



Nimbus

CLOUD SEEDING COORDINATES

Product Guide

Right cloud. Right place. Before the haze crosses.

seednimbus.cloud

A working prototype running on live public satellite and weather data. This guide walks through each screen and explains what every element shows. It is also available from the Guide button on the site.

Andi Akbar Wury
Co-founder & CEO

Muhammad Radika Afwa Bimalaksa
Co-founder & CTO

What Nimbus does

Nimbus is a decision layer for cloud-seeding teams fighting peat fires. It does not build another fire detector. It combines existing public fire, cloud and wind data into one shared answer, every day.

Where to seed

Ranked drop zones with coordinates and the reasons behind each score.

When to fly

A daylight flying window, hour by hour, for the next 24 hours.

Where the smoke goes

Towns under the plume and the first hour it crosses a border.

How it works

1. INPUTS

Fire hotspots from NASA satellites and hourly cloud, humidity and wind forecasts from NOAA.

2. ENGINE

Filters clouds that can produce rain, scores drop zones, and models where smoke drifts.

3. OUTPUT

One shared screen: drop zones, flying windows, haze alerts and a brief for partner agencies.

Data sources

INPUT	SOURCE	DETAIL
Fire hotspots	NASA FIRMS VIIRS, 3 satellites	375 m detections, last 24 hours, worldwide
Clouds, humidity, wind	NOAA GFS forecast model	About 28 km grid, hourly, next 24 hours
Borders, provinces, towns	Natural Earth	Public domain map data

All inputs are free and public. The site refreshes automatically every 3 hours, and each screen shows when its data was last updated.

