ATAK

FireCast

Plug-in Version: 0.5
ATAK 5.7.0
10 November 2026



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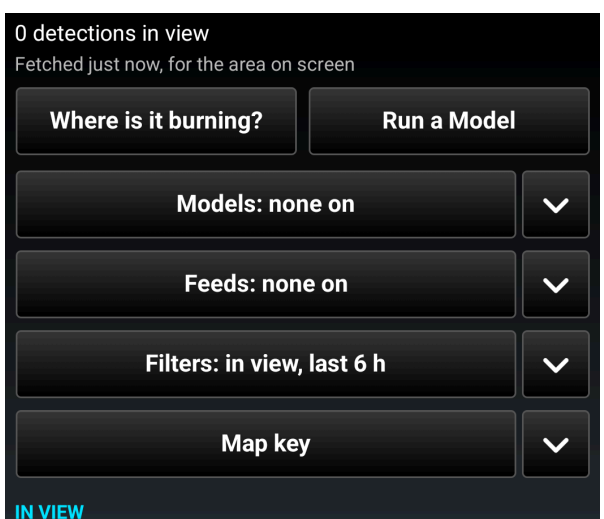
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Overview

FireCast puts satellite heat detections on the ATAK map and runs a fire spread model on the device, from a point you tap or a perimeter you draw. It also shows other agencies' published fire forecasts beside your own runs.



Everything starts on this one pane: the detections in view, Where is it burning?, Run a Model, and folded rows for Models, Feeds, Filters and the map key. "In view" is the map you can see, not the part behind the pane.

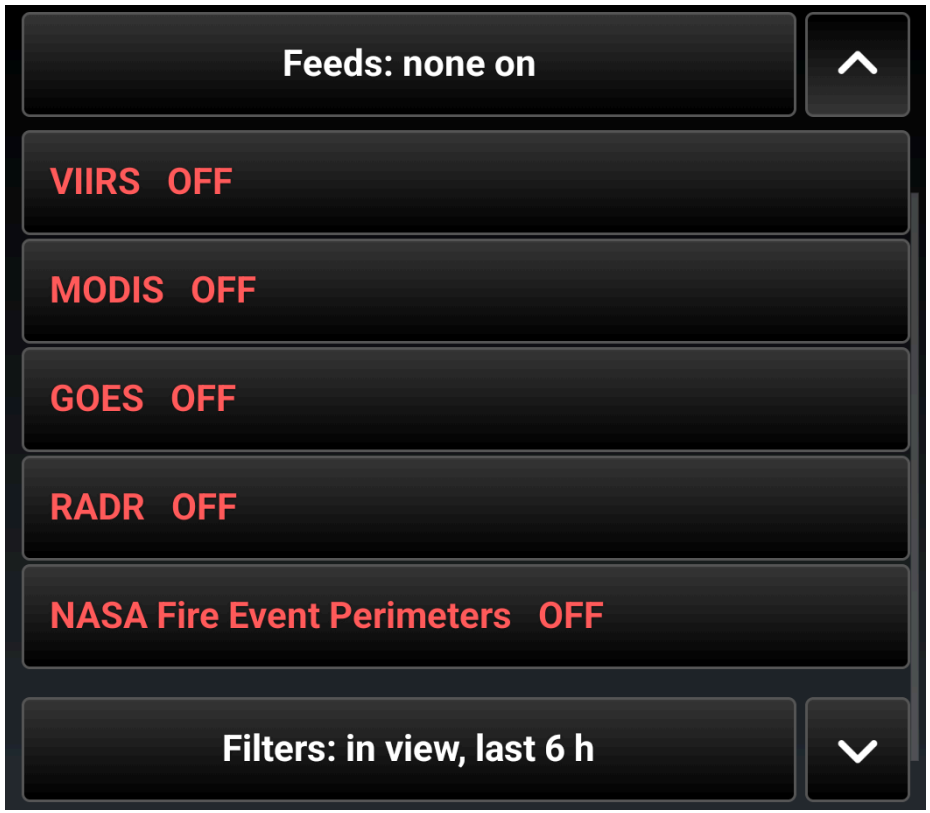
Switches read ON in green or OFF in red.

Before you start

- **Match the plugin to your ATAK version.** Builds are tied to the ATAK release they were built against; 5.6, 5.7 and 5.8 builds are published.
- **It needs a network to fetch and to run the model.** Outbound HTTPS on port 443 only, to public agency services. Nothing is sent to a TAK server and no CoT is generated.
- **What it fetched stays on the device.** Runs, the last detections and the forecasts come back after a restart with no signal, with their age shown.

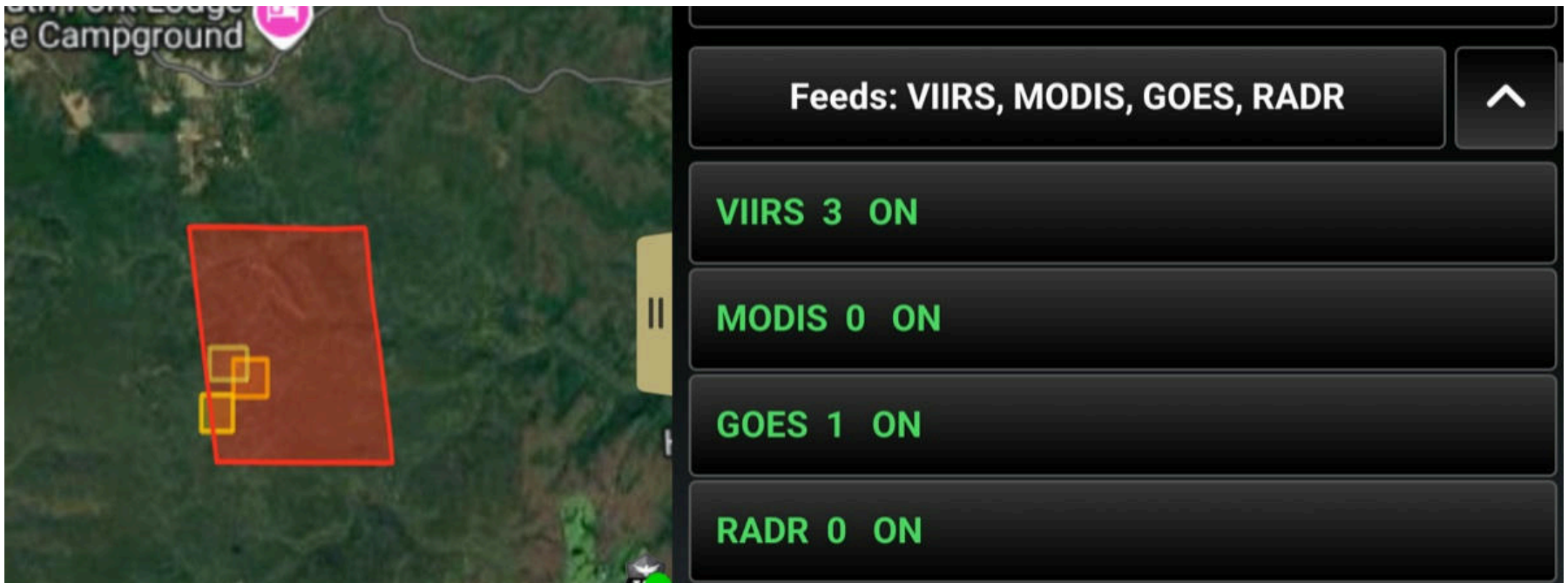
Load it from ATAK's Plugins manager (TAK Package Mgmt) like any other plugin, then open it from the toolbar.

