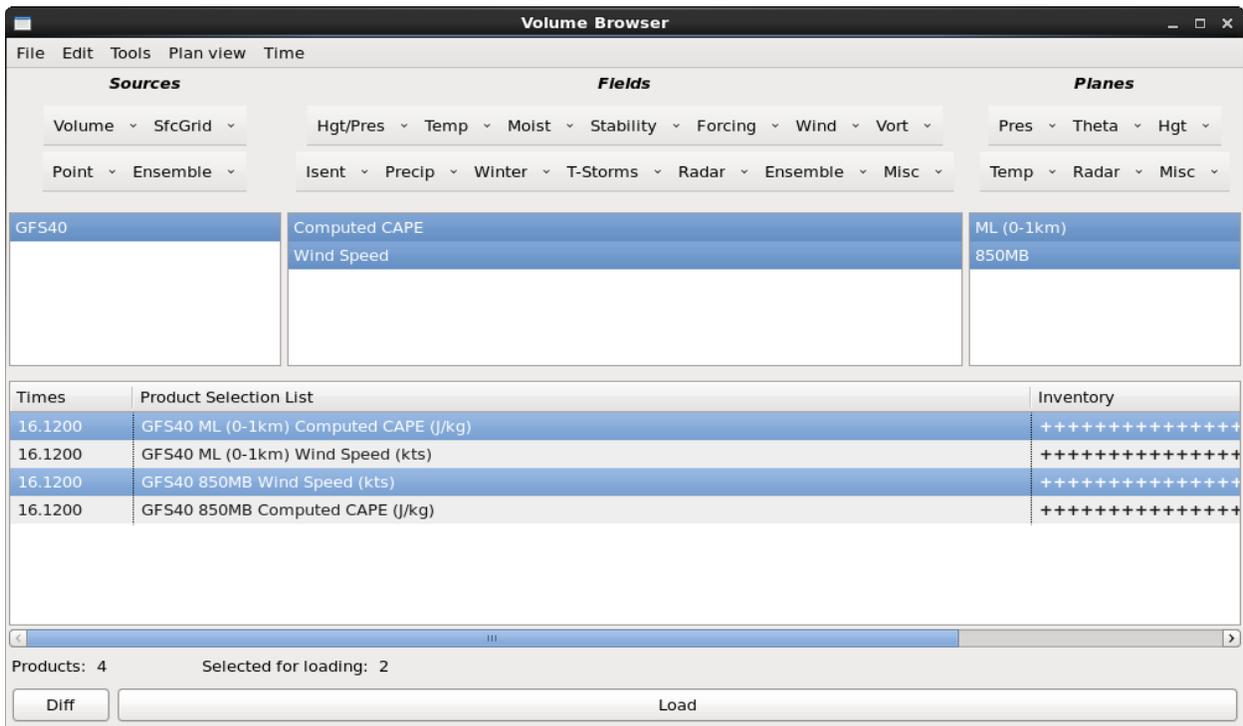


Jobsheet #3: Create Meteograms From Multiple Stacked Grid Images and Use Snap All Points To This Location

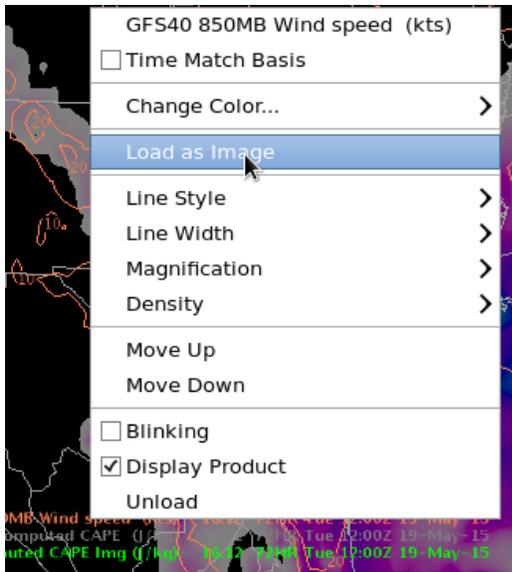
1. From the **Volume Browser** (Browser...menu in the Volume menu), load the **GFS40 850 mb wind speed** (or isotachs) product and stack it with the **Mixed Layer (0-1 km) CAPE** product. Here's an example of what the Volume Browser will look like before you click **Load** (note your VB menus may be different):

Sources->Volume->GFS40, **Fields**->Wind->Wind Speed, **Planes**->Pres->850MB

Sources->Volume->GFS40, **Fields**->T-Storms->Computed CAPE, **Planes**->Misc->ML (0-1km)

