



Forecast models

The model picker has 125 entries: global, regional, convection-allowing, ensemble, AI, ocean, air-quality and seasonal guidance. Each map panel shows one model and run, and you add its fields as layers.

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BEFORE YOU START

- The model and run menus sit near the top of the sidebar on both **Select Data** and **Edit Layers**. Press **F1** to open or close the sidebar.
- Fields come from **Add Layer** on the **Edit Layers** tab. The list shows the fields of the model on the panel.
- Free has 26 models, including HRRR, GFS, NAM, RAP and RRFS. Models with an **E** badge need Enthusiast or higher.

01 Pick a model and run

Choose a model, then a run. New runs appear in the run list as they arrive.

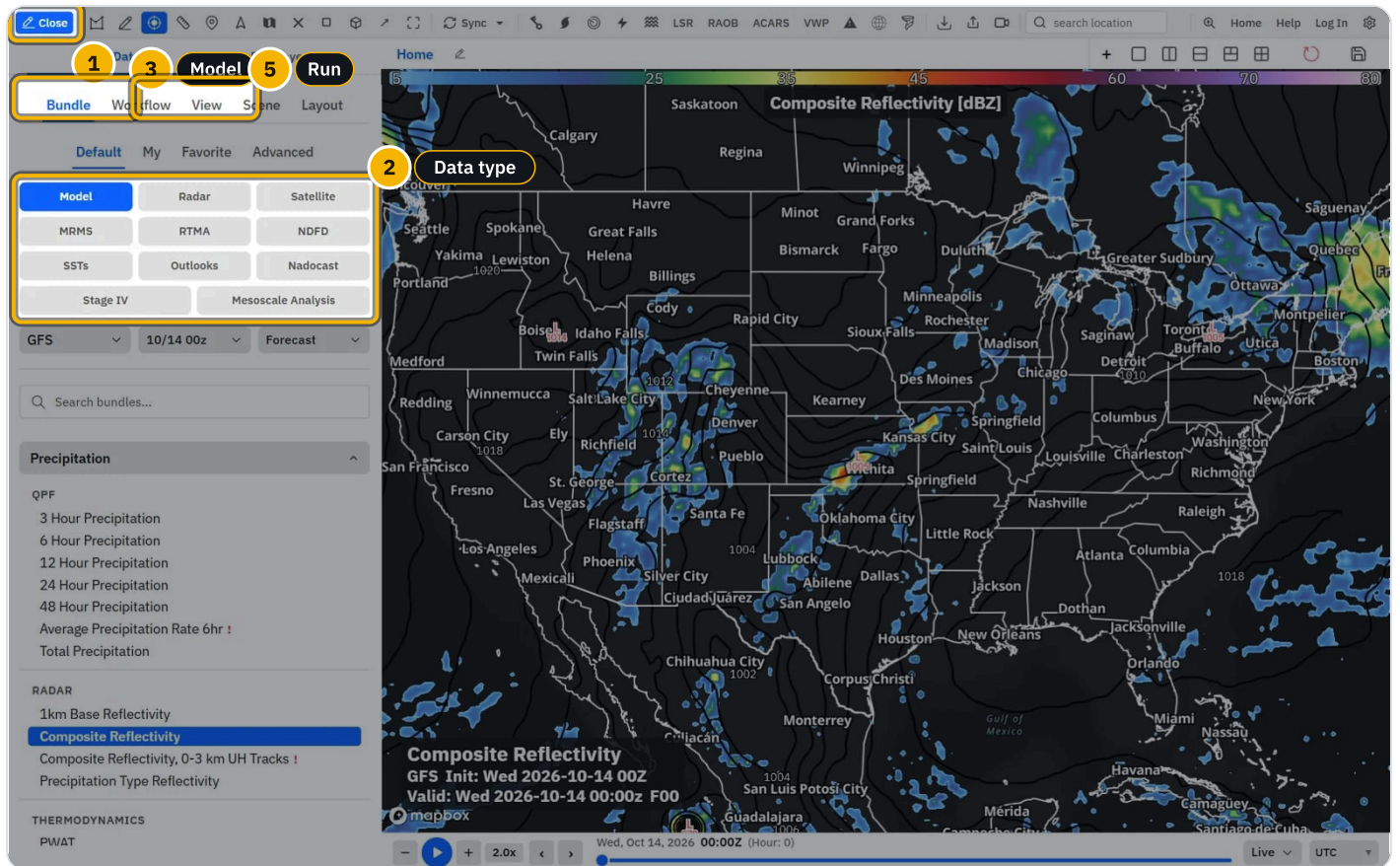
- 1 Open the sidebar with **Edit** on the toolbar, or press **F1**.
- 2 On **Select Data**, click **Model** in the data type filter and click a bundle to load it.
- 3 Click the model name near the top of the sidebar to open the model menu.
- 4 Click a category, such as **Global** or **Mesoscale**, then click a model.
- 5 Pick a run in the run menu next to it.

TIPS

- Each model in the menu shows its latest run and a bar for how far that run has processed.
- Click the info icon next to a model for its operator, resolution, timesteps, run times and domain.

