AGUACEROWX USER GUIDE

Radar

Radar covers every NEXRAD and TDWR site with Level II and Level III products, MRMS mosaics and national radars from Europe, Canada, Mexico and overseas France. You can view it flat on the map, slice it, or open a storm in 3D.

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BEFORE YOU START

- Radar is a layer in your bundle. Add it from **Add Layer** on the **Edit Layers** tab, or click **Radar** in the data type filter on **Select Data** to load a radar bundle.
- The radar tools are on the toolbar: **NEXRAD sites**, **3D NEXRAD**, **Cross section**, **Storm tracker** and **VWP**.
- Single-click **NEXRAD sites** or **VWP** for settings. Double-click to turn the overlay on or off.
- NEXRAD loops run 1 hour on Free, 4 hours on Enthusiast and 12 hours on Professional.

01 Load NEXRAD radar

Show any WSR-88D or TDWR site with every tilt: reflectivity, velocity, dual-pol moments and Level III products such as echo tops, VIL and rainfall totals.

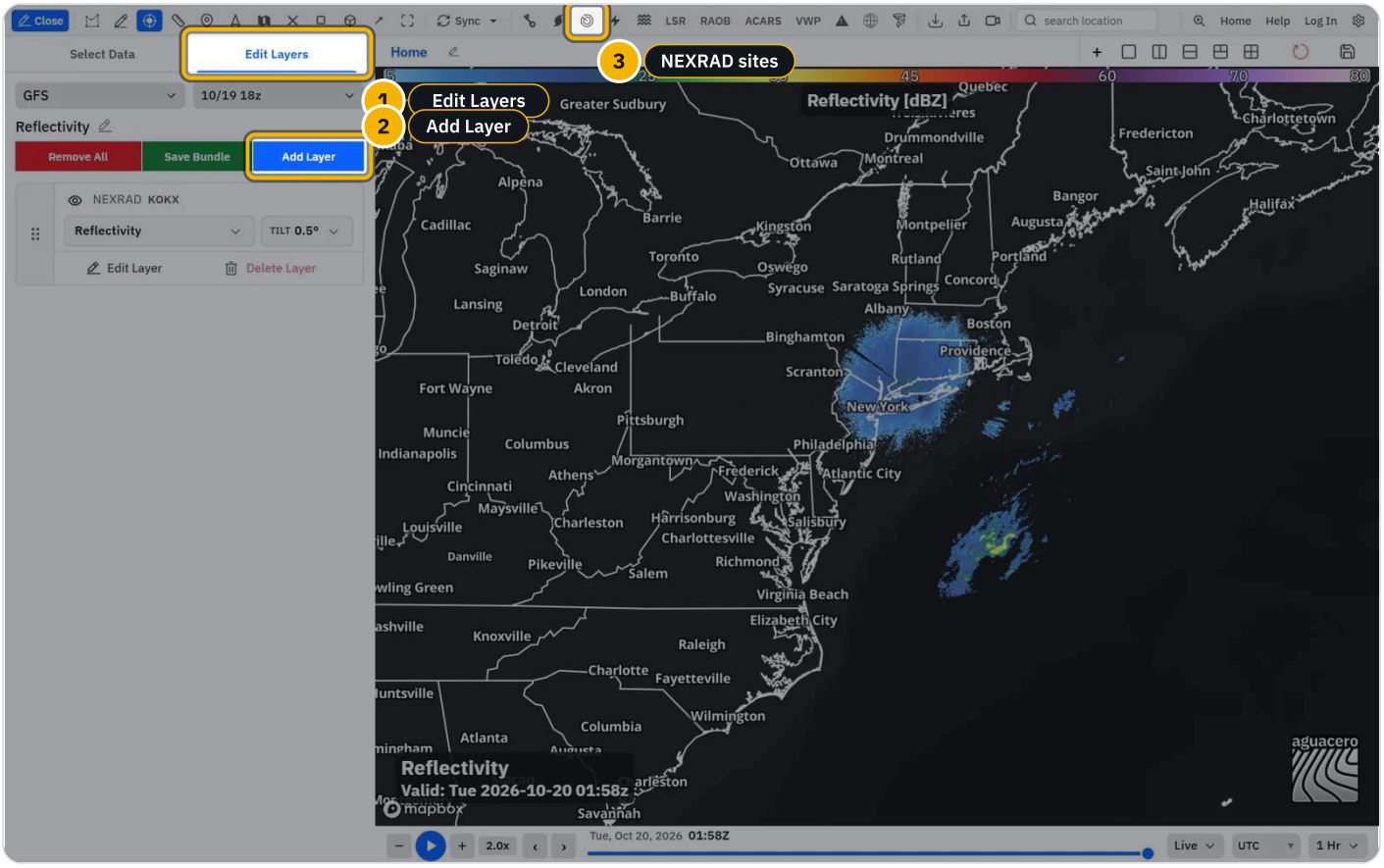
1. Click the **Edit Layers** tab in the sidebar.
2. Click **Add Layer**, then **Radar**, and pick a product.
3. Double-click **NEXRAD sites** on the toolbar to show the radar sites.
4. Click a site on the map to load its data.
5. Click **Tilt** on the layer row to pick an elevation angle.

TIPS

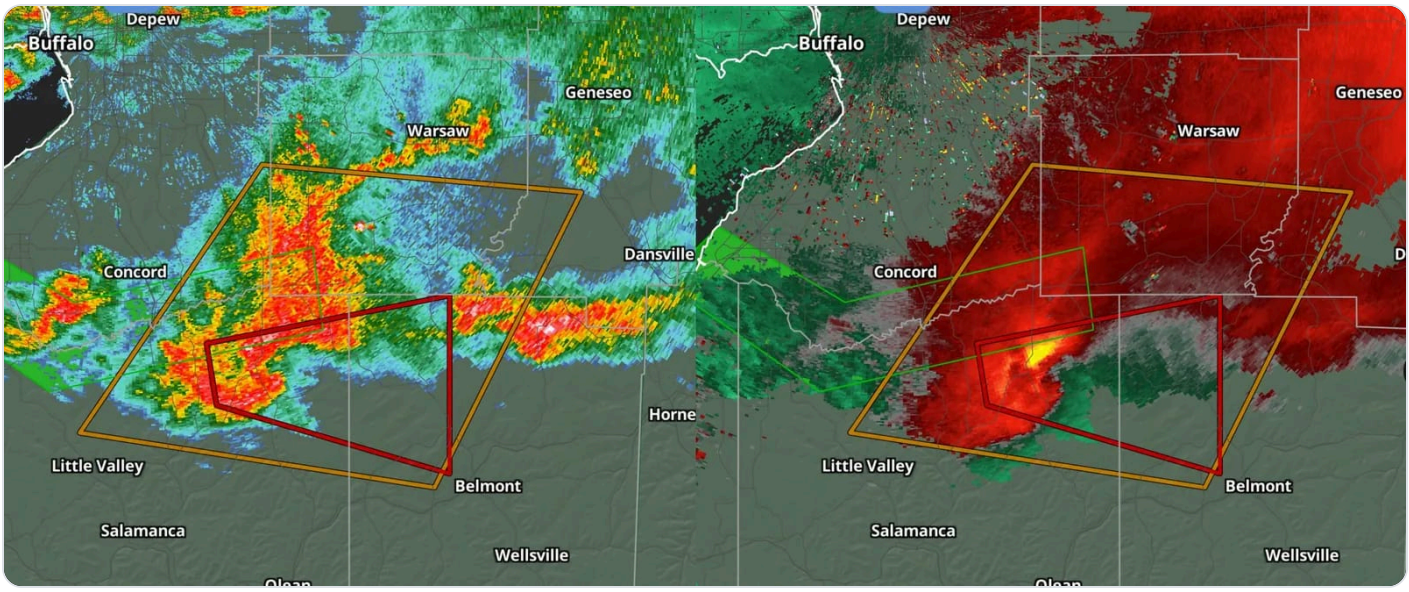
- Right-click the map and choose **Nearest NEXRAD** to load reflectivity from the closest site.
- Click the product name on the layer row to swap to another product.
- With a NEXRAD layer active, the keys below switch products and tilts.