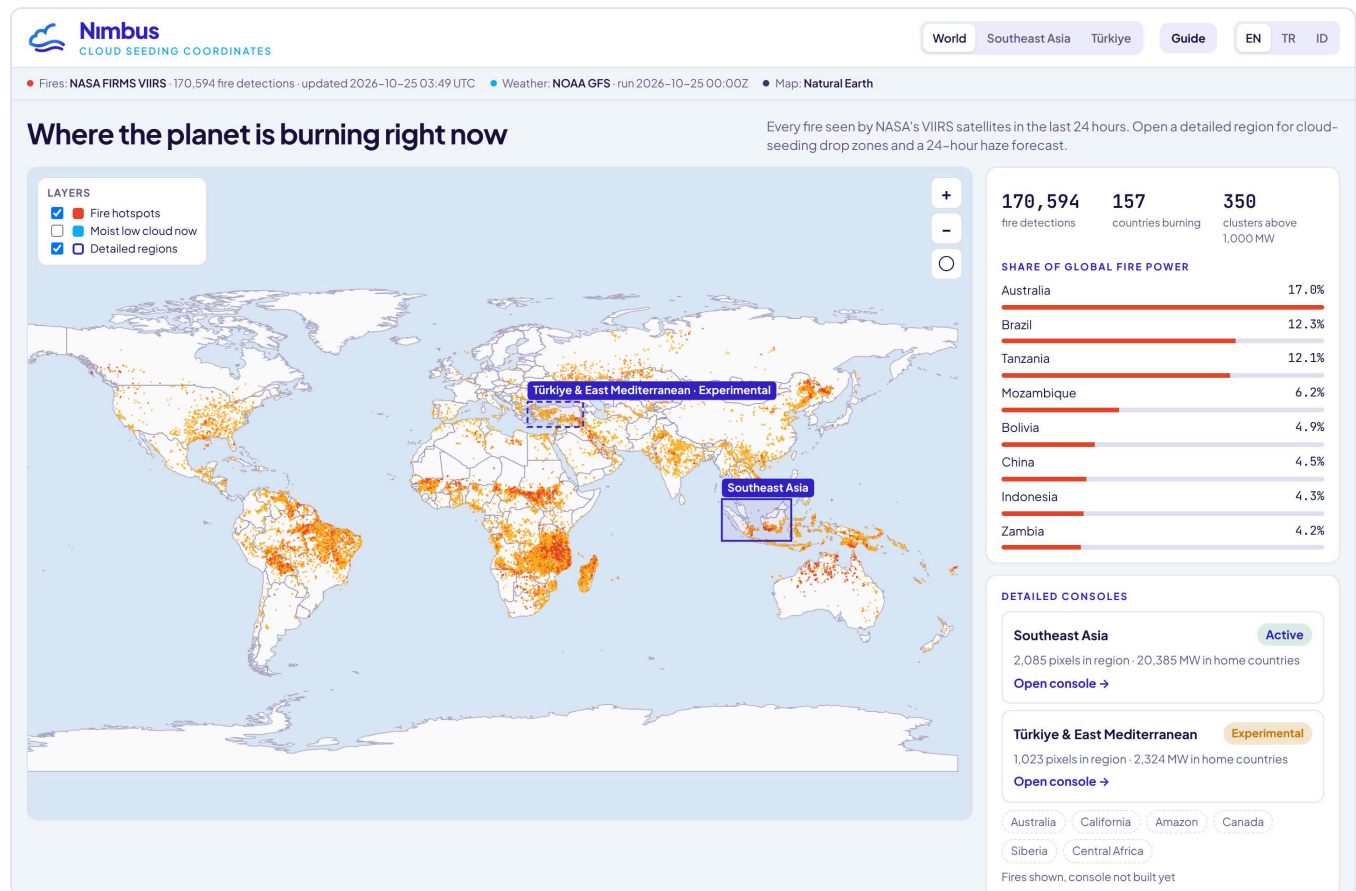
Three screens

SCREEN	PURPOSE
World	Every active fire on Earth, the largest clusters, and entry points to the regional consoles.
Southeast Asia console	The full engine for Indonesia, Malaysia, Brunei and Singapore. Our beachhead market.
Türkiye console	The same engine for Türkiye and the East Mediterranean. Marked as a pilot region.

The menu at the top of every screen switches between the world view and the regional consoles, sets the language and opens this guide. Every screen is available in English (default), Turkish and Indonesian (EN / TR / ID), works on phones, and follows light or dark mode.

World view

A live picture of where the planet is burning, and where Nimbus already runs its full decision engine.

