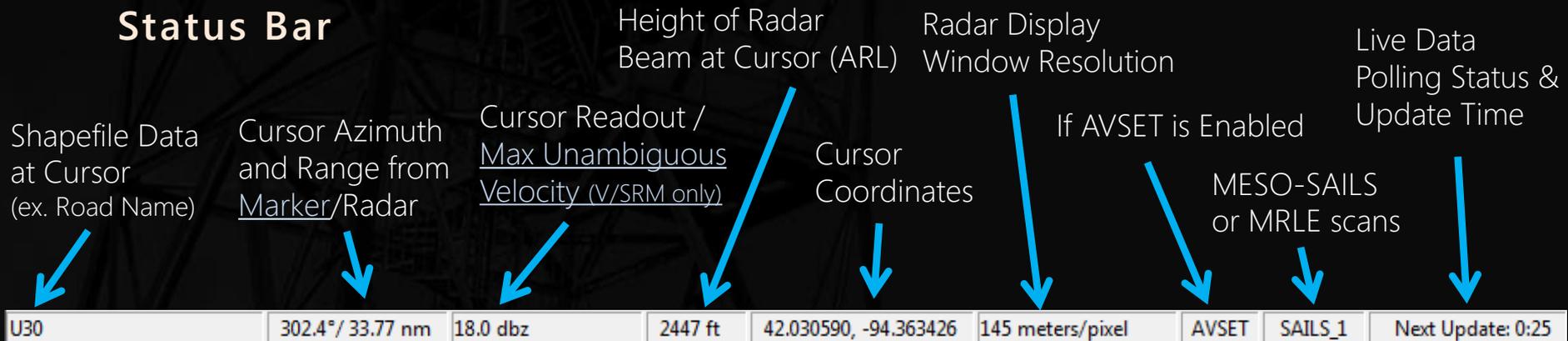
MRLE\_2 = 0.5°, 0.9°

MRLE\_3 = 0.5°, 0.9°, 1.4°

MRLE\_4 = 0.5°, 0.9°, 1.4°, 1.8°

MESO-SAILS and MRLE cannot be used concurrently. If no text is displayed, neither scanning strategy is being used.

### Status Bar



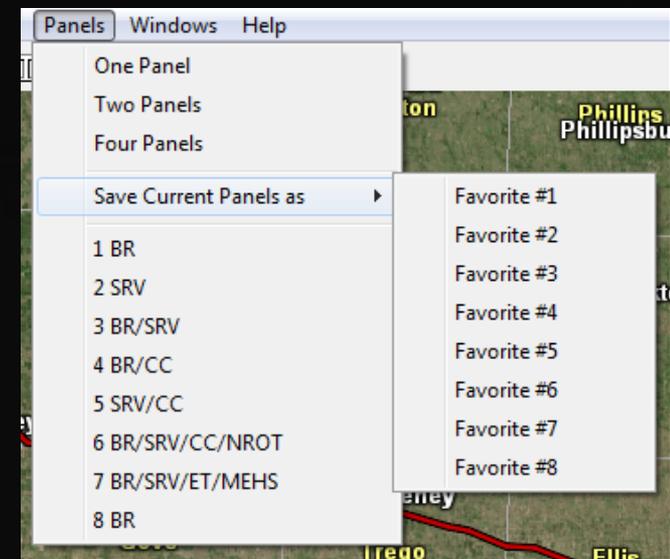


# Program Layout

## Panel Editing

- To add a product to each panel in the two or four panel layout, click the panel—it becomes highlighted with a thin black box—and choose the desired product and elevation from the Product/Tilt Window or Menu Bar.
- Pre-built panels are also under the *Panels* menu. Up to 8 different layouts can be edited and saved using the *Panels -> Save Current Panels as* option in the menu.

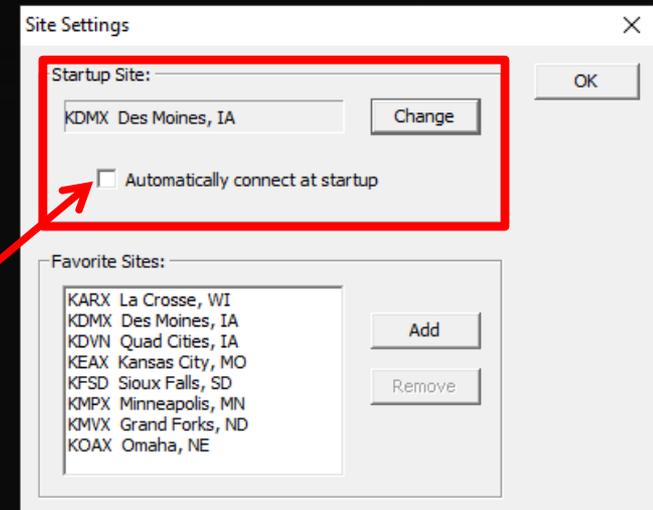
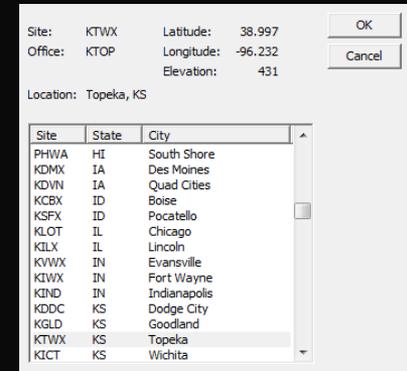
Each panel is numbered 1-8. To open a panel, choose it from the list under the *Panels* menu or select the corresponding number from the keyboard/keypad.



# Radar Site Settings

## Changing Current & Startup Sites

- To change the current site, go to *Site -> Select...*
  - Choose your site from the list that opens and click *OK*. Sites that begin with the letter "T" are TDWR sites.
  - You can also change to a nearby site by clicking on the radar ID in the Radar Display Window.
- To change the startup site
  - Go to *Site -> Settings...*
  - In the Startup Site box, click *Change* and select the site from the provided list
  - To have GR2A begin polling this site at startup, check the box below the site selection field
  - Click *OK* once done



# Radar Site Settings

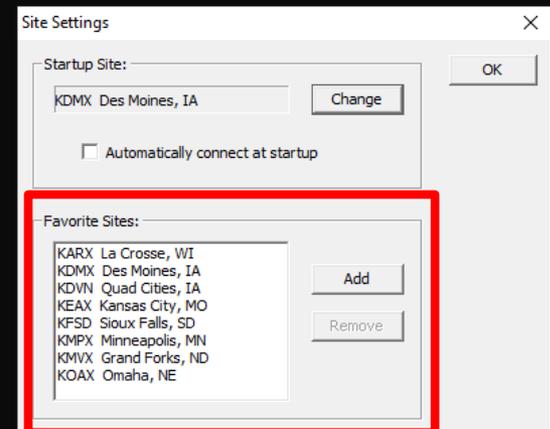
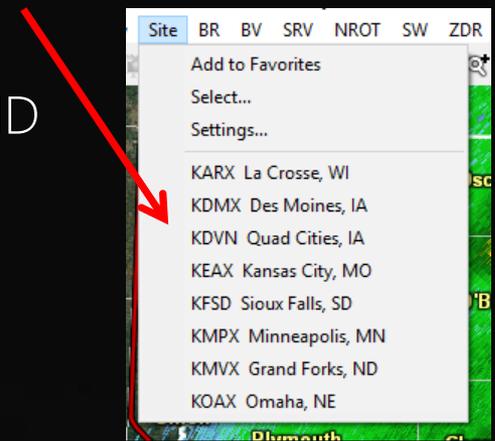
## Favorite Sites

- User-defined favorite radars are displayed in the *Site* menu

Sites are displayed in alphabetical order by site ID

- To configure Favorites:
  - Go to *Site* -> *Settings...*
  - In the Favorite Sites box, click *Add*
  - Select the site from the list and click *OK*  
You will have to do this for each site
  - To remove a site from your favorites, select the site from your list and click *Remove*
  - Click *OK* in the Site Settings box when done

To add the currently displayed radar site as a favorite, go to *Site* -> *Add to Favorites*



# Loading Radar Imagery

## Live Data

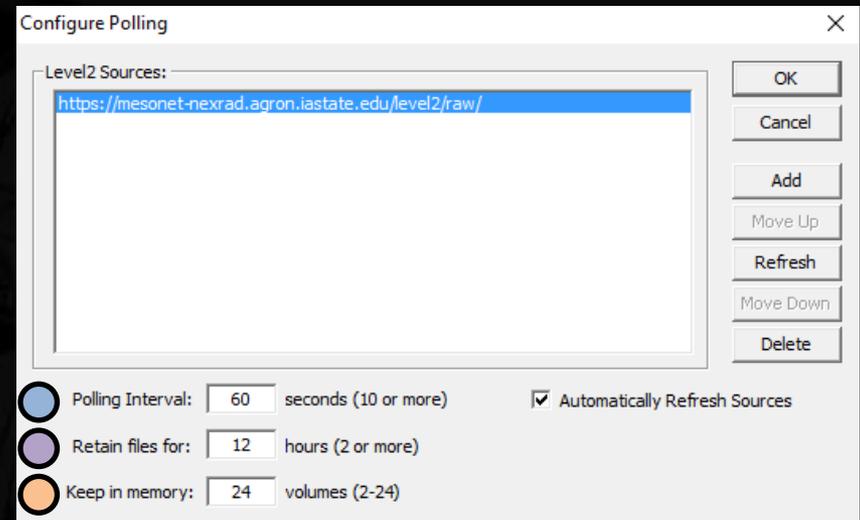
---

- To start downloading live data
  - Click the Start Polling button  on the Toolbar
  - Note: A polling site must be configured beforehand, either when the program was first set up or via the [Configure Polling](#) setting
- To load previous volume scans
  - Click the Download Recent Data button  on the Toolbar
  - To configure how many volume scans GR2A downloads and how often it polls for data, see the [Configure Polling](#) section
- To stop live polling without shutting GR2A down
  - Click the Stop Polling button  on the Toolbar

# Loading Radar Imagery

## Configure Polling (Advanced Users)

- Navigate to *File -> Configure Polling...*
  - You cannot be downloading live data while changing these options
- The window that opens up will display the sources of Level II data. The buttons on the right allow you to add/remove new sources and change their priority (top source is used first).
- There are three configurable options on the bottom:
  - **Polling Interval:** How often GR2A checks for new radar data
  - **Retain files for:** How long GR2A will keep the files it downloads before discarding them
  - **Keep in memory:** How many scans GR2A will keep in memory that will be available for animating

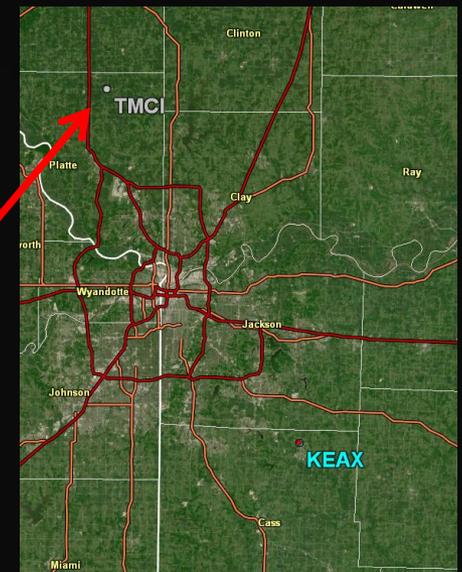
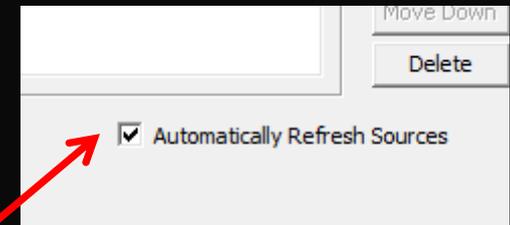


# Loading Radar Imagery

## TDWR Data Availability

As of April 2020, GR2A supports the use of TDWR data, though Level II data is not flowing from all sites.

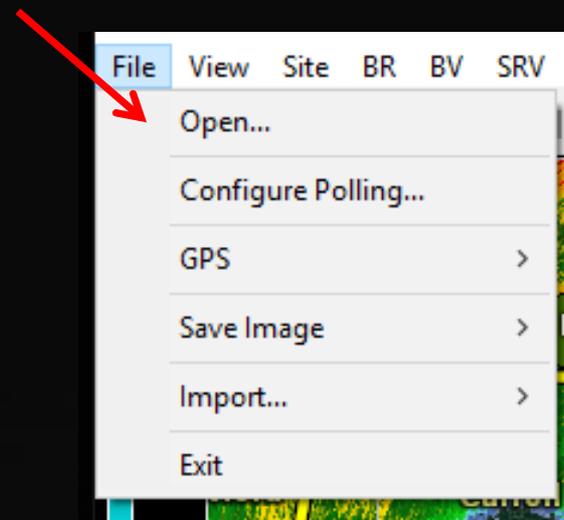
- To alert users to whether data is available for a site, there is an option called *Automatically Refresh Sources* in the Configure Polling window. This is **DISABLED** by default. If you plan to use TDWR data, it would be beneficial to have this setting turned on until all sites are transmitting Level II data.
- By enabling it, GR2A will refresh its radar site list when the program launches, removing sites that are not available from the *Site* menu and greying them out on the Radar Display Window.