SHORTCUTS

R	Base reflectivity
V	Base velocity
W	Spectrum width
S	Storm-relative velocity
Z	Differential reflectivity (ZDR)
C	Correlation coefficient
K	Specific differential phase (KDP)
P	Differential phase
E	Echo tops
L	Vertically integrated liquid (VIL)
↑ / ↓	Raise or lower the tilt
← / →	Step back or forward one frame



The Edit Layers tab, the Add Layer button and the NEXRAD sites button.



Reflectivity and velocity side by side with warning polygons.

02 Storm-relative velocity

Take the storm's own motion out of the velocity data so rotation is easier to see. Use the Level III motion, take it from an NWS warning, or set it yourself.

1. With a NEXRAD layer on the map, press `S` to switch to storm-relative velocity.
2. On the **Edit Layers** tab, click **Edit Layer** on the radar layer.
3. Under **Storm-relative motion**, choose **Level III**, **NWS alert** or **Manual**.
4. For **NWS alert**, click a tornado, severe thunderstorm, special weather statement or marine warning that lists storm motion.
5. For **Manual**, type the **Storm speed** and set **From (°)**, the direction the storm is moving from.

TDWR sites have base velocity only, not storm-relative velocity.

03 Storm tracker

Draw a storm's path to see its speed, its cone and the towns in its way with arrival times. Keep one track or several.

1. Click **Storm tracker** on the toolbar to turn it on and open its settings.

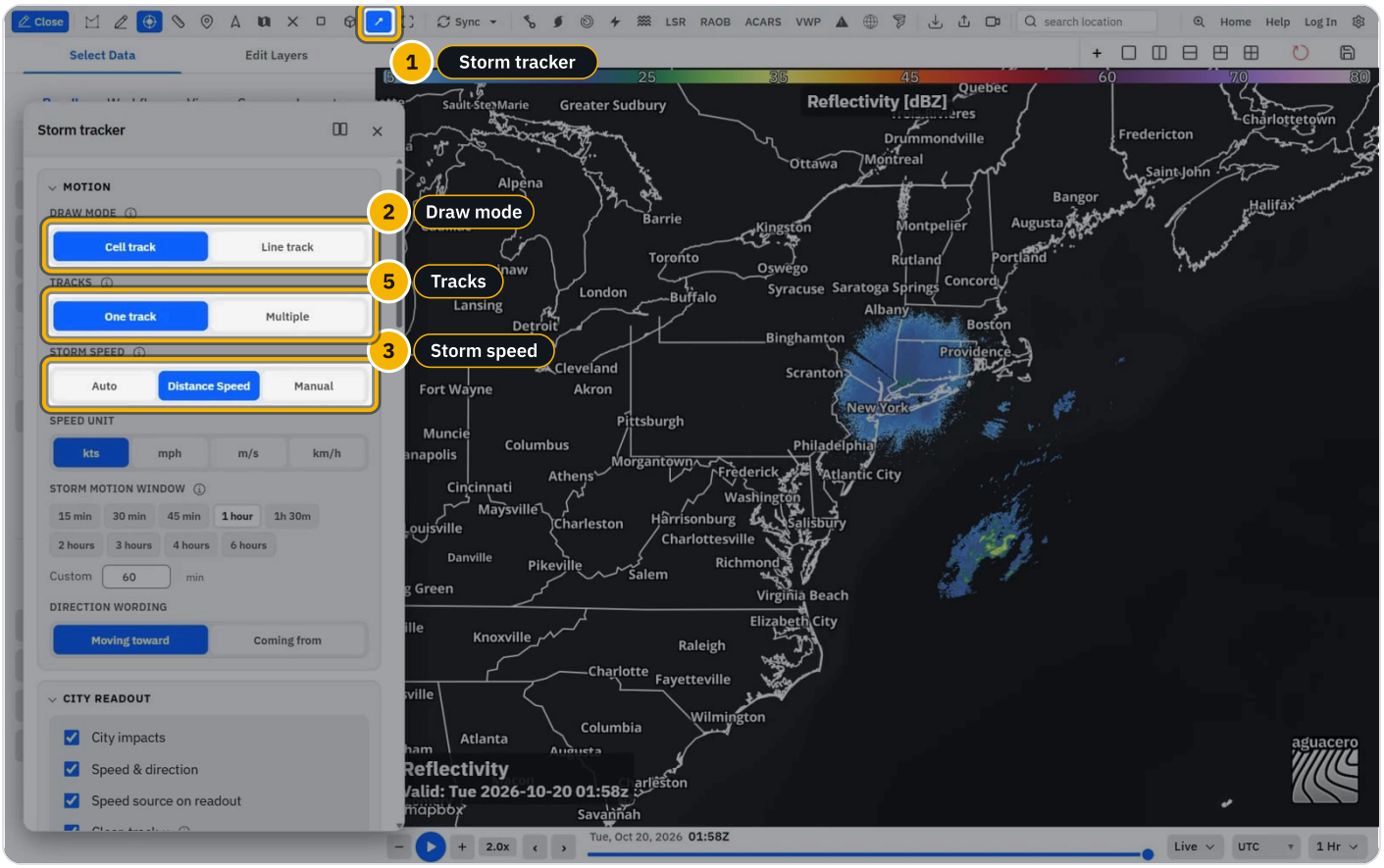
2. Under **Draw mode**, choose **Cell track** or **Line track**.
3. Under **Storm speed**, choose **Auto**, **Distance Speed** or **Manual**.
4. Drag across the storm in the direction it is moving. For a line track, click each point and double-click to finish.
5. To keep several tracks, set **Tracks** to **Multiple** and click **Add another track**.

TIPS

- **Auto** pins the track to an NWS warning. Start the track inside the warning polygon and the speed comes from the warning.
- Select a track and press `Delete` to clear it.
- NEXRAD storm tracks are a separate Level III overlay. Turn them on in **Settings** > **Data** > **Radar**: click a radar product, tick **Storm tracks**, and optionally **Rotation & TVS** for mesocyclone and TVS markers.

SHORTCUTS

`T` + drag	Draw a storm track with your saved settings



The Storm tracker button and its draw mode, storm speed and tracks settings.

04 VWP hodographs and winds

See the VAD wind profile from any NEXRAD site as a hodograph with shear and storm motion, as wind barbs on the map, or over time.