SHORTCUTS

[/] Step to the previous or next run

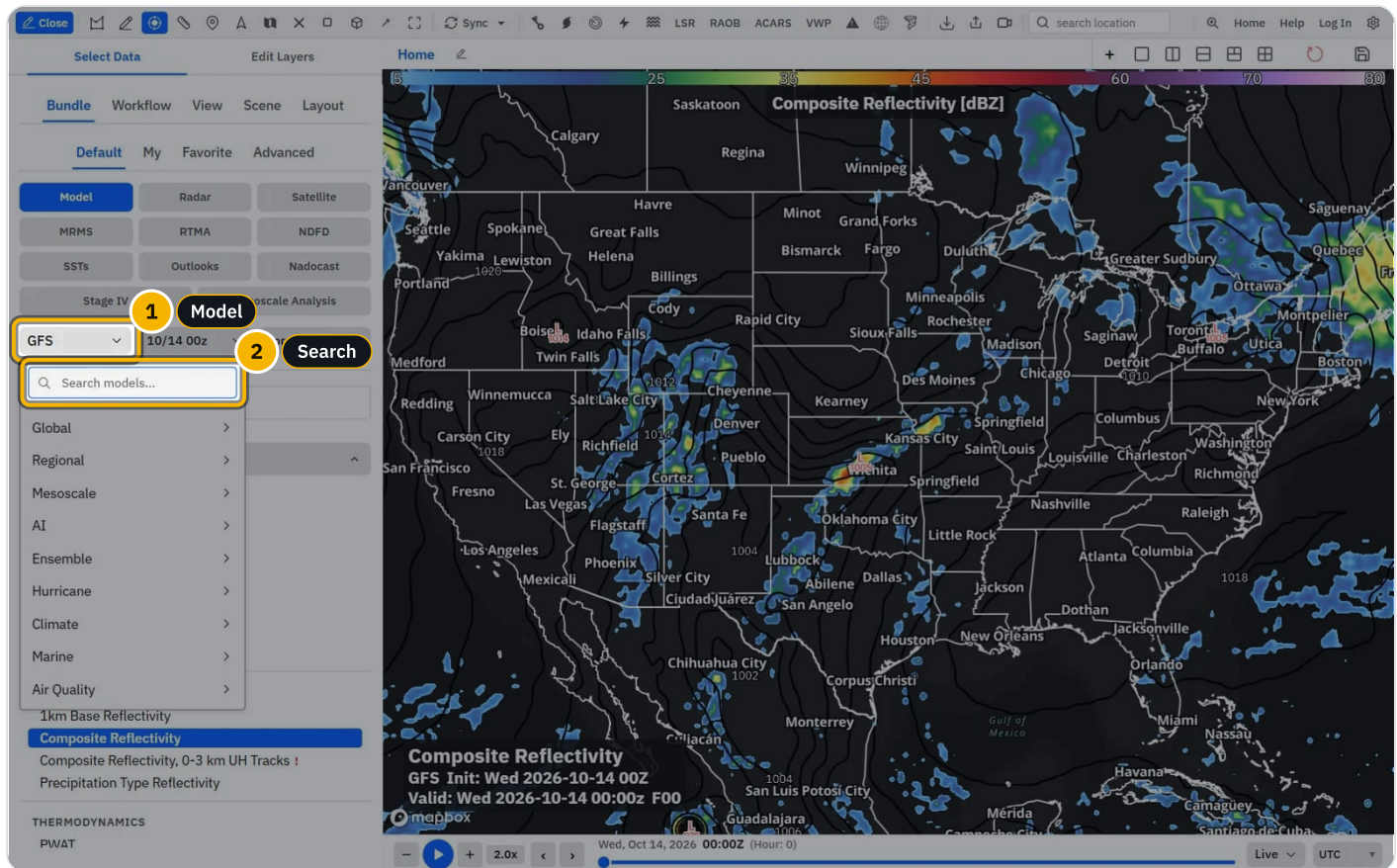


The Edit button, the data type filter, and the model and run menus.

02 Search models and read the availability dots

Type a model name, id or category to find a model fast. Colored dots show which models can draw the layers in your bundle.

- 1 Click the model name near the top of the sidebar.
- 2 Type a name, model id or category in **Search models....**
- 3 Check the dot next to each result. Green means the model has all of your bundle's layers, yellow some and red none.
- 4 Click a result to switch the panel to that model.



The model menu with its search box.

03 Add a model field

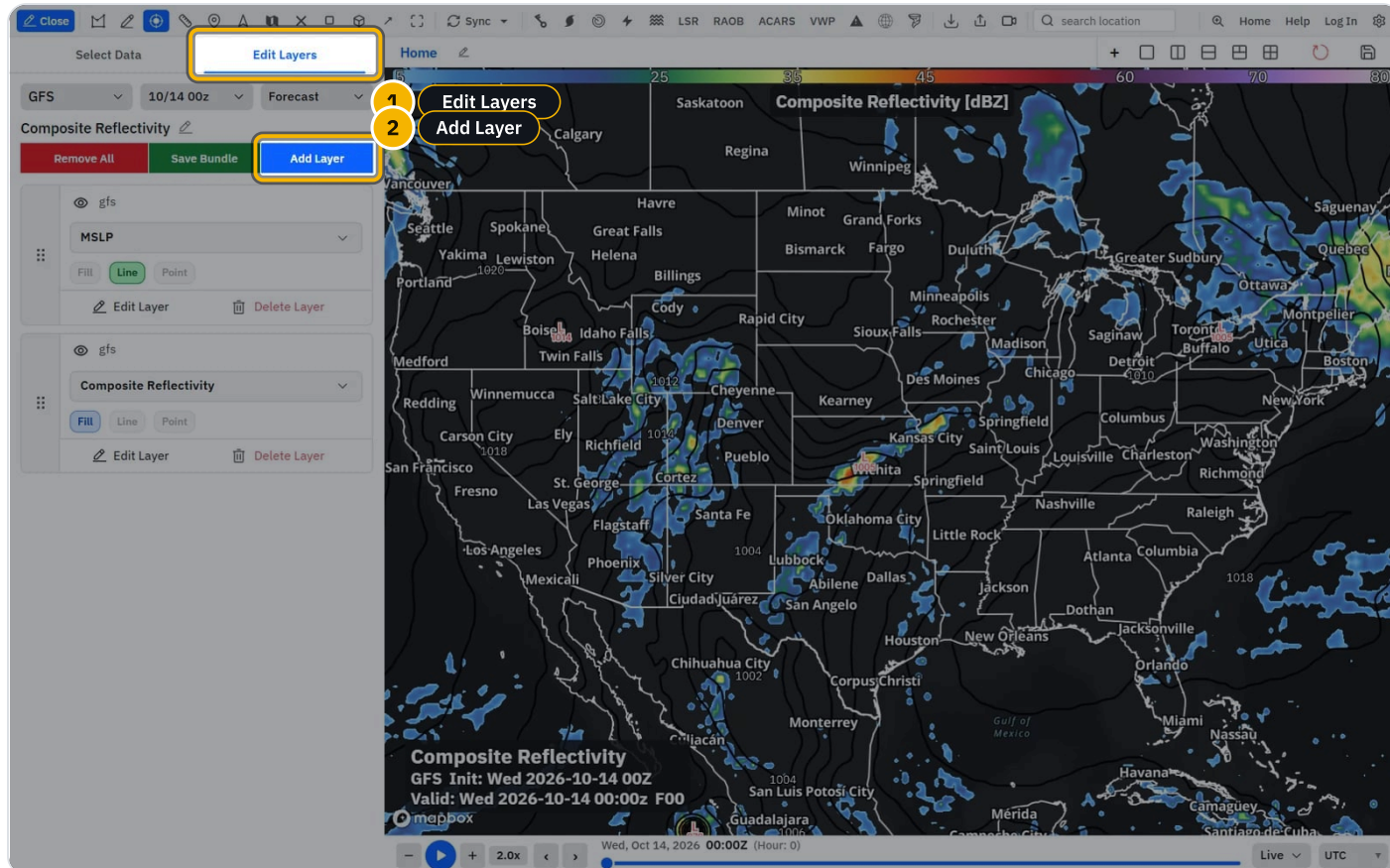
Put any field from the current model on the map, from temperature to CAPE.

- 1 Click the **Edit Layers** tab in the sidebar.
- 2 Click **Add Layer**.
- 3 Click **Model**, then a category, then a field.
- 4 Or type part of the name in **Search variables...** and click the result.

TIPS

- If a field is missing, the model on the panel does not have it. Switch models and look again.
- To see which models carry a field, open **Settings**, choose **Data**, then **Model**, and click the field.

A bundle holds up to 8 data layers.



The Edit Layers tab and the Add Layer button.

