



Soundings, cross sections and charts

Soundings, cross sections, meteograms and time-height plots give you a vertical look at the atmosphere, or follow one point through a model run. Most of them start from a right-click on the map or a toolbar button, and they all open in the same chart window.

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|-------------------------------|----------------------------------|
| 01 Open a model sounding | 02 Dock, float and resize charts |
| 03 Draw a model cross section | 04 Meteograms |
| 05 Model time-height plots | 06 Area-averaged soundings |
| 07 Hover soundings | 08 RAOB soundings |
| 09 ACARS aircraft soundings | 10 Compare soundings |
| 11 Archived soundings | 12 Hodographs on the map |
| 13 Ocean cross sections | |

BEFORE YOU START

- Right-click the map for soundings and point charts. The right side of the menu has a **Soundings** group (**Model**, **Meso analysis**, **RAOB**, **ACARS**, **NEXRAD VWP**) and an **Analysis** group (**Meteogram**, **Time-height**, **VWP time-height**). On a touch screen, press and hold the map.
- The toolbar has **Cross section**, **Box sounding**, **RAOB** and **ACARS** buttons.
- Model soundings, cross sections, meteograms and time-height plots use the model on the active map, so load a model bundle first.
- Each chart has its own controls, which open in the sidebar area next to the chart.

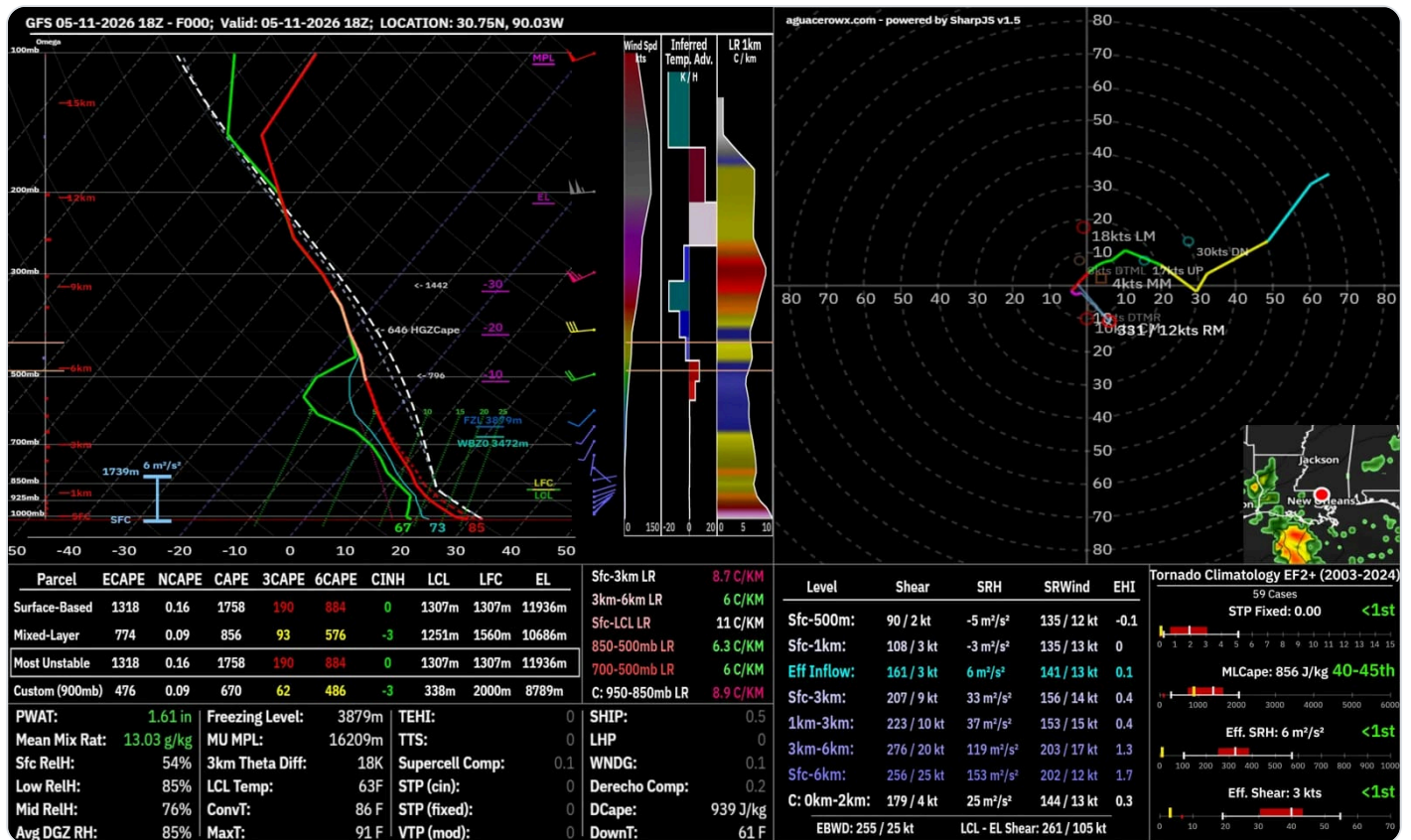
01 Open a model sounding

Right-click anywhere on a model map for a Skew-T with a hodograph, parcels, ECAPE and severe and winter parameters.

- 1 Load a model bundle on the map.
- 2 Right-click the map where you want the sounding.
- 3 Under **Soundings**, click **Model**.
- 4 In the controls, use **Parcel Selection** to switch between **Surface-Based**, **Mixed-Layer**, **Most-Unstable** and **Custom-Pressure** parcels.
- 5 Use **Storm Motion** and **Presets** to change the storm motion, the inset parameters and the side panel view.
- 6 Step through forecast hours with the time slider. The sounding follows it.

TIPS

- Click **Meso analysis** instead of **Model** for a sounding from the SPC Mesoscale Analysis.
- Type a city, zip code, station or coordinates under **Location Search** and click **Request Sounding** to move the sounding without the map.
- Right-click the sounding to copy or download the image, or click **Download Sounding Data** for the data.



A model Skew-T with its hodograph, thermodynamic parameters and severe indices.

You can choose which items the right-click menu shows, and in what order, in Settings under **Context menu**.

