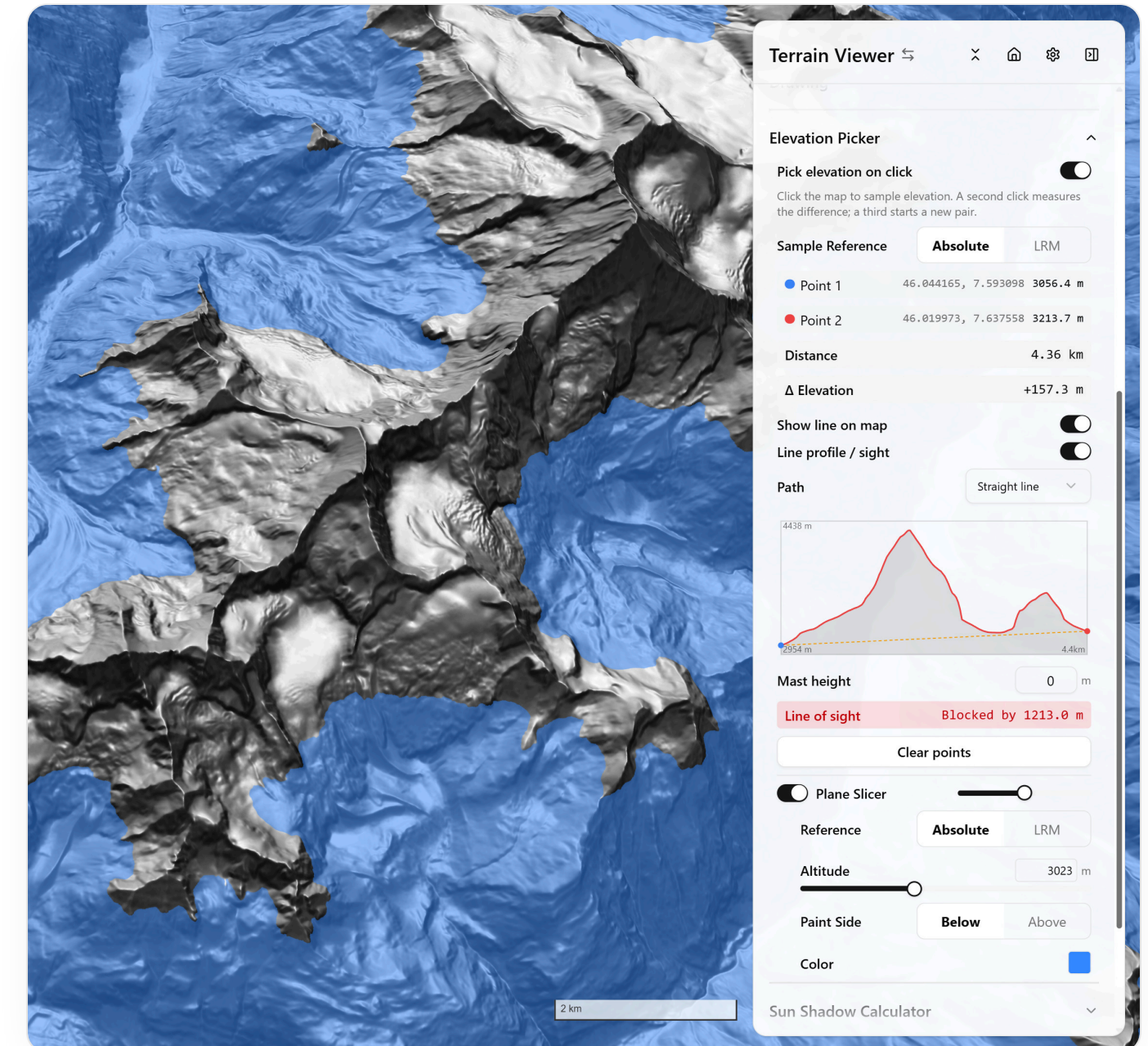


Measure, draw, bring your own

Profiles, shadows, georeferencing, catalogs, derived terrain, exports and embeds: the Tools group and the dialogs around it.



Point, delta, profile, line of sight, slicer

Point one click reads the active DEM, the same source the rest of the app draws.

Delta a second click: distance and Δ elevation.