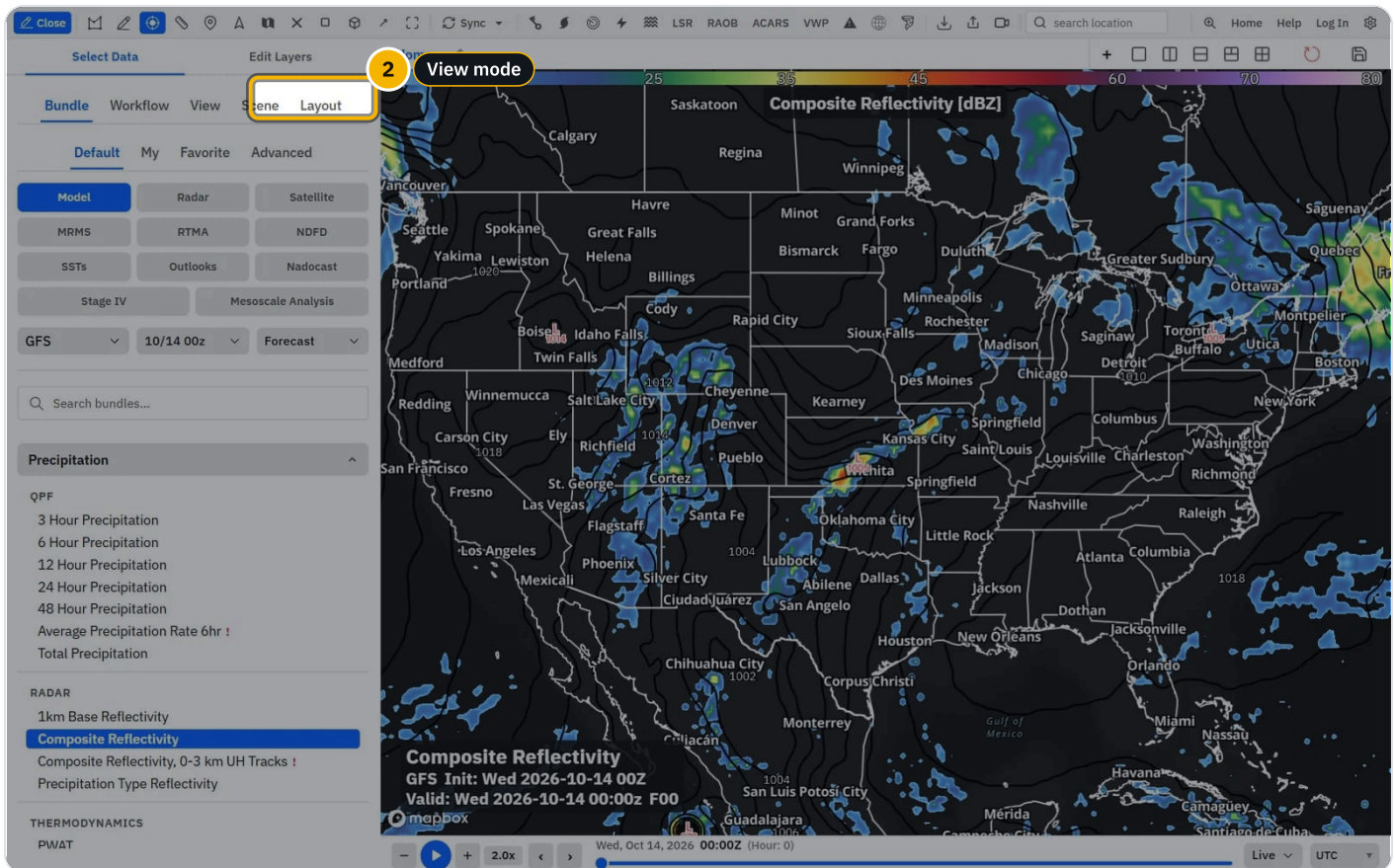
04 Trend and Compare modes

Trend keeps one valid time and steps through runs, so you can see how the forecast changed. Compare keeps one time and steps through models.

- 1 Load a model bundle and move the time bar to the valid time you want.
- 2 Open the view mode menu that reads **Forecast**, next to the run menu, and choose **Trend**.
- 3 Drag the time bar, or use its step buttons, to move from run to run.
- 4 For Compare, choose **Compare** in the same menu.
- 5 Tick at least two models in **Compare Models** and click **Start Comparison**.
- 6 Move the time bar to step from model to model. Choose **Forecast** to go back.

TIPS

- Compare lists only the models that have the current run time and forecast hour.



The view mode menu for Forecast, Trend and Compare.

05 Convection-allowing models

High-resolution models that draw individual storms: HRRR and RRFS (sub-hourly too), NAM 3 km, HRDPS, NSSL MPAS, HRW FV3, WRF-ARW, ICON-D2, AROME and more.

- 1 Click the model name near the top of the sidebar.
- 2 Click **Mesoscale**.
- 3 Pick a model. US models are under **USA**, the sub-hourly HRRR and RRFS under **Sub-Hourly**, and European models under **European**.

Free includes HRRR, HRRR Sub-Hour, RRFS A, RRFS Sub-Hour, RRFS NA and NAM 3km CONUS.

06 Global and regional models

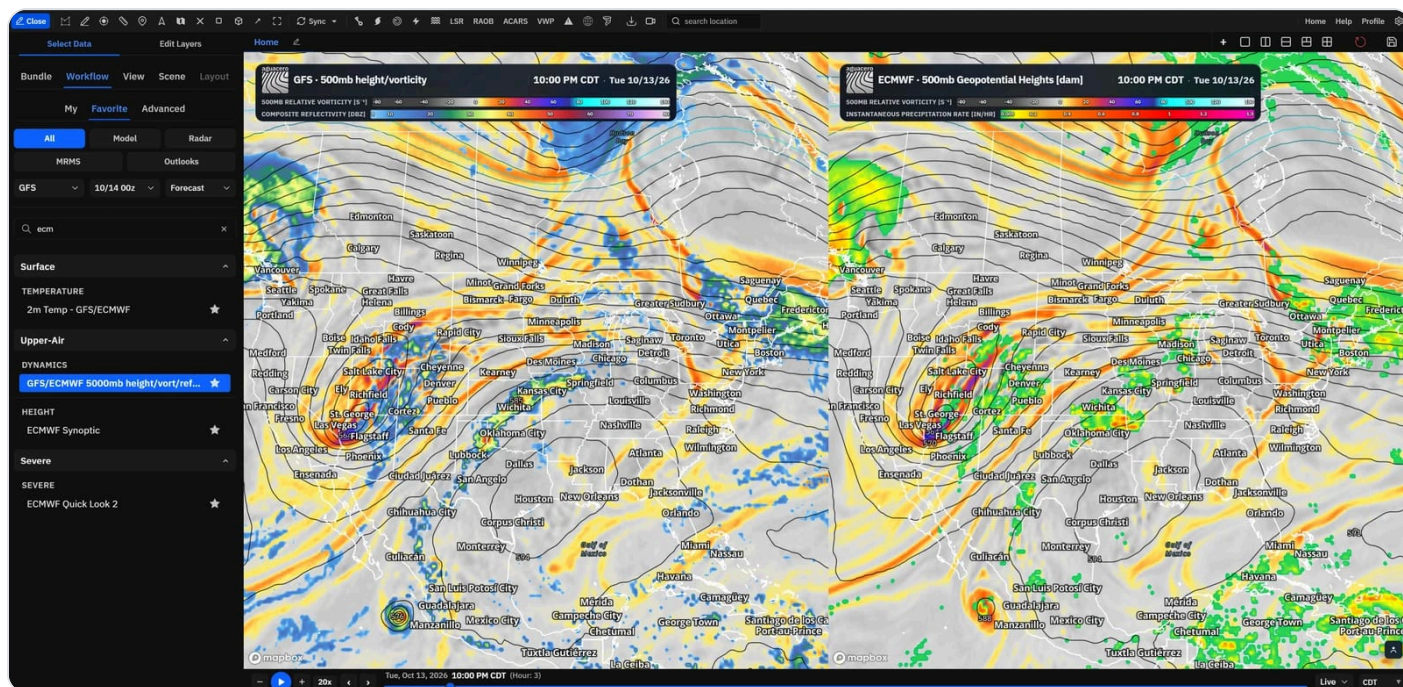
GFS, ECMWF, ICON, UKMET, GDPS, ARPEGE and NAVGEM cover the world. Regional models such as NAM, RAP, RGEM, ICON-EU and ETA-CPTEC cover smaller areas.

- 1 Click the model name near the top of the sidebar.
- 2 Click **Global** for worldwide models or **Regional** for limited-area models.
- 3 Pick a model, then a run.

TIPS

- High-resolution European models such as UKV, HARMONIE and AROME-Arctic are under **Mesoscale**. MEPS is under **Ensemble**.

Free includes GFS, NAVGEM, NAM, RAP, ICON-EU and ARPEGE EU. ECMWF, ICON, UKMET and GDPS need Enthusiast or higher.



GFS and ECMWF 500 mb height and vorticity side by side.