# Loading Radar Imagery

## Archived Data

- In Menu Bar go to *File -> Open...*  
Navigate to the folder containing the data, use the shift key to highlight the desired time range, then click open
- You can also drag and drop the radar files you wish to load directly from the Windows Explorer into GR2A.
- A maximum of **24 radar files** can be loaded into the program at one time.

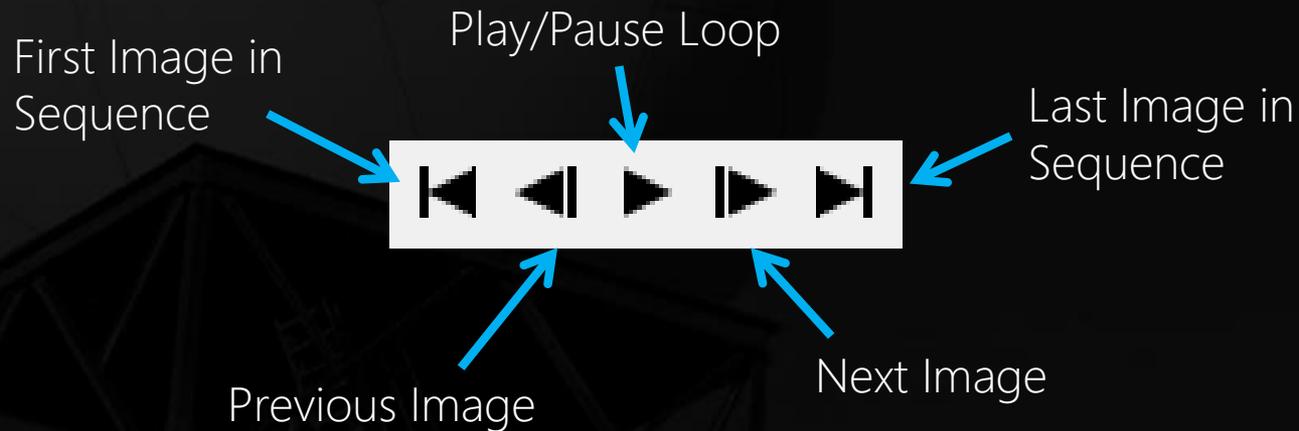


Depending on the size of the radar files and the computer hardware, the dataset may take over a minute to load. This is especially true for files containing MESO-SAILS or MRLE data!

# Navigating Radar Data

## Animation

The Toolbar contains the animation controls for looping data



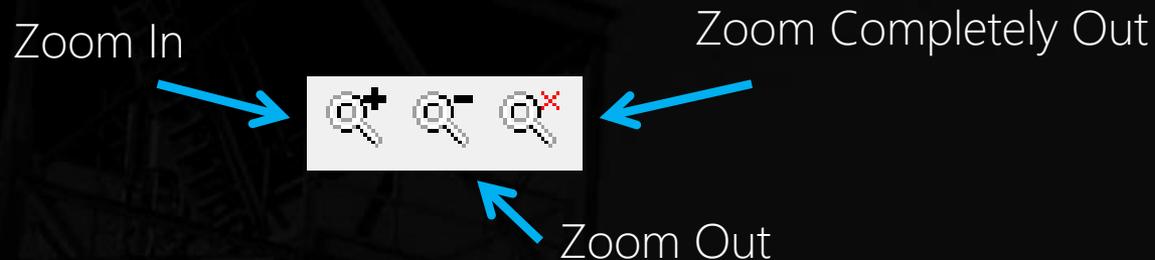
To control looping speeds, see the [Editing Settings](#) section

**Shortcut:** You can also step through the images by using the left and right arrows on the keyboard. The spacebar activates/stops looping.

# Navigating Radar Data

## Zooming & Panning

- To Zoom (Three Options)
  1. Use your scroll wheel to zoom into where ever your mouse is located on the Radar Display Window.
  2. Right-click & hold on an area in the Radar Display Window and drag outwards, forming a box that GR2A zooms in to.
  3. Use the zoom controls on the Toolbar (below):



- To Pan

Click the  button on the Toolbar, then click and drag on the Radar Display Window to move the image around. You will need to select this option when exiting from Cross Section or Volumetric mode.

# Navigating Radar Data

## GR2A Radar Products

GR2A calculates a number of Level III products using Level II data

Level II Products Ingested by GR2A	Level III Products Produced by GR2A
<ul style="list-style-type: none"><li>• Base Reflectivity (BR)</li><li>• Base Velocity (BV)</li><li>• Spectrum Width (SW)</li><li>• Differential Reflectivity (ZDR)</li><li>• Correlation Coefficient (CC) <small>Not Available with TDWR Data</small></li><li>• Phase Shift (PHI)</li><li>• Differential Phase Shift (KDP)</li></ul>	<ul style="list-style-type: none"><li>• Storm Relative Velocity (SRM)</li><li>• Echo Tops (ET)</li><li>• Vertically Integrated Liquid (VIL/DVIL)</li><li>• Probability of Severe Hail (POSH)</li><li>• Maximum Estimated Hail Size (MEHS)</li><li>• Normalized Rotation (NROT)</li><li>• Hydrometeor Classification Algorithm (HCA)</li></ul>

### Product Notes

- An extra dual-pol product is available in GR2A that is not viewable elsewhere. This is phase shift, or PHI. This is the differential phase shift product before a distance derivative is applied to the data
- Hydrometeor Classification Algorithm is listed as a product in GR2A, but is currently not available.

Description of the Precipitation Type Product on Next Pages

# Navigating Radar Data

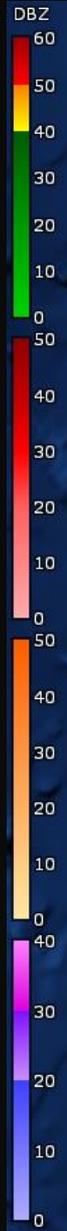
## Precipitation Type

Using RAP model data, GR2A calculates the expected type of precipitation reaching the ground in areas with radar echoes.

To view this imagery, ensure that base reflectivity is loaded and then select the  button on the toolbar. The reflectivity imagery is colorized by four main p-types:

1. Liquid
2. Freezing Rain
3. Sleet
4. Snow

To view the raw base reflectivity data again, deselect the  button. You can view other base products except base reflectivity with the  button toggled on.



1

2

3

4



# Navigating Radar Data

## Changing Products & Elevation Angles

Ways to change products and elevation angles:

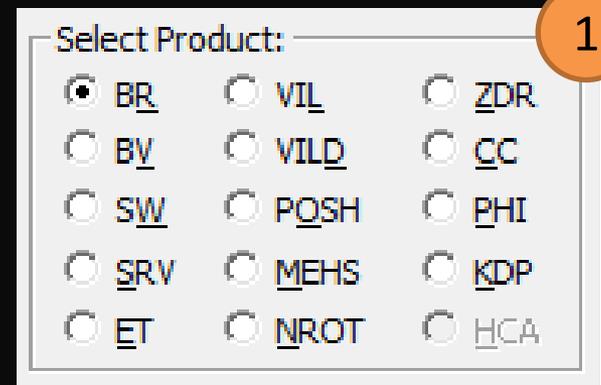
- 1 Click the desired product & tilt on the Product/Tilt Window
- 2 Choose the desired product & tilt from the Menu Bar
  - **Tilt Only:** Use the up and down arrow keys on the keyboard to progress up and down through the volume scan.
  - **Product Only:** Use the keyboard shortcuts for each product. The keys that correspond to each product are underlined in the Product Information panel (image below, right)

2

BR BV SRV NROT SW ZDR CC PHI KDP DERIVED

### Menu bar items for choosing products

If a \* appears next to the tilt, the data is from the previous volume scan.

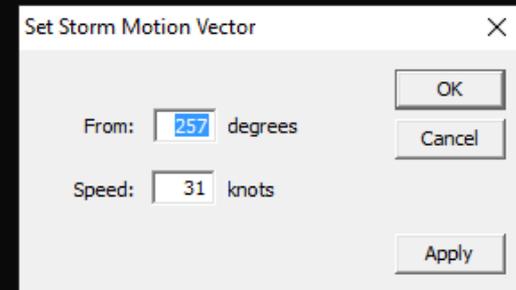


# Navigating Radar Data

## Setting Storm Motion Pg. 1 of 2

### To set the storm motion manually

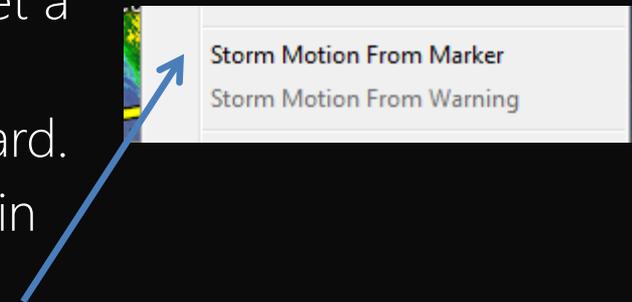
- Click the  icon in the Toolbar.
- A window will pop up allowing you to enter the storm's motion and speed.



(Note: Storm motion should be the direction the storm is COMING from)

### To have GR2A calculate the storm motion

1. Right-click in the middle of storm (or edge, as long as you are consistent in step 3) and set a marker there.
2. Advance several frames forward or backward.
3. Right-click on that region of the storm again and in the menu that opens up, select *Storm Motion from Marker*.



# Navigating Radar Data

## Setting Storm Motion Pg. 2 of 2

### To set the storm motion from NWS warnings

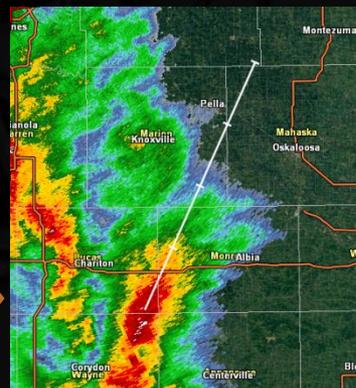
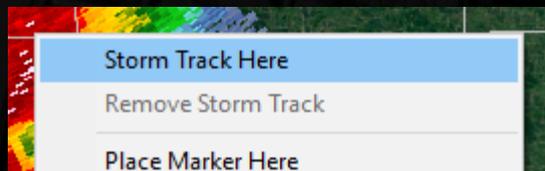
Right-click the warning polygon and select *Storm Motion from Warning* from the menu that appears



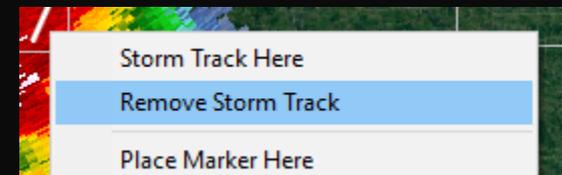
## Storm Track

GR2A can show a one hour predicted storm track based on the set storm motion with 15 minute increments highlighted.

**To Add:** Right click on storm and click *Storm Track Here*



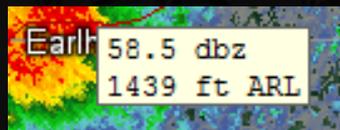
**To Remove:** Right click and click *Remove Storm Track*



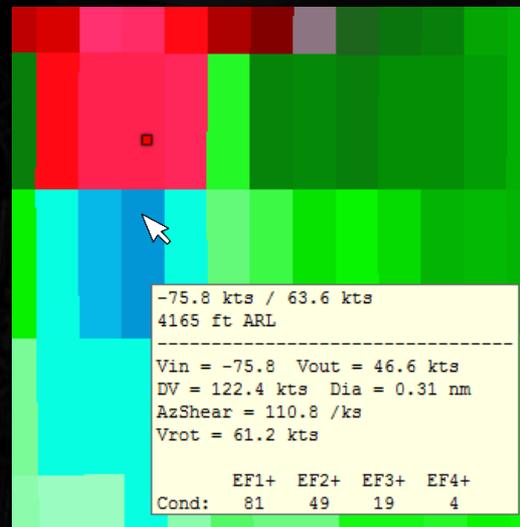
# Navigating Radar Data

## Sampling & Rotational Info (Advanced Users)

To sample radar data at the location of the mouse, either reference the status bar at the bottom of the window or hold down the ctrl key, which will open up a small box next to your mouse arrow with the product value and elevation above the ground.



To conduct a detailed interrogation of a rotational couplet, zoom into the couplet on radar. Set a marker on either the max inbound or outbound velocity value of the couplet and, while holding down the ctrl key, sample the opposite max value of the couplet. The pop-up window below appears.