Heat detections



- **VIIRS:** three satellites, a few passes a day. Drawn as the square the sensor saw, about 375 m across.
- **MODIS:** 1 km at the center of the swath, over 4 km at the edge, and the drawn box grows with it.
- **GOES:** a scan every few minutes; the footprint is worked out from the viewing angle.
- **RADR:** burned areas from the last fourteen days, real outlines of where fire has been.

Detections on the map



Three VIIRS detections, each the 375 m square the sensor saw, inside one GOES detection, worked out from the satellite's viewing angle. The feeds list gives each feed's count in view.

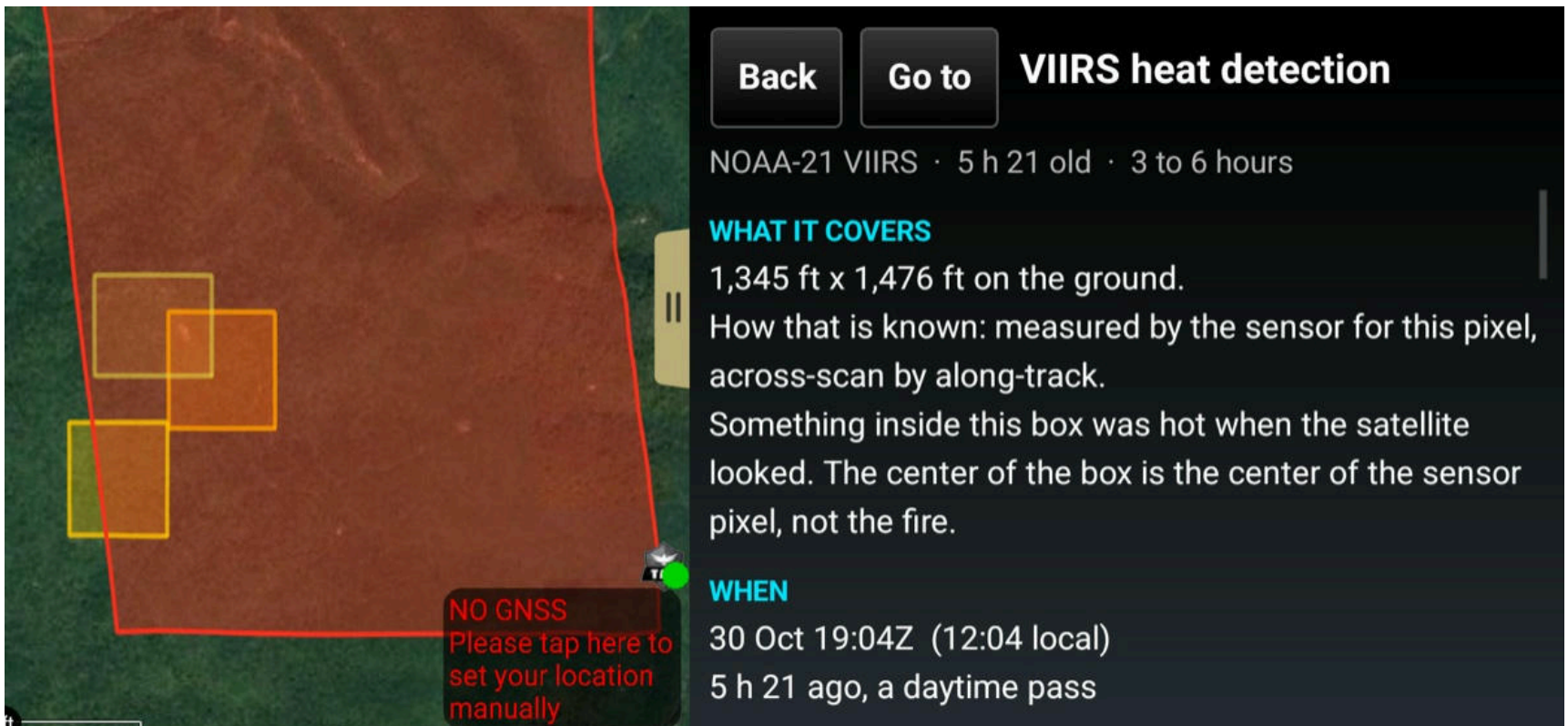
Reading a detection

Detections are colored by age: red within the hour, through amber, to gray past a day, fading with it. **Filters** sets the time window, the confidence and whether to hide known industrial heat sources. **Map key** explains the colors.

Tap a detection on the map or in the list for its detail panel: how big the footprint is and how that was worked out, when the satellite saw it, and the radiative power.

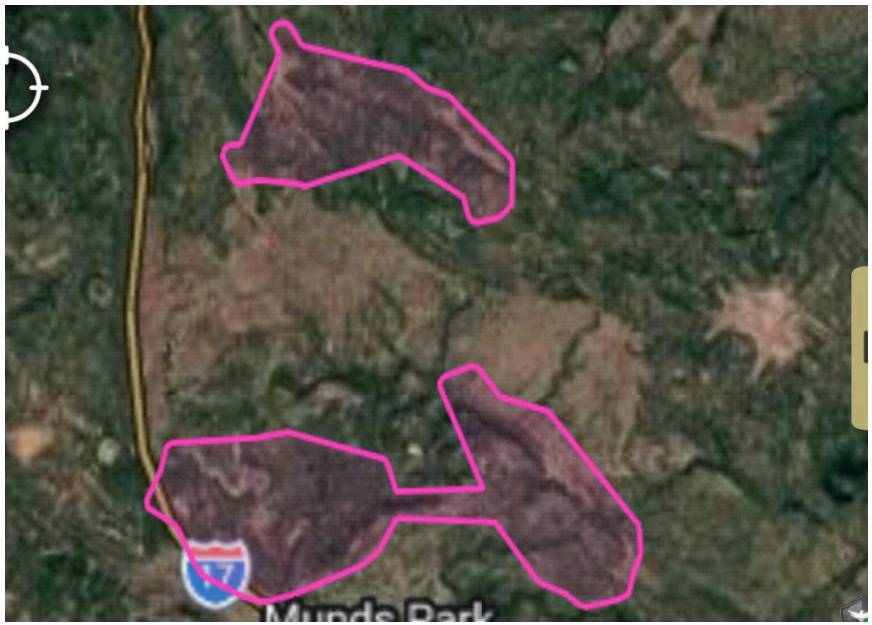
What this does not mean is on every panel. A heat detection is a hot pixel. It does not say the fire is at the center of the box, that an empty map is empty ground, or that a hot pixel is a wildfire and not a flare or a solar farm.

A detection up close



How big the footprint is and how that is known, which satellite and when.