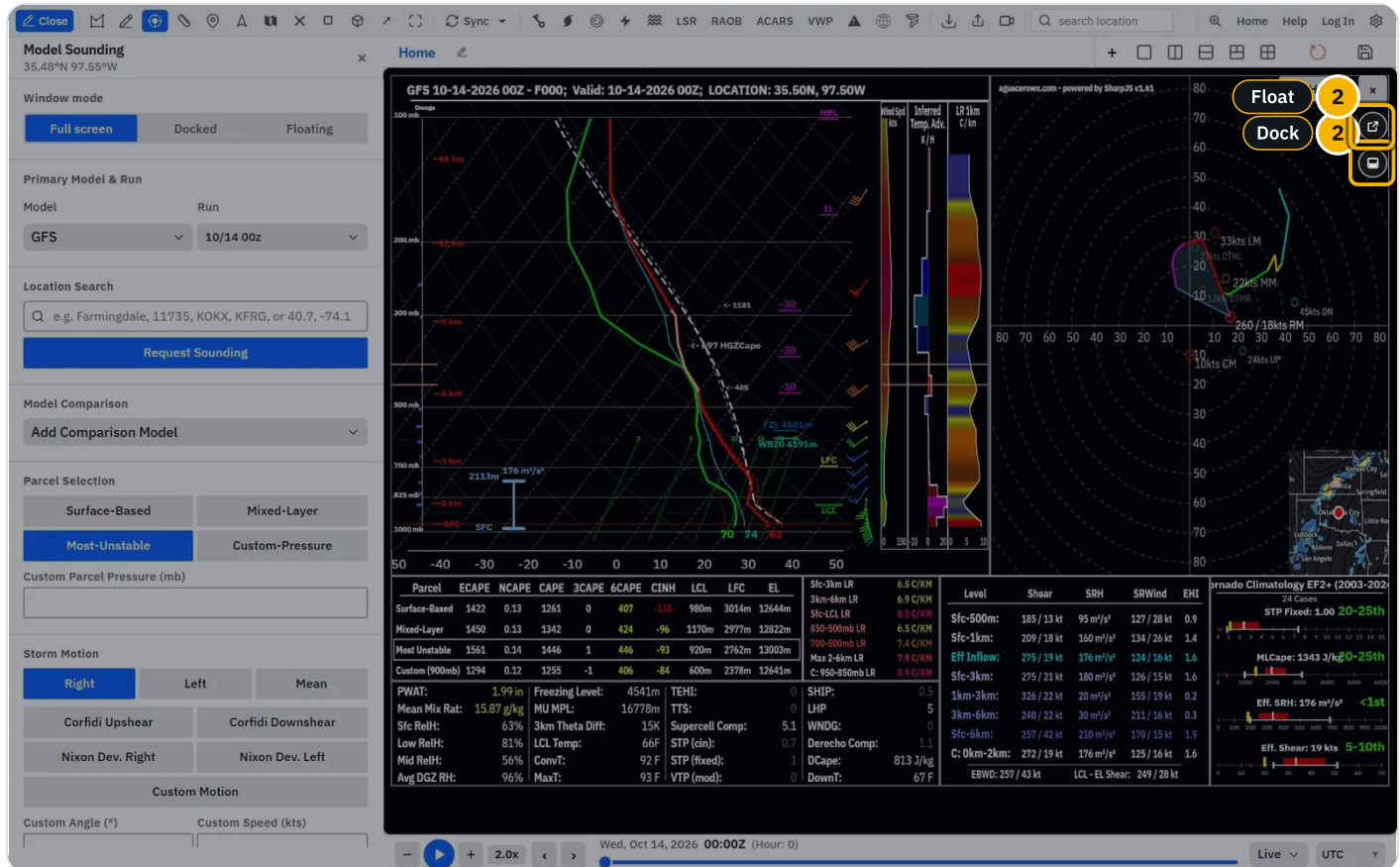
02 Dock, float and resize charts

Soundings, meteograms, cross sections and VWP plots can cover the board, dock under the map or float in a window you move and resize.

- 1 Open a sounding, meteogram, cross section image or time-height plot.
- 2 Click the dock button on the chart (**Dock under the map**) to put it below the map, or the pop-out button to float it over the map.
- 3 Drag a floating window by its title bar, and drag its edges to resize it.
- 4 Drag the top edge of a docked chart to change its height.
- 5 Double-click the title bar to go back to full screen.

TIPS

- **Window mode** in the chart controls has the same three choices: **Full screen**, **Docked** and **Floating**.
- The app remembers the last mode you used for each kind of chart.



A full-screen sounding with its dock and pop-out buttons.

Docked and floating windows are on desktop only.

03 Draw a model cross section

Draw a line on the map for a vertical slice through the model. It stands on the map as a curtain you can drag, with presets, overlays and model-minus-model comparison.

- 1 Load a model bundle on the active map.
- 2 Click **Cross section** on the toolbar.
- 3 Drag a line across the map from A to B.

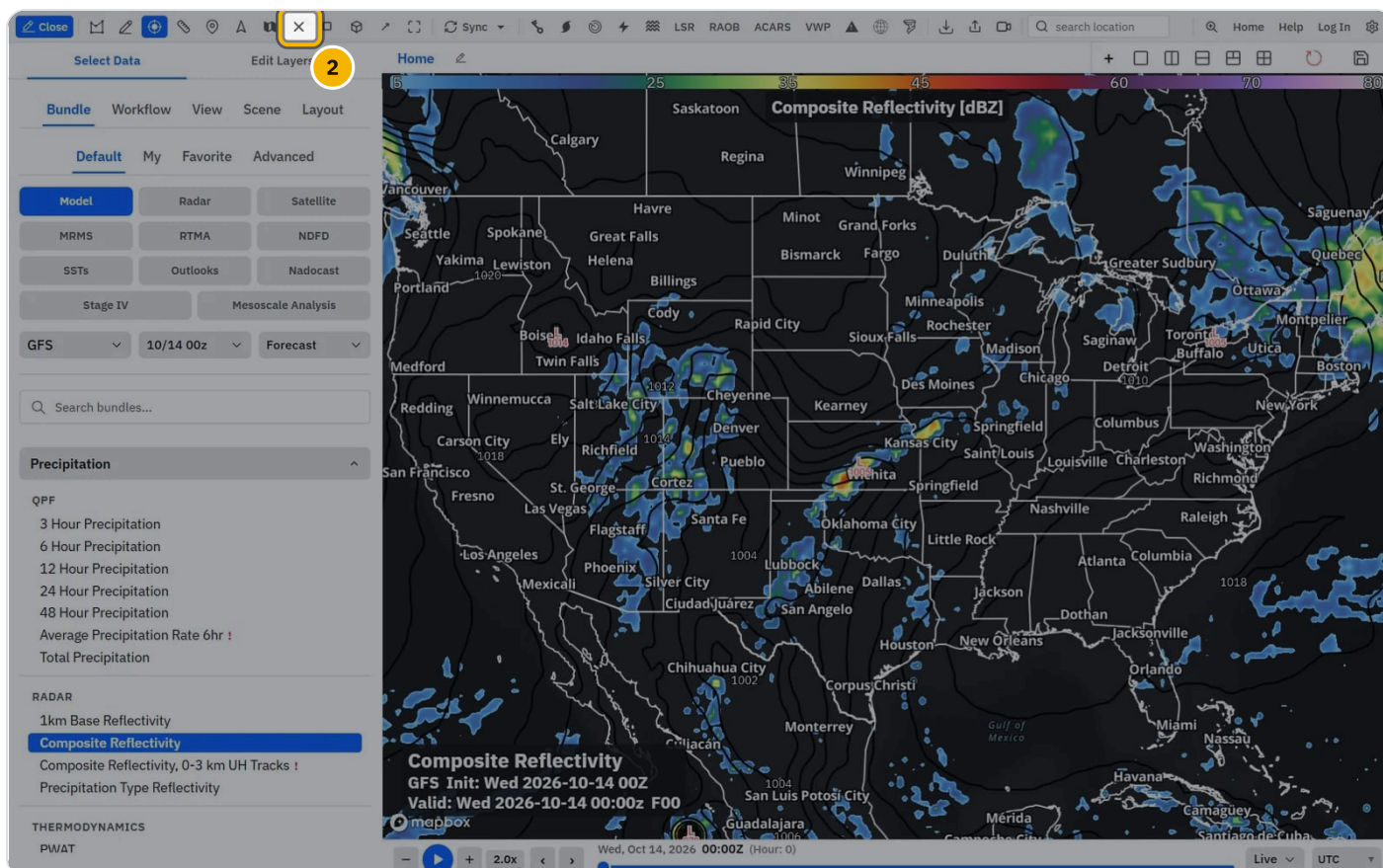
- 4 Drag the line or its A and B ends to move the cross section.
- 5 In the controls, pick a **Style** preset, or choose your own **Shading** and **Contours & wind**.
- 6 Under **Model Comparison (A - B)**, pick a second model to plot the difference.
- 7 Under **Show as**, click **Image** for a flat chart instead of the curtain.