### Window Components

Sampled Velocity / Max Unambiguous Velocity (kts)

Sampled Beam Height (ARL)

-----

Velocity Inbound (kts)    Velocity Outbound (kts)

Velocity Difference (kts)    Diameter of Couplet (nm)

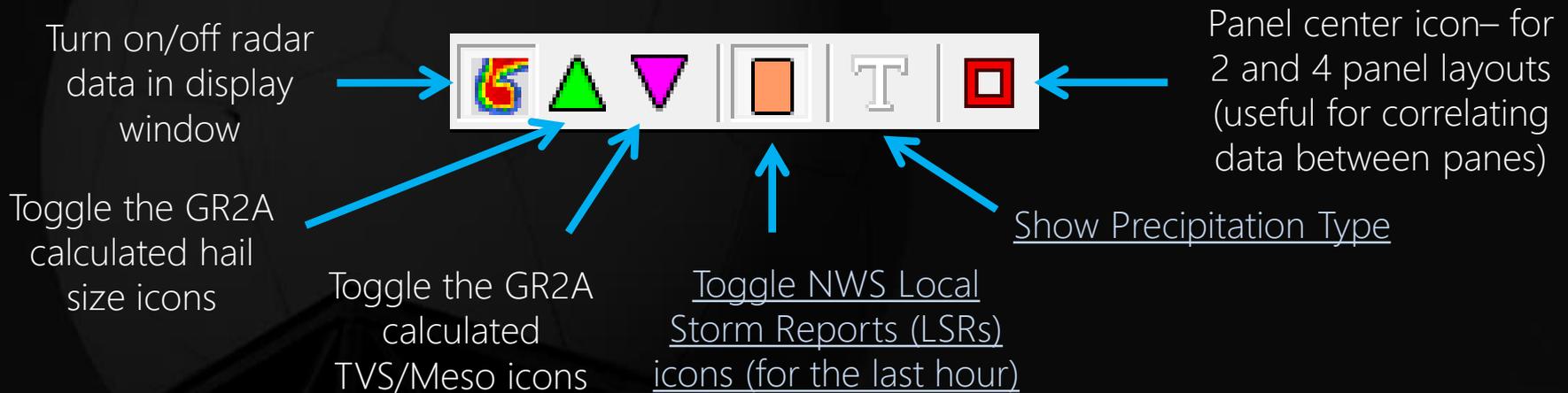
Azimuthal Shear ( $0.001 * s^{-1}$ )

Rotational Velocity ( $(|V_{in}| + |V_{out}|) / 2$ ) (kts)

Conditional Tornado EF-Scale Probability using  $V_{rot}$  values in case studies from 2009-2013. Please read the article to use this technique properly!

# Overlays

## Toolbar Options & Warnings



Current NWS warnings can be toggled off and on using the checkboxes next to each respective warning on the top right of the toolbar.



Numbers next to each warning indicate how many are currently in effect. These numbers do not show when viewing archived data.

**FFW:** Flash Flood Warning

**SQW:** Snow Squall Warning

**TOR:** Tornado Warning – Base/No Tags

**SVR:** Severe Thunderstorm Warning

**SMW:** Special Marine Warning

**TORR:** Tornado Warning – Tornado Reported

**TORE:** Tornado Warnings – Tornado Emergency

# Overlays

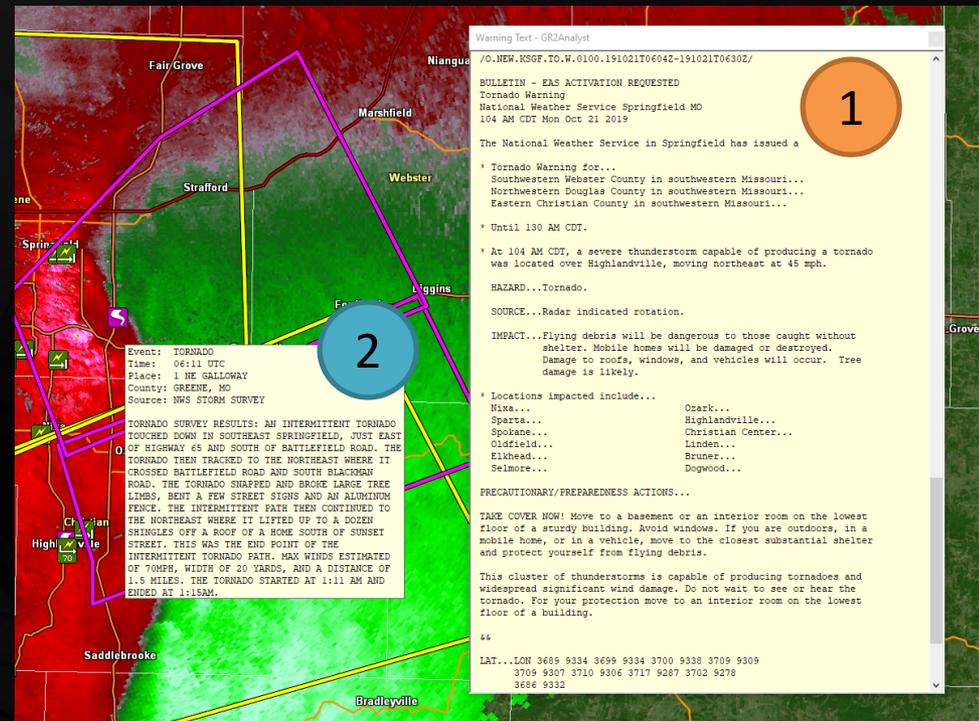
## Warnings and Local Storm Reports

1

Clicking on a warning allows you to view the warning text and any follow-up statements. Active warning data only can also be accessed from the *Windows -> Show Warnings Window* pop-up box.

2

Mousing over an LSR icon allows you to view more data.



GR2A also downloads & displays historical NWS warnings (2007-present) and LSRs (2003-present) with archived radar data. These appear and disappear as though it were real time.

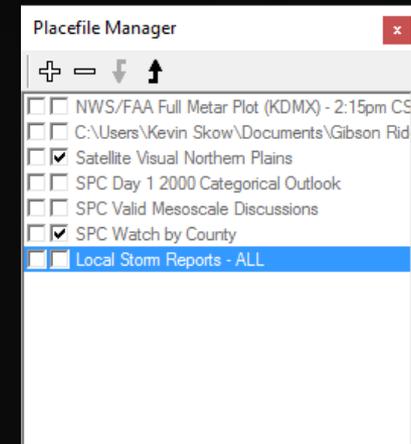
# Overlays

## Placefiles

- Placefiles are custom text files developed by third parties that are specifically designed for GR products

Can be either static files (spotter residences, law enforcement locations, etc.) or dynamically updated on a server (surface obs, SPC outlooks and watches, webcam images, etc.)

- To load either type of placefile, make sure the *Windows -> Show Placefile Manager* option is checked. When it is checked, a small window should open up on the screen.



# Overlays

## Placefiles: Loading

Click the  button on the Placefile Manager window

- The following window will open



- To load a static (saved) placefile, click the  button and navigate to the file on the computer.
- To load a placefile located on the Internet, simply paste the address to the placefile in the text field (to the left of the  button)
- Click *OK* when done.

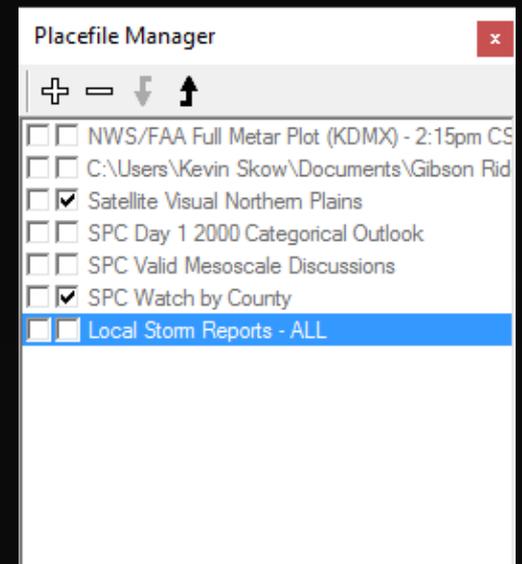
**Repeat the process above for each placefile**

# Overlays

## Placefiles: Managing

Each placefile will be listed in the Placefile Manager window

- To reorder the placefiles, click the placefile in the window and click either the  or  buttons
- To remove a placefile, select the placefile and click the  button
- The left checkbox next to each placefile toggles whether the placefile is visible on the map
- The right checkbox toggles whether the placefile is visible above (unchecked) or below (checked) the radar image.



# Overlays

## Placefiles: Locations

Online Placefiles (non-exhaustive list and not endorsed by the NWS). Please note that the reliability of these third-party placefiles is not guaranteed.

<http://redteamwx.com/grlevelx.html>

A wide array of surface observation and outlook placefiles

<https://placefilenation.com/>

A wide array of surface observation, outlook, and lightning placefiles

[https://cimss.ssec.wisc.edu/severe\\_conv/ProbSevere\\_V1vsV2.pdf](https://cimss.ssec.wisc.edu/severe_conv/ProbSevere_V1vsV2.pdf)

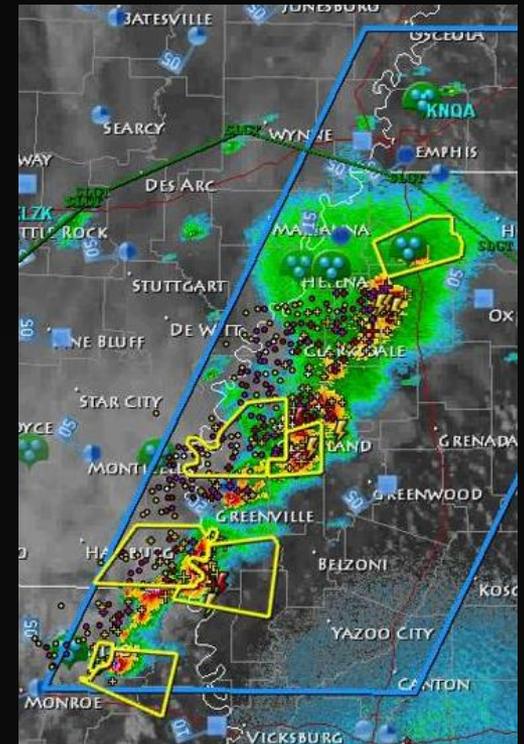
CIMSS ProbSevere/Tor Product (Experimental)

<http://mesonet.agron.iastate.edu/request/grx/>

Iowa surface obs (all networks), webcam images, NEXRAD Level 3 attributes

<http://www.spotternetwork.org/pages/feeds/gibson-ridge>

Spotter Network locations and reports

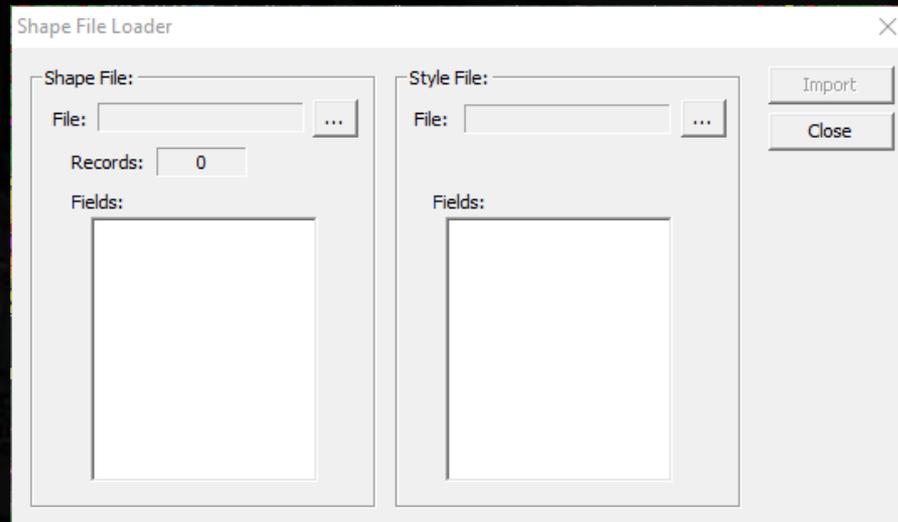


# Overlays

## Shapefiles Pg. 1 of 2 (Advanced Users)

Shapefiles are static GIS files created by third parties that are supplemental to the overlays already provided in GR2A

- Shapefiles require both a “shape file” and a “style file”
- To load a shapefile, go to *GIS -> Load ShapeFile*
- The Shape File Loader box will open



# Overlays

## Shapefiles Pg. 2 of 2 (Advanced Users)

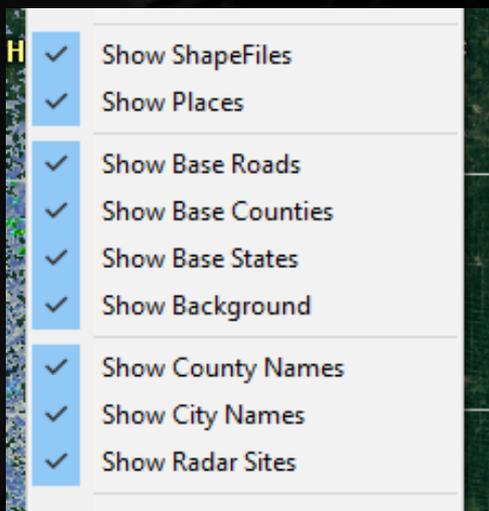
---

- In the left hand box, click the  button and navigate to the directory containing the shape file. Select the shape file and click *Open*
- Perform the same steps for the right hand box, but this time navigating to the location of the style file (many times they are in the same directory).
- Once both of these are loaded, click the *Import* button
- To remove a shapefile, go to *GIS -> Unload ShapeFile* and chose the file you wish to remove.