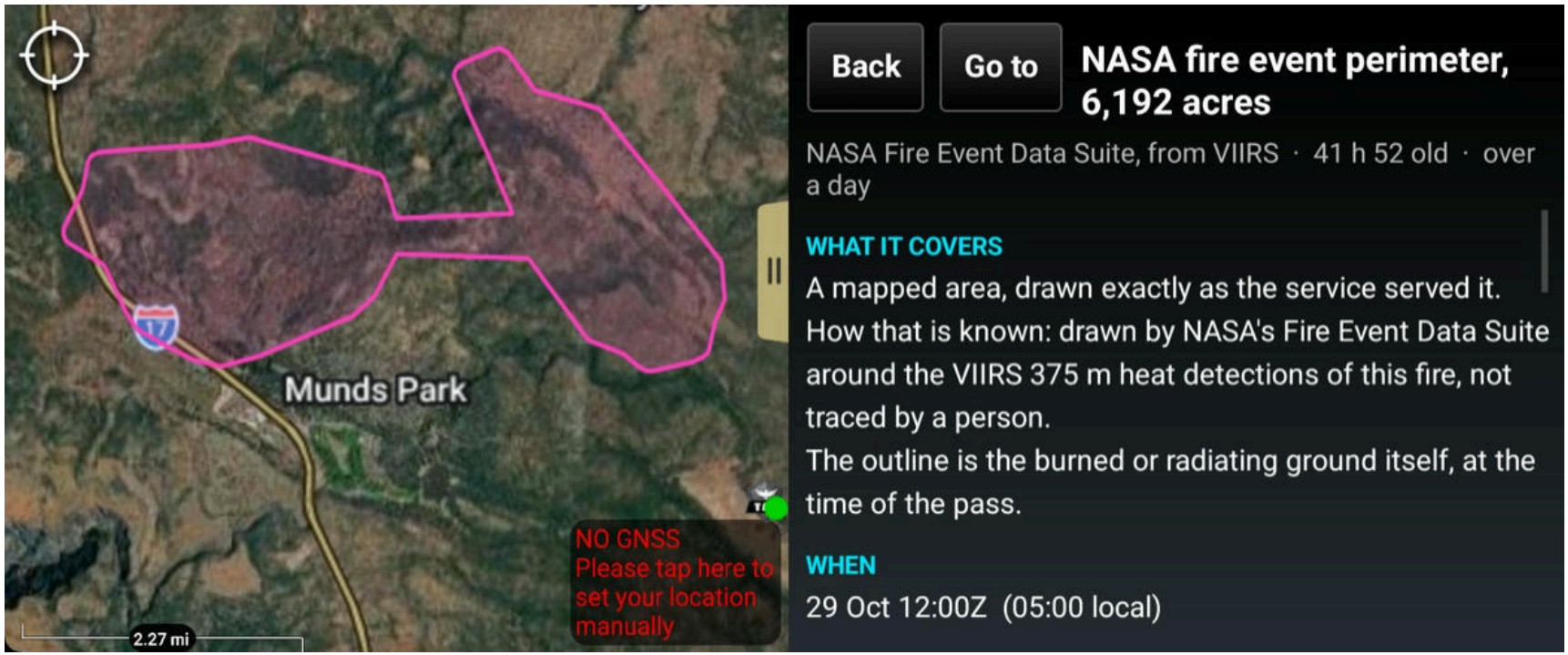
NASA Fire Event Perimeters



A feed like the others: NASA's Fire Event Data Suite draws an outline around each fire's VIIRS detections every 12 hours, so a fire nobody has mapped has a perimeter. Magenta, brighter while active.

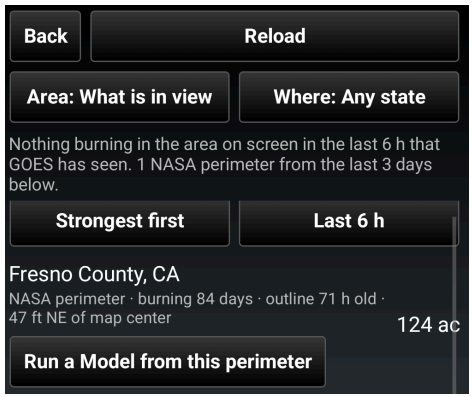
375 m steps, up to a day old, and not the incident's mapped perimeter. It always looks back three days.

A NASA perimeter up close



Its acres, when NASA drew it, and what it is not. **Run a Model from this perimeter** starts a run from that outline.

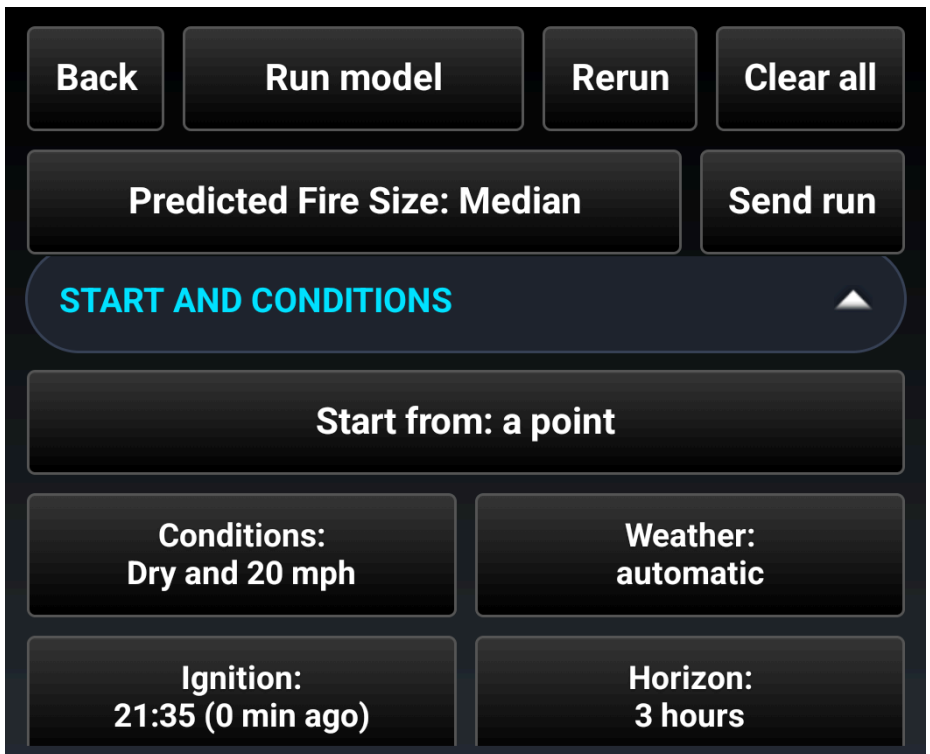
Where is it burning?



One list: GOES fires burning now, then NASA perimeters with no GOES fire in them, then fires seen in one scan only (often burn piles).

Pick the order and how far back above the list. Tap one and the map goes there; the list stays open. **Run a Model from this perimeter** on a row with a NASA perimeter starts a run from it.

Run a Model



Tap **Run a Model**. The top line: **Back**, **Run model**, **Rerun**, **Clear all**. Open **Start and conditions** and tap **Start from**:

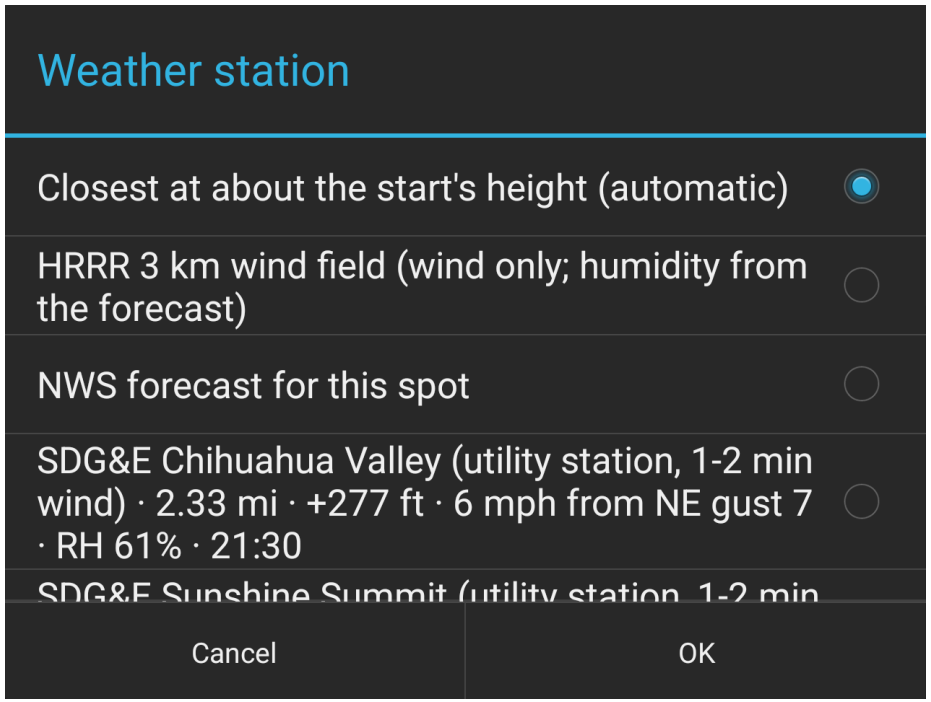
- **A point:** tap the map. Drag the marker to make it exact.
- **A perimeter you draw** with ATAK's shape tool.
- **A shape already on the map:** tap one, drawn, sent, or a Feature Layer perimeter.