SHORTCUTS

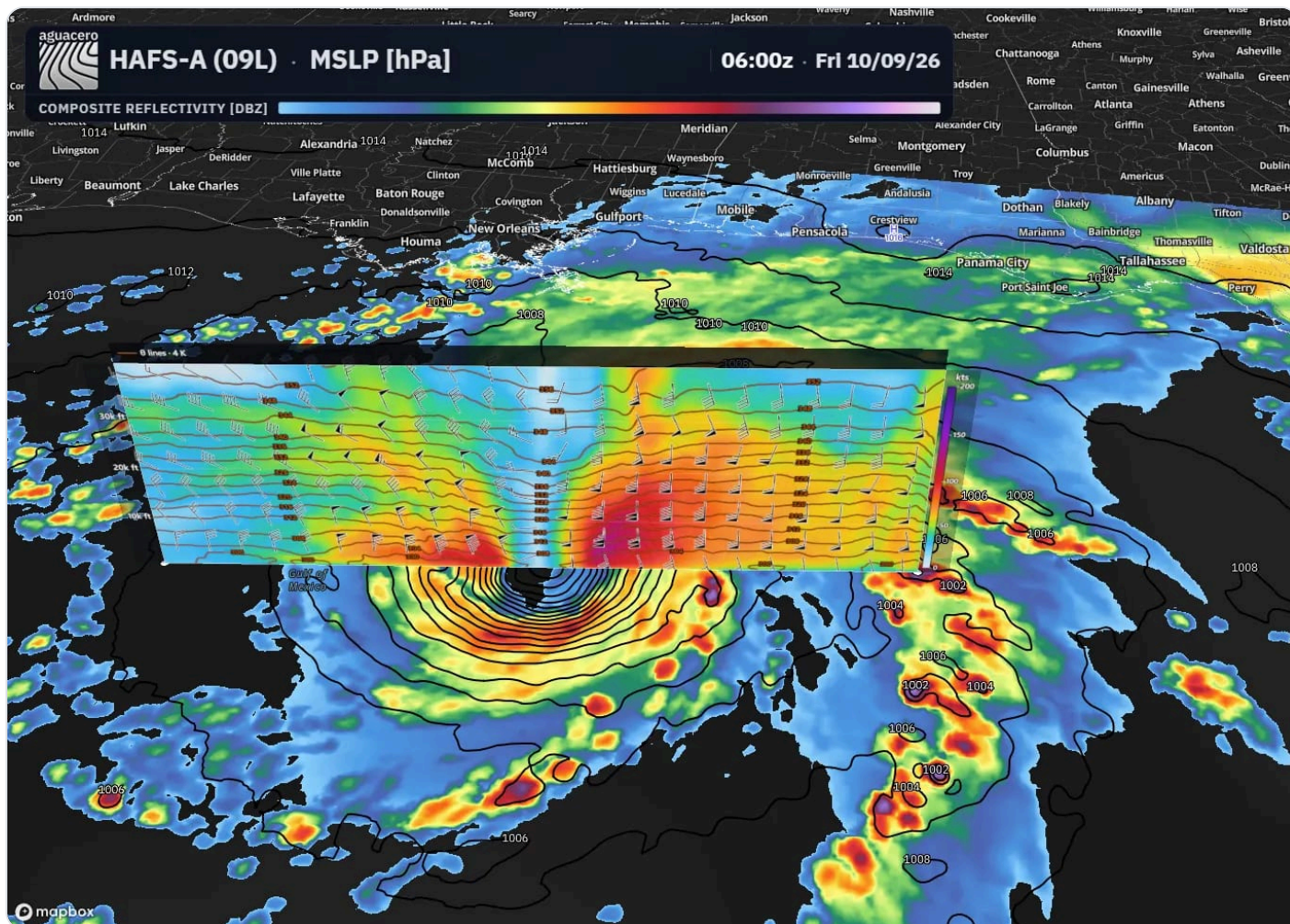
Ctrl + drag Draw a cross section without the toolbar button

TIPS

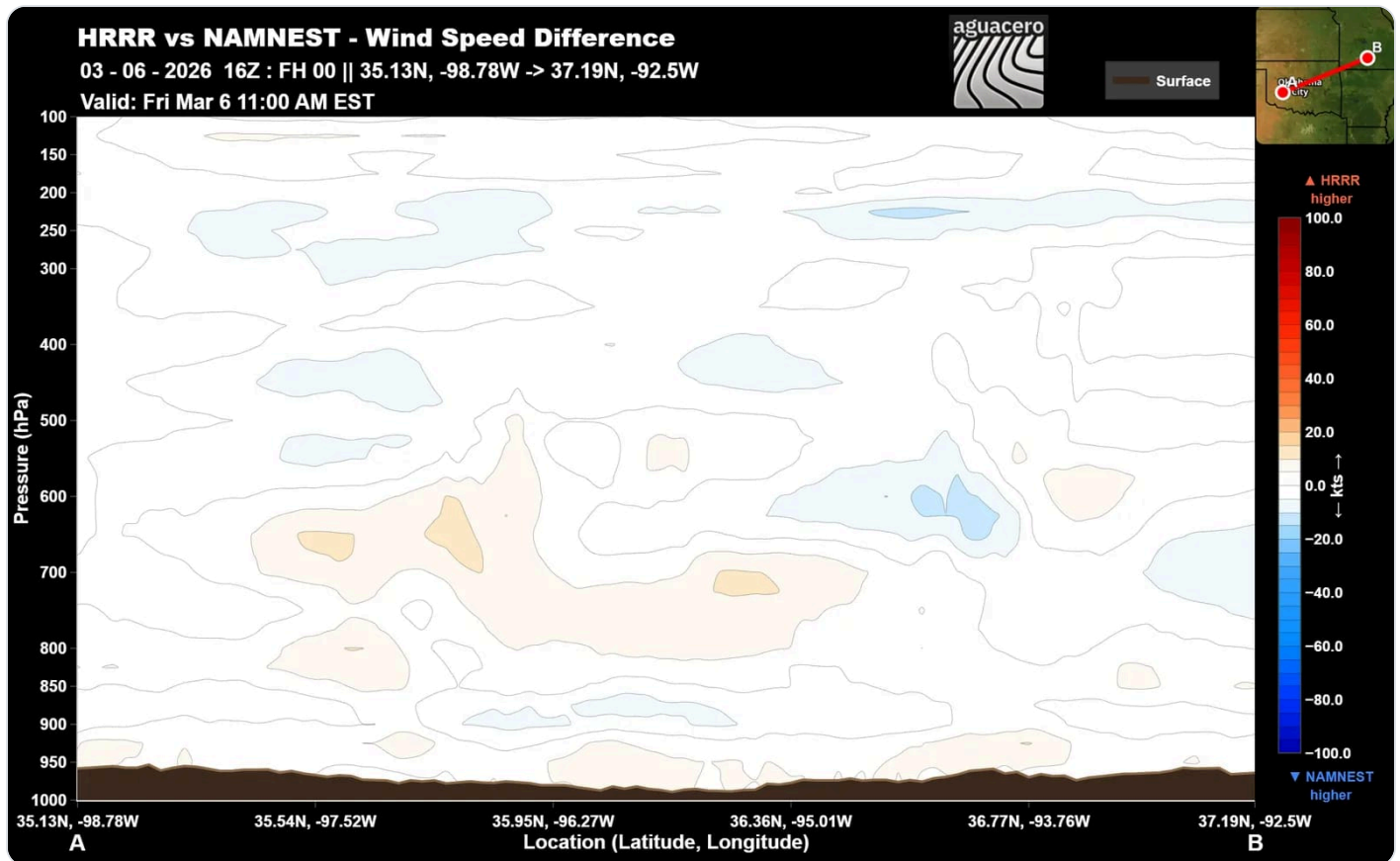
- **Plot Options** switches the vertical axis between height and pressure and sets the vertical exaggeration of the curtain.
- Save your own fills and overlays under **Style** with **Save current**.