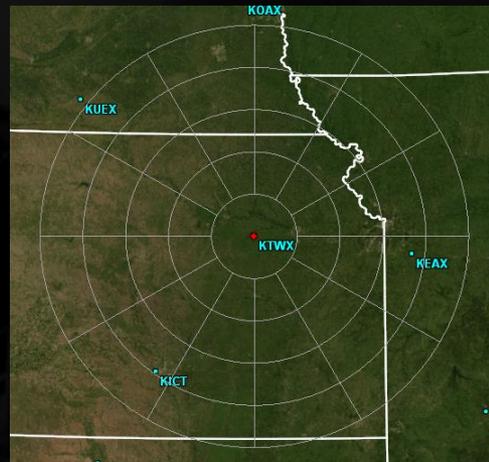
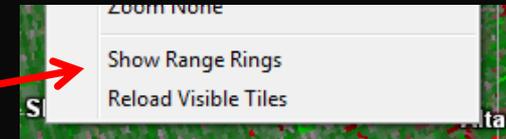
# Overlays

## GIS Data, Range Rings, and GPS Data

All of the overlays in GR2A can be turned on or off by clicking the corresponding item in the *GIS* menu.



To show range rings (25 nm increments), right click the Radar Display Window and click *Show Range Rings*.



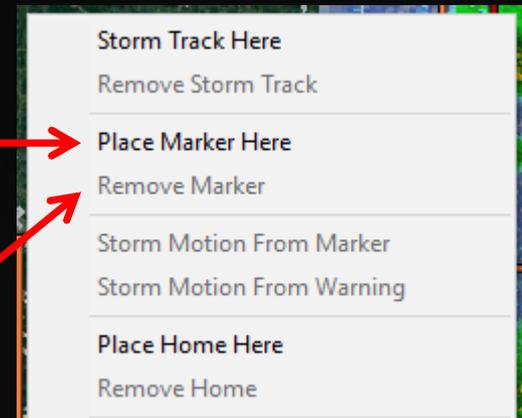
Note: By default, range rings are centered on a radar location. Range rings can be centered on both markers and home points, if GR2A is set to measure distances from these points.

If you have a GPS device attached to your computer, you can display your location using the *File -> GPS -> Start* option. You can turn this display off by going to *File -> GPS -> Stop*. A GPS monitor pop-up will also open up when this is active and can be turned off using the *Windows -> Show GPS Monitor* option.

# Viewing Options

## Markers

- Markers are useful for setting the storm motion and measuring distances between points.
- To set a marker, right-click on the Radar Display Window at the spot you want to place the marker. A menu will open up (see image to the bottom right).
- Click *Place Marker Here*.
- To remove the marker, right-click the screen and select *Remove Marker*.



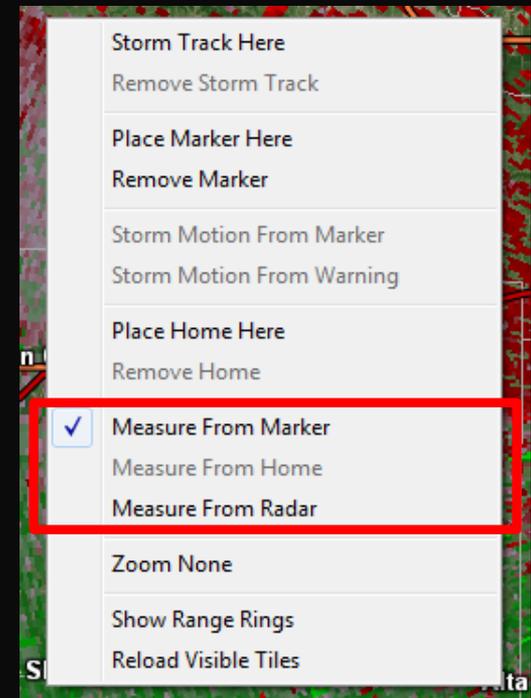
The distance between your cursor and a marker is viewable on the bottom status bar—second field from the left.

# Viewing Options

## Home Markers (Advanced Users)

- GR2A will erase any marker you set after exiting the program.
- To set a marker that GR2A will remember the next time you open the program:
  - Right-click where you want to set the marker and click *Place Home Here*.
  - To remove the Home marker, right-click the marker and select *Remove Home*.
- By default, GR2A measures distances from the radar or, if set, a marker. You can force GR2A to measure from certain points.

Right-click anywhere in the Radar Display Window and choose from one of the three options near the bottom (red box).

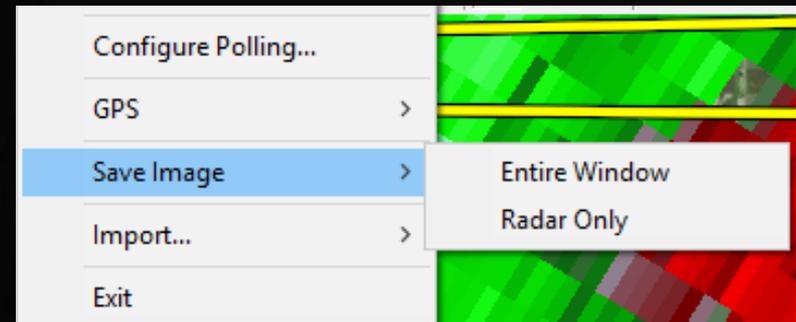


# Viewing Options

## Saving Images

Go to *File -> Save Image* and select one of two options

- **Entire Window:** Captures the whole screen
- **Radar Only:** Captures only the Radar Display Window



Folder:  ...

File Spec:

Save

Cancel

File Spec Format Help:

- %r inserts the radar site in lower case, eg "kffc"
- %R inserts the radar site in upper case, eg "KFFC"
- %D inserts the product date, eg "20060107"
- %T inserts the product time, eg "2359"
- %P inserts the product name, e.g. "BR\_0.5"

GR2A can insert certain variables (site ID, date, product time, and product name) into the image filename, as well as any user-desired words/characters at any location in the filename

# Viewing Options

## Smoothing, Dealiasing, and Units

---

- To toggle smoothing for non-velocity products, click the  button on the Toolbar.

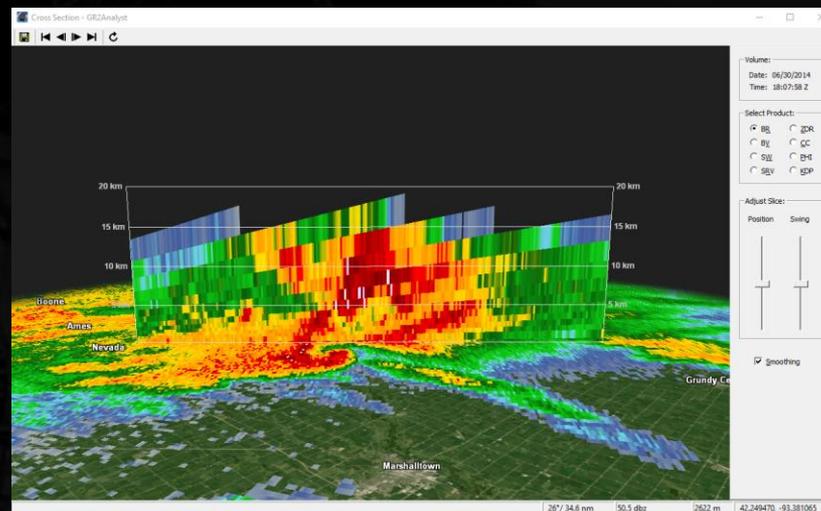
To configure smoothing settings, navigate to *View -> Smoothing Settings...* In general, these settings don't need to be changed.
- To turn dealiasing on or off for velocity products, click the  button on the Toolbar.

To configure dealiasing settings, navigate to *View -> Dealias Settings...* It is **highly recommended** to uncheck the box next to *Convert Unresolved to ND*. This will force GR2A to show velocity data even if it can't dealias it correctly. This also allows TDWR velocity data to be displayed without having to disable dealiasing.
- To view distances in metric units, go to *View -> Show Metric Units*

# Cross Section Mode

## Introduction

- Cross sections can be made of all Level II products.
- Click the  button on the Toolbar to activate the cross section tool.
- Click and drag your mouse across the area you wish to make a cross section of. Release the mouse button when finished.
- A separate cross-section window will open up.



# Cross Section Mode

## Window Panels

Volume:

Date: 06/30/2014  
Time: 18:07:58 Z

Select Product:

BR  ZDR  
 BV  CC  
 SW  PHI  
 SRV  KDP

Adjust Slice:

Position Swing

Smoothing

Product date/time

Product to load as a cross section

**Position:** Moves the cross section back and forth in the horizontal. Is moved on a line tangential to its orientation.

**Swing:** Pivots the cross section on its left axis by about 30° in either direction.

Turns smoothing on and off. Note: will only work if smoothing is activated on the main program window.

Save Image

First Image in Sequence

Previous Image

Next Image

Last Image in Sequence

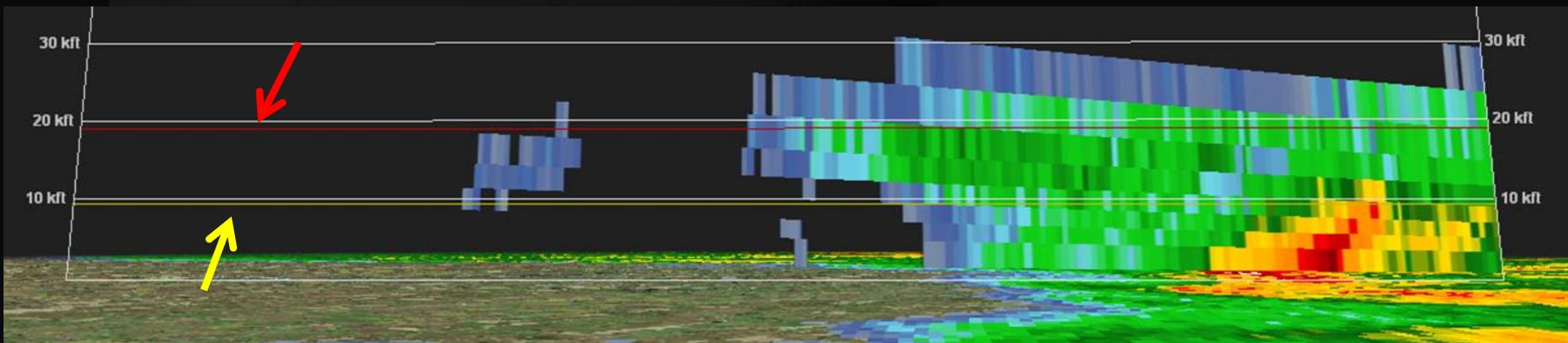
Refresh Data

*You can also use the arrow keys to navigate through time in a cross section*

# Cross Section Mode

## Additional Notes

If environmental data are available, GR2A will plot the 0° C and -20° C levels on the cross section as yellow and red lines, respectively



The status bar at the bottom of the cross section window is an abbreviated version of the main program and contains (from left to right): program status, distance & bearing from radar/marker, product value, altitude, and coordinates (when plotted on background map, if visible).