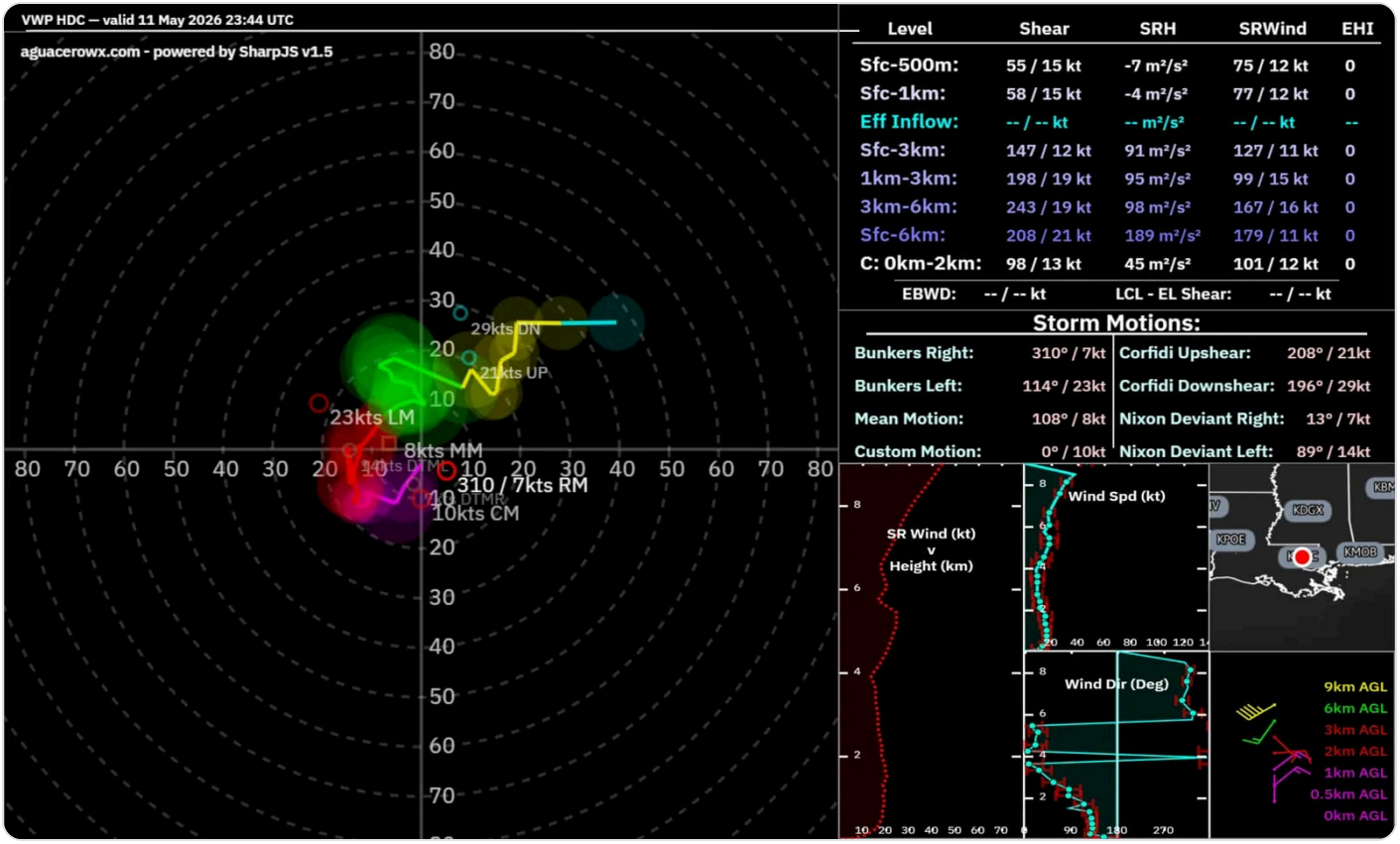
1. Double-click **VWP** on the toolbar to show the VWP sites.
2. Click a site to open its hodograph.
3. Single-click **VWP** to style the site dots and turn on **Show wind barbs**.
4. Press `Shift` + `↑` or `Shift` + `↓` to change the barb height.
5. For winds over time, right-click the map and choose **NEXRAD VWP** under **Time-height**.

TIPS

- Right-click the map and choose **NEXRAD VWP** for the hodograph from the nearest site.

SHORTCUTS

`Shift` + `↑` / `↓` Raise or lower the VWP barb height



A VAD wind profile drawn as a hodograph with shear and storm-motion parameters.

05 MRMS mosaics

Multi-Radar Multi-Sensor mosaics: reflectivity, rotation tracks, hail size, rainfall estimates and 100+ more products, with heights you can switch.

1. Click the **Edit Layers** tab in the sidebar.
2. Click **Add Layer**, then **MRMS**.
3. Pick a category and a product, or search for one, such as Rotation Track or Max Hail Size.
4. For products with heights, click **Tilt** on the layer row, or press `↑` and `↓`.

TIPS

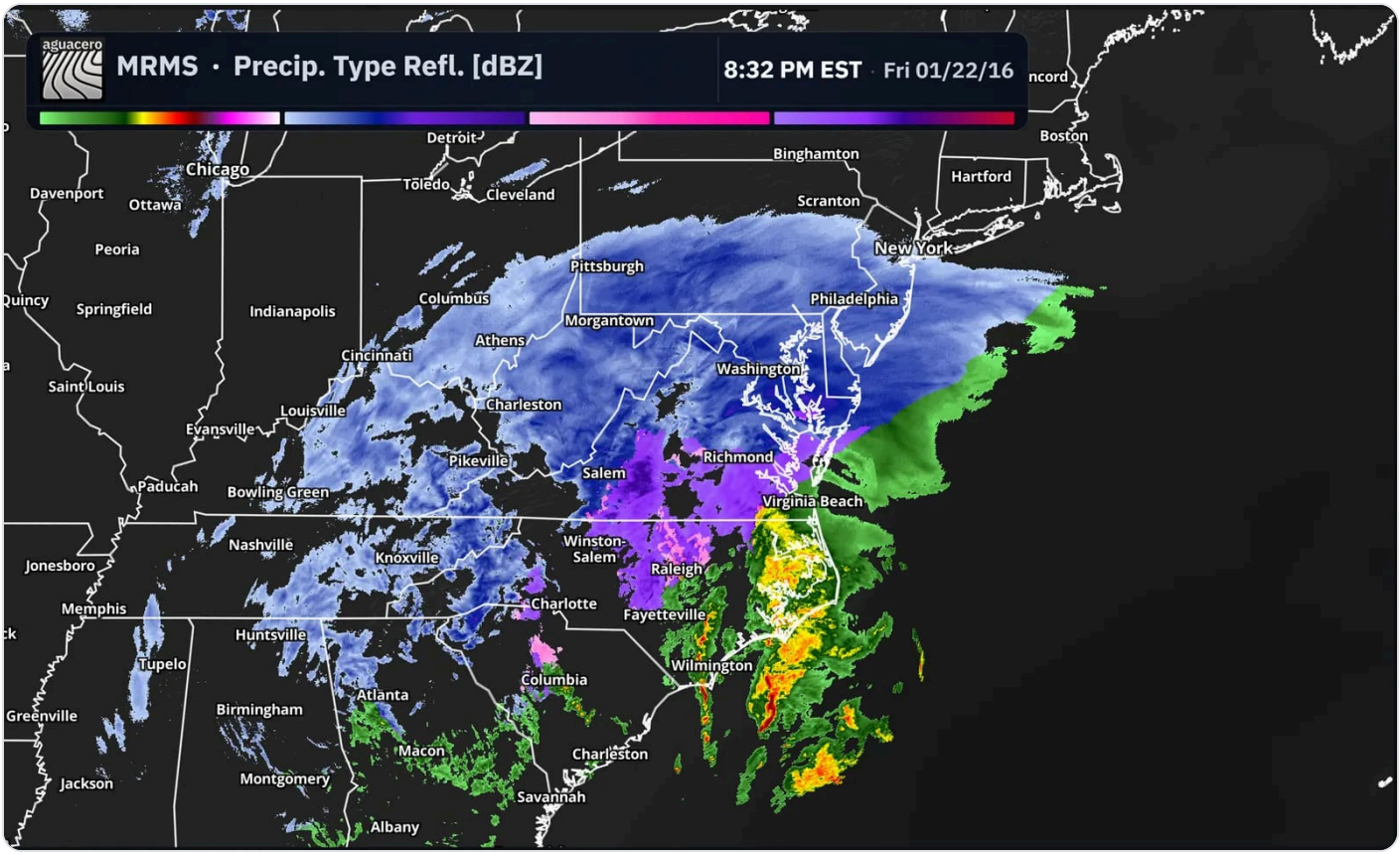
- Click **MRMS** in the data type filter on **Select Data** for ready-made MRMS bundles.
- Double-click **Mouse readouts** on the toolbar to read values under the cursor.

Every MRMS product is on every plan. Your plan sets how many hours a loop can hold.

06 MRMS precipitation type

Reflectivity colored by precipitation type, so rain, snow, sleet and freezing rain stand apart.

1. Click the **Edit Layers** tab, then **Add Layer**.
2. Type Precipitation Type in **Search variables...**.
3. Click **Precipitation Type Reflectivity** under the **MRMS** heading.



MRMS precipitation-type reflectivity during the January 2016 blizzard.