The Cross section button on the toolbar.



A HAFS-A cross section standing on the map through a tropical cyclone.



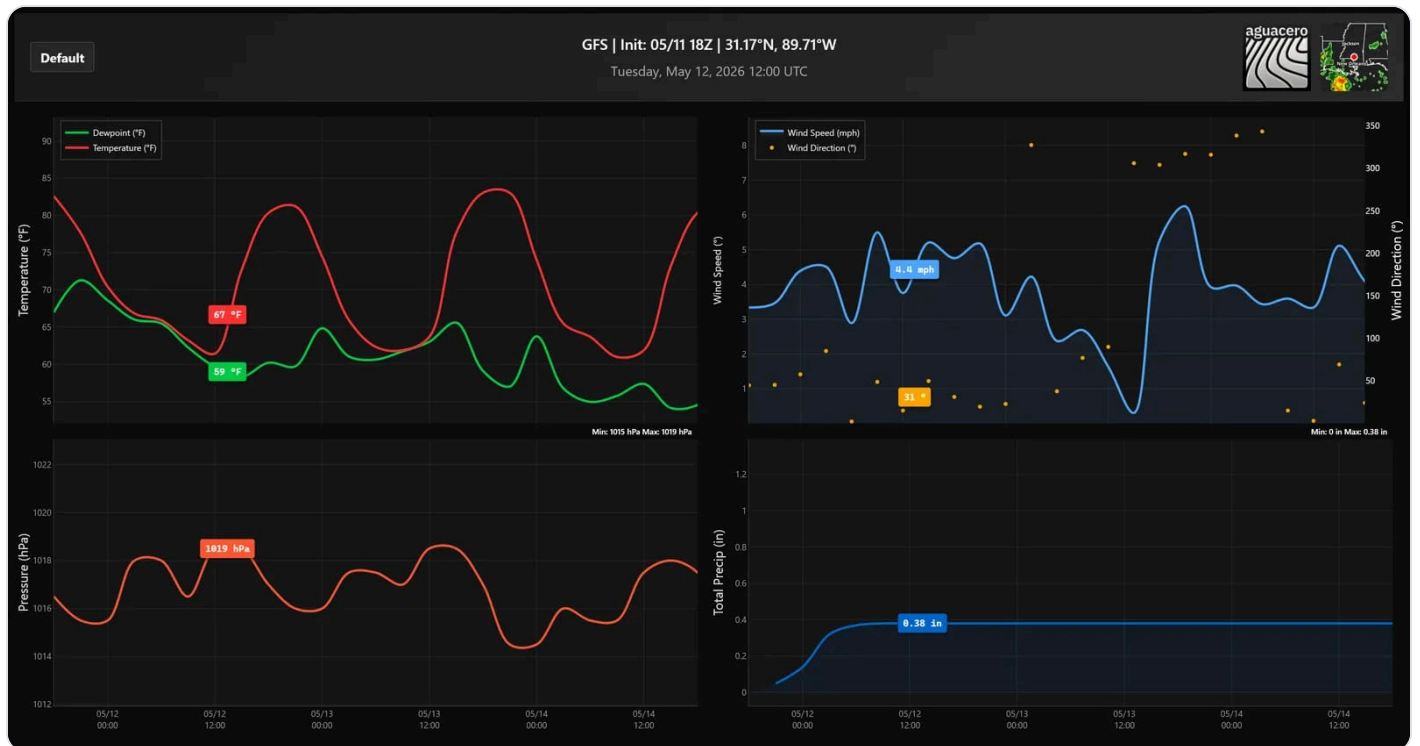
An HRRR minus NAM nest wind speed difference.

Model cross sections are on every plan. With a NEXRAD layer on the board, the same tool draws a radar cross section, which needs Professional. Compare and Trend views show the cross section as an image.

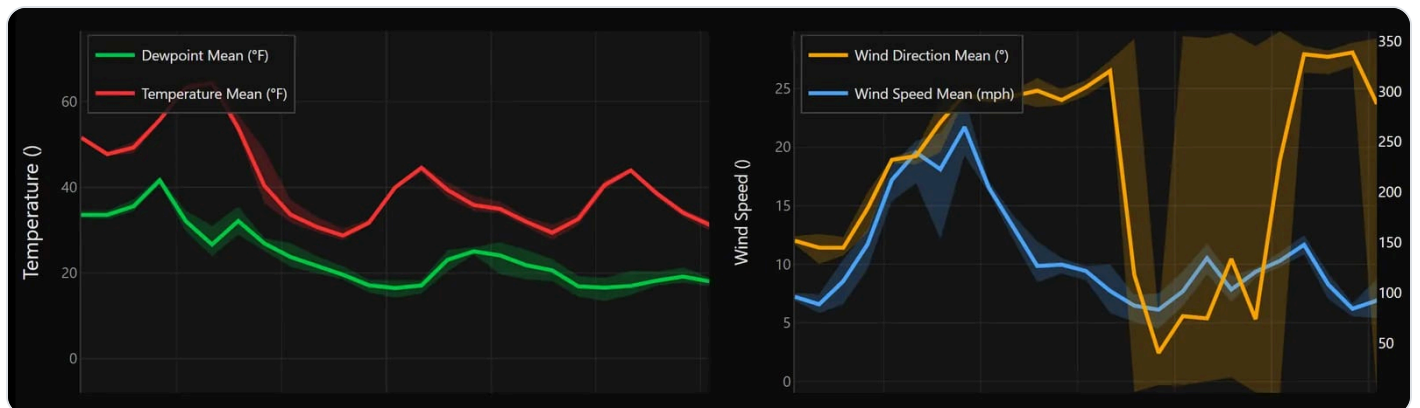
04 Meteograms

Temperature, dew point, wind, pressure and precipitation at one point through the model run.

- 1 Right-click the map at the point you want.
- 2 Under **Analysis**, click **Meteogram**.
- 3 Use **Meteogram Settings** to change the **Plot Layout** and **Precipitation Display**.
- 4 Under **Model Runs**, choose **Comparison** and click **Compare Model** to add models, or **Trend** to add earlier runs.
- 5 Under **Visualization Style**, pick **Line**, **Plume** or **Box**.



A GFS meteogram with temperature, dew point, wind and pressure.



A multi-model meteogram with the mean and spread.