Then the settings:

- **Conditions:** as observed, at the gust, a dry day, or dry with 20 mph wind.
- **Weather:** a station, your own observation, or a Kestrel station.
- **Ignition:** when it started; the rings run from then.
- **Horizon:** one or three hours ahead.

Then **Run model**.

Your own weather and the ignition



Weather lists the stations around the start as soon as it is placed: RAWS, National Weather Service and, in California, the utility stations (SCE, SDG&E, PG&E, HPWREN), each with its distance, height and reading. Automatic picks by distance and height. Or it takes what you measured at the fire: wind, direction, gust, temperature, humidity and the 1 h fuel moisture. An eye-level wind (a hand-held meter) is taken as the wind at the flames. **From a Kestrel station** lists the stations the Kestrel Wx plugin shares, ready to check and use. An observation is used while under six hours old.

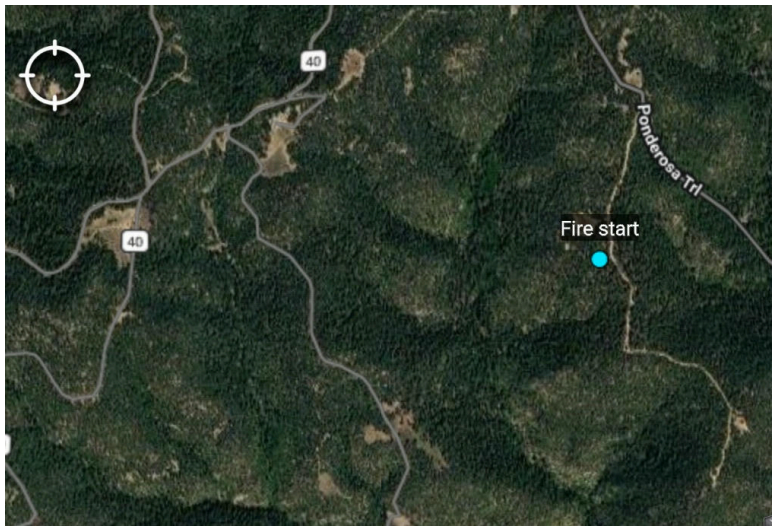
Ignition is when the fire started: minutes ago, a clock time, or minutes before dispatch. A run from a point then begins at the ignition, and one of its rings is **now**.

Start from a shape on the map

A shape already on the map takes any area on the map: one you drew, one a contact sent, an imported KML, or a perimeter from another layer such as a FIRIS perimeter in Feature Layer. Every piece of it starts burning.

A line is refused in orange, and the start is cleared so nothing runs by mistake. A NASA satellite perimeter is run from its detail: tap it on the map, then **Run from perimeter**.

The start on the map



The **Fire start** marker sits where you tapped. Drag it, or use Fine Adjust on its menu, to put it exactly where the fire is.

Then set the conditions and tap **Run model**.

What the model uses

The fuel, slope and canopy are the real ground from LANDFIRE, cell by cell. Wind comes from the best weather station near the fire, a RAWS, a National Weather Service station or a California utility station, and the National Weather Service forecast. How dry the fuels are comes from the national fuel moisture data.

The fire spreads over that ground, carries embers, is slowed by roads and stopped by water and bare ground, and counts the buildings and people it reaches from FEMA's building inventory.

Check what went in first. When a run looks wrong, a weather station far from the fire is the usual reason.

How it burns

The engine is the Forest Service Fire Lab's Behave library, the same one inside BehavePlus, built into the plugin and run on the device:

- **Surface fire:** Rothermel's spread model over the 40 Scott and Burgan fuel models (grass, grass-shrub, shrub, timber understory, litter, slash).
- **Crown fire:** Scott and Reinhardt; whether the fire stays on the ground, torches single trees or runs through the crowns, from the canopy LANDFIRE maps.
- **Embers:** Albini's spotting distance. Embers carry the fire across a road or a block narrower than they fly.

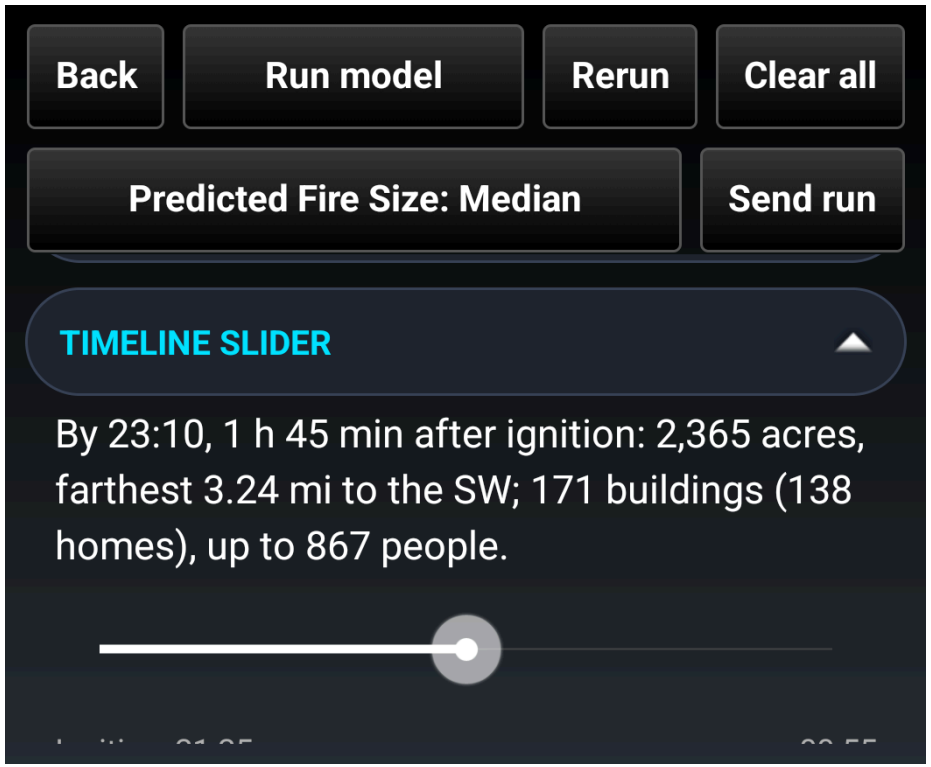
The fire moves cell by cell over 30 m ground, each cell at its own fuel, slope, canopy and wind. Houses burn house to house at the rate measured in nine North American conflagrations (Moran, Seielstad and Pietruszka, 2025). From a perimeter with a start time, the run is first checked against what the fire already burned and its speed scaled to match, at most three times either way.

What is not in it

- **Firefighting.** No line, no dozers, no aircraft. The run is the fire left alone.
- **Wind the fire makes itself,** and wind bent by a canyon finer than the forecast.
- **A fuel break narrower than 15 m.**
- **Today's ground,** if it has changed since LANDFIRE mapped it: a recent burn, a new subdivision, a cleared lot.