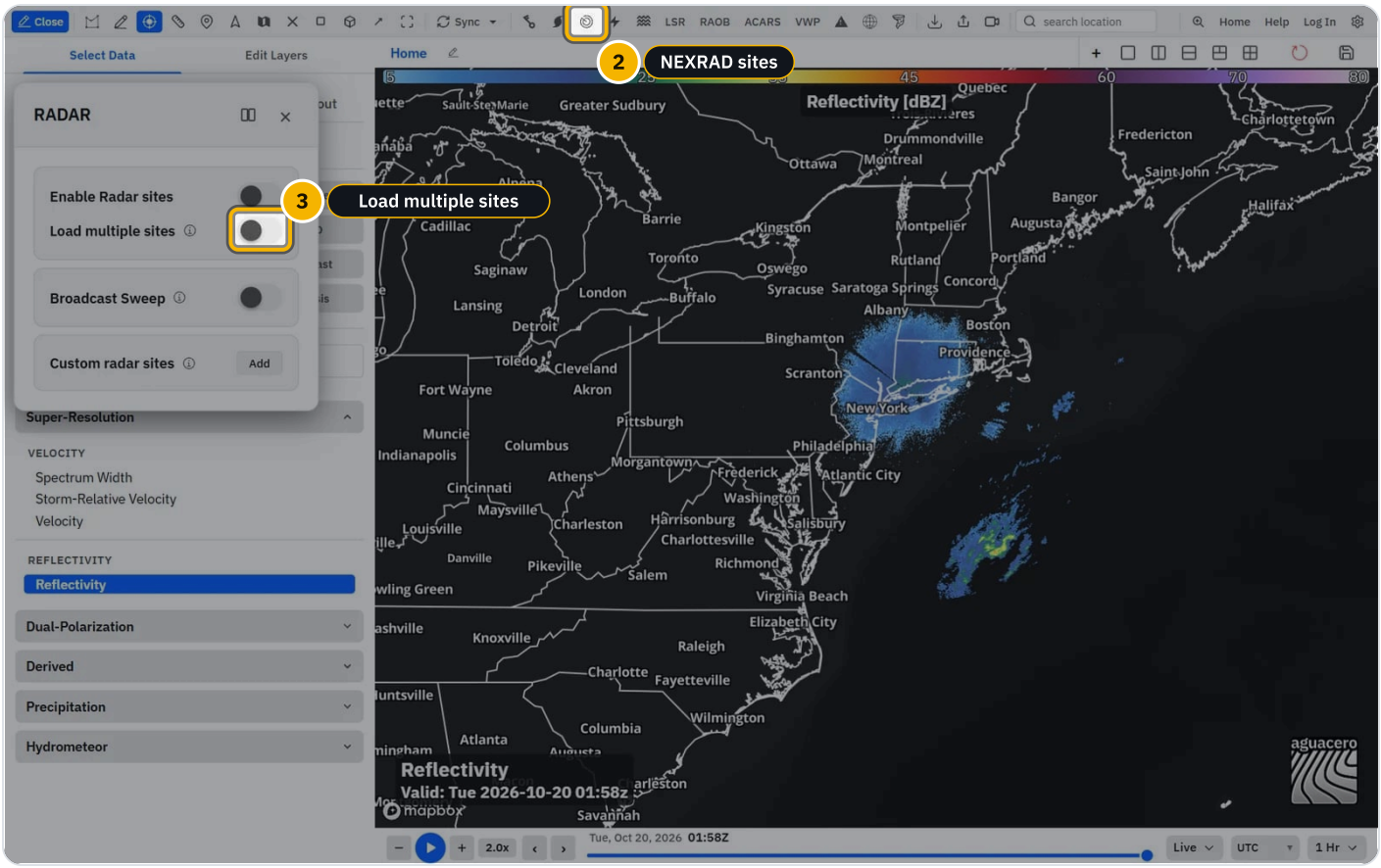
07 Multiple NEXRAD sites PROFESSIONAL

Load up to 5 sites on one radar layer with the same product, tilt and colormap. Where coverage overlaps, the closest site is shown.

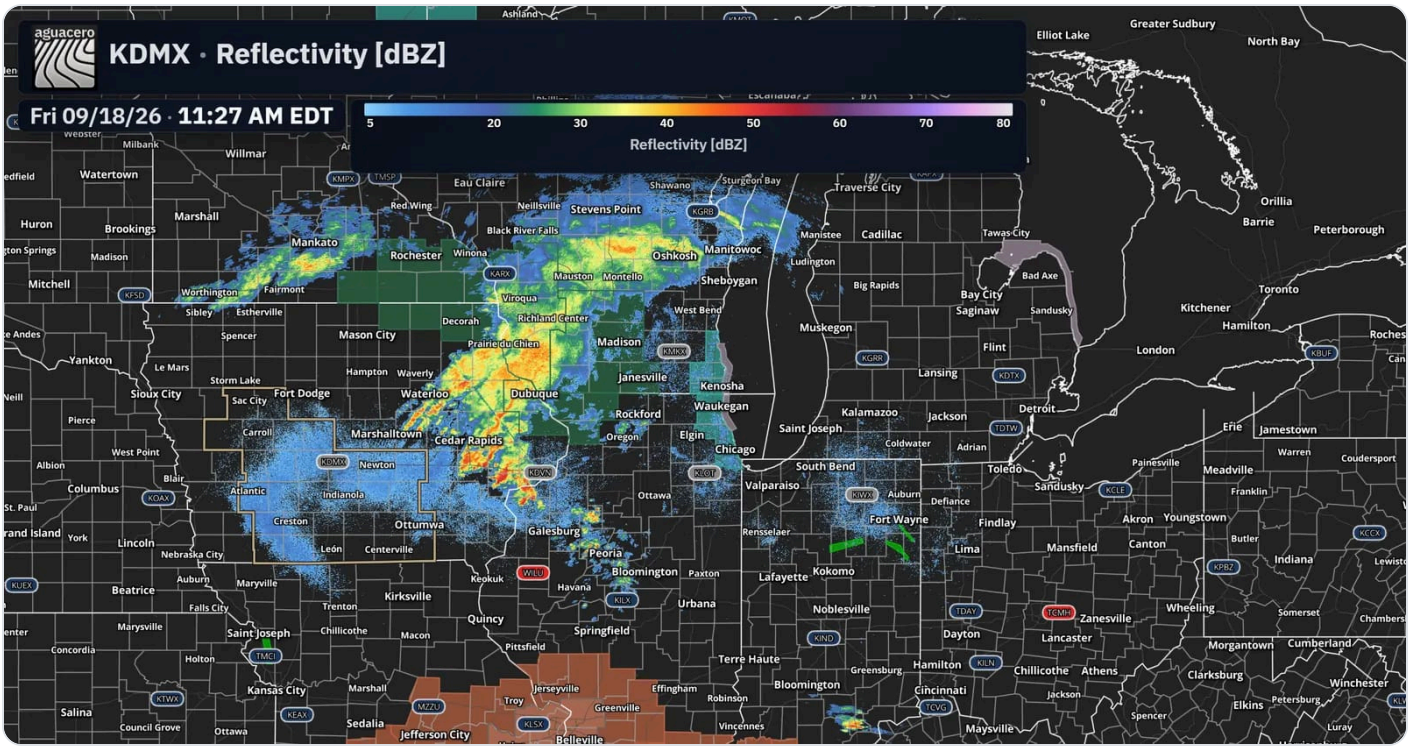
1. Load a NEXRAD layer on the map.
2. Single-click **NEXRAD sites** on the toolbar to open the **RADAR** settings.
3. Turn on **Load multiple sites**.
4. Click sites on the map to add them, up to 5.
5. Click a site again to remove it.

TIPS

- Turning on a sixth site turns off the oldest one.



The NEXRAD sites button and the Load multiple sites switch.



Reflectivity from several NEXRAD sites at once across Iowa and Illinois.