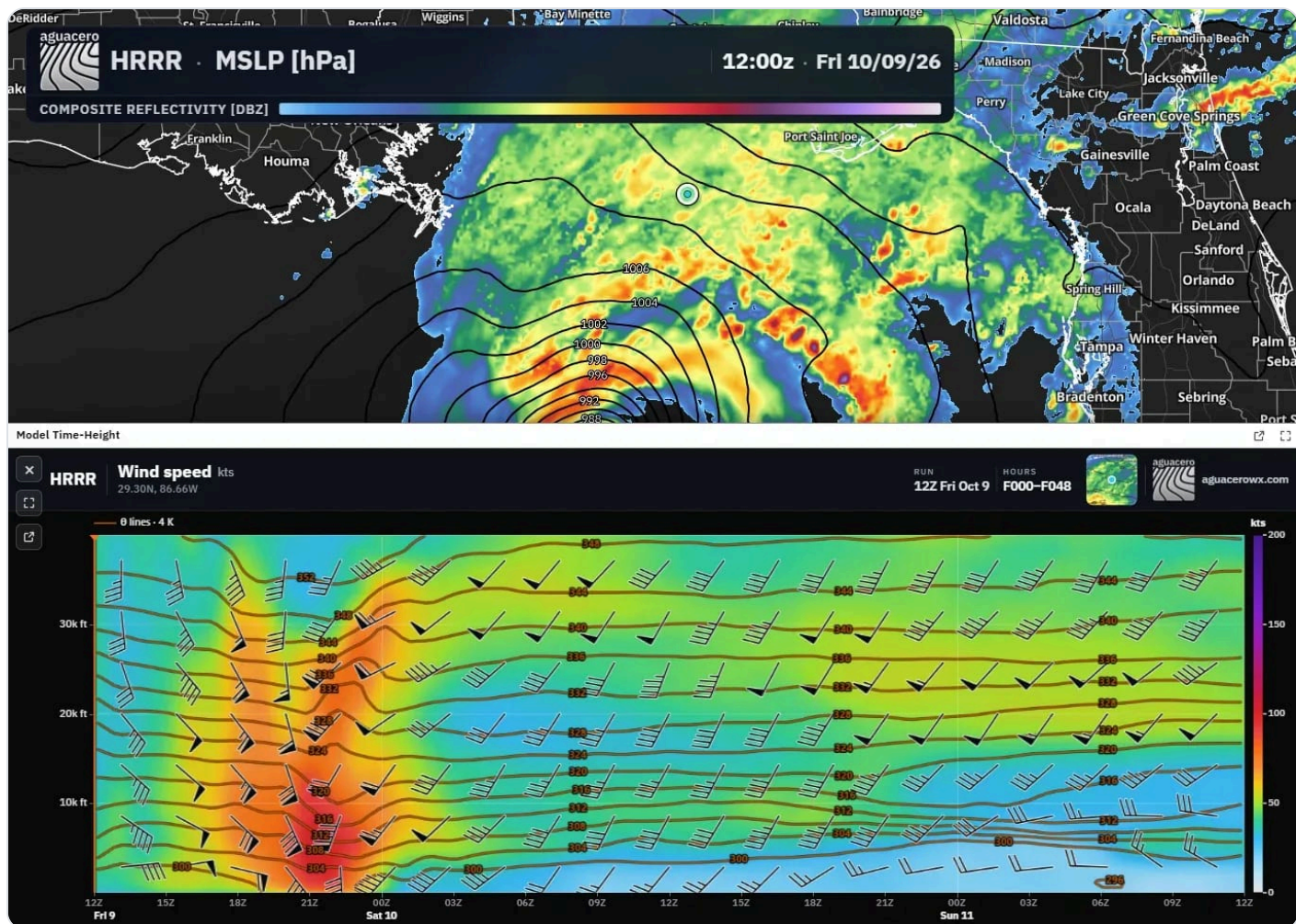
Comparison, Trend and the plume and box views need Professional.

05 Model time-height plots

One point through the whole model run, with the same fills, barbs and contours as cross sections.

- 1 Right-click a model map at the point you want.
- 2 Under **Analysis**, click **Time-height**.

- 3 Under **Hours shown**, pick how much of the run to plot.
- 4 Choose fills and overlays under **Style, Shading** and **Contours & wind**.
- 5 Drag the point on the map to move the plot, and click the chart to set the map time.



An HRRR time-height plot docked under the map.

06 Area-averaged soundings

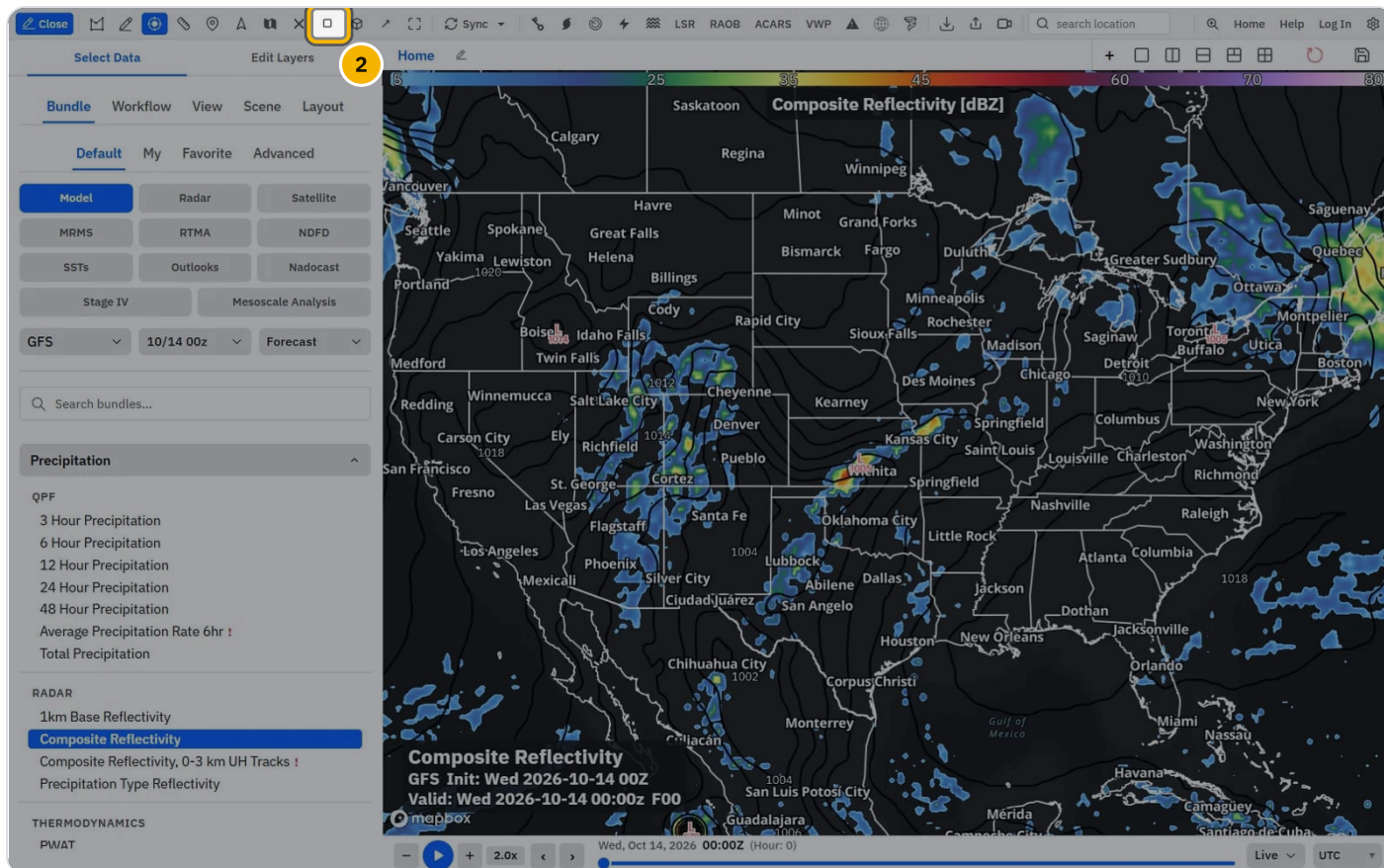
Draw a box for a sounding averaged over the whole area, from the model or the SPC Mesoscale Analysis.

- 1 Load a model bundle on the active map.
- 2 Click **Box sounding** on the toolbar.
- 3 Drag a rectangle over the area.