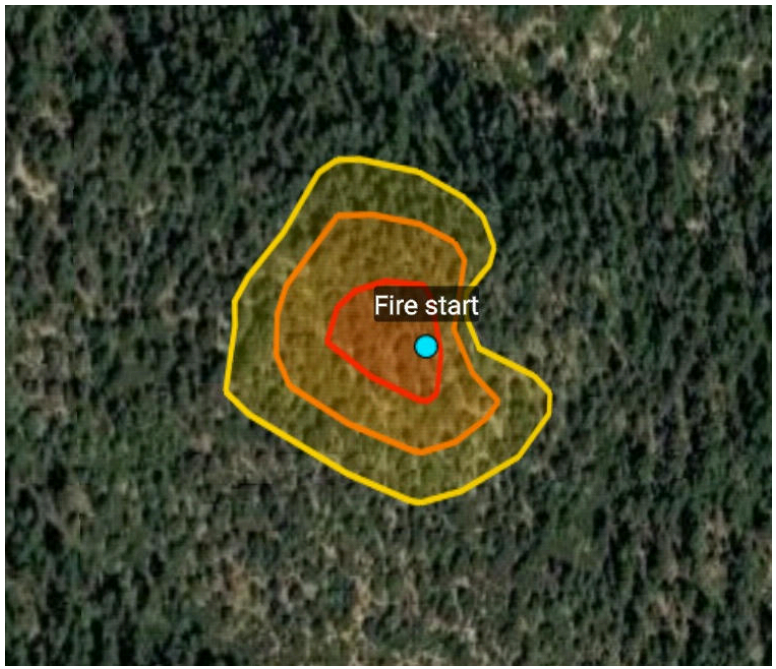
So read a run as a direction and an order of magnitude, and run it again when the wind changes.

Reading a result



- **Timeline Slider** opens on the run. Its line says where the fire is by a time: area, how far it has gone, how many buildings.
- The **time slider** moves the rings on the map. The edge at the slider's time is drawn in cyan.
- The **table** gives each time step: acres, buildings and people reached (FEMA's upper estimate, "up to").

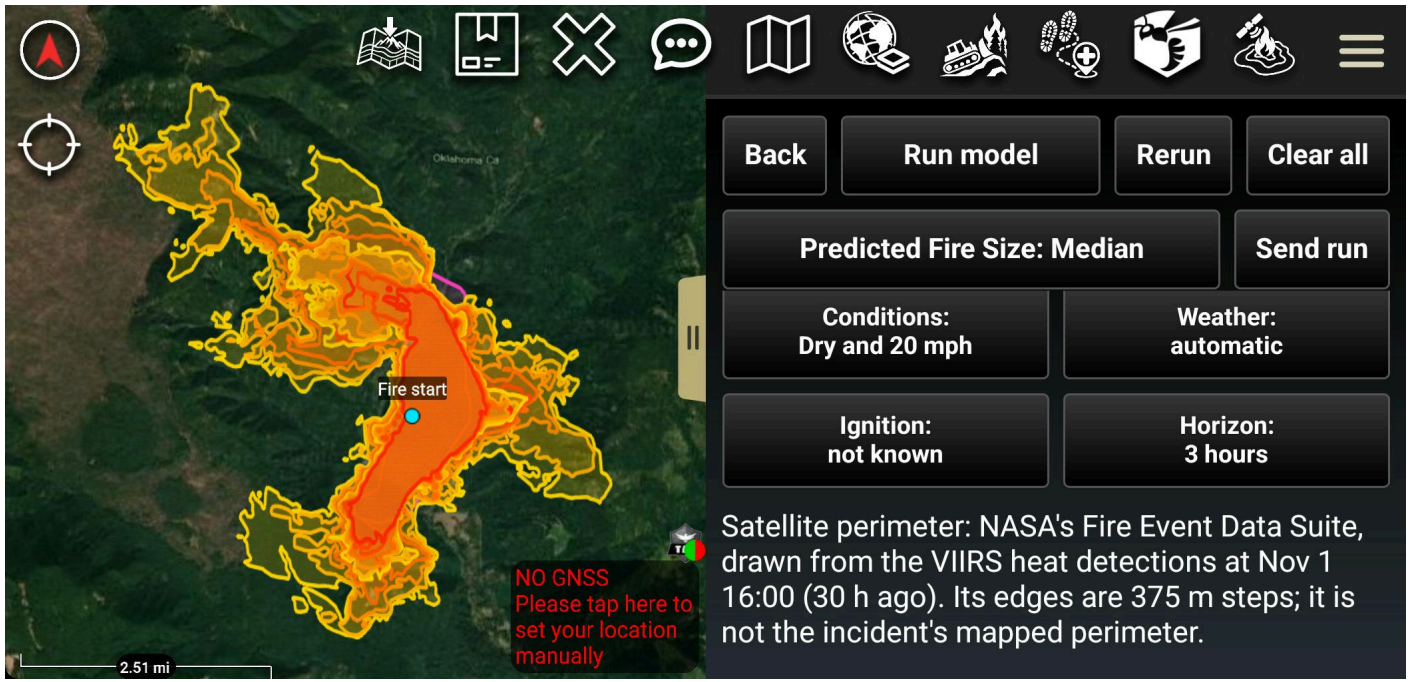
A run on the map



Each time step is a ring, red for the first, then orange, then yellow, with the burned ground filled in.

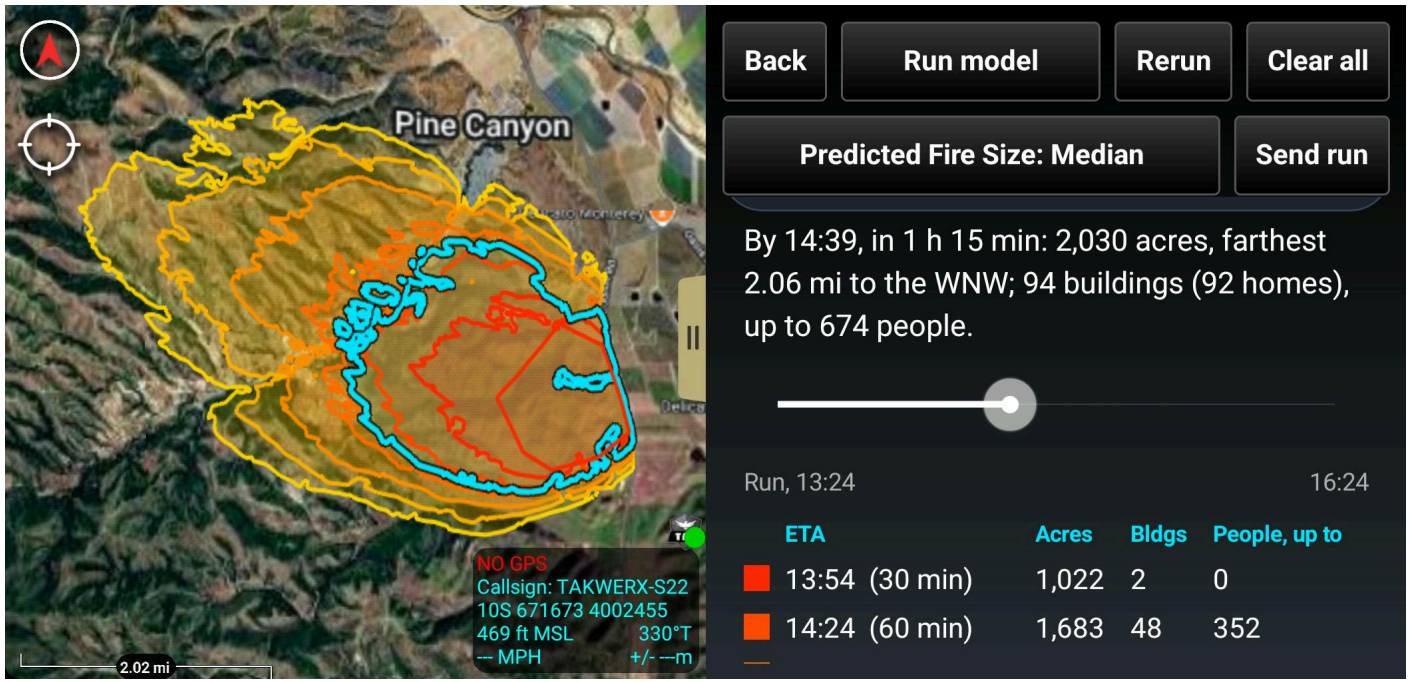
A run can be small: a litter fire under trees in a light wind may cover a fraction of an acre in an hour, and the page says so. Set **Conditions** to **Dry and 20 mph wind** to see what a bad day would do.