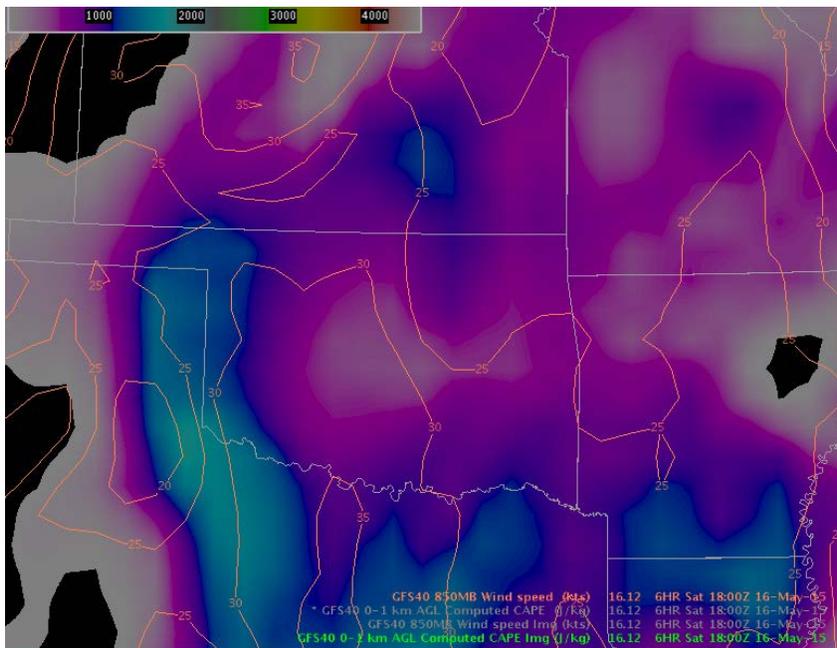


2. Once you have the products loaded in the map editor, **right click** on each of the two products in the Product Legend in the bottom right and select **Load as Image**, to make the data compatible with the Tracking Meteogram.

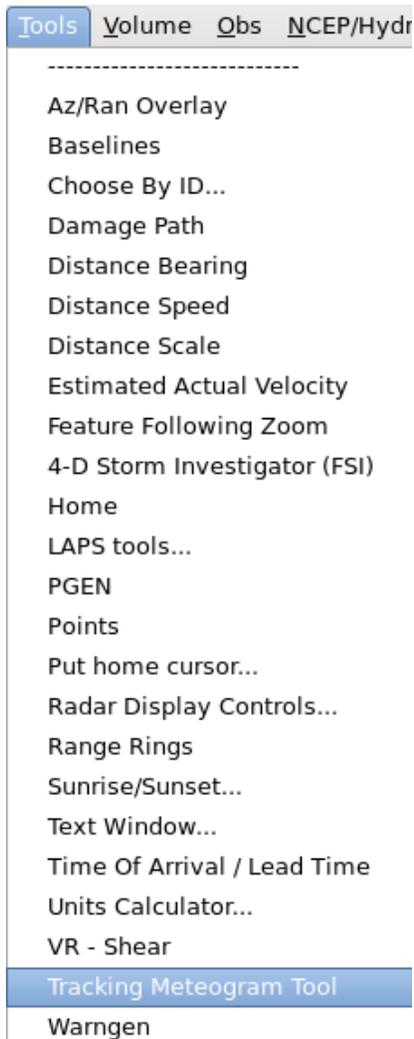


Tip: To avoid the clutter of having two different image plots loaded on top of each other, toggle off one of the image plots and replace it with the default contour plot of that product. The products do not have to be active in the Product Legend for the Tracking Meteogram to be able to perform calculations on that product. You may have as many inactive image products loaded as you wish. The Tracking Meteogram will perform calculations and display a separate line plot for each of them.

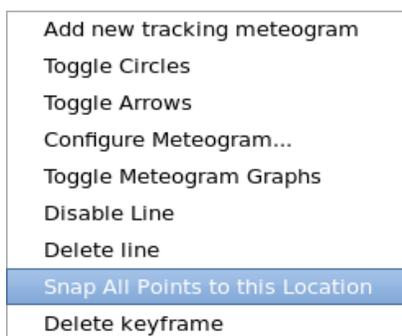
3. The result should look something like this:



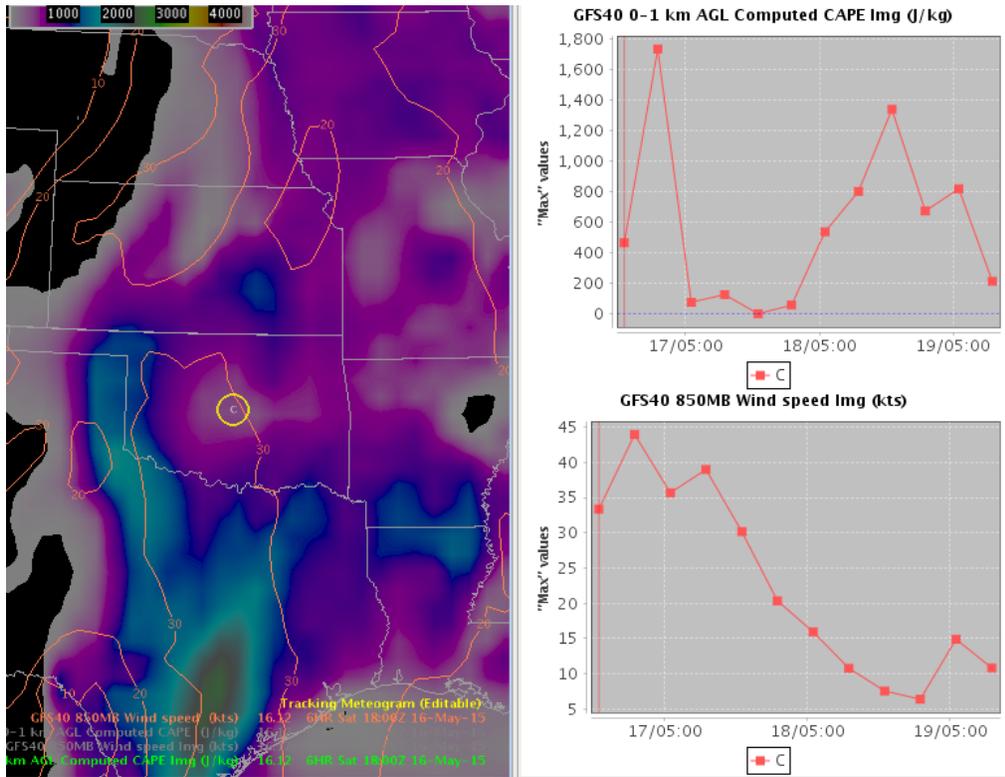
4. From the **Tools** menu, load the **Tracking Meteogram Tool**.



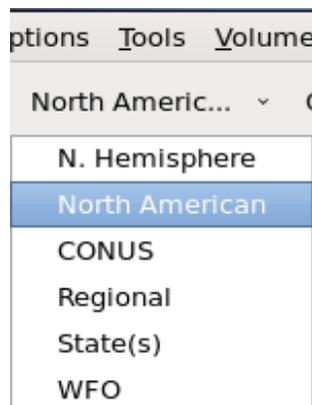
5. A Drag Me To Feature icon will appear. **Zoom** in to a location you wish to create a time series for. **Move the circle** to the point you wish to create a time series for. **Right click and hold** inside the current frame circle and select **Snap All Points to this Location**.



This results in all circles being moved to the same location so you can make a time series at a point.

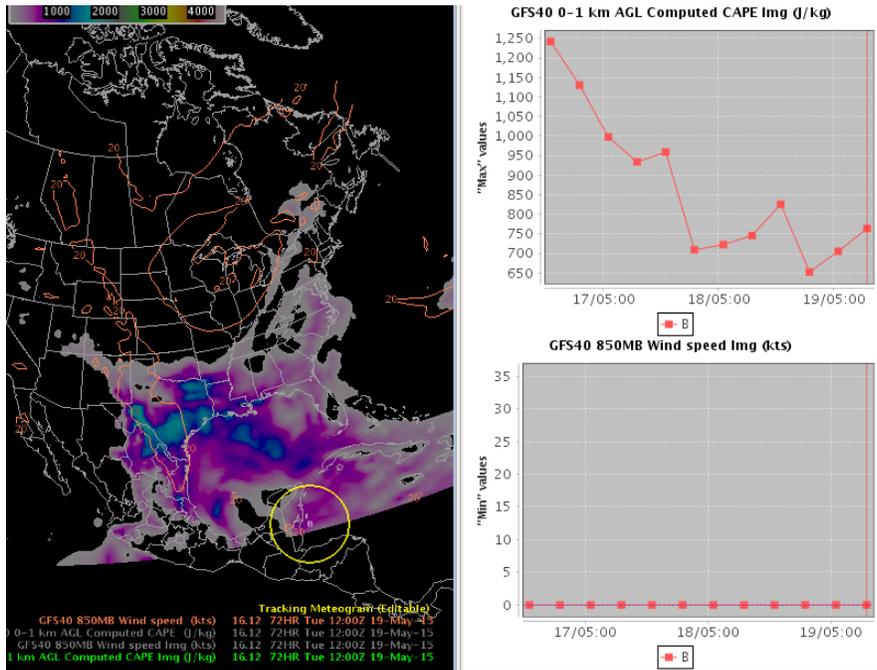


6. Notice in the above example that there are two graphs, one for each stacked image loaded. If you were to load another image in the editor (remembering to convert contour to image), you will get a third separate plot.
7. If any of your circles are outside of the domain, the axis in the plot may become skewed to accommodate the missing data (many times are values of zero). To see this, change the scale to **North American** and use the **scroll wheel** over the circle to make the circle huge.



8. Configure the 850 mb windspeed to Min by **right clicking** on the **circle** and selecting **Configure Meteogram**. Select **Min** under **Type** on the row containing **850 mb windspeed**.

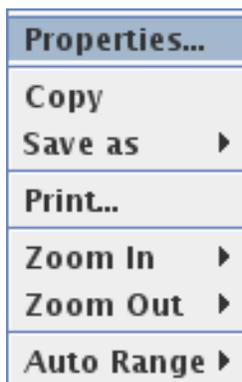
Move the Meteogram circle outside the domain and observe the change in behavior of the plots.