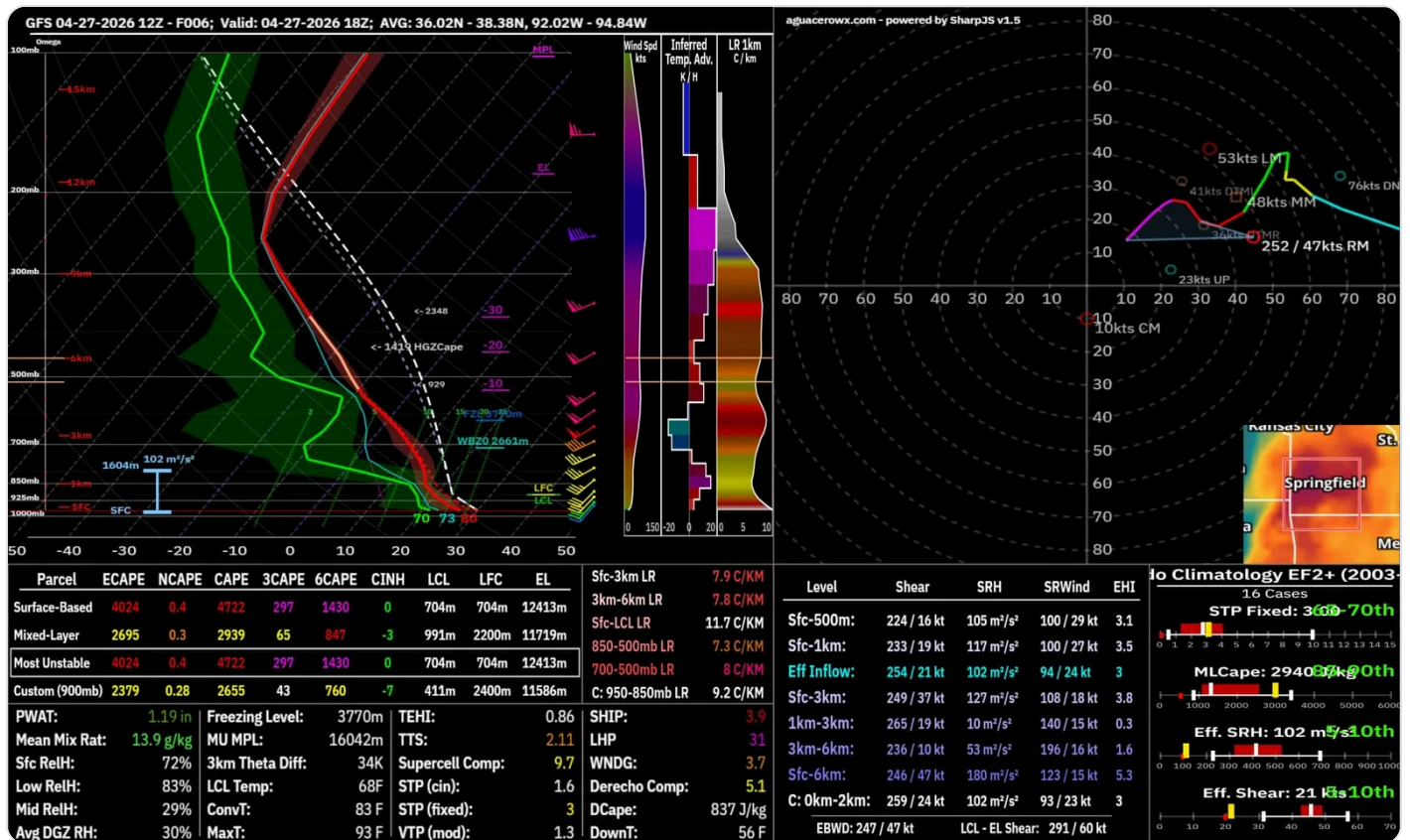
- 4 In the small menu, click **Model** or **Meso analysis**.
- 5 Read the averaged sounding. The tool turns itself off.

SHORTCUTS

Hold **B** + drag Draw a box sounding without the toolbar button



The Box sounding button on the toolbar.



An area-averaged GFS sounding with its hodograph and severe parameters.

07 Hover soundings

A model sounding that follows your cursor, or that you drag across the map. The profile updates as it moves.

- 1 Right-click a model map and click **Model** under **Soundings**.
- 2 Switch the sounding to **Docked** or **Floating** so the map stays in view.
- 3 In the sounding title bar, click **Follow mouse**.
- 4 Move the cursor over the map. The sounding updates as you go.
- 5 Click the map to pin the sounding, and click again to follow the cursor.
- 6 Or click **Static** and drag the sounding marker on the map.

Hover soundings work for model point soundings on desktop, not for RAOB, ACARS or box soundings.

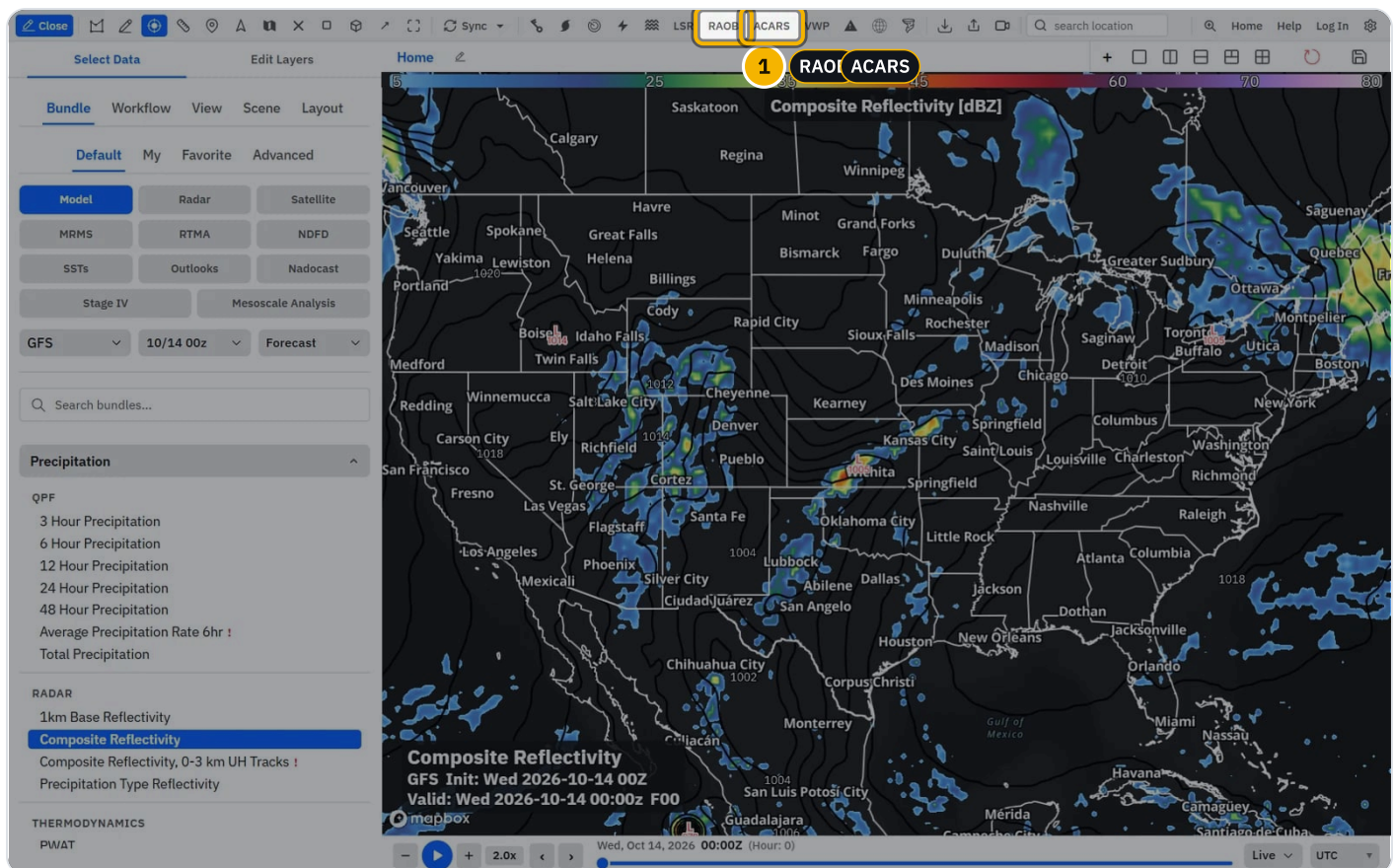
08 RAOB soundings

Radiosonde launch sites on the map. Click one for its observed sounding.