07 AI models

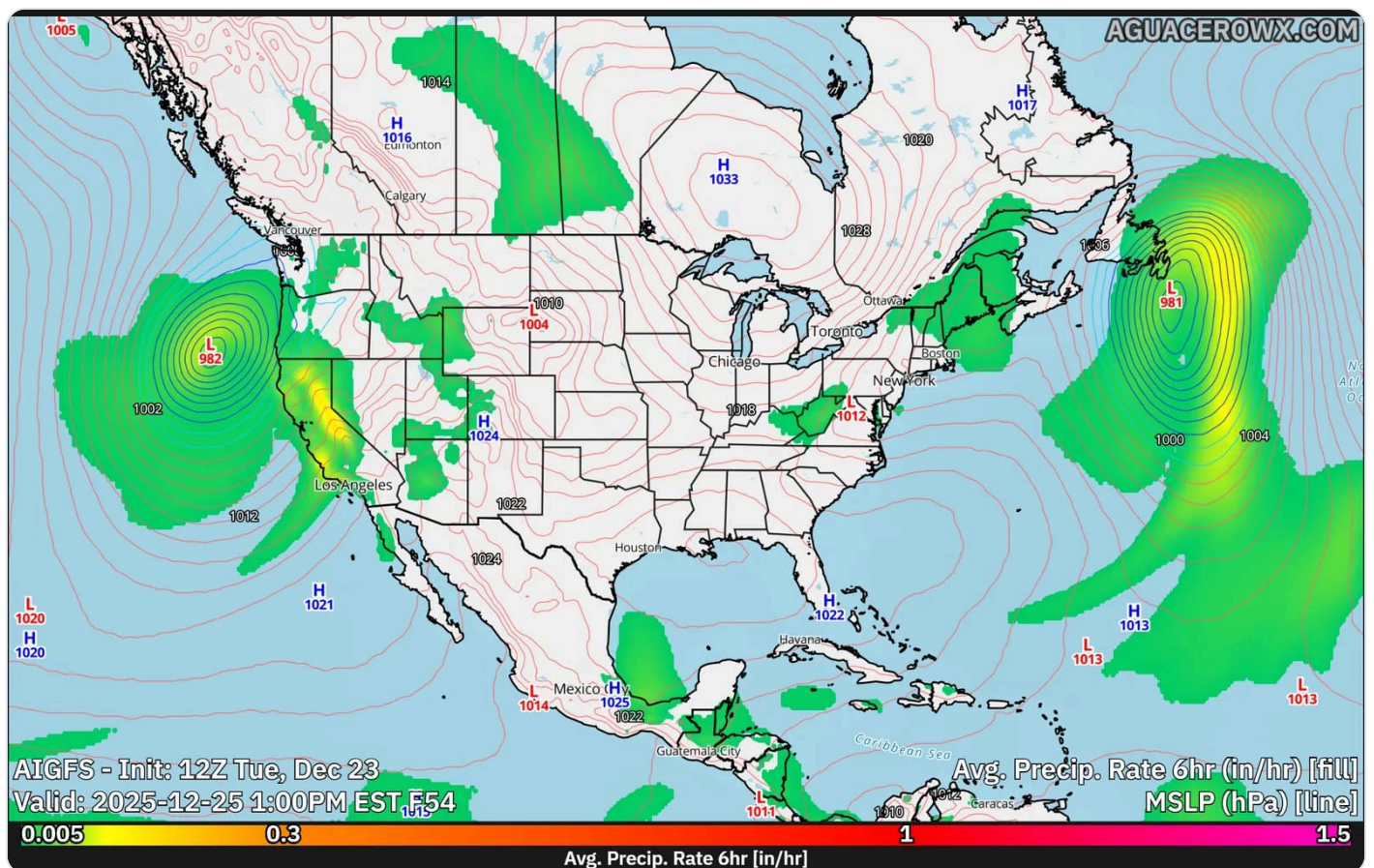
Machine-learning forecasts: ECMWF-AIFS, WeatherNext 2, AI GFS, AI GEFS, AI ICON, GEM-L, Aurora and Pangu-Weather. Several include precipitation type and snowfall.

- 1 Click the model name near the top of the sidebar.
- 2 Click **AI**.
- 3 Pick a single-run model under **Global** or an ensemble under **Ensemble**.

TIPS

- HRRR Cast is under **Mesoscale** in the same menu.

AI GFS, AI GEFS and Hybrid GEFS are on the Free plan. The other AI models need Enthusiast or higher.



AI-GFS 6-hour precipitation rate and sea-level pressure over North America.

08 Ensembles

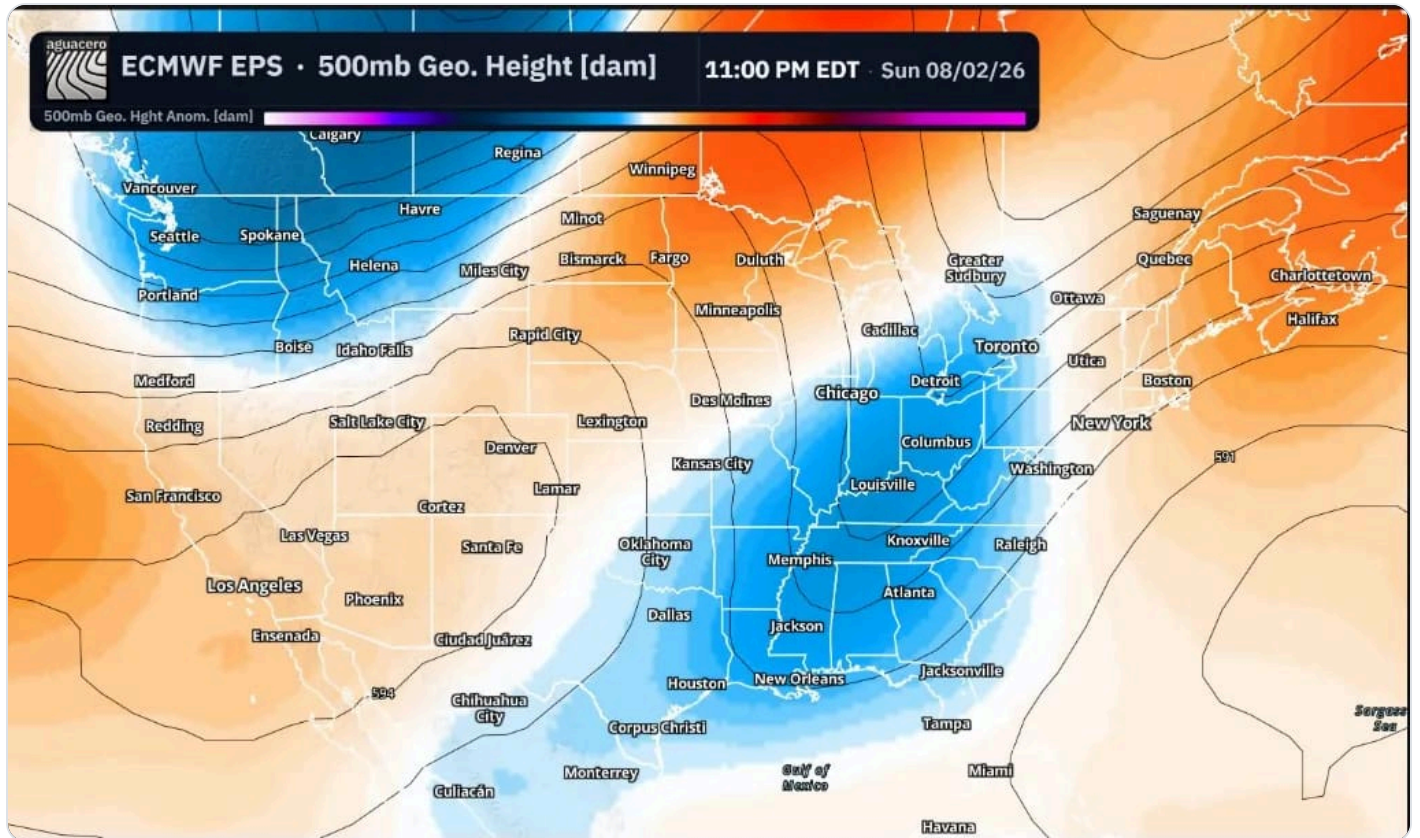
GEFS, GEPS, ECMWF EPS, ICON-EPS, NAEFS, MOGREPS, HREF, REFS, REPS and more, for spread and probabilities.