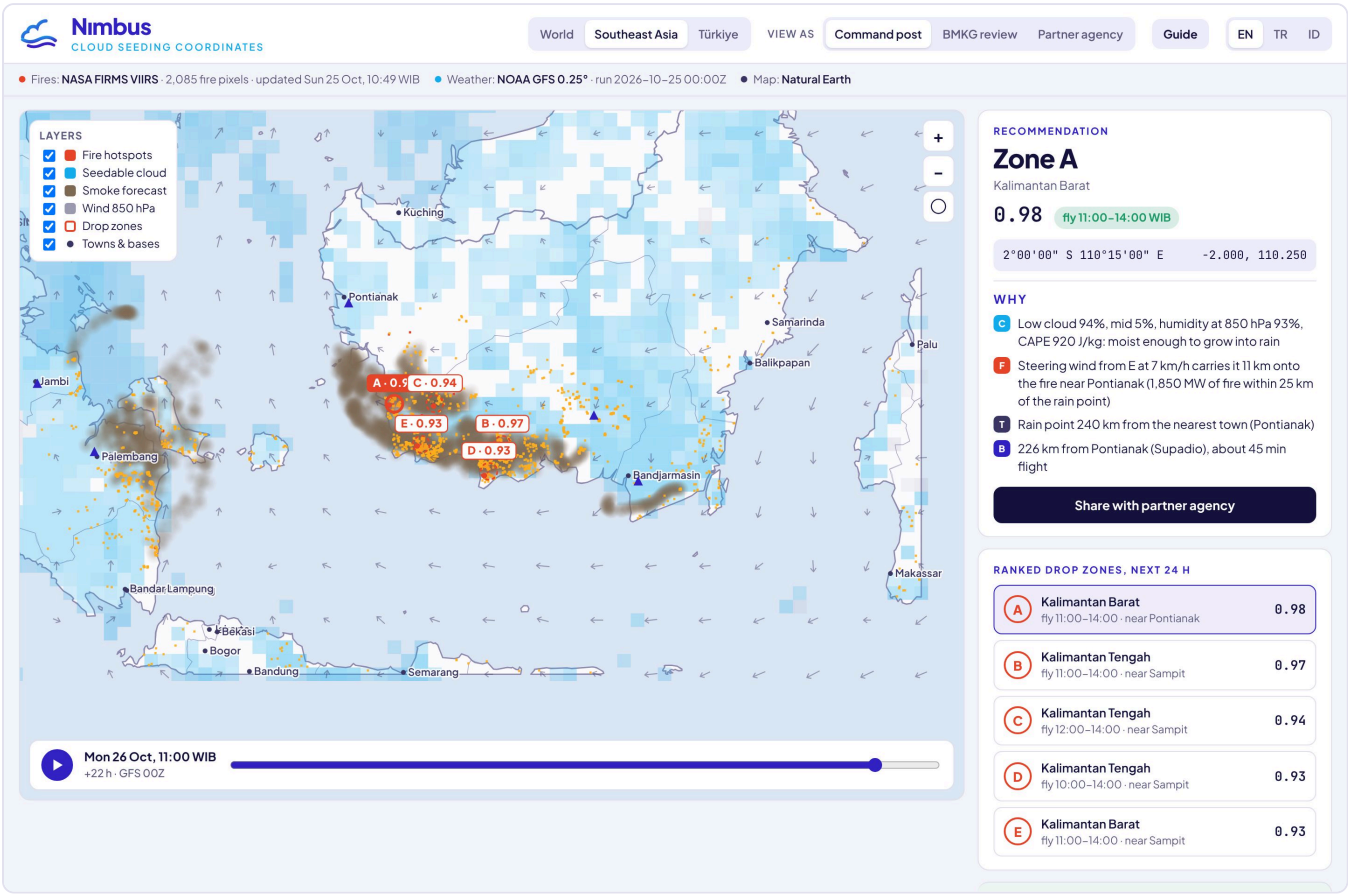


World view with live data.

ELEMENT	WHAT IT SHOWS
 Fire hotspots	Each square is a 0.25° cell with active fires. Darker red means more fire power.
 Detailed regions	Regions with a full console. Solid outline: active. Dashed outline: pilot. Click to open.
 Moist low cloud	Optional layer showing low cloud with humid air, a first sign of clouds that could be seeded.
Global summary	Fire detections, countries burning, clusters above 1,000 MW, and each country's share of global fire power.
Largest clusters	Top 15 fire clusters on Earth, with nearest city, fire power and a link to the console when covered.

Regional console

The working screen for a cloud-seeding command post: map on the left, decisions on the right.



Southeast Asia console with live data.

Map layers

LAYER	WHAT IT SHOWS
Fire hotspots	Each dot is one satellite fire detection. Grey dots are fires outside the region's own countries.
Seedable cloud	Blue cells hold clouds moist enough to grow into rain at the selected hour.
Smoke forecast	Where smoke from the largest fires is expected to be at the selected hour.
Wind 850 hPa	Wind direction at about 1.5 km, the height where seeded clouds travel.
Drop zones	Red circles labelled with letter and score, for example "A · 0.96". The dashed line shows where the cloud drifts before it rains.
Towns & bases	Towns, plus purple triangles for cloud-seeding command posts or operating airports.

The time bar under the map moves through the next 24 hours. The play button animates the forecast.

Recommendation

The top drop zone for the next 24 hours, with a score and the reasons behind it.

RECOMMENDATION

Zone A

Kalimantan Barat

0.98

fly 11:00–14:00 WIB

2°00'00" S 110°15'00" E -2.000, 110.250

WHY

C

Low cloud 94%, mid 5%, humidity at 850 hPa 93%, CAPE 920 J/kg: moist enough to grow into rain

F

Steering wind from E at 7 km/h carries it 11 km onto the fire near Pontianak (1,850 MW of fire within 25 km of the rain point)

T

Rain point 240 km from the nearest town (Pontianak)

B

226 km from Pontianak (Supadio), about 45 min flight

Share with partner agency

Recommendation card.

ELEMENT	MEANING
Zone A	Highest-scoring zone. Zones A to E are ranked by score.
Score	From 0 to 1. Combines cloud quality, drift toward the fire and distance from towns.
Flying window	Daylight hours when the score stays within 85% of its peak.
Coordinates	Degrees-minutes-seconds for flight crews, decimal for GPS.
C Cloud	Cloud cover, humidity and growth energy (CAPE).
F Fire	Where the wind carries the cloud, and how much fire lies under the rain point.
T Town	Distance from the rain point to the nearest town.
B Base	Nearest command post or airport, with estimated flight time.