- 1 Click **RAOB** on the toolbar to show the launch sites.
- 2 Click a station on the map.
- 3 Step through the station's launch times with the time slider.

TIPS

- Right-click the map and click **RAOB** under **Soundings** for the nearest station without turning on the sites.



The RAOB and ACARS buttons on the toolbar.

09 ACARS aircraft soundings

Observed profiles from aircraft as they take off and land at airports.

- 1 Click **ACARS** on the toolbar to show the airports.
- 2 Click an airport on the map.
- 3 Step through the airport's soundings with the time slider.

TIPS

- Right-click the map and click **ACARS** under **Soundings** for the nearest airport.

In archive mode, ACARS data goes back to January 1, 2019.

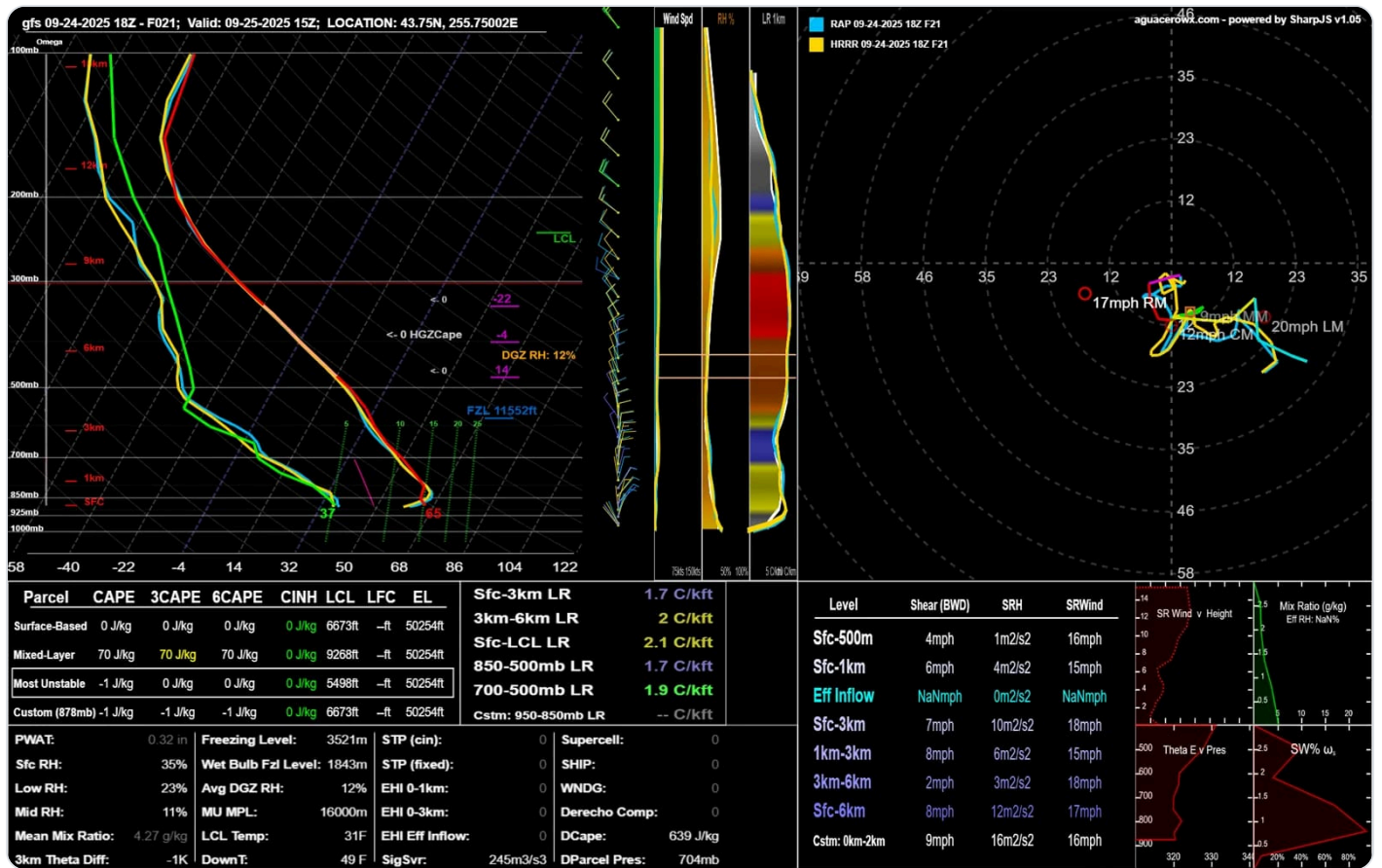
10 Compare soundings PROFESSIONAL

Overlay other models and runs on one Skew-T, on top of a model, RAOB or ACARS sounding.

- 1 Open a model, RAOB or ACARS sounding.
- 2 In the controls, under **Model Comparison**, click **Add Comparison Model** and pick a model.
- 3 To compare runs, add the same model again, then click its row to change the run.
- 4 Click a model's color swatch to change its color, the eye to hide it, or ✕ to remove it.

TIPS

- To overlay your own files, use **Upload Comparison Soundings** under **Load Custom Sounding**.



GFS and RAP soundings overlaid on one Skew-T.

Needs Professional. On other plans the button reads **Compare Model (Pro)**.