Ready	266° / 75.5 nm	56.0 dbz	13991 ft	38.908241, -97.846443
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# Volumetric Mode

## Introduction

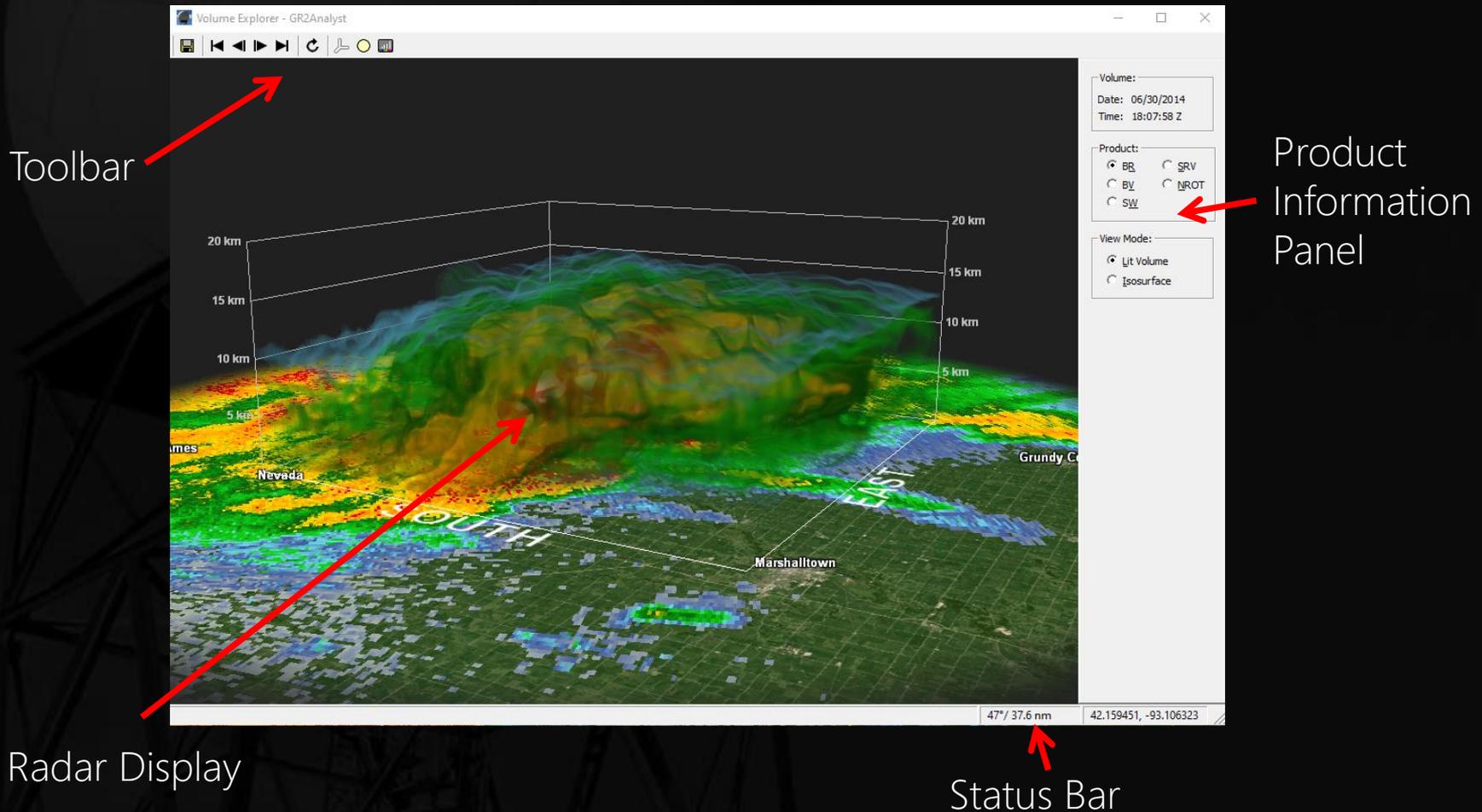
---

- Volumetric displays allow you to get a 3D look at a storm.
- Volumetric displays are only available for BR, BV, SRM, SW, and rotation (special GR2A calculated product).
- To create a volumetric display, click the  icon on the Toolbar.
- Move your mouse to where you want the center of the cross section to be, then click and drag outward. A box will grow outward with your cursor showing the area that will be analyzed.
- When you let go of your mouse button, the volumetric display will open in a new window.

# Volumetric Mode

## Window Components

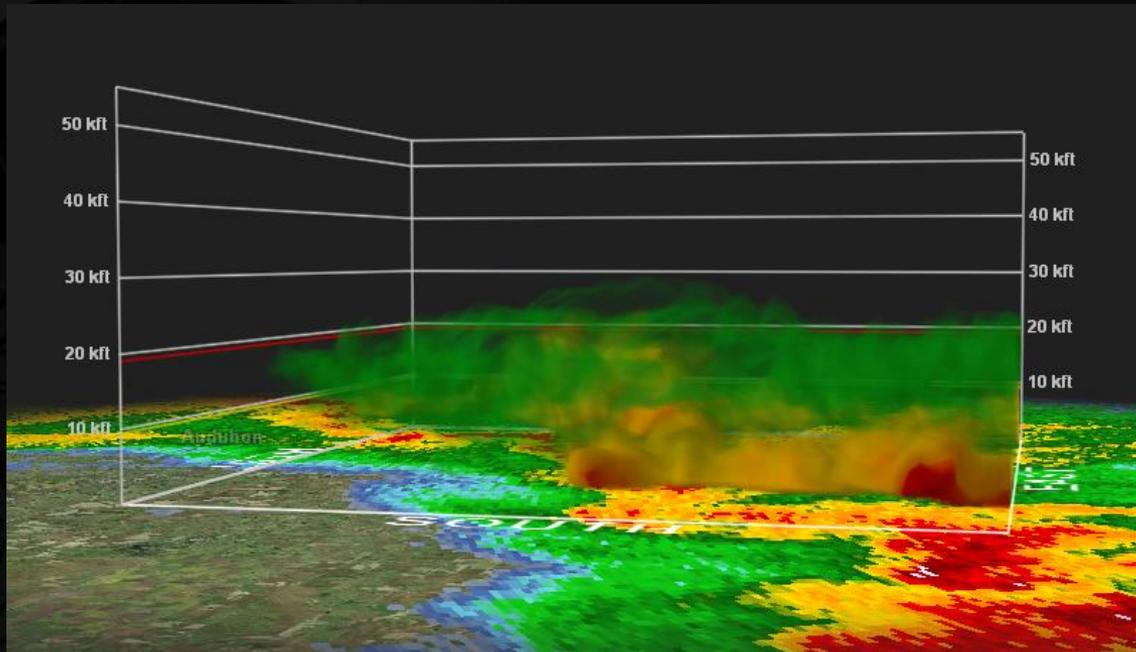
The volumetric display window consists of four parts



# Volumetric Mode

## Window Components: Radar Display

- The Radar Display shows a smoothed three dimensional radar image on top of the 0.5° image of that product.
- Click and drag your mouse on the display to rotate the image.
- Like a cross section, the 0° C and -20° C lines are plotted if the environmental data is available as yellow and red lines, respectively.



# Volumetric Mode

## Window Components: Info Panels

### Product Information Panel

Date and time of the volume scan start

Available products to select from

**Lit Volume:** View the storm using multiple transparent layers, which can be set by the user (see the [color table](#) section for more)

**Isosurface:** Only display data that is of a certain value (again, see the [color table](#) section for more)

Volume:

Date: 06/30/2014  
Time: 18:07:58 Z

Product:

BR     SRV  
 BV     NROT  
 SW

View Mode:

Lit Volume  
 Isosurface

The Status Bar is located at the bottom of the window and displays your cursor's latitude & longitude and azimuth/range from radar.

# Volumetric Mode

## Window Components: Toolbar

Save Image

**Sync with Main Window**

**Light Settings**

*Change the ambient light and light angle. Play with this until your heart is content*



Animation Controls

**Volume Display Settings**

*You shouldn't have to change anything in here other than sky color*

**Volume Alpha Settings**

*Controls how the 3-D image looks, more on that on the following pages*

# Volumetric Mode

## Editing the Volume Alpha

- Click on the  icon on the Toolbar. The Volume Alpha window opens.
- The color scale is oriented along the bottom of the window, with a line stretching from the left to right side of the black window. This line controls the transparency of the colors.
- The closer to the top of the window the line is, the more opaque the color directly under the line becomes; the closer the line is to the bottom of the window, the more transparent the color under it becomes.
- You use a series of click and drags with your mouse in the window to edit the transparency of colors.

**Completely Opaque**



**Completely Transparent**

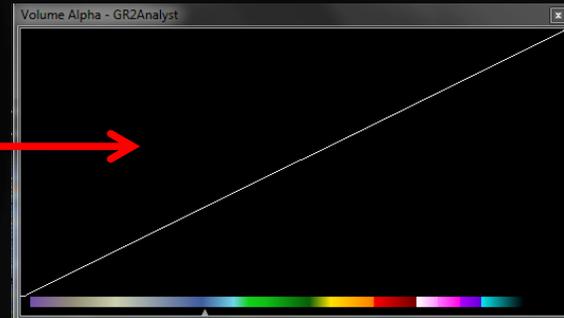
Examples on  
Next Pages

# Volumetric Mode

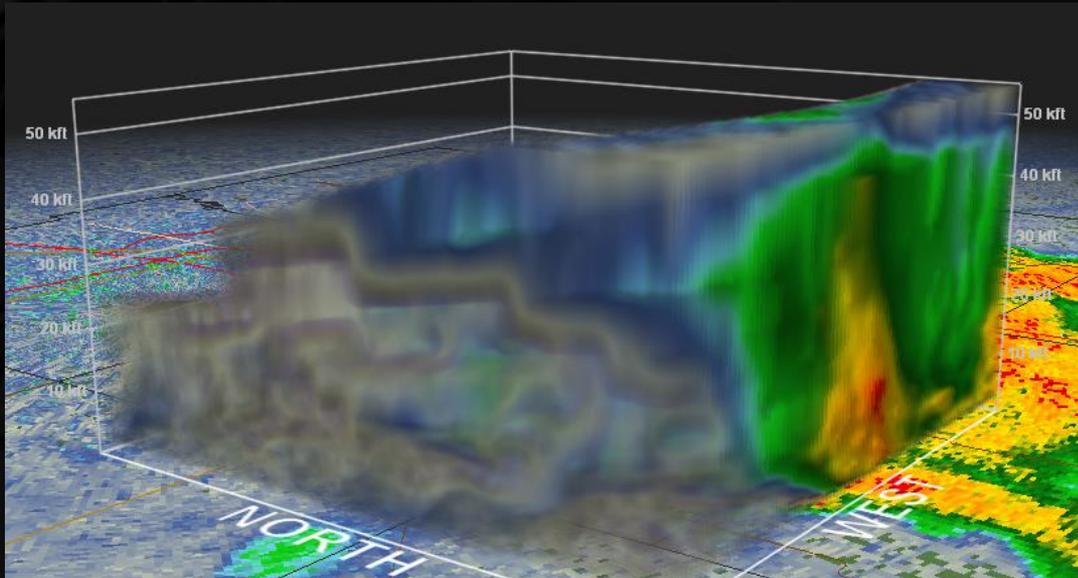
## Editing the Volume Alpha: Examples

Let's look at a few examples and the resulting volume images

When you first open the Volume Alpha window, it will likely look something like this (unless you've already edited it):



And the volume image looks like this:



But we can make this so much better...

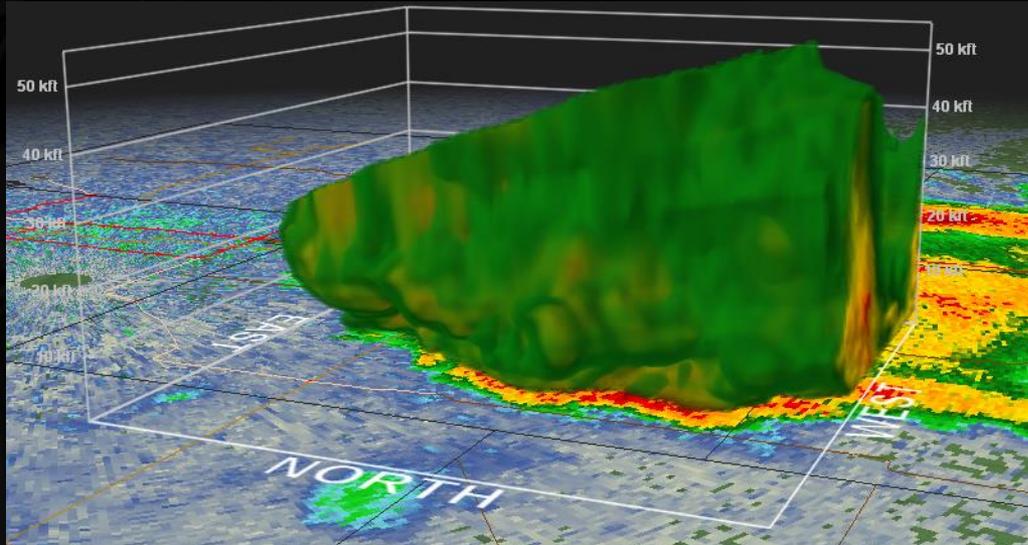
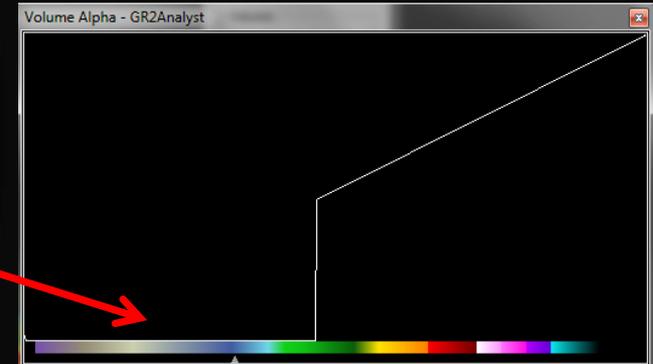
# Volumetric Mode

## Editing the Volume Alpha: Examples

### Let's get rid of the low reflectivity values

Click and drag the cursor along the bottom of the window over the lower end of the scale to make the low values transparent

And the volume image now looks like this:



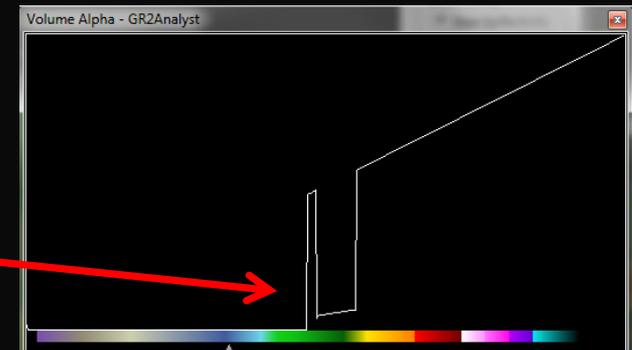
Somewhat better, but the green is still overpowering...