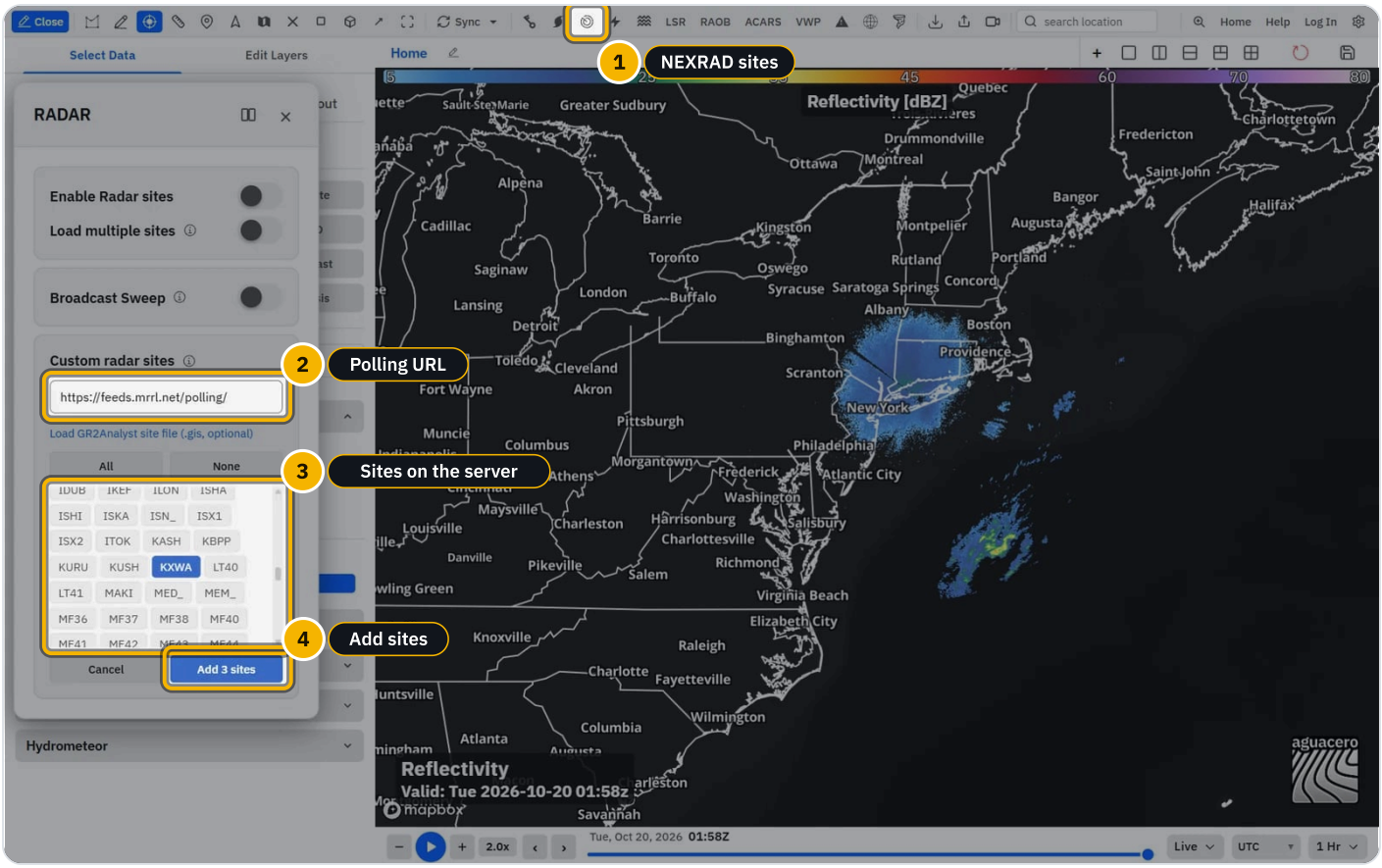
08 Custom radar sites PROFESSIONAL

Add Level II radars from GR2Analyst-style polling servers, such as private networks and research radars, and load them like any NEXRAD site.

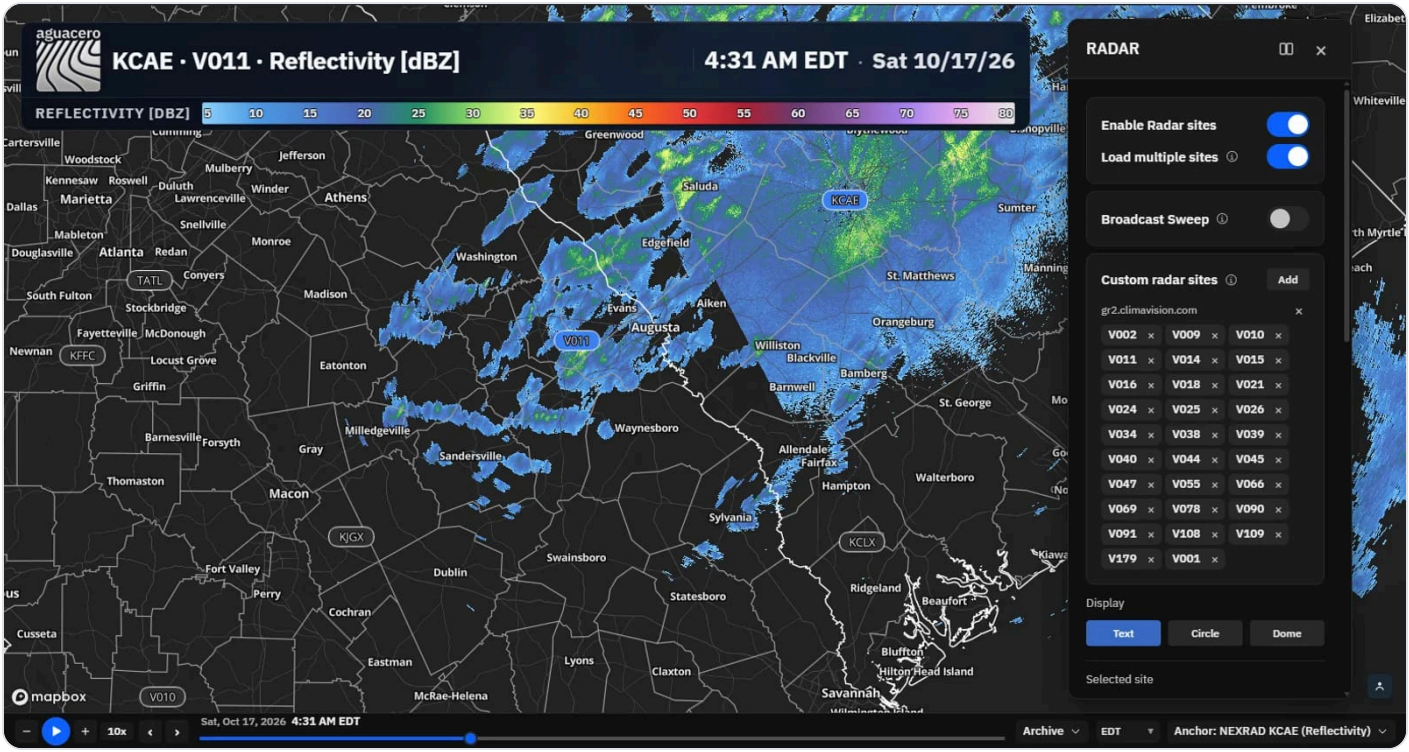
1. Single-click **NEXRAD sites** on the toolbar to open the **RADAR** settings.
2. Under **Custom radar sites**, click **Add** and paste the polling server URL, the same URL you would give GR2Analyst.
3. Leave **Site ID** empty and click **Find sites** to list every site on the server. To add one site, type its ID and click **Add site** instead.
4. Pick the sites you want and click the add button, which counts them (for example **Add 3 sites**). Each site is checked and placed on the map from its newest volume.
5. Double-click **NEXRAD sites** to show the radar sites, then click a custom site to load it.

TIPS

- Each radar's location comes from its own data, so a GR2Analyst .gis site file is optional. Load one with **Load GR2Analyst site file (.gis, optional)** in the form to name the sites and to add radars that are offline right now. Sites you already added get their names too.
- Custom sites are saved to your account and follow you to other browsers and the desktop app. Other users add their own.
- Radars that filter out clear-air returns show nothing until there is weather in range.
- Remove a site with its ×, or every site from one server with the × next to the server name.