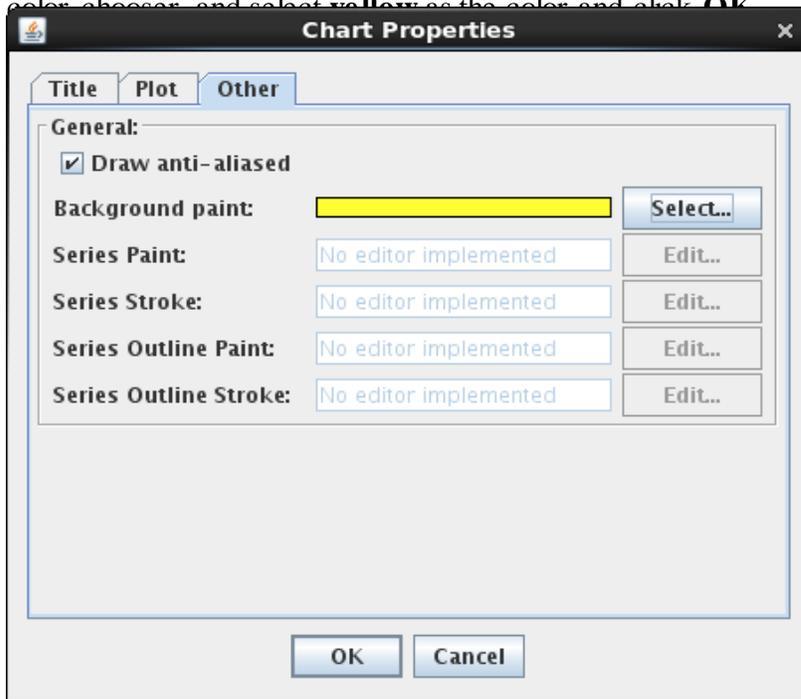
9. Missing data will result in the time trend plots sometimes displaying unwanted values, like zero in the above 850MB Min Wind Speed (your values may be different). Since part of the circle is still in the domain in the above image, the top CAPE plot is not affected because it is configured to Max and therefore will still find non-zero pixels to sample. The Min configuration automatically results in a zero value even if only a single data cell in that circle ends up outside the domain.

10. Move the circle back to the center of the display and verify that the axis is not skewed.

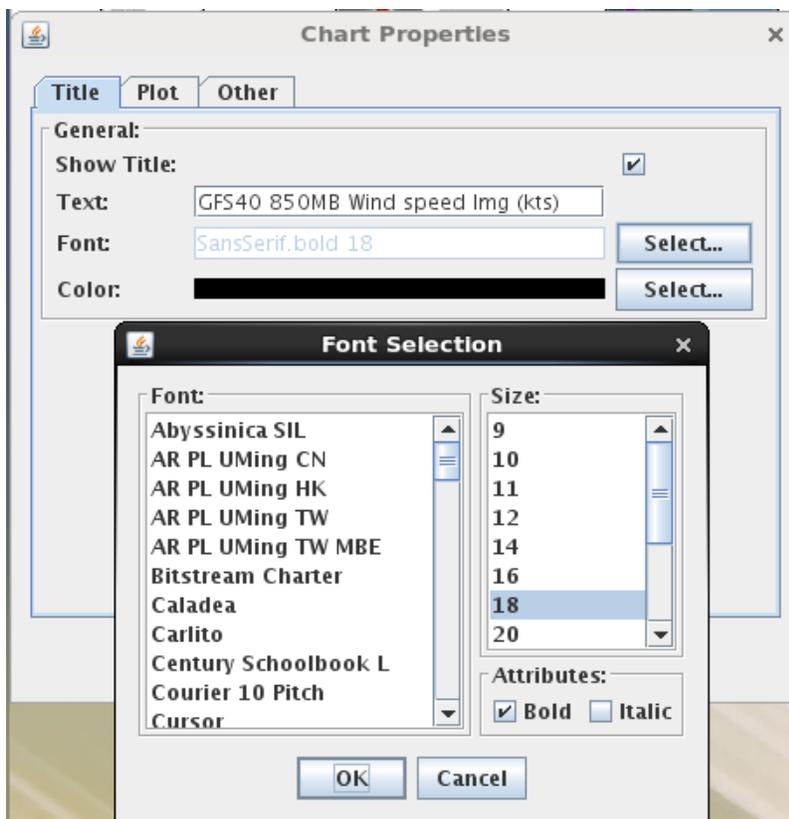
11. Next, practice modifying the properties on the time trend plot itself. Right click on one of the graph plots and select Properties.