# Volumetric Mode

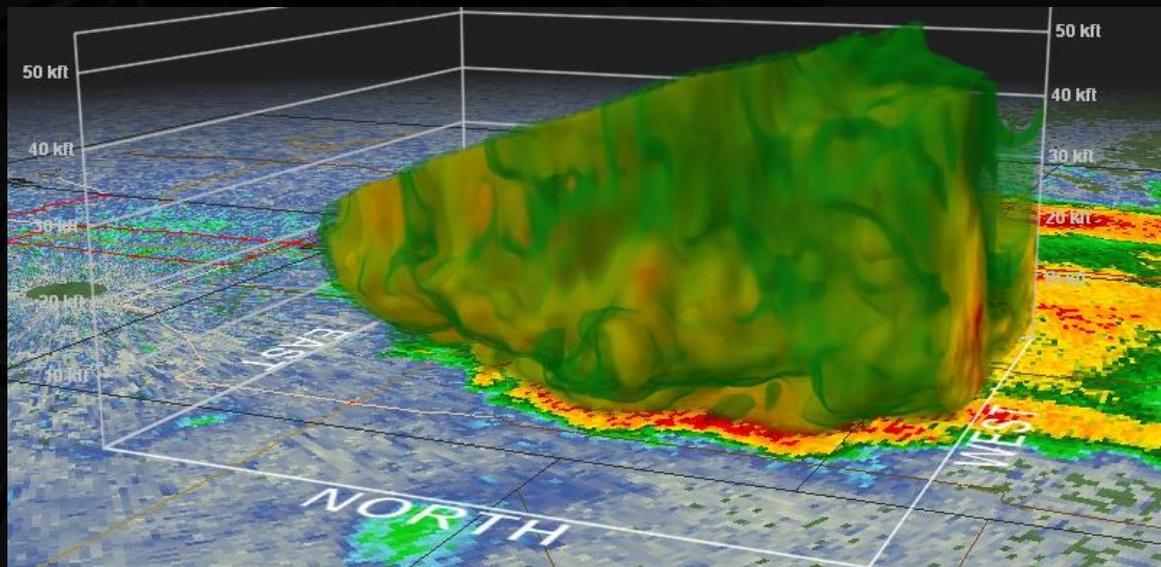
## Editing the Volume Alpha: Examples

Let's lower the strength of the green and make it more transparent

Move the cursor a few shades of green up the scale, then drag a little ways off the bottom until you reach the yellows to make the rest of the greens transparent



And the volume image now looks like this:



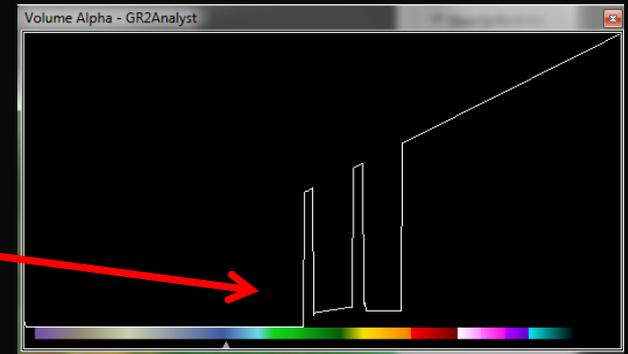
Getting there, let's do the same to the yellows...

# Volumetric Mode

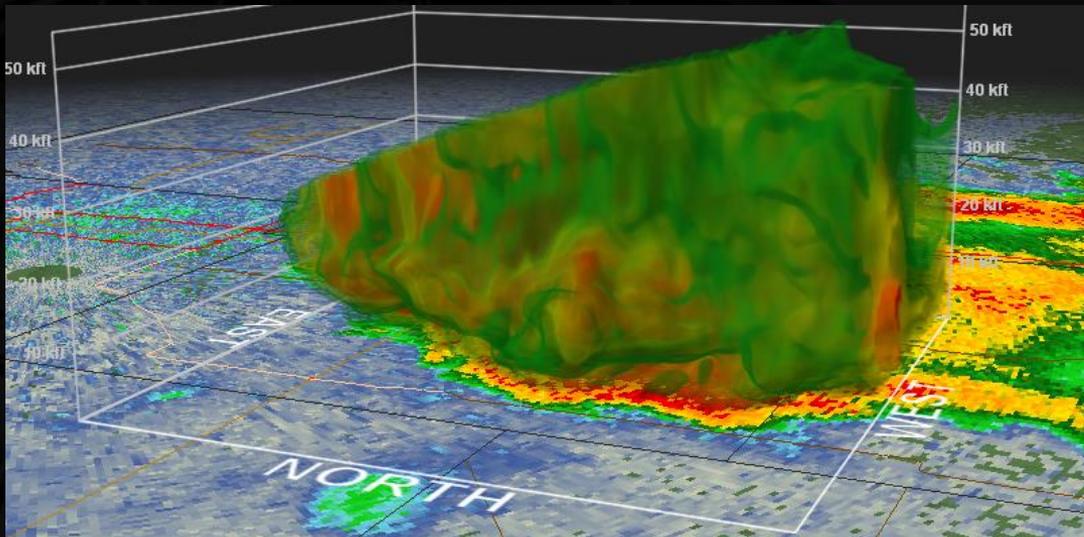
## Editing the Volume Alpha: Examples

### Now let's make the yellows more transparent

Move the cursor a few shades of yellow up the scale, then drag a little ways off the bottom until you reach the oranges to make the rest of the yellows nearly transparent



And the volume image now looks like this:



That green is still a bit much...

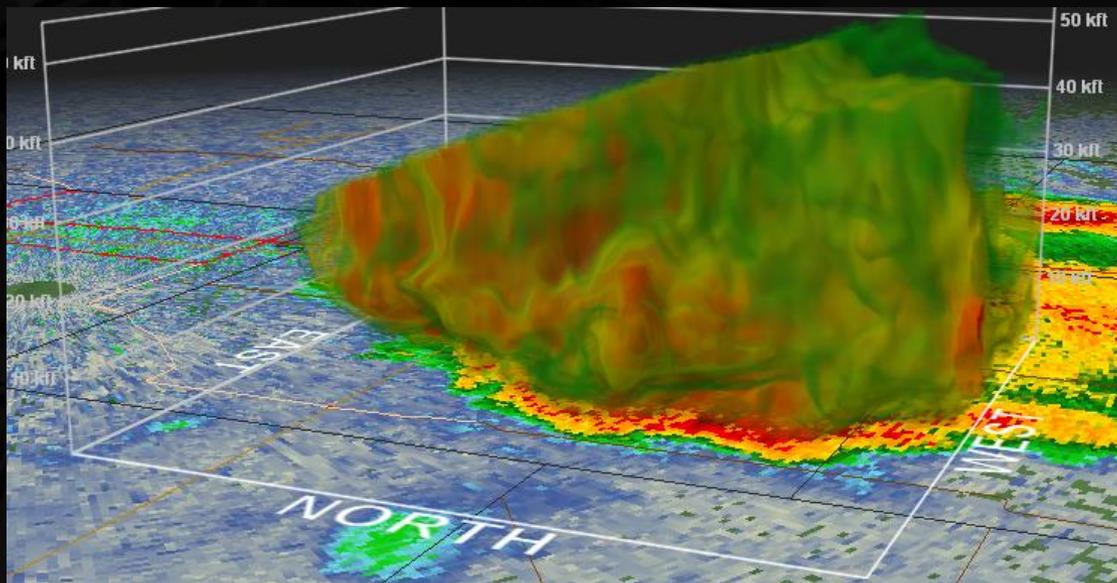
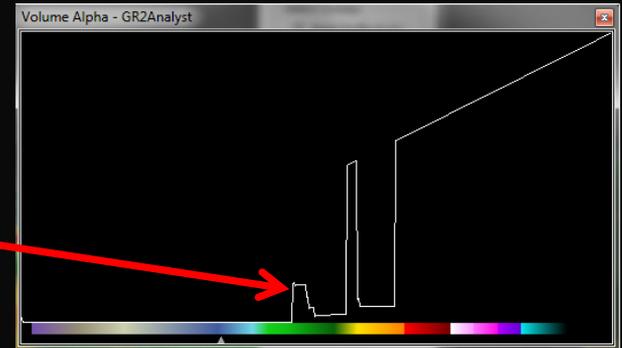
# Volumetric Mode

## Editing the Volume Alpha: Examples

### Now let's make the greens more transparent

Drag the cursor along the spike over the green to dampen it out a bit. Also drag the cursor over the rest of the greens to make them more transparent

And the volume image now looks like this:



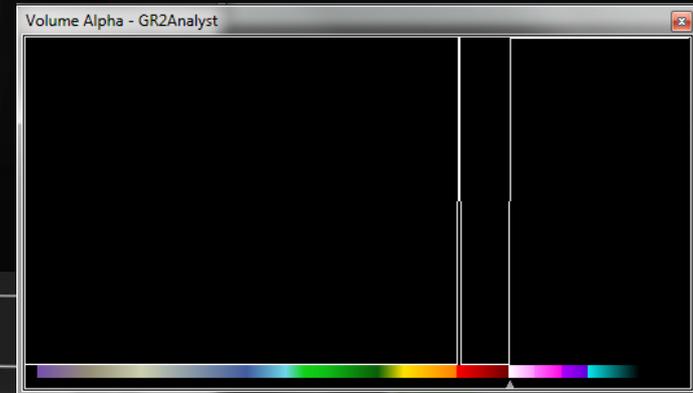
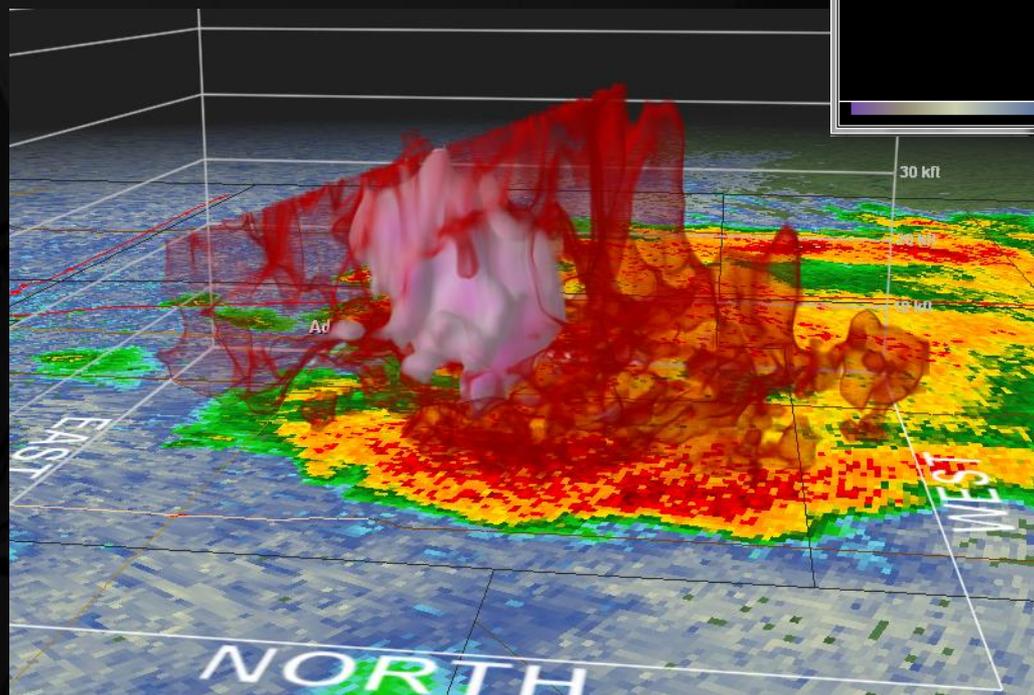
You're probably getting the drift of what we're doing. Let's look at some final products...