Ranked drop zones

RANKED DROP ZONES, NEXT 24 H

A

Kalimantan Barat

fly 11:00–14:00 · near Pontianak

0.98

B

Kalimantan Tengah

fly 11:00–14:00 · near Sampit

0.97

C

Kalimantan Tengah

fly 12:00–14:00 · near Sampit

0.94

D

Kalimantan Tengah

fly 10:00–14:00 · near Sampit

0.93

E

Kalimantan Barat

fly 11:00–14:00 · near Sampit

0.93

Up to five zones, at least 60 km apart.

Each row shows the province, the flying window, the fire cluster the cloud will reach, and the score. Selecting a zone moves the map and the time bar to it.

When no seedable cloud is heading toward a fire, the card says so directly, and the next forecast run is checked automatically.

Haze alert and shared brief

HAZE ALERT

No border crossing expected in the next 24 h

TOWNS UNDER THE FORECAST PLUME

Sampit Indonesia	arrives +2 h	High
Palembang Indonesia	arrives +3 h	High
Martapura Indonesia	arrives +6 h	High
Bandjarmasin Indonesia	arrives +10 h	Moderate
Pangkalpinang Indonesia	arrives +11 h	Moderate

Relative smoke load from plume model, not measured PM2.5.

Haze alert.

Haze alert

ELEMENT	MEANING
Green card	No smoke is expected to reach another country in the next 24 hours.
Red card	The first hour smoke reaches another country, the nearest town there, and the source cluster.
Towns under the plume	Towns with smoke expected within 20 km, the hour it arrives, and a relative level: High, Moderate or Low.

Levels come from a smoke dispersion model and show relative load, not measured air quality.

RECOMMENDATION

Zone A

Kalimantan Barat

0.98

fly 11:00–14:00 WIB

2°00'00" S 110°15'00" E -2.000, 110.250

WHY

C

Low cloud 94%, mid 5%, humidity at 850 hPa 93%, CAPE 920 J/kg: moist enough to grow into rain

F

Steering wind from E at 7 km/h carries it 11 km onto the fire near Pontianak (1,850 MW of fire within 25 km of the rain point)

T

Rain point 240 km from the nearest town (Pontianak)

B

226 km from Pontianak (Supadio), about 45 min flight

Share with partner agency

NIMBUS SHARED BRIEF · Sun 25 Oct, 13:00 WIB
Fires: 38 large clusters, 18,654 MW

Smoke outlook:
- No border crossing expected in the next 24 h
- Sampit: arrives +2 h
- Palembang: arrives +3 h
- Martapura: arrives +6 h
- Bandjarmasin: arrives +10 h
- Pangkalpinang: arrives +11 h

Planned seeding areas (rounded):
- Zone A ~2.0, 110.5 · 11:00–14:00 WIB
- Zone B ~2.5, 112.5 · 11:00–14:00 WIB
- Zone C ~2.0, 111.0 · 12:00–14:00 WIB

Copy brief

Shared brief.

Share with partner agency

One click produces a short text brief, ready to send by message or email:

- Number of large fire clusters and total fire power
- Smoke outlook and the first towns affected
- Planned seeding areas, rounded to about 55 km so exact positions stay with the owner agency

One picture, three roles

The same data is shown differently depending on who is looking, so agencies across a border can act together without handing over raw national data.

ROLE	WHO	WHAT THEY SEE
Command post	Daily seeding coordinator	Full view: every fire detection, exact coordinates, reasons and rain points.
BMKG review	Technical gatekeeper (MGM in Türkiye)	Full view plus adjustable score weights, a factor breakdown for the best cells, and CSV export.
Partner agency	Neighbouring country, for example Malaysia	Fires as aggregated clusters, zones rounded to 0.5°, full haze alerts and the shared brief.