- 1 Click the model name near the top of the sidebar.
- 2 Click **Ensemble**. Global ensembles are under **Global**, and short-range ones such as HREF and REFS under **Mesoscale**.
- 3 Pick an ensemble and a run.
- 4 On **Edit Layers**, click **Add Layer** to add its fields, such as spread and probability products.

TIPS

- ECMWF AIFS EPS and AI GEFS are in the **AI** menu.

GEFS, GEPS and REFS are on the Free plan.



ECMWF EPS 500 mb height anomaly over North America.

09 NBM and NDFD ENTHUSIAST

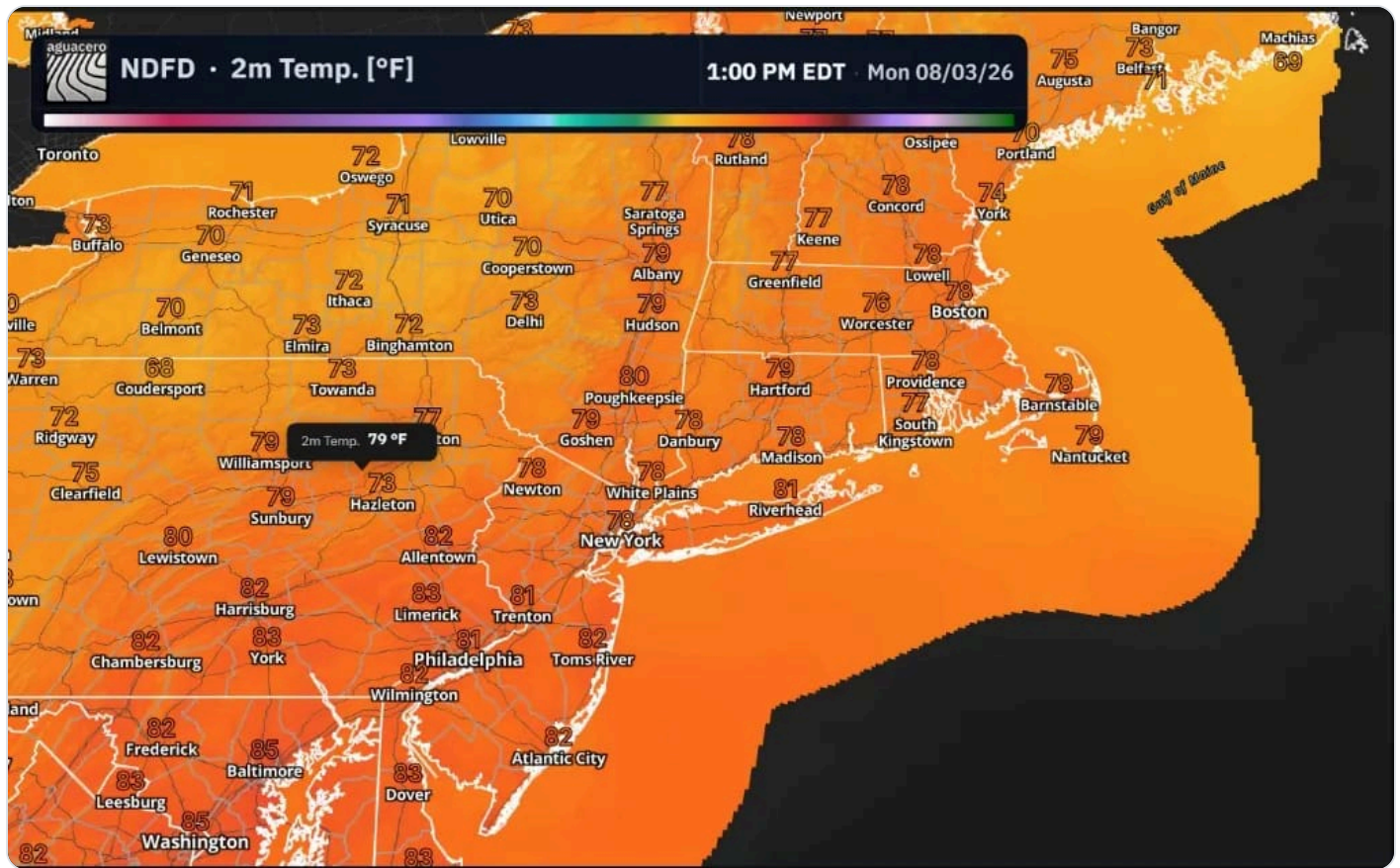
The National Blend of Models every hour, and the official NWS NDFD forecast grids at 2.5 km.

- 1 For the NBM, click the model name near the top of the sidebar, click **Ensemble** and pick NBM.
- 2 For NDFD, click **NDFD** in the data type filter on **Select Data**.
- 3 Click an NDFD bundle to load it.
- 4 Pick the issuance in the **NDFD** run menu under the model menu.

TIPS

- You can also add NDFD fields from **Add Layer > NDFD**.

The NBM needs Enthusiast or higher.