A run from a NASA perimeter



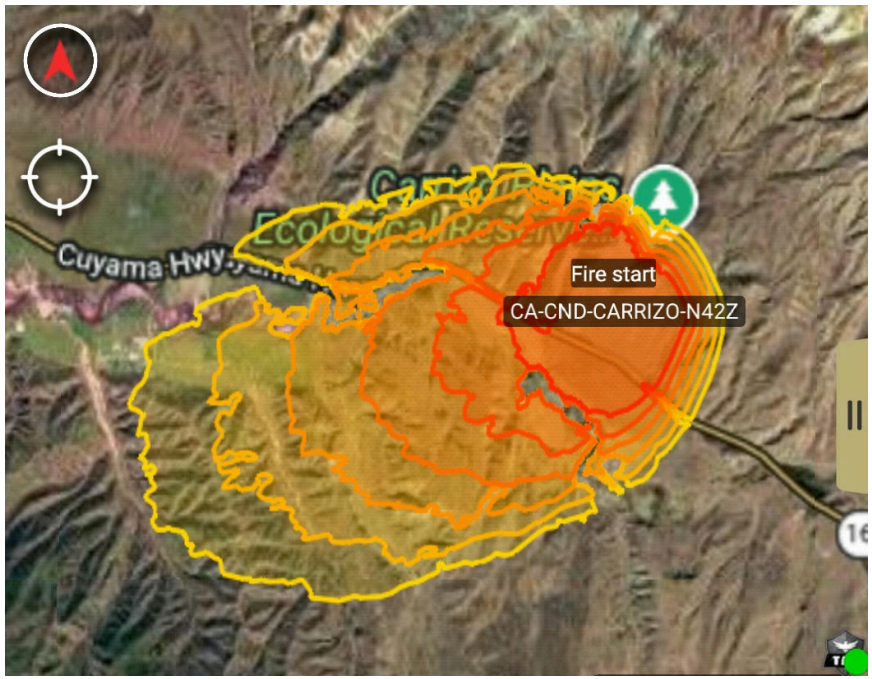
The rings grow out from the outline. On a wet night a run may not grow at all, and the page says why; **Dry day** shows what it would do once it dries.

A run from a perimeter you draw



A drawn outline burns from its whole edge. The slider and the table work the same as for a point.

A run from a shape on the map



Any area already on the map can be the start: one you drew earlier, one a contact sent, an imported KML, or a perimeter from another layer. Every piece of it starts burning.

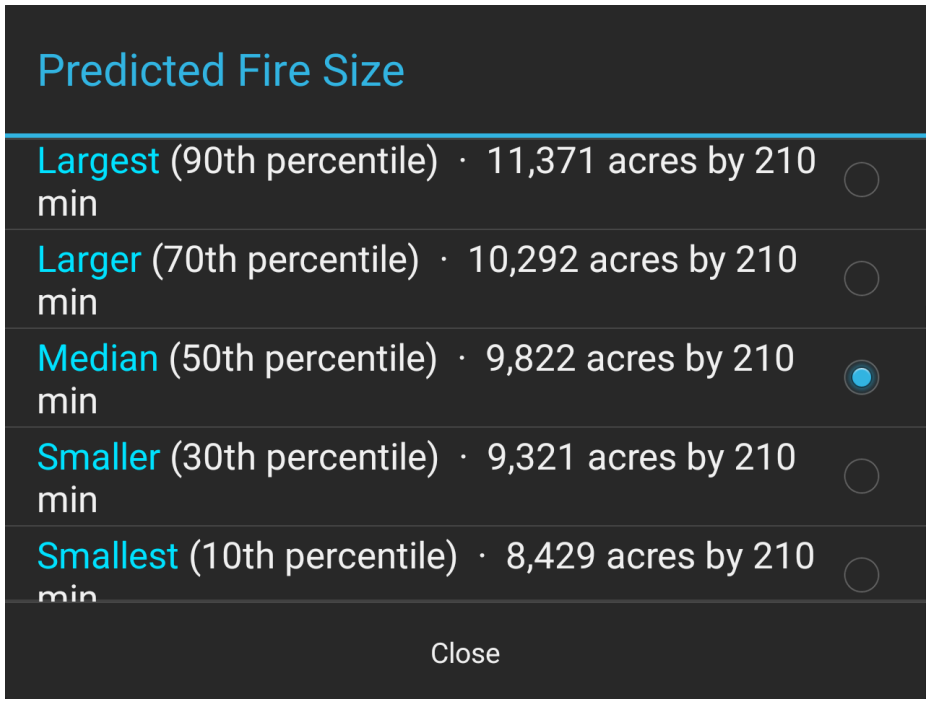
A line is refused, in orange, and the start is cleared so nothing runs by mistake; the outline has to be an area.

The slider on a run



Drag the slider and the cyan edge moves to that time. The line above it says where the fire is by then: the acres, how far it has gone and the buildings.