SCORE WEIGHTS (EXPLAINABLE)

Cloud quality

0.45

Drift toward fire

0.40

Distance from towns

0.15

Reset weights

FACTOR BREAKDOWN, BEST 10 CELLS

LAT, LON	Q	D	T	SCORE
-2.00, 110.25	0.95	1.00	1.00	0.98
-2.75, 112.25	0.94	0.99	1.00	0.97
-3.00, 112.25	0.93	0.99	1.00	0.97
-3.00, 112.00	0.91	0.99	1.00	0.96
-2.75, 112.00	0.89	0.98	1.00	0.94
-2.00, 111.00	0.87	0.99	1.00	0.94
-3.25, 112.00	0.85	1.00	1.00	0.93
-2.75, 110.75	0.84	1.00	1.00	0.93
-1.75, 110.25	0.84	1.00	1.00	0.93
-2.75, 111.00	0.83	1.00	1.00	0.92

Copy top cells as CSV

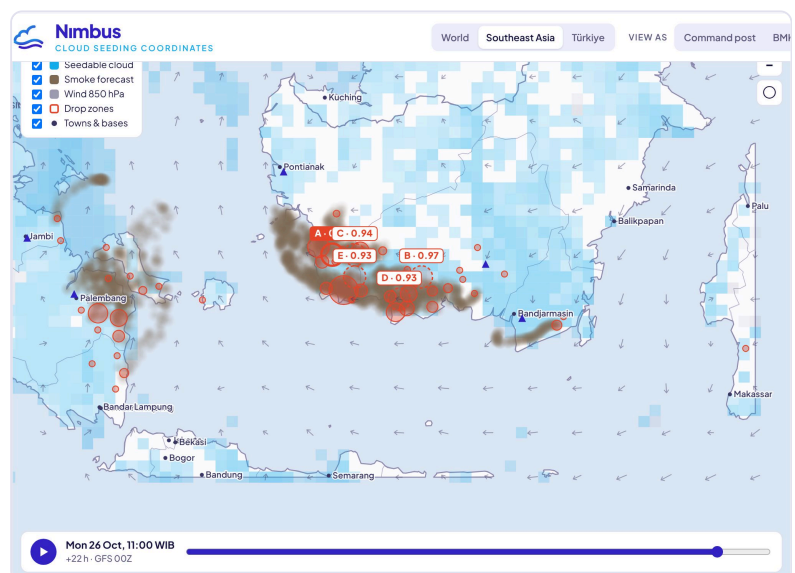
Score weights in BMKG review.

Explainable by design

Reviewers can change how much each factor counts and watch the ranking update instantly. Every score is broken into its three parts:

- **Q** Cloud quality
- **D** Drift toward fire
- **T** Distance from towns

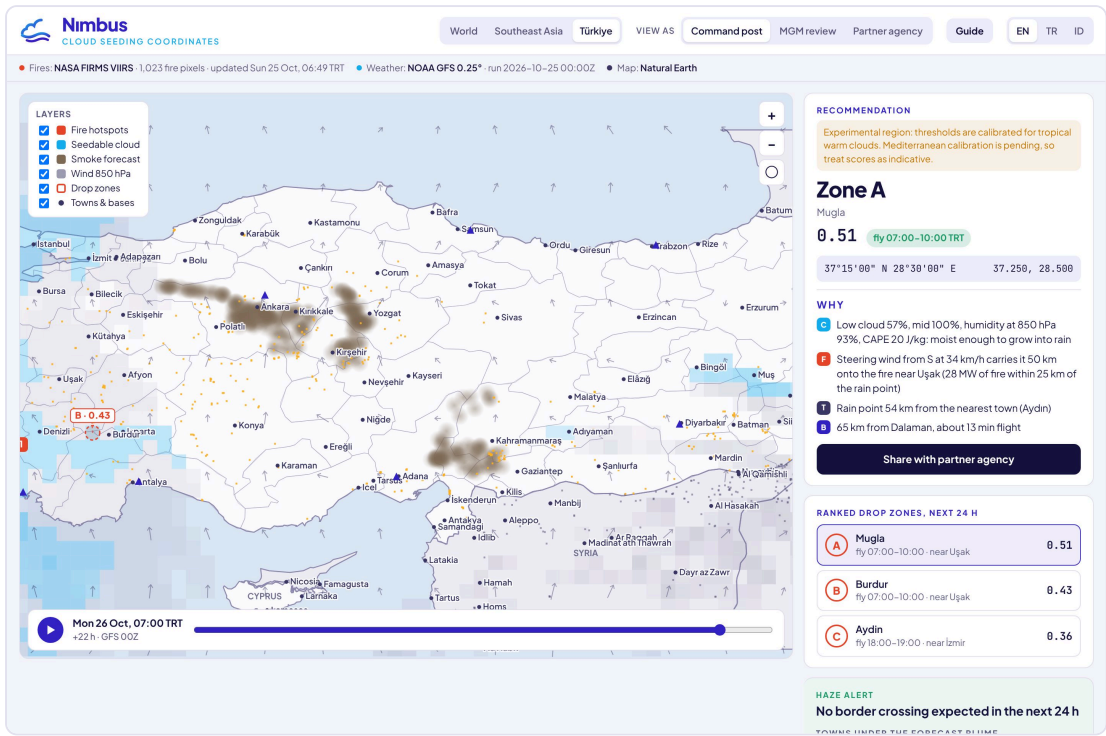
No black box: a meteorologist can audit any number on screen, and an official can defend it in public.