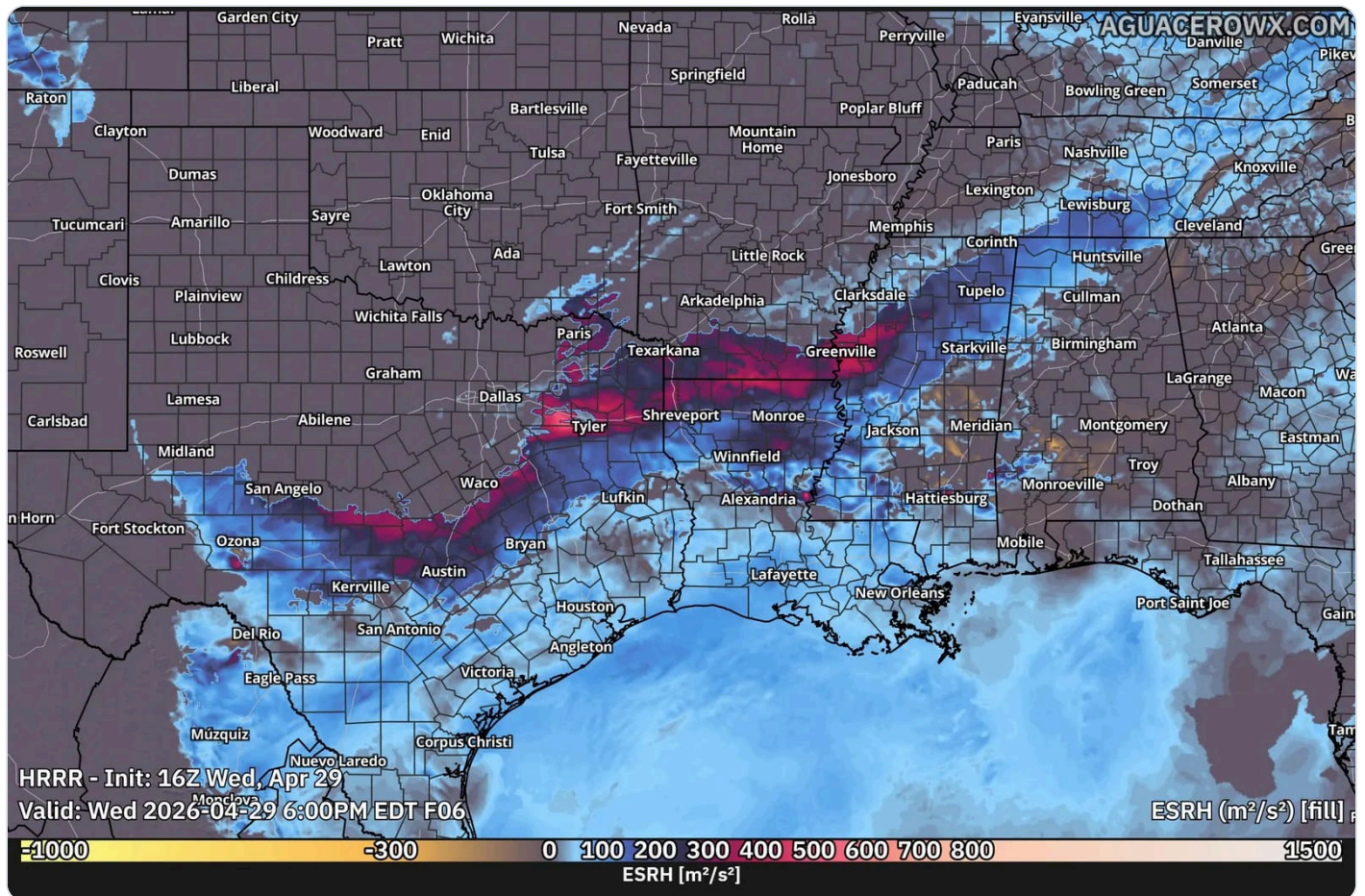


NDFD 2 m temperature forecast over the Northeast with city values.

10 Severe weather parameters

Effective SRH, SHERBE, the Violent Tornado Parameter, the Non-Supercell Tornado Parameter, downdraft CAPE, the Microburst Composite and hail fields, on the models that carry them.

- 1 Switch the panel to a model with severe fields, such as the HRRR, RRFs or RAP.
- 2 Click the **Edit Layers** tab, then **Add Layer**.
- 3 Type a name in **Search variables...**, such as SHERBE, Violent Tornado, Microburst or Downdraft.
- 4 Click the field to add it.



HRRR effective storm-relative helicity across the southern Plains.

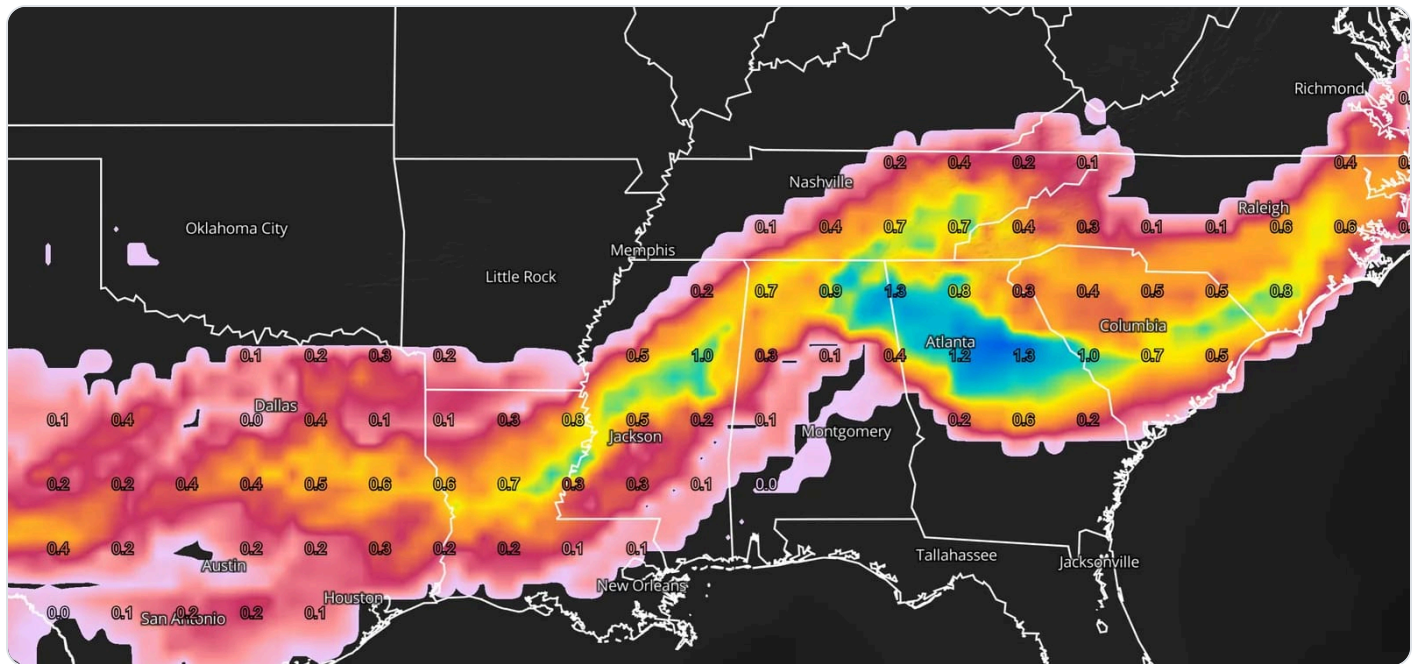
11 Winter weather fields

FRAM ice accumulation, precipitation-type reflectivity, snow depth change and dendritic growth zone depth.

- 1 Switch the panel to a model with winter fields, such as the HRRR or NAM 3km CONUS.
- 2 Click the **Edit Layers** tab, then **Add Layer**.
- 3 Search for FRAM, Precipitation Type, Snow Depth Change or Dendritic.
- 4 Click the field to add it.

TIPS

- Dendritic growth zone depth is on the GFS, NAM and NAM 3 km.



FRAM ice accumulation with point values across the Southeast.

12 Fire weather fields

The Hot-Dry-Windy Index and its anomaly, the Red Flag Threat Index and vapor pressure deficit.

- 1 Switch the panel to a model with fire fields, such as the HRRR, NAM, RAP or GFS.
- 2 Click the **Edit Layers** tab, then **Add Layer**.
- 3 Search for Windy, Red Flag or Vapor Pressure.
- 4 Click the field to add it.