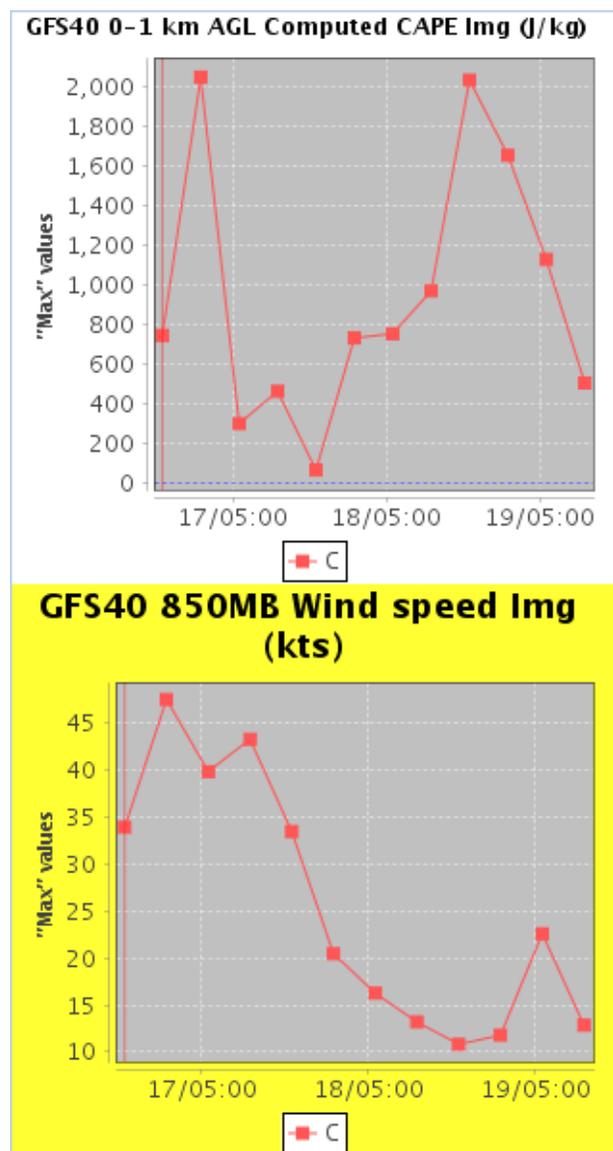
12. Under the **Other** tab, click on the **Select** button next to the **Background paint** to launch the color chooser, and select **yellow** as the color and click **OK**.



13. Under the **Title** tab, click the **Select** button to change the **font size** to **18** and click **OK**.



14. In the Chart Properties window click on **OK** to apply your settings. The result is a yellow background and larger size title for the plot you right clicked on.



15. You can modify lots of graph properties for the current session to make an image for a presentation or web graphic. Note that modifications to the graph properties cannot be saved.

16. Next we are going to show an aviation example using stacked grid products.

17. Clear the pane and use the **Volume Browser** (Browser...menu in the Volume menu) to load the following products on the CONUS scale:

SREF Sfc Wind Speed (kts)

Sources->Ensemble->SREF, **Fields**->Wind->Wind Speed, **Planes**->Misc->Sfc

850MB RH (%)

Sources->Ensemble->SREF, **Fields**->Moist->RH, **Planes**->Pres->850MB

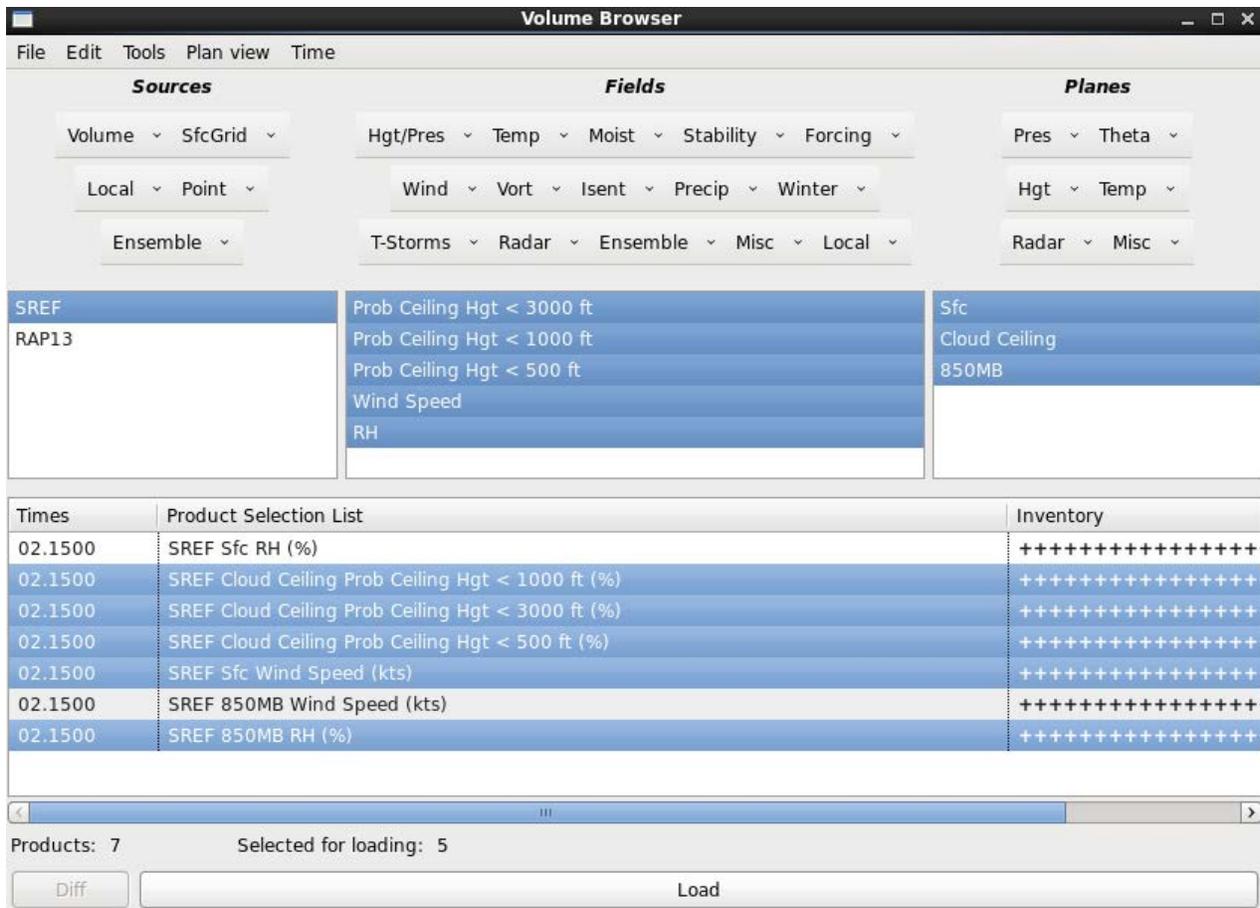
Prob Ceiling Hgt < 500 ft, < 1000 ft, and < 3000 ft