# Volumetric Mode

Editing the Volume Alpha: Examples

**Ideal Use:**

Hail Detection

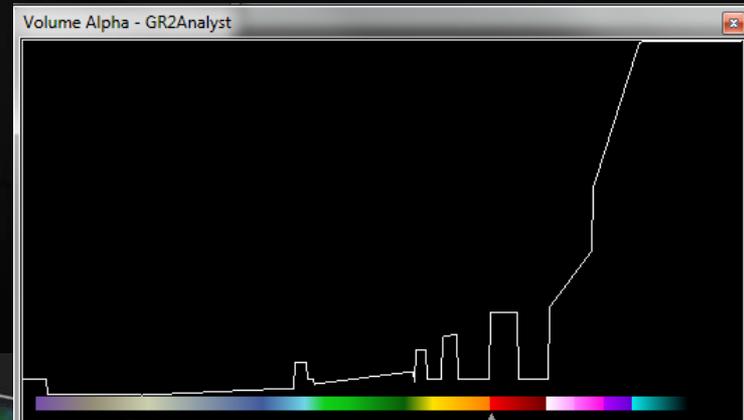
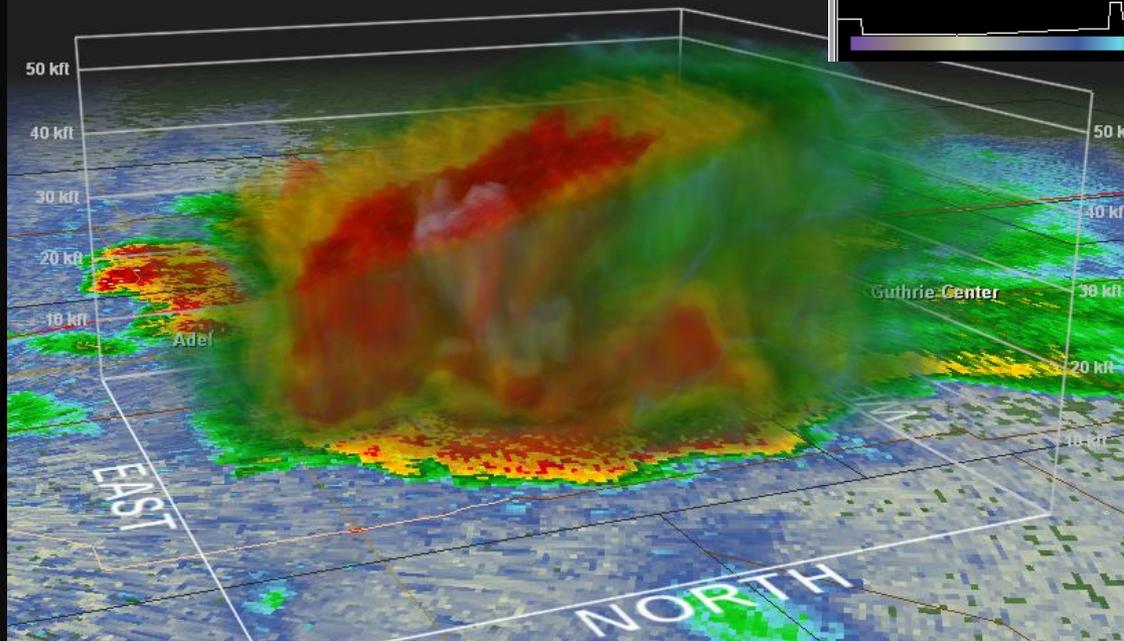


# Volumetric Mode

Editing the Volume Alpha: Examples

**Ideal Use:**

Viewing All Levels

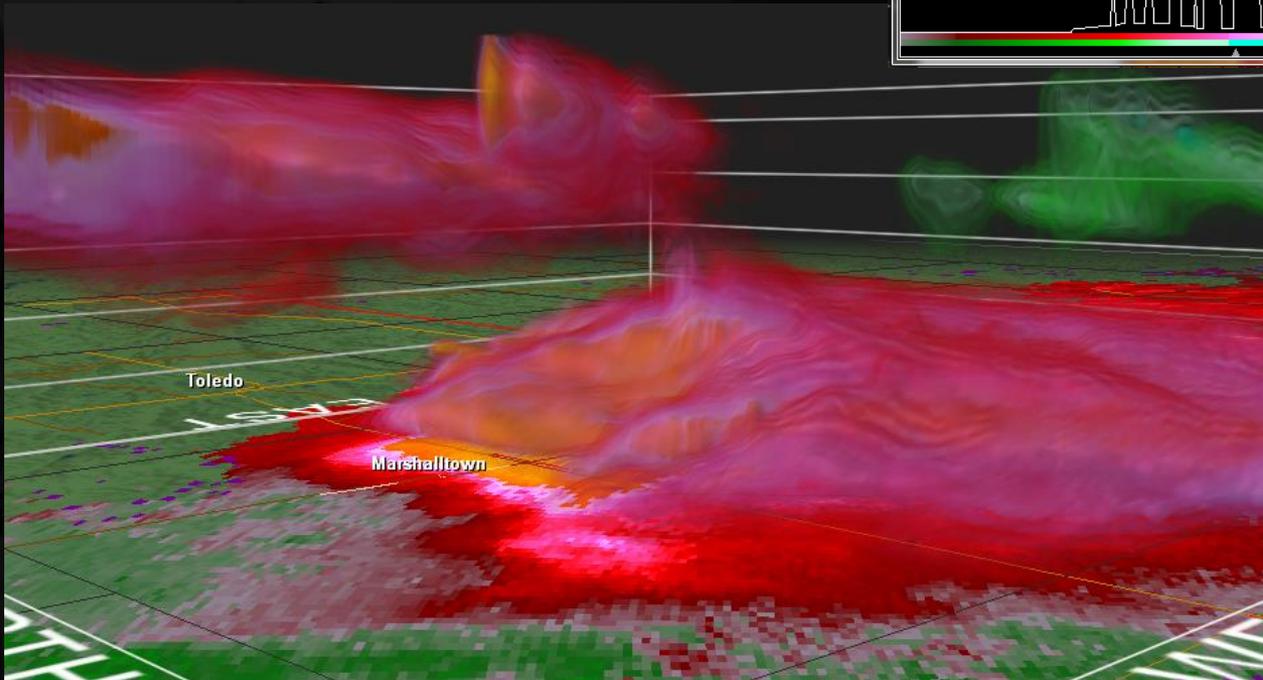
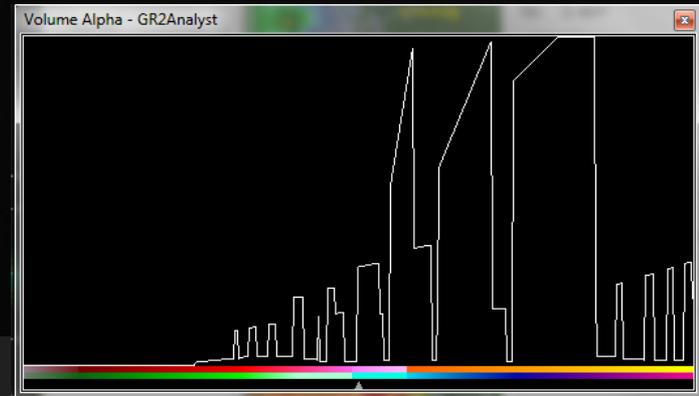


# Volumetric Mode

## Editing the Volume Alpha: Examples

### Velocity

Note that the transparency effects are applied to both inbound and outbound values.



# Volumetric Mode

## Editing the Volume Alpha: Saving Settings

---

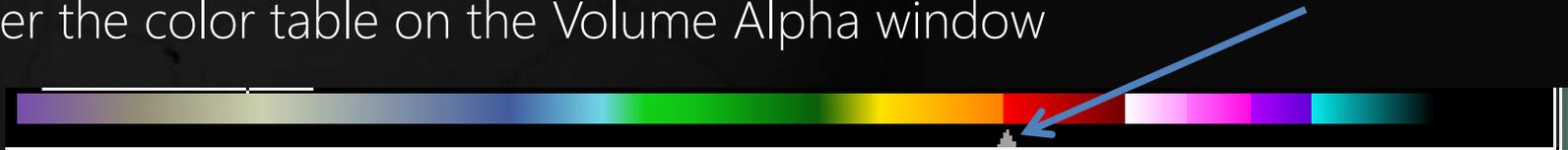
- Once you've edited the transparency to your liking, you can save your settings by right-clicking the Volume Alpha window and clicking *Save Alpha Table....*
- You can then load your saved settings by right-clicking the table and selecting them from the list on the pop up menu.
- The settings only work for the product they were created for (i.e. You can't load the saved settings for a reflectivity product on a velocity image).

**Tip:** When editing the transparency curve on the Volume Alpha window, the exact value your cursor is at is displayed at the very top of the window.

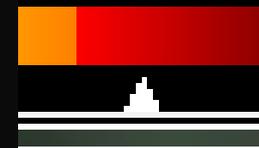
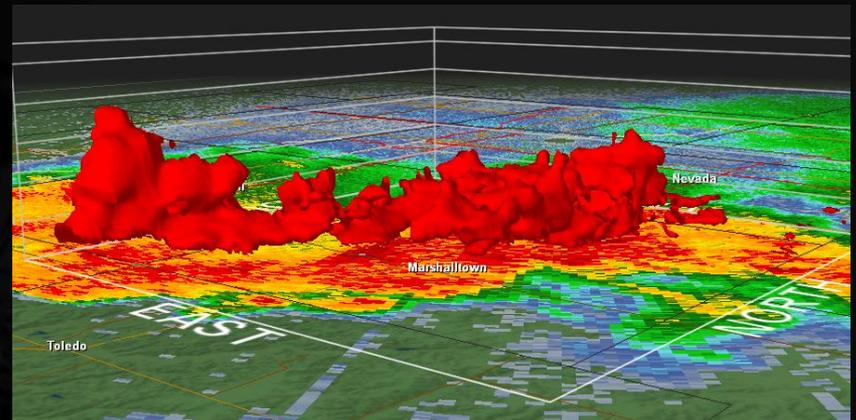
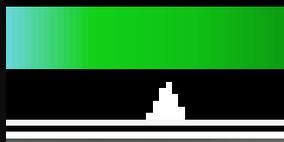
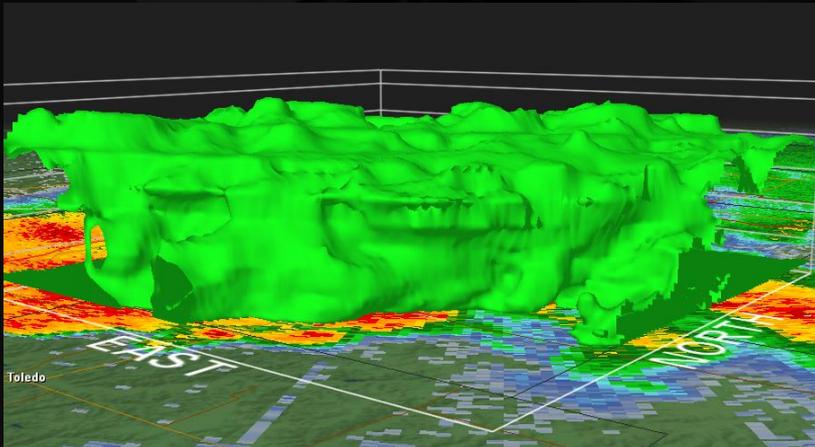
# Volumetric Mode

## Editing the Isosurface

To change the isosurface values, simply click and drag the triangle located under the color table on the Volume Alpha window



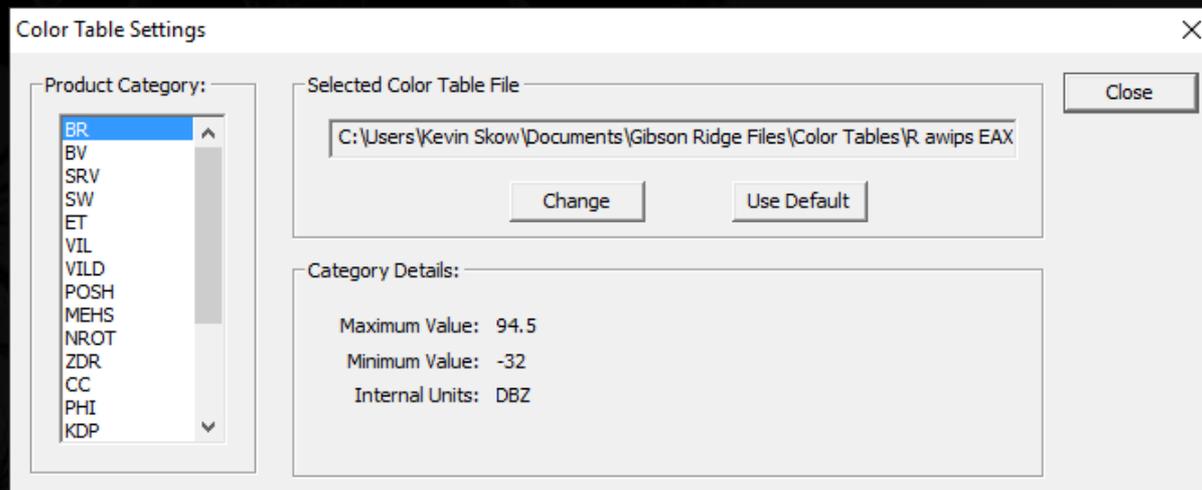
### Examples



# Editing Settings

## Color Tables

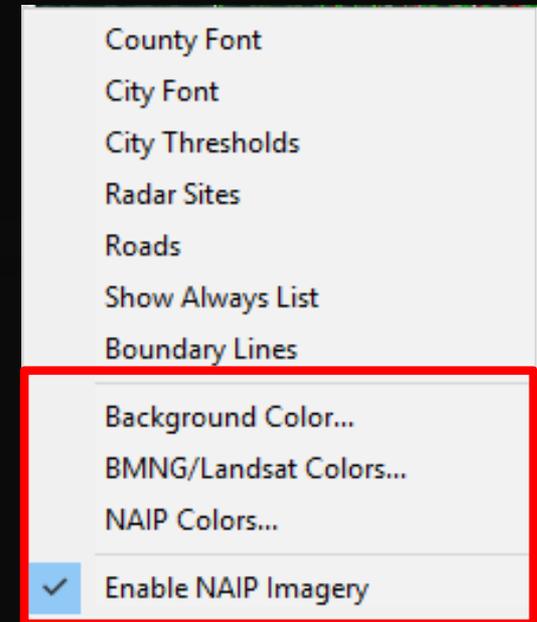
- Navigate to *View -> Color Table Settings...*
- Choose the product you wish to set on the left side of the screen.
- Click *Change*, navigate to the directory that contains the color table file (.pal), and choose the file.
- Repeat for each product you wish to change.
- **Tip:** You can also drag a color table file into the Radar Display Window to change the color table.