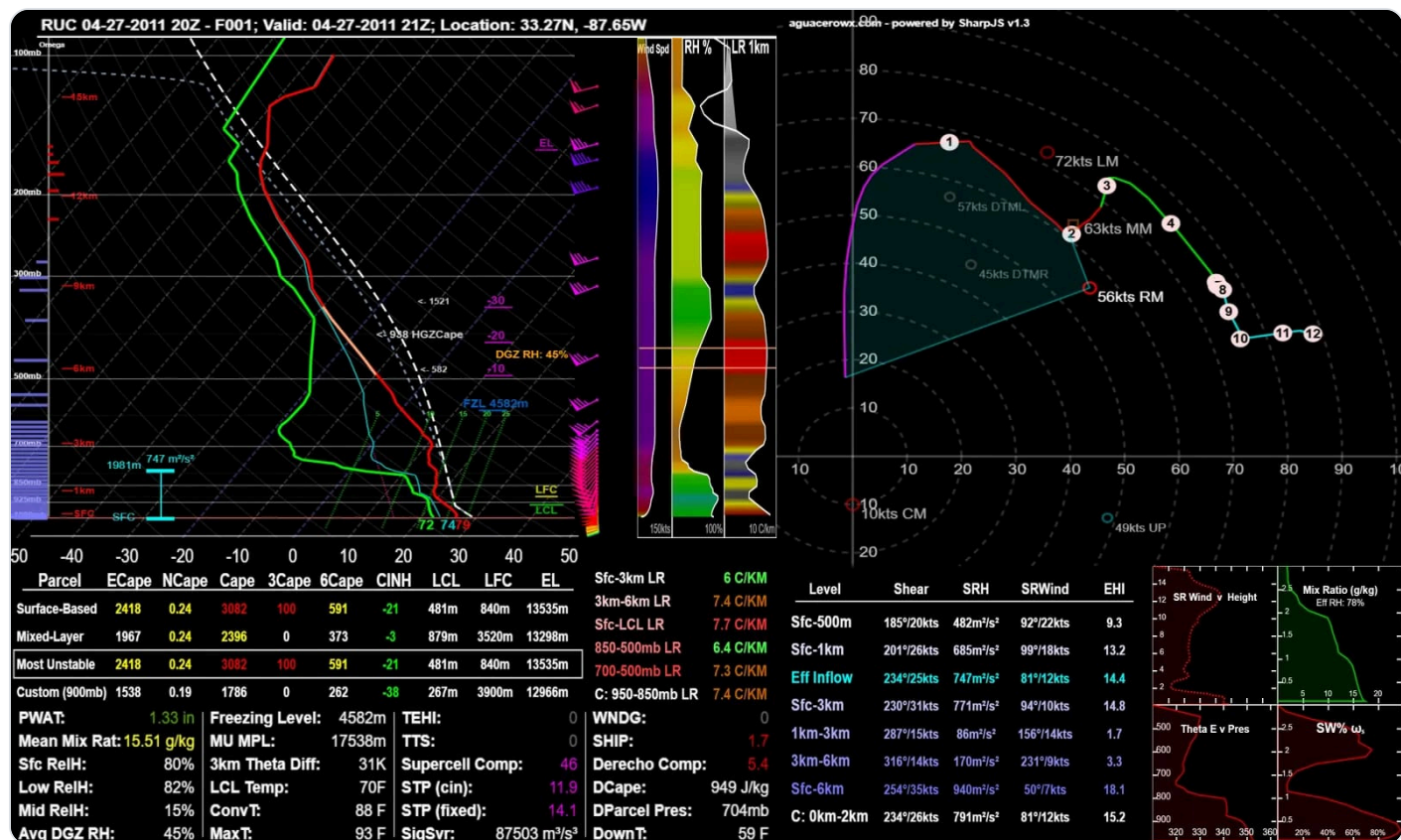
11 Archived soundings

Load past RAOB, ACARS and, for select models, BUFKIT soundings for an event.

- 1 Open any sounding.
- 2 In the controls, scroll to **Load Archived Data**.
- 3 Enter the **Year:**, **Month:** and **Day:**, the **Station:** and the **Hour (Z):**.
- 4 Click **Request Archived RAOB**.
- 5 For a model, set **Model:**, **Run (Z):** and **Forecast Hour (Z):** under **Load Archived BUFKIT**, then click **Request Archived BUFKIT**.

TIPS

- **Archived ACARS** uses the same date with an hour and minute. Click **Request ACARS**.
- In archive mode, right-click and click **Model** to load the archived BUFKIT sounding for that point.



A RUC sounding from April 27, 2011, loaded from the archive.

12 Hodographs on the map

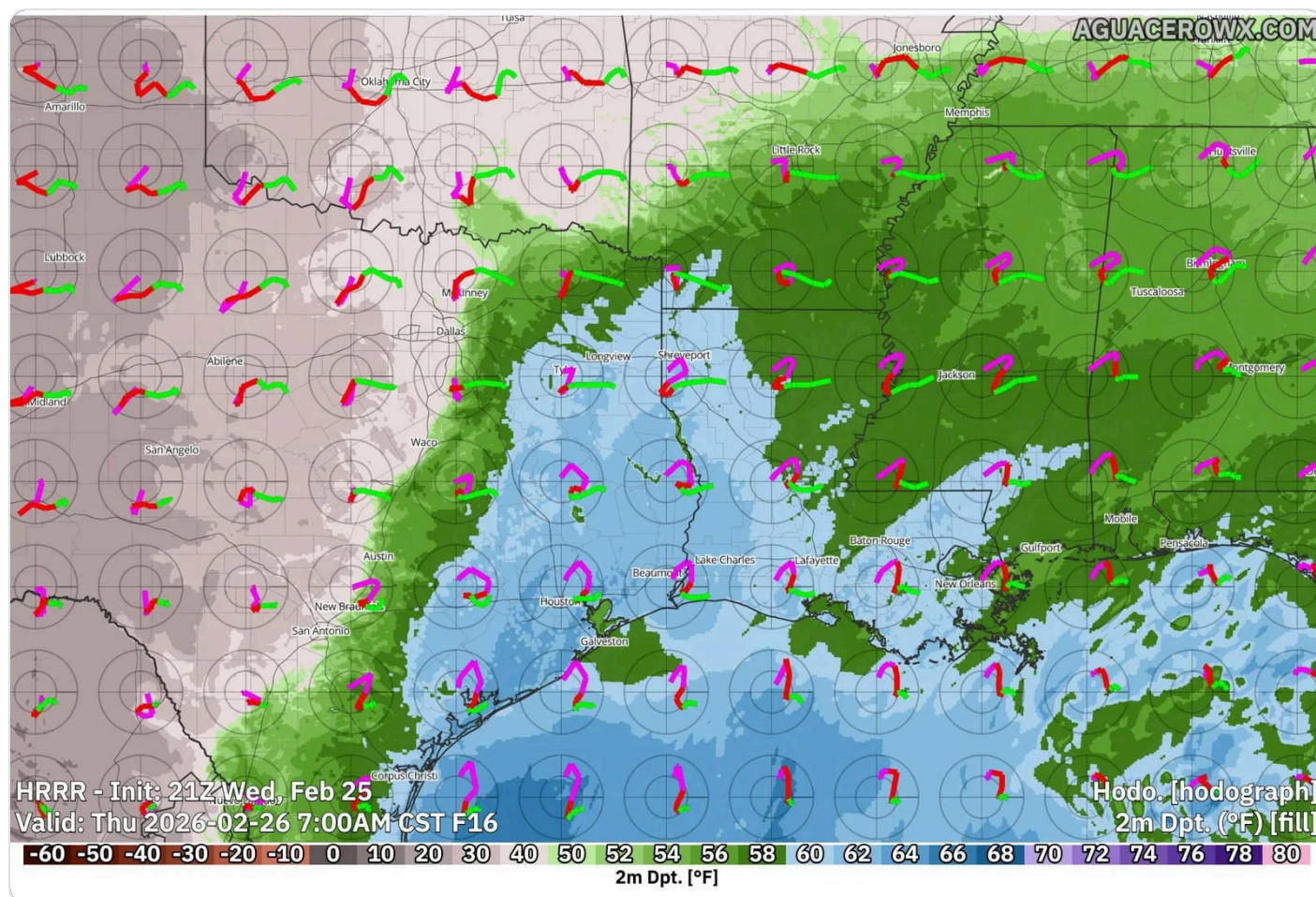
Plot hodographs across the map for select models, such as the HRRR, NAM and RAP.

- 1 Load a model that has hodographs, such as the HRRR.
- 2 Open **Edit Layers** in the sidebar.
- 3 Click **Add Layer**.
- 4 Open **Upper Air** and pick **Hodograph**.
- 5 Open the layer's settings to change the **Hodograph Size** and **Hodograph Distance**.

SHORTCUTS

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Open or close the sidebar



HRRR hodographs across the map over 2 m dew point.

13 Ocean cross sections

Slice the ocean along any line: temperature to 500 m, its anomaly and its 7-, 15- and 30-day change, with the 20 °C isotherm.

- 1 Load a sea surface temperature layer, for example from the **SSTs** data type in the sidebar.
- 2 Click **Cross section** on the toolbar.
- 3 Drag a line across the ocean.
- 4 In **Cross section type**, click **Ocean subsurface (ARMOR3D)**.

5 Under **Type**, pick **Temperature**, **Anomaly**, **7-Day Change**, **15-Day Change** or **30-Day Change**.

6 Set the **Width** and **Depth**, and drag the A–B line to move the section.

TIPS

- Click **Download PNG** to save the chart.