Sources-> Ensemble ->SREF, **Fields**->Ensemble->--SREF-- Aviation->Prob Ceiling Hgt < 500 ft, **Planes**->Misc->Clouds->Cloud Ceiling

Sources->Ensemble->SREF, **Fields**->Ensemble->--SREF-- Aviation->Prob Ceiling Hgt < 1000 ft, **Planes**->Misc->Clouds->Cloud Ceiling

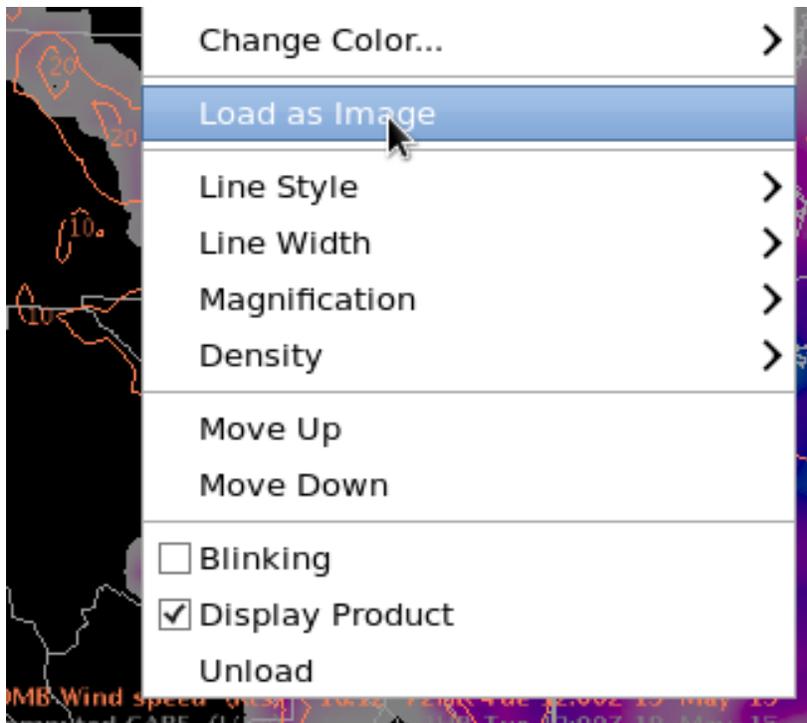
Sources->Ensemble->SREF, **Fields**->Ensemble->--SREF-- Aviation->Prob Ceiling Hgt < 3000 ft, **Planes**->Misc->Clouds->Cloud Ceiling

Note the Aviation field has both SREF and GEFS, and we want SREF. If you choose to load all the products in at once, you will need to toggle off Sfc RH and 850mb wind speed, and the Volume Browser should look like this before clicking **Load**.



18. **Left click and drag** the **map** to the left to put some black space behind the text legends to make them readable.