13 Dynamics and isentropic analysis

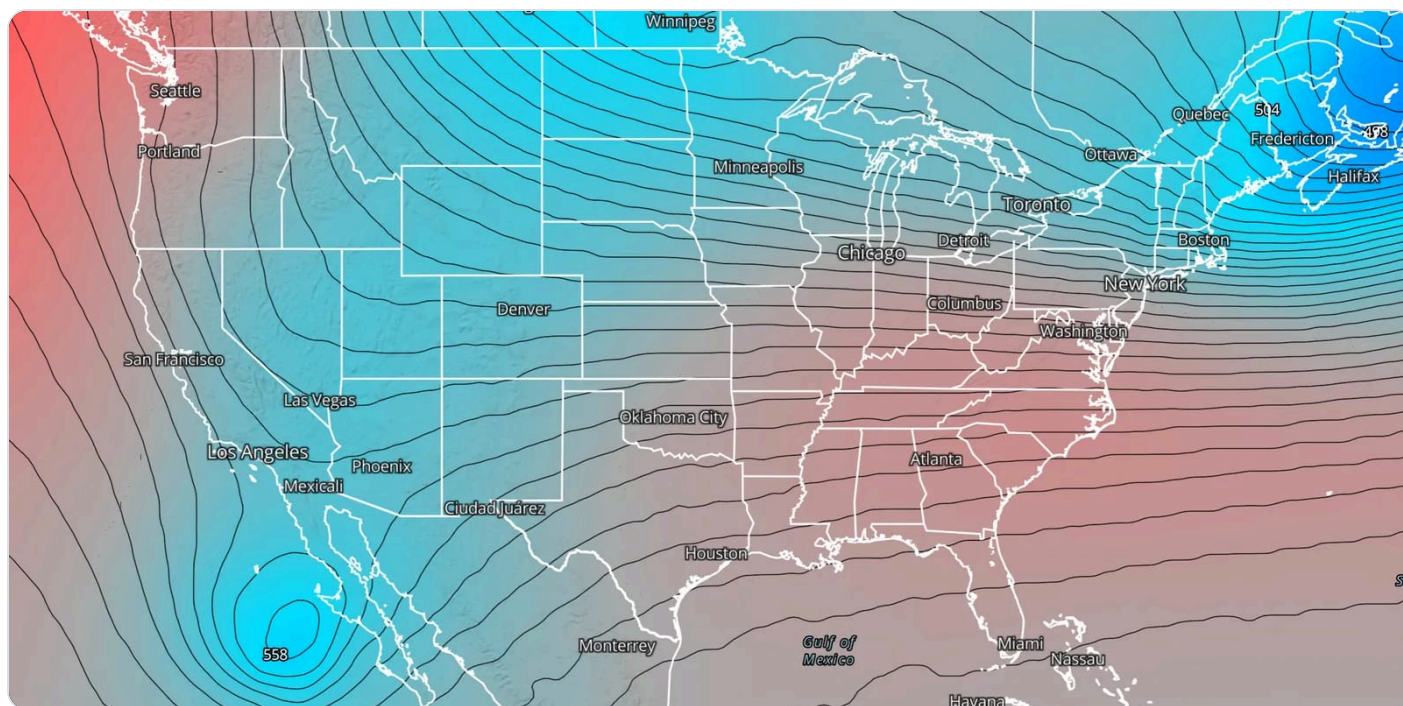
Vorticity, Q-vectors, theta-e advection and moisture transport, plus wind, relative humidity and potential vorticity on the 290–330 K surfaces.

- 1 Click the **Edit Layers** tab, then **Add Layer**.
- 2 Search for Vorticity, Q-Vector, Theta-E Advection or Moisture Transport.
- 3 For isentropic fields, switch to the GFS or NAM and search for a surface, such as 290K.
- 4 Click a field to add it.

14 Anomalies

2 m temperature, 500 mb height, precipitable water and sea-level pressure anomalies against a 1991–2020 climatology.

- 1 Click the **Edit Layers** tab, then **Add Layer**.
- 2 Type Anomaly in **Search variables....**
- 3 Click a field, such as 2m Temperature Anomaly or MSLP Anomaly.



A model anomaly field with contours over North America.

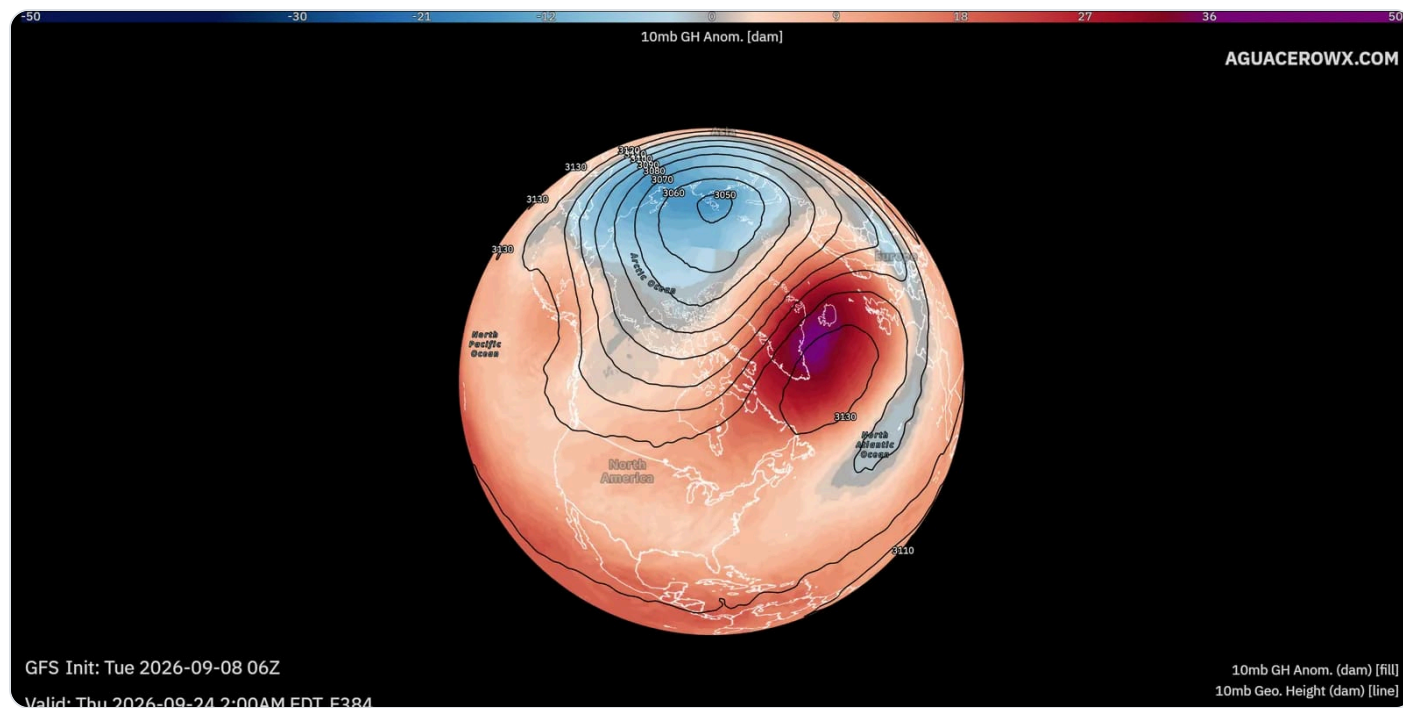
15 Stratospheric fields

10, 50 and 100 mb temperature, height and wind on global models, with anomalies, for watching the polar vortex.

- 1 Switch the panel to a global model with stratospheric fields, such as the GFS or ECMWF.
- 2 Click the **Edit Layers** tab, then **Add Layer**.
- 3 Search for 10mb, 50mb or 100mb.

- Click a height, temperature or wind field to add it.

Stratospheric anomalies are measured against 1990–2019 ERA5.



GFS 10 mb geopotential height anomaly centered on the North Pole.