Partner agency view: aggregated clusters and rounded zones.

Türkiye pilot region

The same engine applied to Türkiye and the East Mediterranean, in line with our plan to bring the fire and smoke module to Türkiye.



Türkiye console with live data.

	SOUTHEAST ASIA	TÜRKİYE
Status	Active	Pilot
Local time	WIB (UTC+7)	TRT (UTC+3)
Countries scored	Indonesia, Malaysia, Brunei, Singapore	Türkiye, Greece, Cyprus, Bulgaria
Technical reviewer	BMKG	MGM
Operating points	6 cloud-seeding command posts	10 airports on fire-prone coasts and inland

Scoring thresholds are currently tuned for tropical warm clouds. Mediterranean calibration with local partners is part of the pilot.

How Nimbus decides

1. Seedable–cloud filter

A grid cell qualifies when cloud cover is at least 25%, humidity at 850 hPa is at least 65%, and no heavy rain is already falling. Salt seeding only works on clouds that already have the moisture to grow.

2. Drop–zone score

FACTOR	WHAT IT MEASURES	WEIGHT
Cloud quality	Cloud cover, humidity and growth energy (CAPE)	0.45
Drift toward fire	Where the wind carries the cloud 90 minutes after seeding, and how much fire power lies within 25 km of that rain point	0.40
Distance from towns	Distance from the rain point to the nearest town	0.15

Only daylight hours are flyable. The best five zones, at least 60 km apart, are shown.

3. Smoke forecast

Smoke particles are released every hour from the largest fire clusters and moved with the forecast wind for 24 hours. Nimbus flags the towns under the plume and the first hour smoke reaches another country.

Key terms

TERM	MEANING
Cloud seeding	Aircraft release salt into clouds so droplets grow faster and fall as rain.
Fire power (MW)	Heat released by a fire, measured by satellite. Higher means a more intense fire.
Cluster	Neighbouring fire detections grouped as one fire event.
850 hPa	About 1.5 km above the ground, where seedable clouds sit.
CAPE	Energy available for a cloud to grow upward.

Prototype scope and next steps

Scope today

- Runs end to end on real, live public data, refreshed every 3 hours.
- Scoring thresholds and weights are expert starting values, to be calibrated against past seeding operations.
- Satellites cannot tell wildfires from gas flares or farm burning, so a cluster is a fire signal, not a confirmed wildfire.
- The smoke model shows direction and relative load, not measured air quality.
- Roles are views of the same data. Secure sign-in per agency comes in the pilot-ready version.

Next steps

WHEN	MILESTONE
Nov to Dec 2026	Back-test on the 2019 and 2023 fire seasons and publish the results.
Q1 2027	Technical review with BMKG and a university partner.
Q2 2027	Pilot-ready version: secure role-based access, phone and email alerts.
Jul to Oct 2027	Live pilot in one province for a full dry season, measured against the previous season.
2028 to 2029	National licence, cross-border module with Malaysia, fire and smoke module for Türkiye.

How we will measure the pilot

METRIC	TARGET
Time from new satellite data to recommendation	Under 10 minutes
Sorties flown into clouds scored as seedable	Higher than last season
Accuracy of the 24-hour haze direction	Compared with observed smoke
Command posts using Nimbus daily	Adoption across the pilot province

Nimbus is a decision-support prototype. Outputs complement, and do not replace, official forecasts from national meteorological agencies.