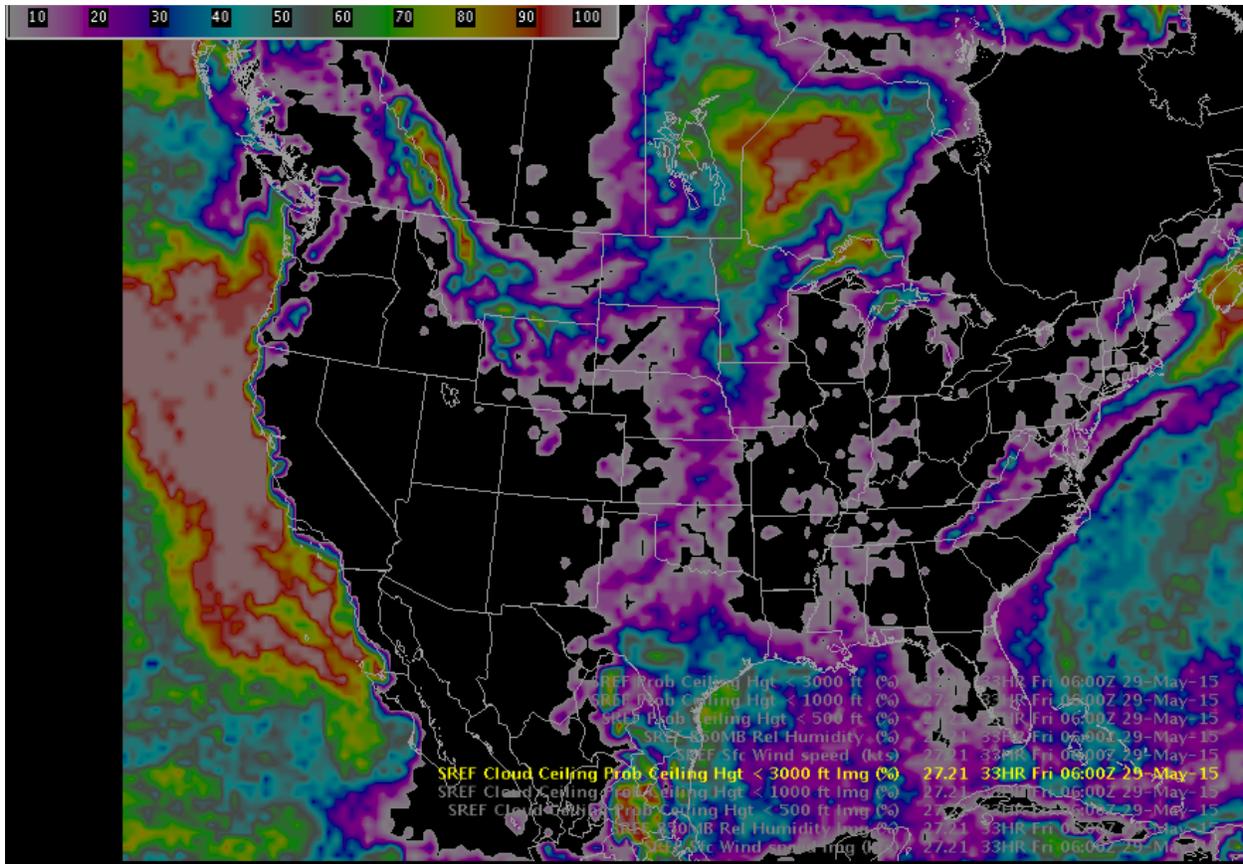
19. **Left click** on each **product legend** to **Toggle off** all the **contours**. Then work from the bottom up to **right click** on each **product legend** to perform **Load as Image** on the five products loaded.



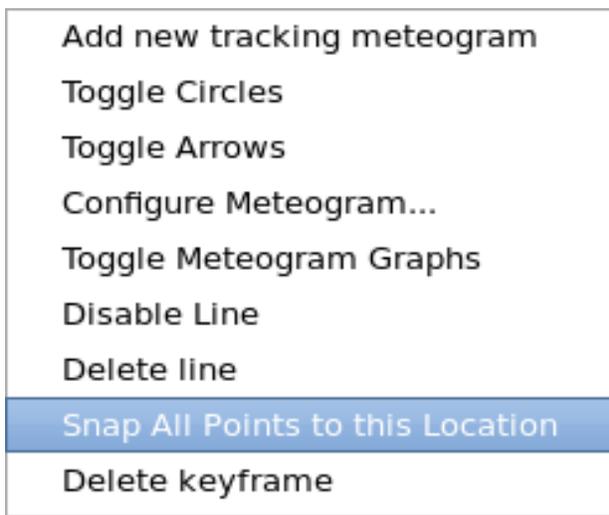
	SREF Prob Ceiling Hgt < 1000 ft (%)	27.21	33HR
	SREF Prob Ceiling Hgt < 3000 ft (%)	27.21	33HR
	SREF Prob Ceiling Hgt < 500 ft (%)	27.21	33HR
	SREF 850MB Rel Humidity (%)	27.21	33HR
	* SREF Sfc Wind speed (kts)	27.21	33HR
SREF Cloud Ceiling	Prob Ceiling Hgt < 3000 ft Img (%)	27.21	33HR
SREF Cloud Ceiling	Prob Ceiling Hgt < 1000 ft Img (%)	27.21	33HR
SREF Cloud Ceiling	Prob Ceiling Hgt < 500 ft Img (%)	27.21	33HR
	SREF 850MB Rel Humidity Img (%)	27.21	33HR
	SREF Sfc Wind speed Img (kts)	27.21	33HR

20. **Left click** on the **Img product legends** except **Prob Ceiling Hgt < 3000 ft** to toggle them off and make the < 3000 ft product visible. This is the product we will use for spatial visualization. **Left click** and **drag** the **map** back to the right to re-center the map.