Adding sites from a polling server: the URL, the server's site list and the Add sites button (it shows how many).



A private X-band radar near Augusta, Georgia, added from its polling server and shown next to NEXRAD KCAE.

09 3D NEXRAD volumes PROFESSIONAL

Draw a box around a storm to see its whole radar volume in 3D, then tilt, turn and zoom around it.

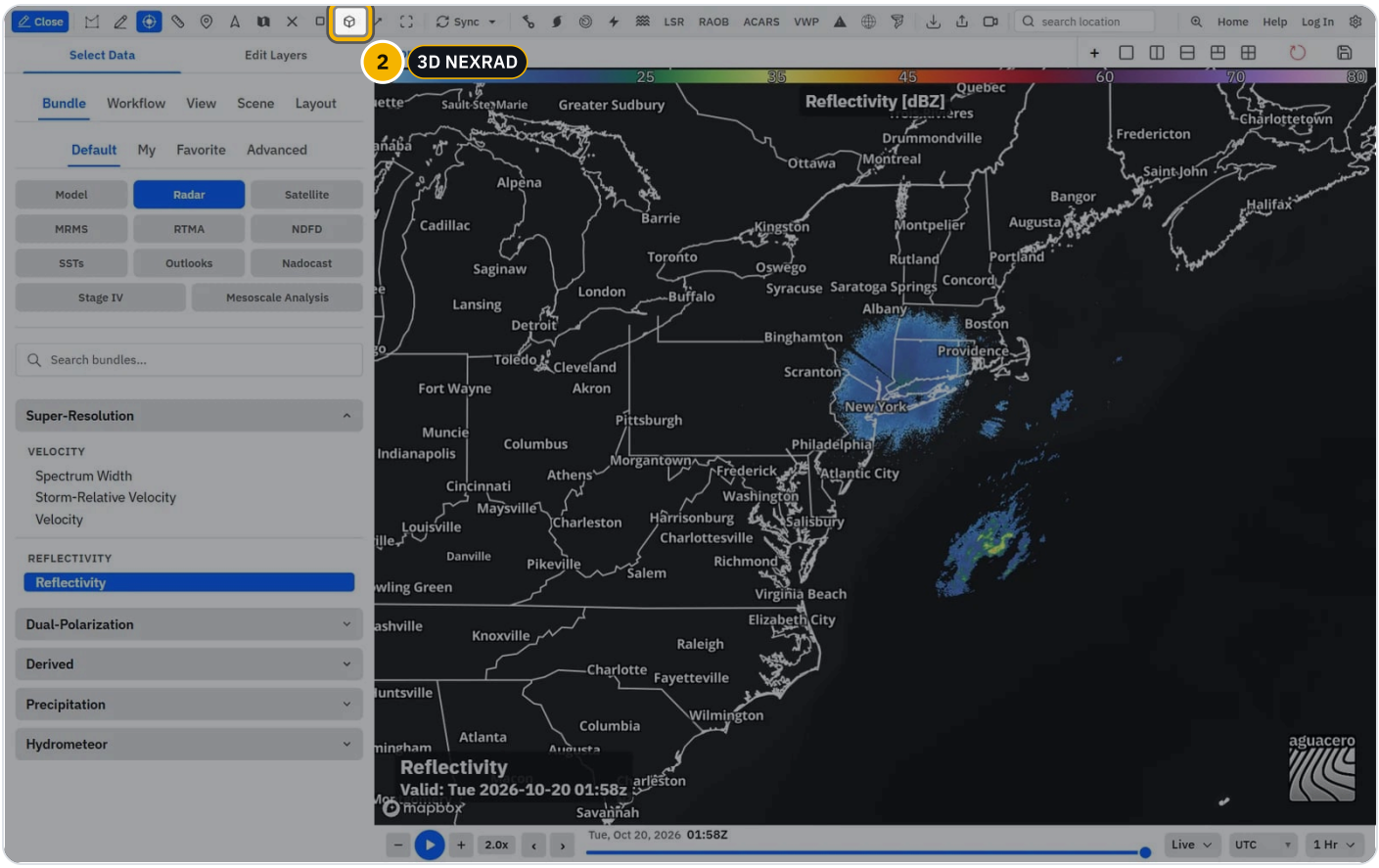
1. Load a NEXRAD layer on the active map panel.
2. Click **3D NEXRAD** on the toolbar.
3. Drag a box around the storm on the map.
4. Right-click and drag on the map to tilt and turn the view.
5. In the sidebar, pick a **Product** and a **Display** mode: **lit volume**, **cloud**, **max** or **solid**.
6. Click **3D NEXRAD** again to close the volume.

TIPS

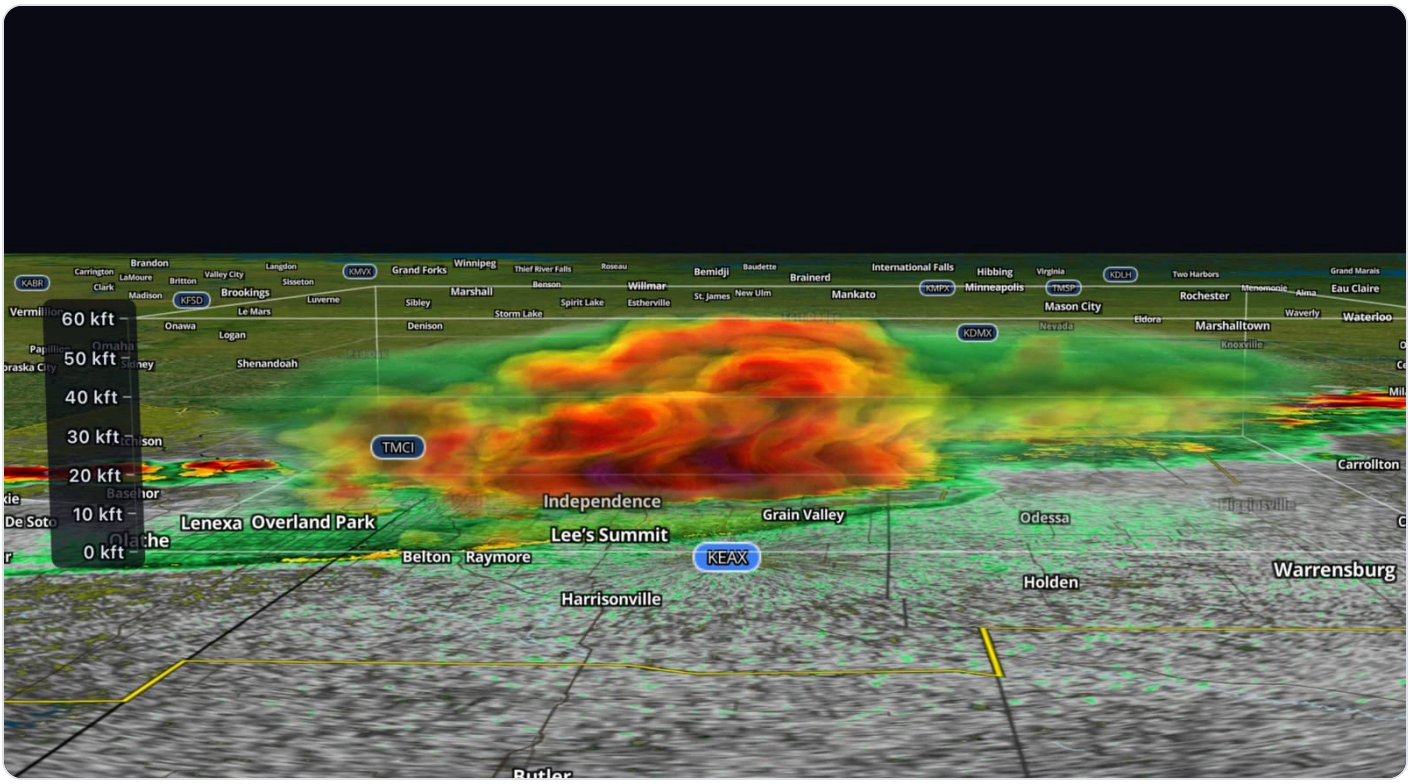
- Under **Overlays**, turn on model **Temperatures**, **Wind barbs** or a **Height box** in kft.
- Lower the **opacity** under **Map radar** to fade the flat radar under the volume.
- Drag **vertical scale** to stretch the storm’s height.