16 Air quality and smoke

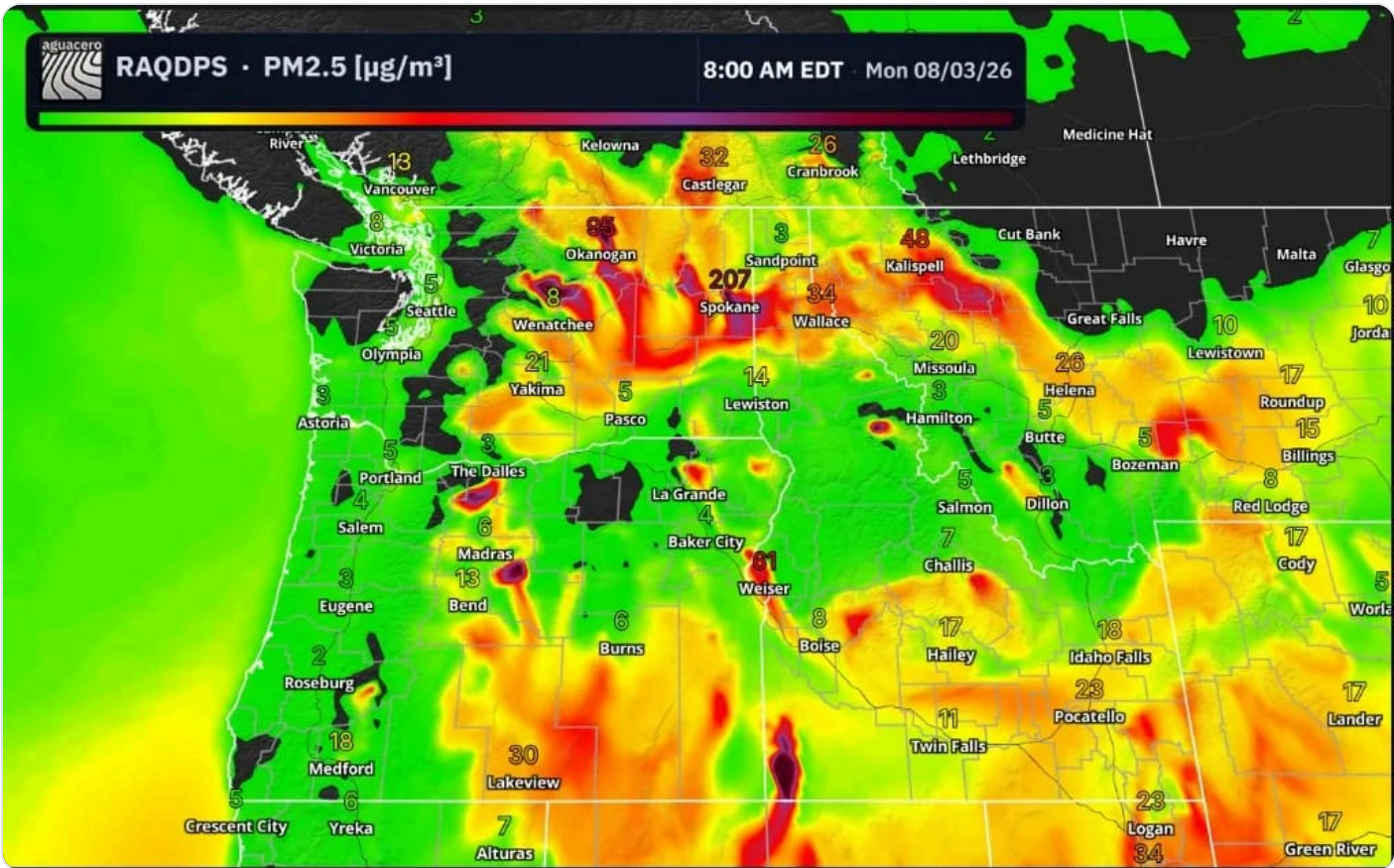
AQM, RAQDPS, CAMS Global and Regional, ICON-ART, GEFS-Aerosols, SILAM, HYSPLIT-Dust and WRF-Chem, plus smoke on supported models.

- Click the model name near the top of the sidebar.
- Click **Air Quality** and pick a model.
- On **Edit Layers**, click **Add Layer** and add a field such as PM2.5.

TIPS

- For smoke on the HRRR or RAP, search **Add Layer** for Smoke.

AQM (AirNow) is on the Free plan.



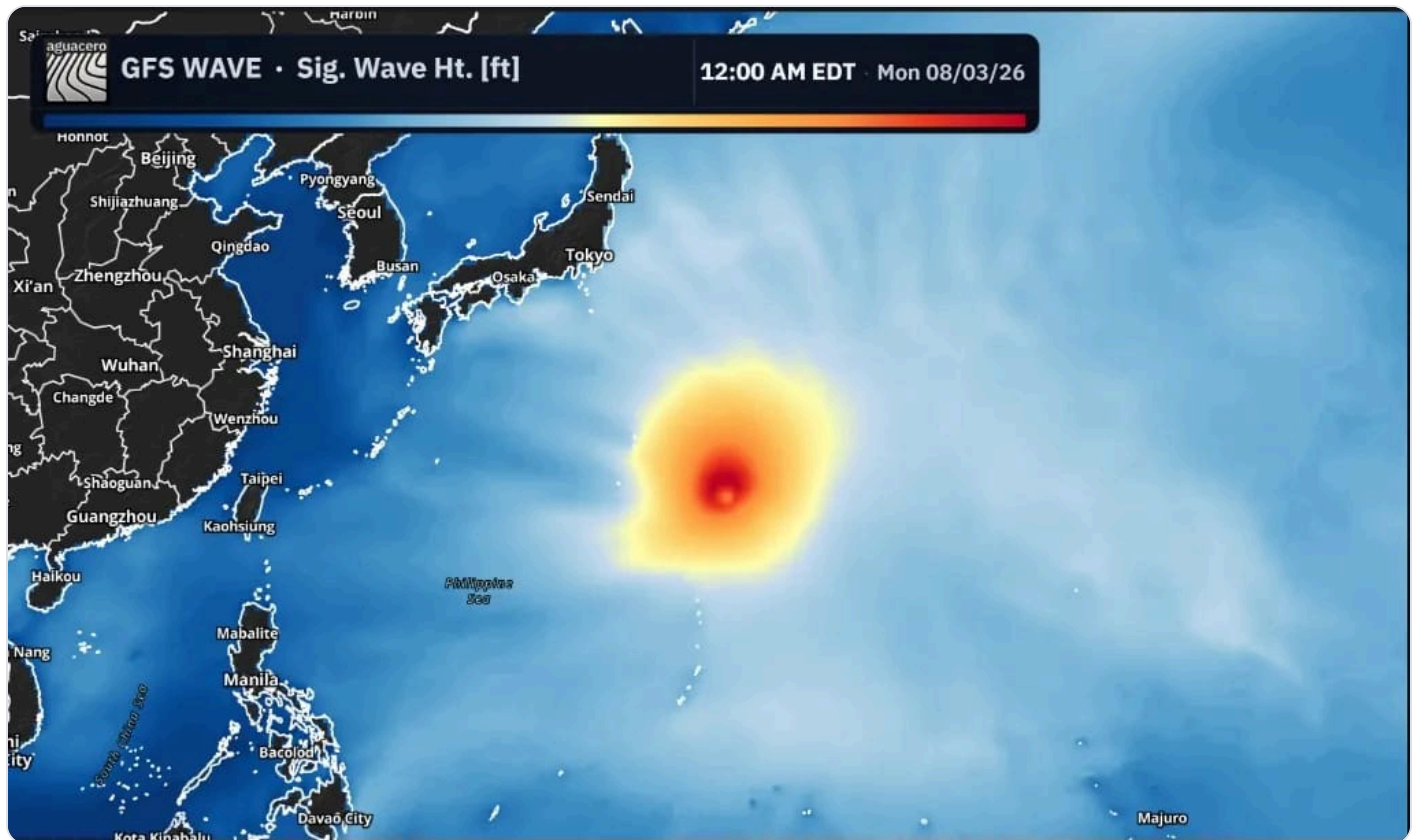
RAQDPS PM2.5 smoke forecast over the Pacific Northwest.

17 Ocean, wave and surge models

GFS Wave, ECWAM, AIFS Wave, GLWU and RTOFS, plus ETSS, P-Surge and STOfS storm surge guidance.

- 1 Click the model name near the top of the sidebar.
- 2 Click **Marine**.
- 3 Pick a model under **Waves**, **Storm Surge** or **Ocean**.
- 4 Add a field such as Significant Wave Height or Storm Surge from **Add Layer**.

GFS Wave is on the Free plan.



GFS Wave significant wave height around a western Pacific typhoon.

18 Seasonal and subseasonal

CFS, CanSIPS, NMME and ECMWF SEAS5 for monthly-lead outlooks.

- 1 Click the model name near the top of the sidebar.
- 2 Click **Climate**.
- 3 Pick CFS, CFS Monthly, CanSIPS, NMME or SEAS5, then a run.

CFS Monthly is on the Free plan.