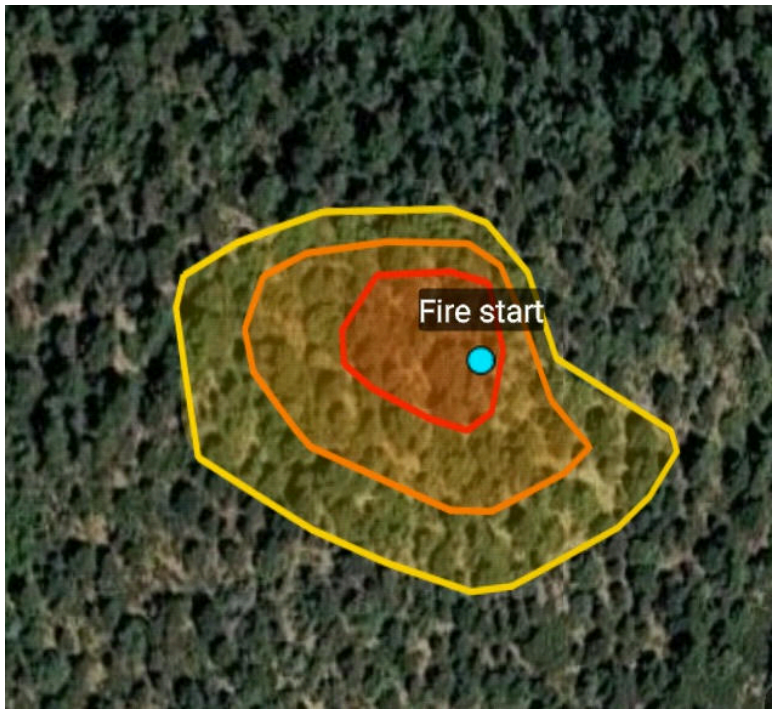
Predicted Fire Size



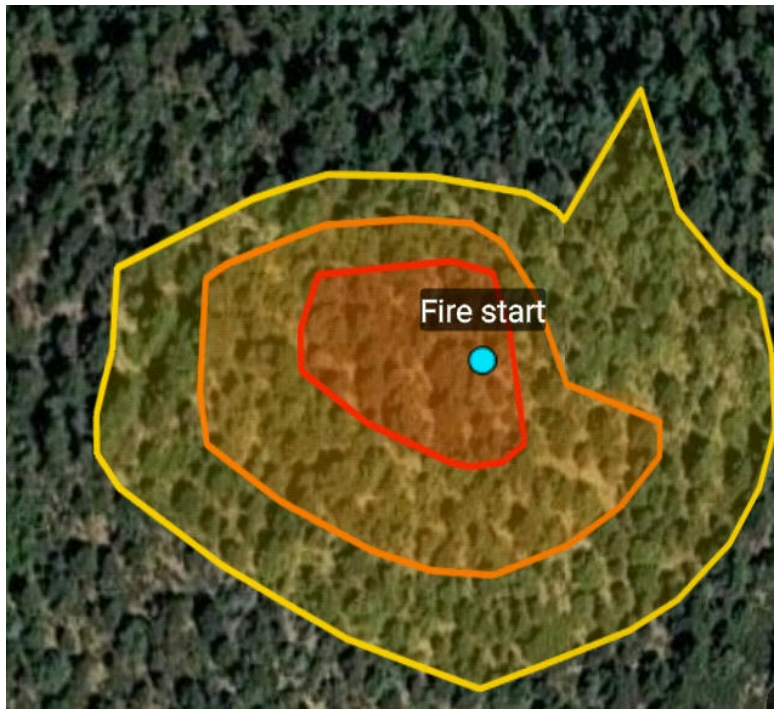
A fire does not spread exactly as forecast. Each run is repeated 30 times with the wind speed, the wind direction and the fuel moisture nudged the way a forecast misses, and ranked by what burned.

Pick **Smallest**, **Smaller**, **Median**, **Larger** or **Largest**. It starts on Median. The rings, the slider, the acres and the buildings all become that one run.

Smallest and Largest



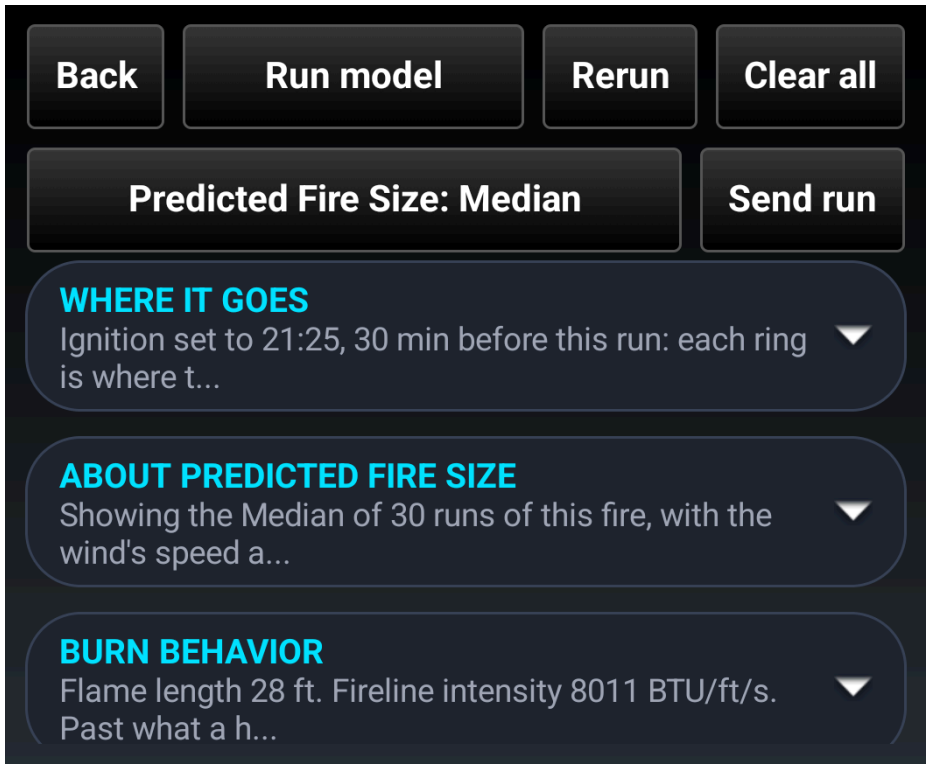
Smallest



Largest

The same start and the same map. In a light wind the two are close; the stronger the wind, the further apart they come.

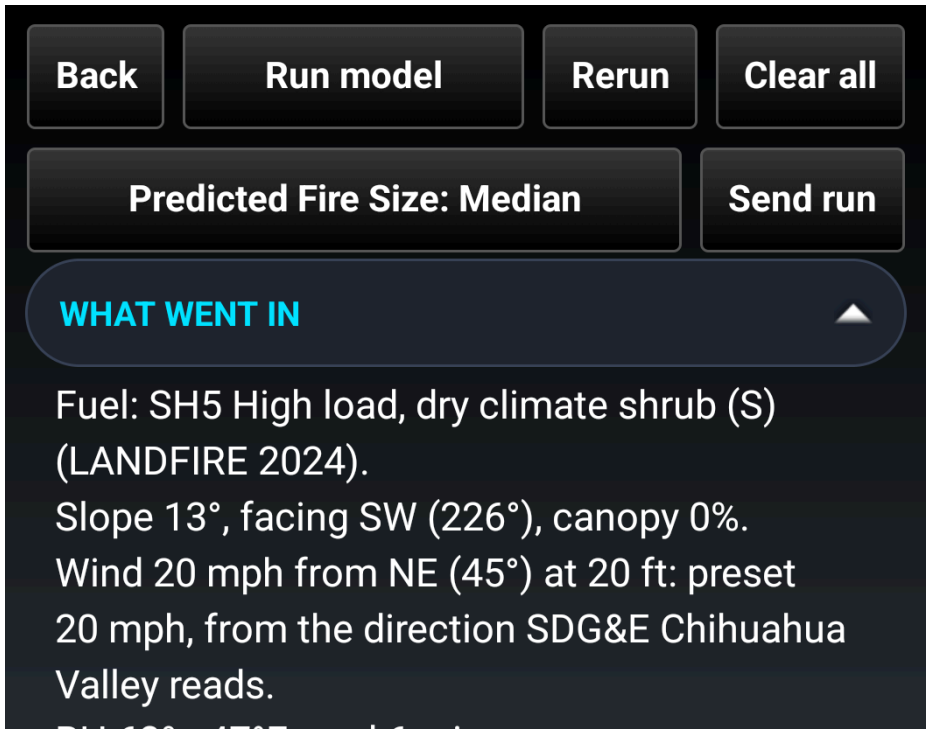
The detail pills



Under the results the rest is folded away. A closed pill shows its first line; tap it to open it and tap again to close it.

- **Where it goes:** each time step in words, embers, crown fire, buildings.
- **About Predicted Fire Size.**
- **Burn behavior:** flame length and what a hand crew can hold.

What went in



The fuel, slope and canopy, the wind and the station it came from, and the moisture.