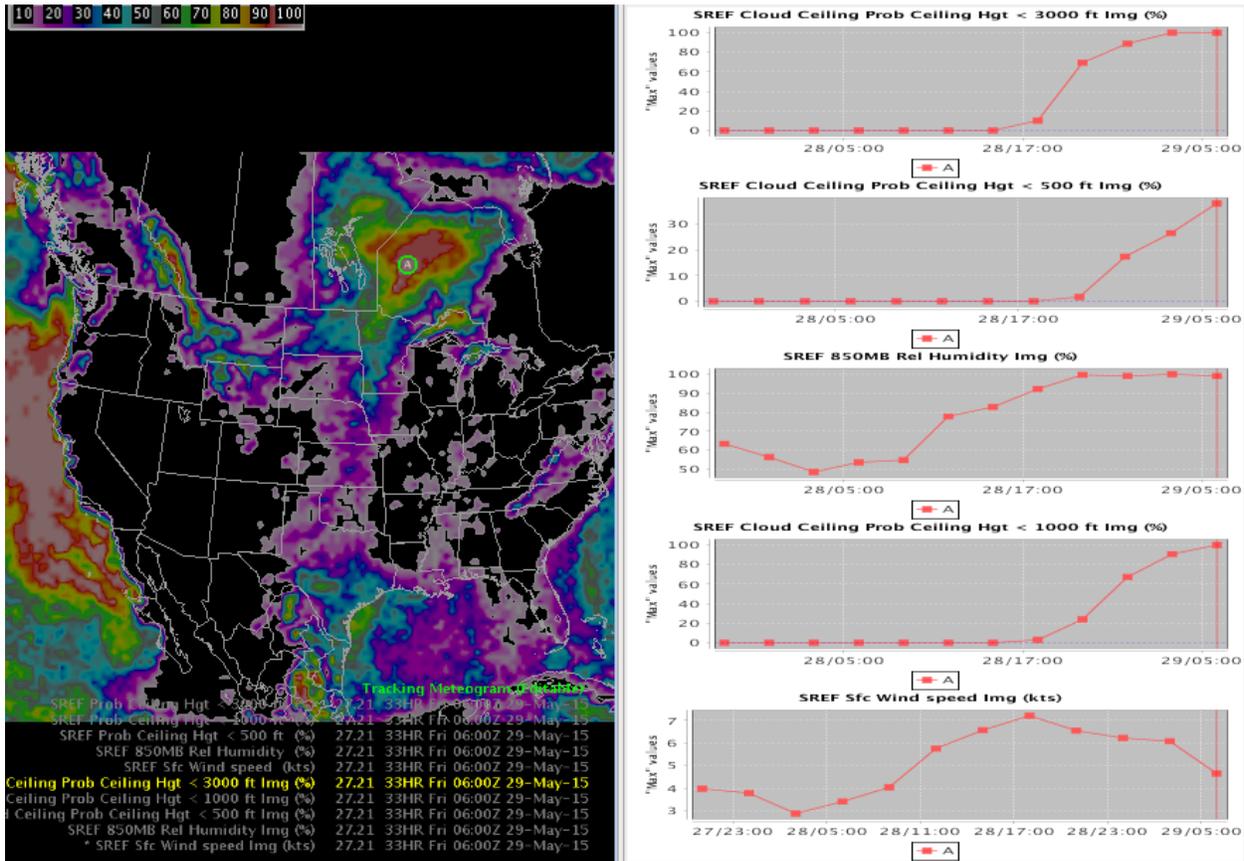
21. Your CAVE editor display should now look something like this.



22. Step to the **last frame** and then load the **Tracking Meteogram Tool** from the **Tools** menu.
23. **Move the Drag Me to Feature circle** to an area of red/white (100% chance of cloud ceiling < 3000 ft).
24. **Right click** inside the **colored circle** and select **Snap All Points to this Location**.



25. **Analyze** the time trend plots of the maximum values of Cloud Ceiling Height plots at different layers, as well as Sfc wind and 850 mb RH (note tracking meteogram defaults with Max calculations inside the circle). In the example below at the current time (denoted with the vertical red line) the SREF is forecasting cloud ceiling probabilities around 100% at < 3000 ft and < 1000 ft layers, but only around 40% for the <500 ft layer at the current forecast hour.



Note: If you want more control over the order of your plots, you can right click on each image product text legend in the CAVE editor and unload all the image plots but the one you desire on the top. Then when you right click on each contour product text legend to load each plot it will add each plot to the bottom in the order you load them. When you are done you will want to toggle on the main image you want as your spatial image in the CAVE editor and toggle the rest of the images off.

Note: The Tracking Meteogram is a dynamic tool that allows you to move the circle(s) around and see the plot(s) update. This is an improvement over the Volume Browser where you need to use separate panes to move points around.

26. Practice **moving** the **circle** around the domain and observe the plots update with each shift of the circle location. Dynamic time trends!