# Editing Settings

## Backgrounds

- GR2A automatically downloads aerial imagery to use for a background image. You can toggle this imagery off and use a single color instead.
- To change this color, go to *GIS -> Settings -> Background Color...* and set the color.
- The two color items below *Background Color...* are used to configure the aerial data and shouldn't need to be modified.
- To turn off high resolution aerial data, uncheck the *Enable NAIP Imagery* box.
- To reload the NAIP imagery, right-click the Radar Display Window and select *Reload Visible Tiles*.

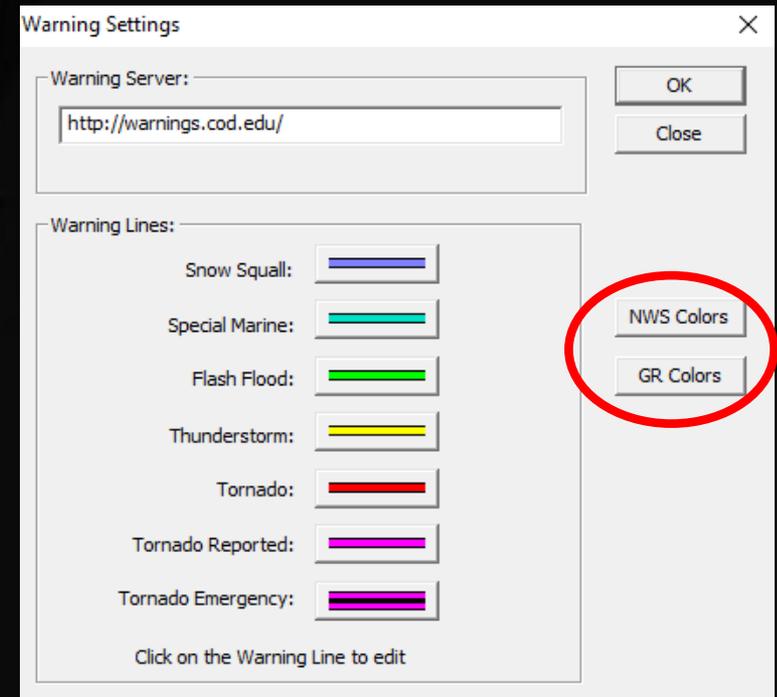


# Editing Settings

## Warning Colors

To customize the how warnings look on the screen, go to *View -> Warning Settings...*

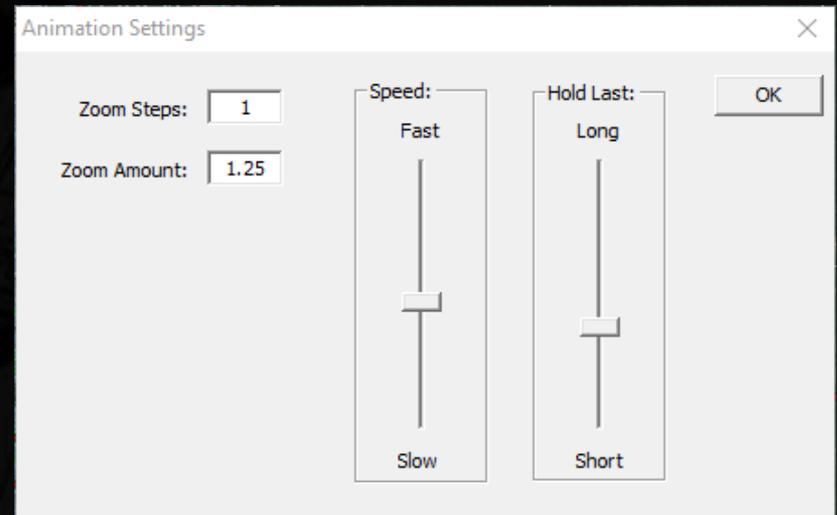
- The warning server shouldn't need to be touched (<http://warnings.cod.edu/>)
- Click the colored line next to the warning label to change line color(s), style, and width.
- To toggle between default NWS colors and GR2A Colors, click the appropriate button on the right side of the window (red circle).



# Editing Settings

## Animation Settings

- Very useful for controlling zoom settings and looping speeds
- Go to *View -> Animation Settings...*
  - **Zoom Steps:** The smoothness of the zooming. Higher numbers = smoother, but slower.
  - **Zoom Amount:** How much the program zooms in or out with each click/turn of the mouse wheel. The default value of 1.25 is a good starting point.
  - **Speed:** How fast the images loop
  - **Hold Last:** How long GR2A holds the last image in a loop

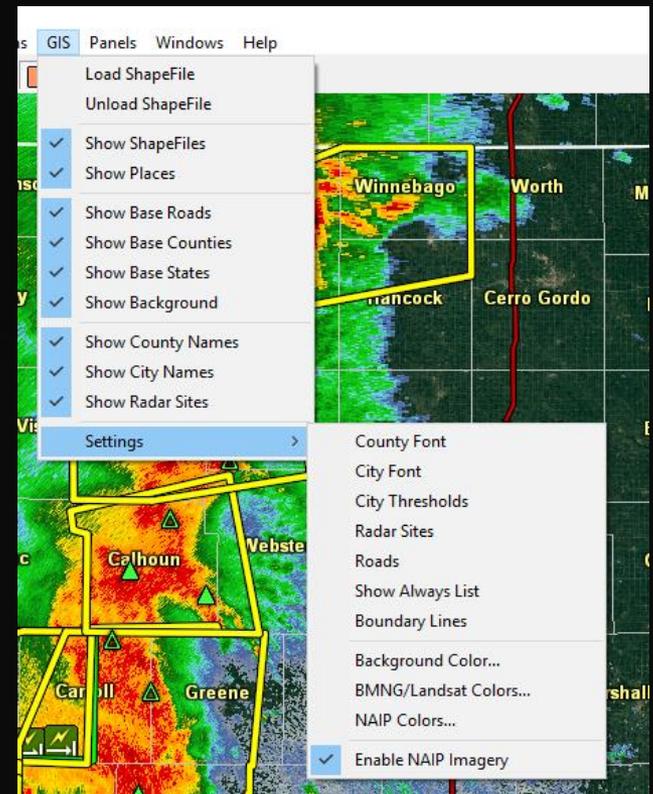


# Editing Settings

## GIS Icons

All of the overlays in GR2A can be customized

- The settings for each variable are under the *GIS* -> *Settings* menu
- These settings include font color, font style, and line color.
- *City Thresholds* defines the types of cities shown at a particular zoom level
- *Show Always List* defines what cities are always shown regardless of the zoom level

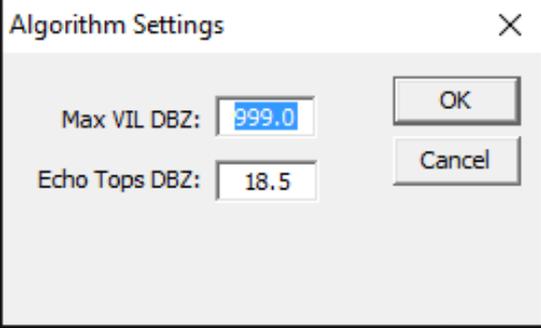


# Editing Settings

## Algorithms (Advanced Users)

### Changing how GR2A calculates VIL and Echo Tops

- *Algorithms -> Algorithm Settings...*
- **Max VIL DBZ:** Maximum reflectivity to be used in calculating VIL
- **Echo Tops DBZ:** Lowest reflectivity value to be used in calculate ET



Algorithm Settings

Max VIL DBZ: 999.0

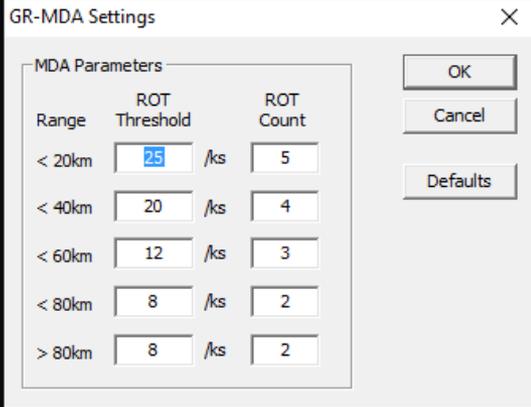
Echo Tops DBZ: 18.5

OK

Cancel

### Changing MDA Threshold Settings

- *Algorithms -> MDA Settings...*
- Can change the ROT threshold and count at certain ranges from the radar (probably won't need to change)



GR-MDA Settings

MDA Parameters

Range	ROT Threshold	ROT Count
< 20km	25 /ks	5
< 40km	20 /ks	4
< 60km	12 /ks	3
< 80km	8 /ks	2
> 80km	8 /ks	2

OK

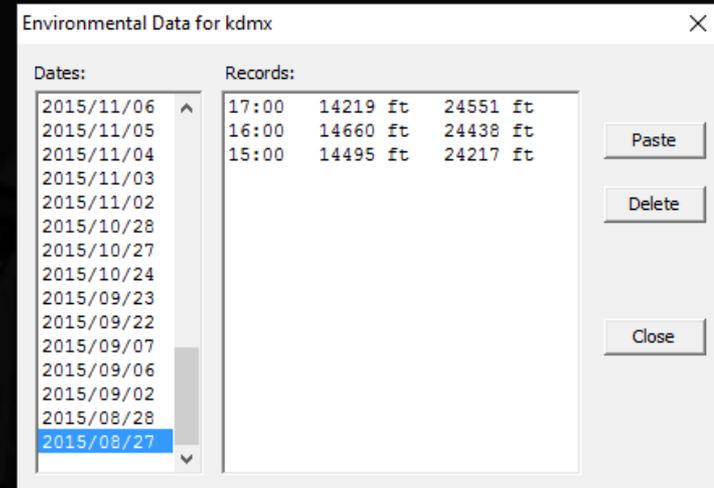
Cancel

Defaults

# Editing Settings

## Environmental Data (Advanced Users)

- GR2A downloads 0° and -20°C heights from the RUC when polling live radar data in order to calculate hail sizes
  - These heights can be found at *Algorithms -> Environment Settings...*
  - Dates that data were downloaded are viewable on the left column
- Once the date is selected, the data for each hour is viewable in the main window.
- To add past sounding data, go to <http://rucsoundings.noaa.gov/>. Choose RAOBs as the data source, select the date, and type in the ID of the closest RAOB site. Click the Ascii text (GSD format) button. Copy entire text sounding data and click *Paste* in the window. GR2A will confirm that the data was added.

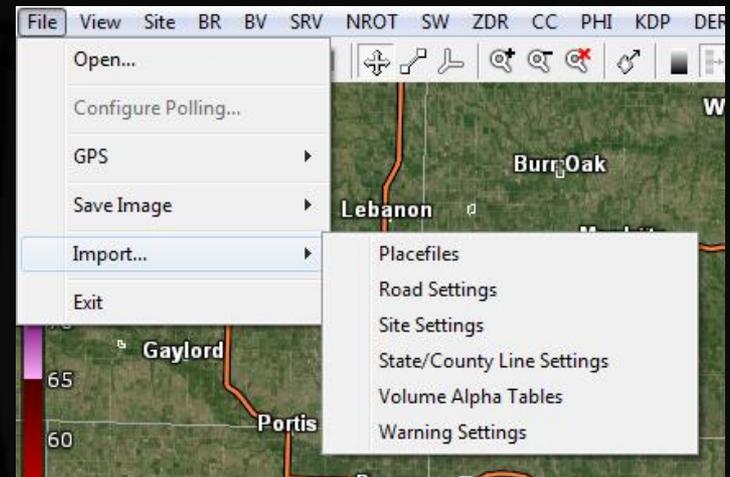


# Upgrading

## Importing Old Settings

- For users of GR2A 1.x, GR2A 2.x allows users to import many settings from the older program.
- In the Menu Bar at the top of the program, click *File -> Import...* and then choose which items you wish to import.

Note: GR2A 2.x will not import color tables from GR2A 1.x. Those will need to be set up manually.



# Upgrading

## Updating GR2A Version 2.x

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Users of GR2A version 2.x can download the latest update for the program at [http://www.grlevelx.com/downloads/gr2analyst\\_2\\_update.exe](http://www.grlevelx.com/downloads/gr2analyst_2_update.exe).

It is highly recommended that all GR2A owners join the [GRLevelX Owners Forum](#) to receive product support and update notifications.

**Thanks for viewing this training!**

This document is intended for free use by all users of the GR2A product, including public, private and government entities. This training guide is not endorsed by the developer of the GR products or the National Weather Service.