SHORTCUTS

`Alt` + drag	Draw a 3D volume box without the toolbar button



The 3D NEXRAD button on the toolbar.



A thunderstorm near Kansas City drawn as a 3D reflectivity volume.

10 Radar cross sections PROFESSIONAL

Slice through a storm along a line to see its vertical structure, standing on the map or as an image.

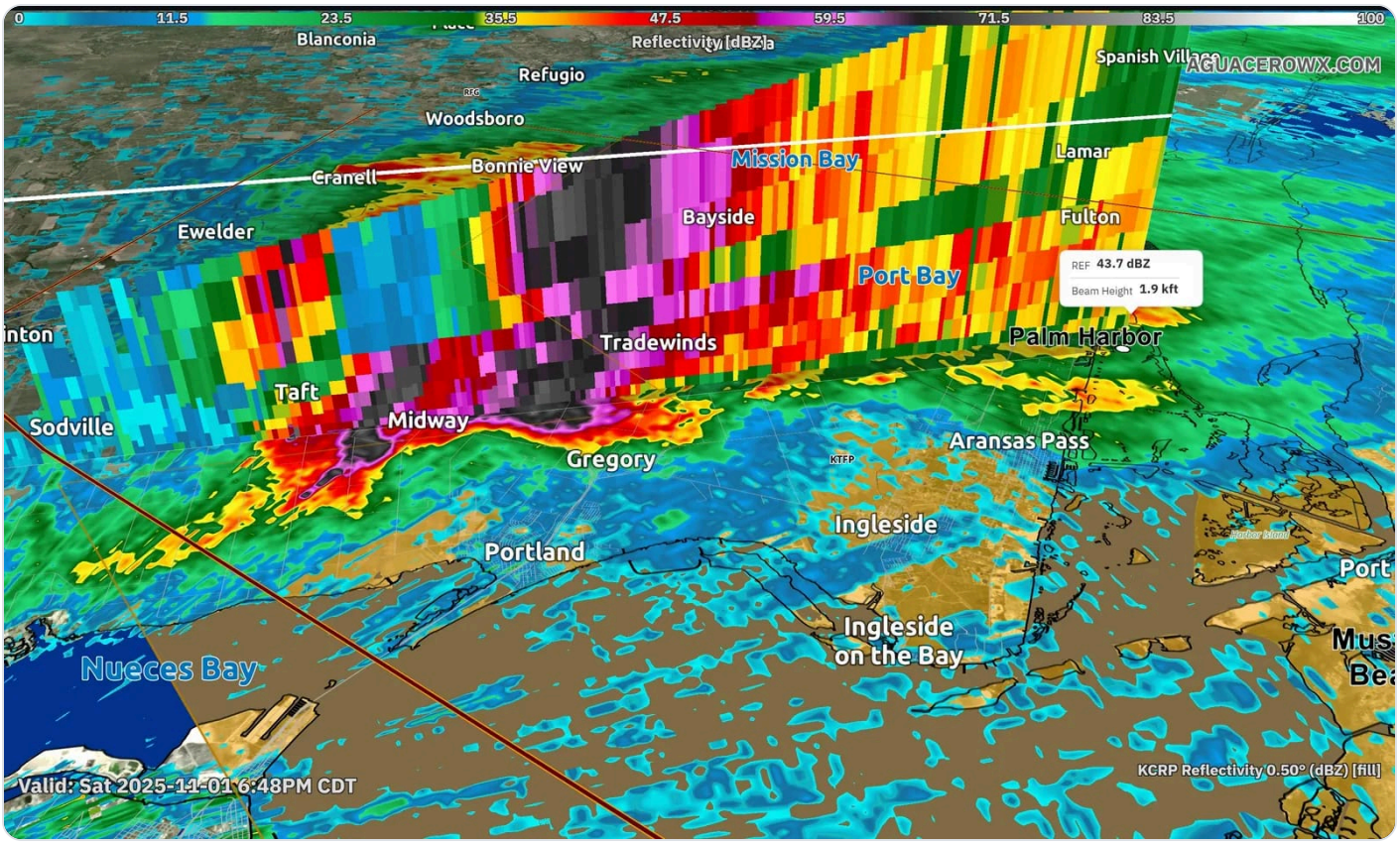
1. Load a NEXRAD layer on the map.
2. Click **Cross section** on the toolbar.
3. Drag a line through the storm on the map.
4. In the sidebar, set **Show as** to **On map** or **Image**.
5. Pick a **Product** and adjust **smoothing**.
6. Drag the A–B line on the map to move the slice.

TIPS

- With radar on the board, the cross section tool slices the radar. Without radar, it draws a model cross section.
- In **Image** view, click **Download PNG** to save the slice.
- Under **Overlays**, add **Temperatures and isotherms**, **Wind barbs** or a **Height box**.

SHORTCUTS

`Ctrl` + drag	Draw a cross section without the toolbar button



A radar cross section standing on the map through a storm near Corpus Christi.

11 Frame blending PROFESSIONAL

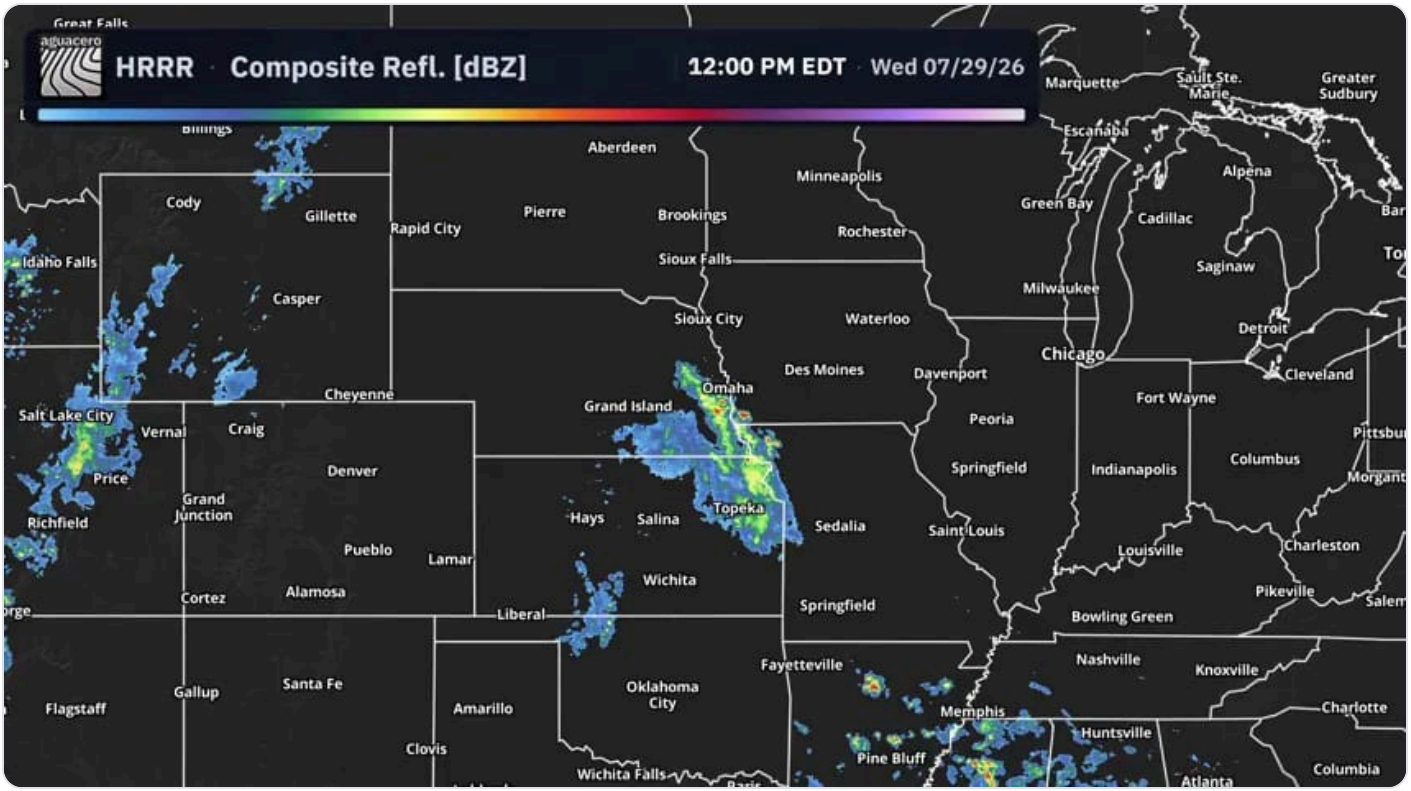
Cross-fade between radar scans as a loop plays, so storms morph instead of jumping.