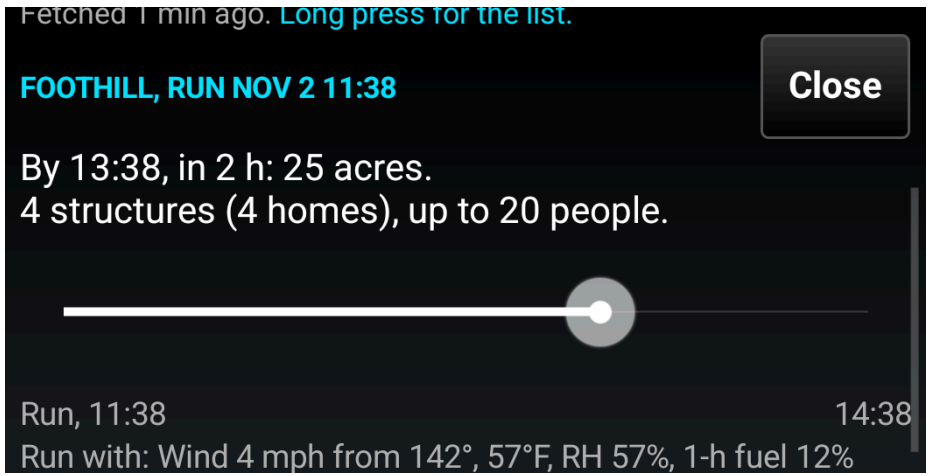
Rerun on the top line runs the selected run again from its own start. **Send run** shares it as one file through ATAK's Send dialog.

Runs on the map

Each run is listed with its time, fuel, wind and area. The one the page shows is in cyan. **ON** and **OFF** show or hide it; **Delete** removes it.

Show: In view lists only the runs beside the pane; tap it for all of them. **Opacity** fades the runs on the map so the ground under them can be read.

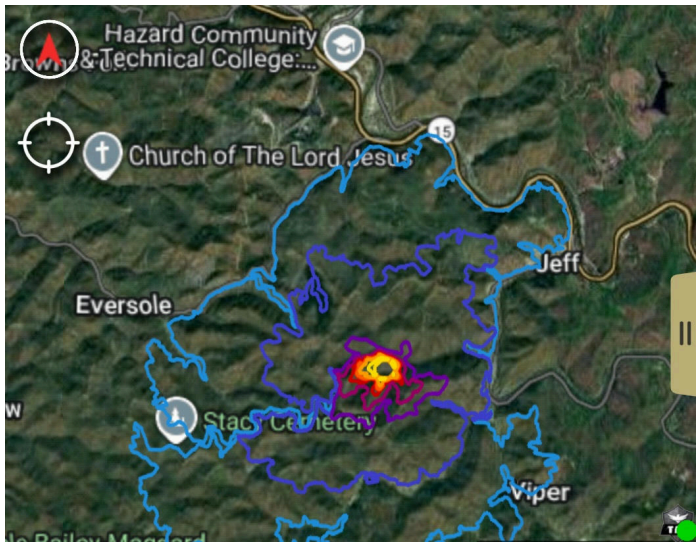
Other forecasts



FIRIS Model Runs shows the spread runs that California's fire analysts publish for ATAK. **PyreCast Forecasts** shows the ELMFIRE forecasts PyreCast publishes for large fires across the country, shown with their permission, with their logo and a link to pyrecast.com.

Each is a switch in the pane. Long press a switch for its list, and pick a fire to put its time slider on it; tap the run's name to go to it. A FIRIS run counts the structures, homes and people each hour reaches, from FEMA's inventory. PyreCast ranks its runs by what burned at the end of the forecast; FireCast shows the middle run unless you pick the smaller or larger end.

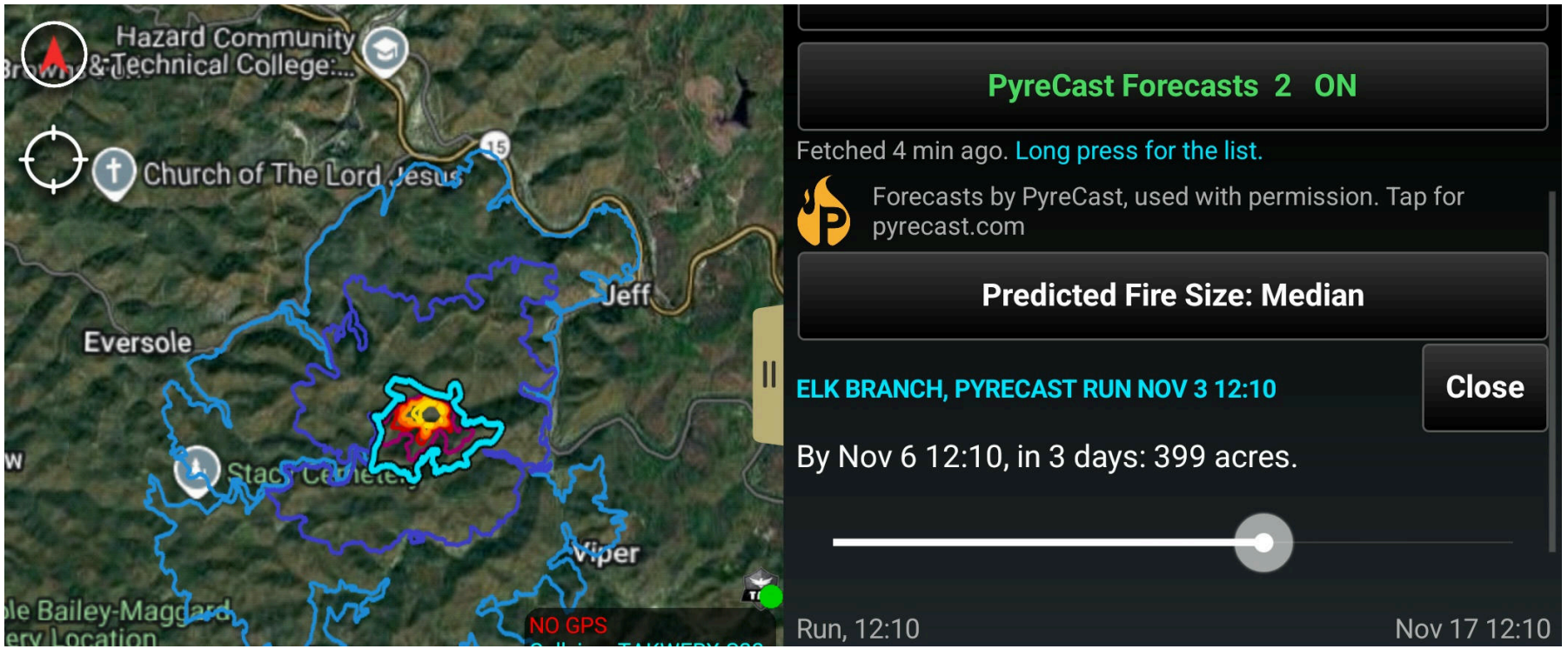
A PyreCast forecast





Long press the switch for the list and pick a fire. Each forecast runs out to about two weeks, drawn from yellow for the first hours to blue for the last.

The slider



Drag the slider to any time. The edge at that time is drawn in cyan, and the pane says where the fire is by then and how big.

Offline

Everything FireCast has fetched or run stays on the device. After a restart of ATAK, or with no signal, your runs, the last detections, the FIRIS runs with their structure counts and the PyreCast forecasts come back with their age on the pane.

Switching a layer off only hides it. A failed fetch never empties what you already have, and a new run with no signal says what it could not reach and leaves your other runs alone.

What to keep in mind

A spread model gives a direction and an order of magnitude. It is not a plan to base a perimeter on.

- Fuel and slope are the real ground, but the wind is one reading or a coarse forecast and cannot know a canyon.
- There is no suppression in it.
- House-to-house spread is an average over past fires, not this street.

Run it again as the wind changes.