1. Click the **Edit Layers** tab in the sidebar.

2. Click **Edit Layer** on the radar layer.
3. Tick **Frame Blending**.
4. Press `Space` to play the loop.

TIPS

- Model fill layers have their own **Frame Blending** box in their layer settings.
- To blend every layer of one data type, open **Settings** > **Data**, pick the data type and set **Frame blending** to On.



An HRRR composite reflectivity loop with frame blending.

12 European radar

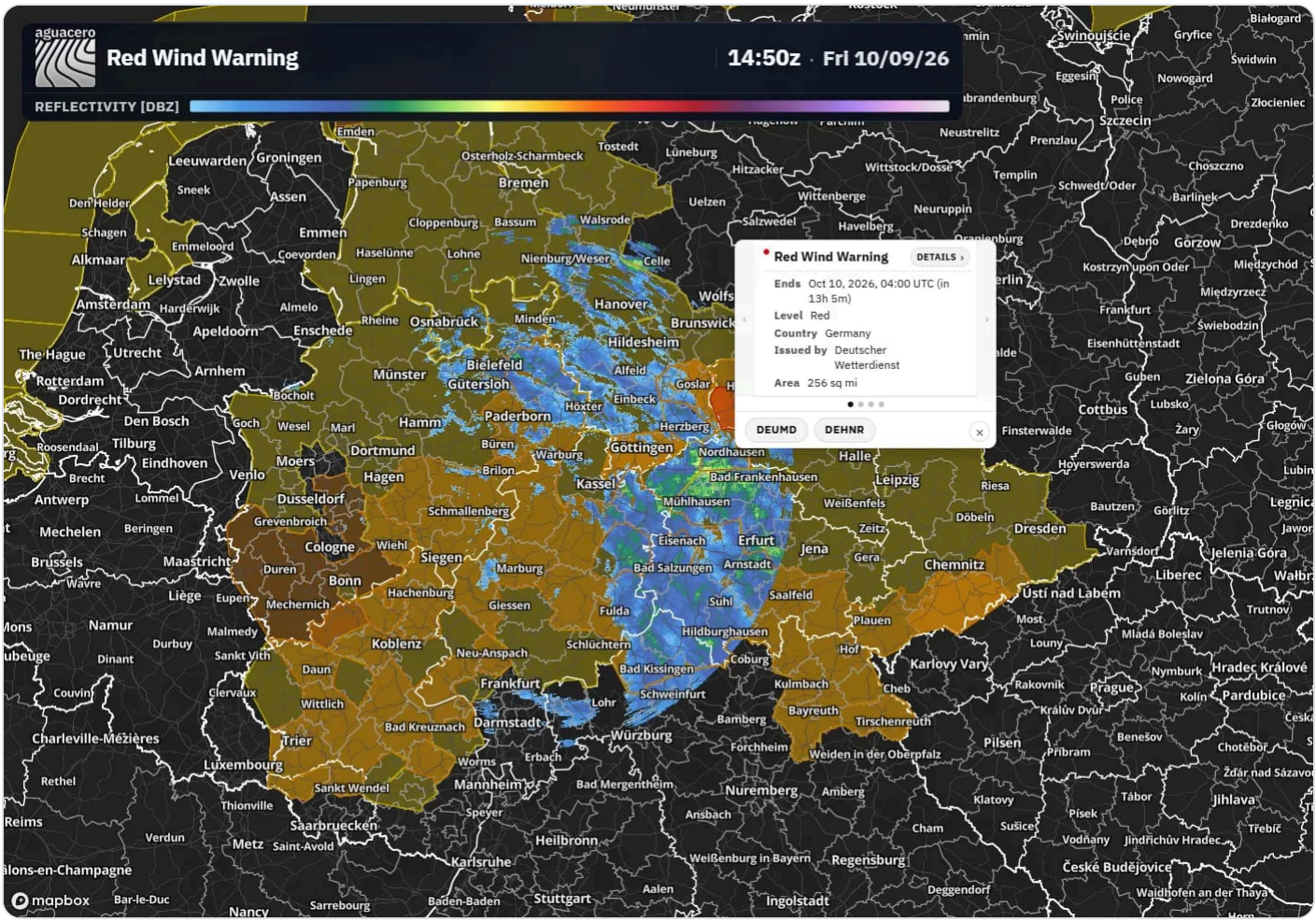
National radars across Europe, live and archived, including Hungary, Cyprus, Iceland's mobile radar and more of France, picked the same way as NEXRAD sites.

1. On the **Edit Layers** tab, click **Add Layer** > **Radar** and pick a product.
2. Double-click **NEXRAD sites** on the toolbar to show the radar sites.

3. Pan the map to Europe.
4. Click a radar site to load it.

TIPS

- Each national service publishes its own set of products, so the product list can differ from NEXRAD.
- Hármashegy (Hungary) and ISX02 (Iceland's Mobile 2 radar) publish reflectivity only. ISX02 is drawn where each scan says the radar was, so it follows the radar when it moves.
- Cyprus's two radars, Larnaca and Paphos, send a volume about every 9 minutes, and each one arrives 10 to 15 minutes after the scan.



A European radar composite with a wind warning outlined over Germany.

13 Canadian radar

All 32 Canadian S-band radars, a full volume every 6 minutes, picked the same way as NEXRAD sites.

1. On the **Edit Layers** tab, click **Add Layer** > **Radar** and pick a product.
2. Double-click **NEXRAD sites** on the toolbar to show the radar sites.
3. Pan the map to Canada.
4. Click a Canadian radar site to load it.

TIPS

- Near the border, turn on **Load multiple sites** in the **RADAR** panel to show a Canadian and a NEXRAD site on one layer (Professional).

14 Mexican radar

Servicio Meteorológico Nacional radars at Sabancuy, Guasave, Catedral, Los Cabos, Cancún and Altamira, picked the same way as NEXRAD sites.

1. On the **Edit Layers** tab, click **Add Layer** > **Radar** and pick a product.
2. Double-click **NEXRAD sites** on the toolbar to show the radar sites.
3. Pan the map to Mexico.
4. Click a Mexican radar site to load it.

TIPS

- A red site isn’t sending scans right now. SMN keeps only the last few hours online, so Mexican radar loops are short.

15 Radar in overseas France

Météo-France radars in Guadeloupe, Martinique, Réunion and New Caledonia, with reflectivity and velocity every 5 minutes.

1. On the **Edit Layers** tab, click **Add Layer** > **Radar** and pick **Reflectivity** or **Velocity**.
2. Double-click **NEXRAD sites** on the toolbar to show the radar sites.
3. Pan the map to the eastern Caribbean, Réunion or New Caledonia.
4. Click a radar site to load it: Le Moule (Guadeloupe), Le Diamant (Martinique), Colorado or Piton Villers (Réunion), Nouméa or Lifou (New Caledonia).

TIPS

- Météo-France posts these radars every 15 minutes, three 5-minute scans at a time, so the newest scan is often about 15 minutes old.