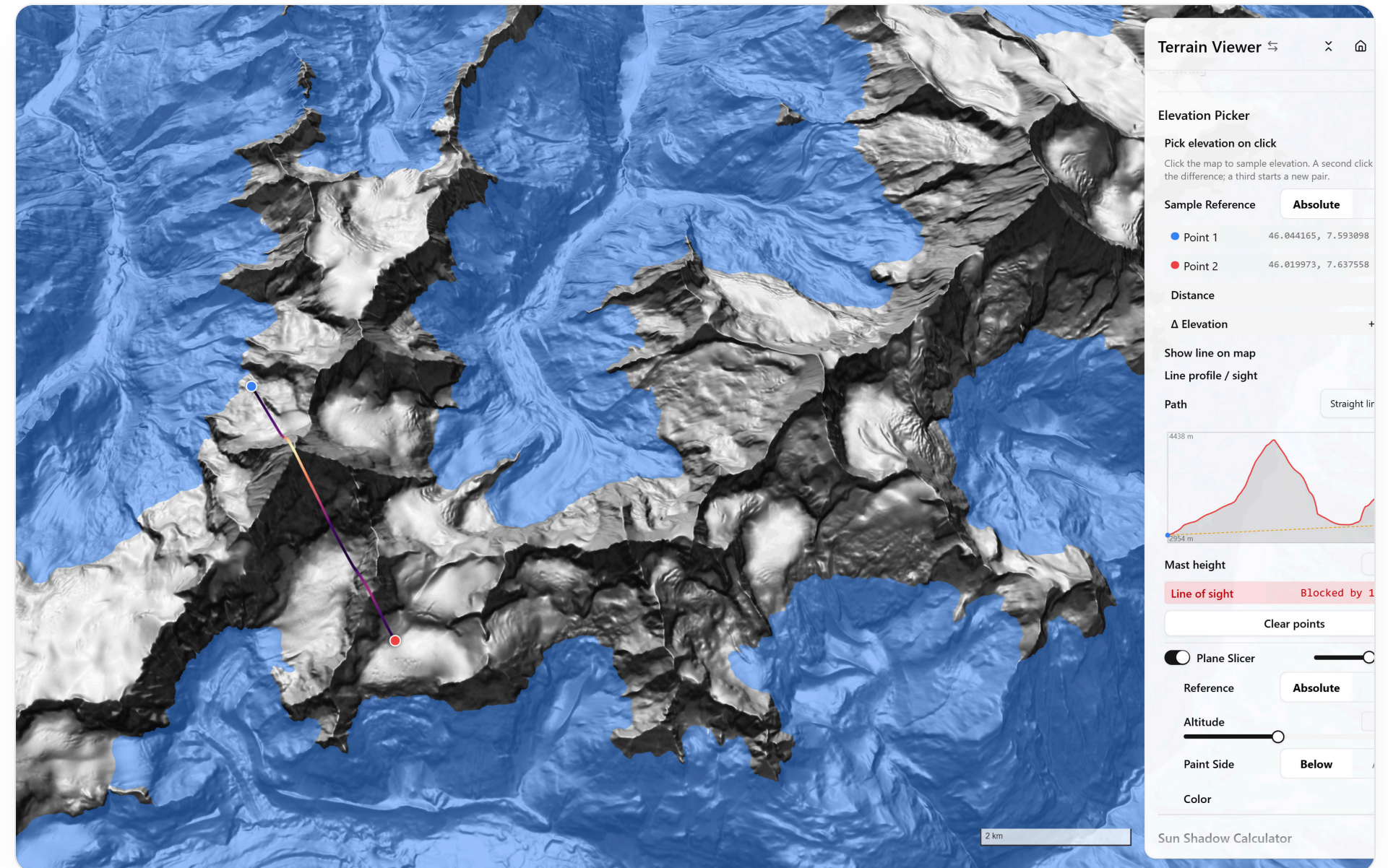
Line profile a chart along the path; a mast height for a line-of-sight check.

Routed path BRouter or Valhalla, hiking, bike or vehicle, instead of a straight line.

Docked the chart moves under the map, phone-friendly: tap, tap, profile.

Reference absolute, or height above the LRM neighbourhood mean.

Plane slicer paints the terrain above or below one altitude.



Line profile + plane slicer at 3,023 m, Matterhorn

Sketch, import, iterate

TerraDraw point, line, polygon, rectangle, circle; Esc back to select.

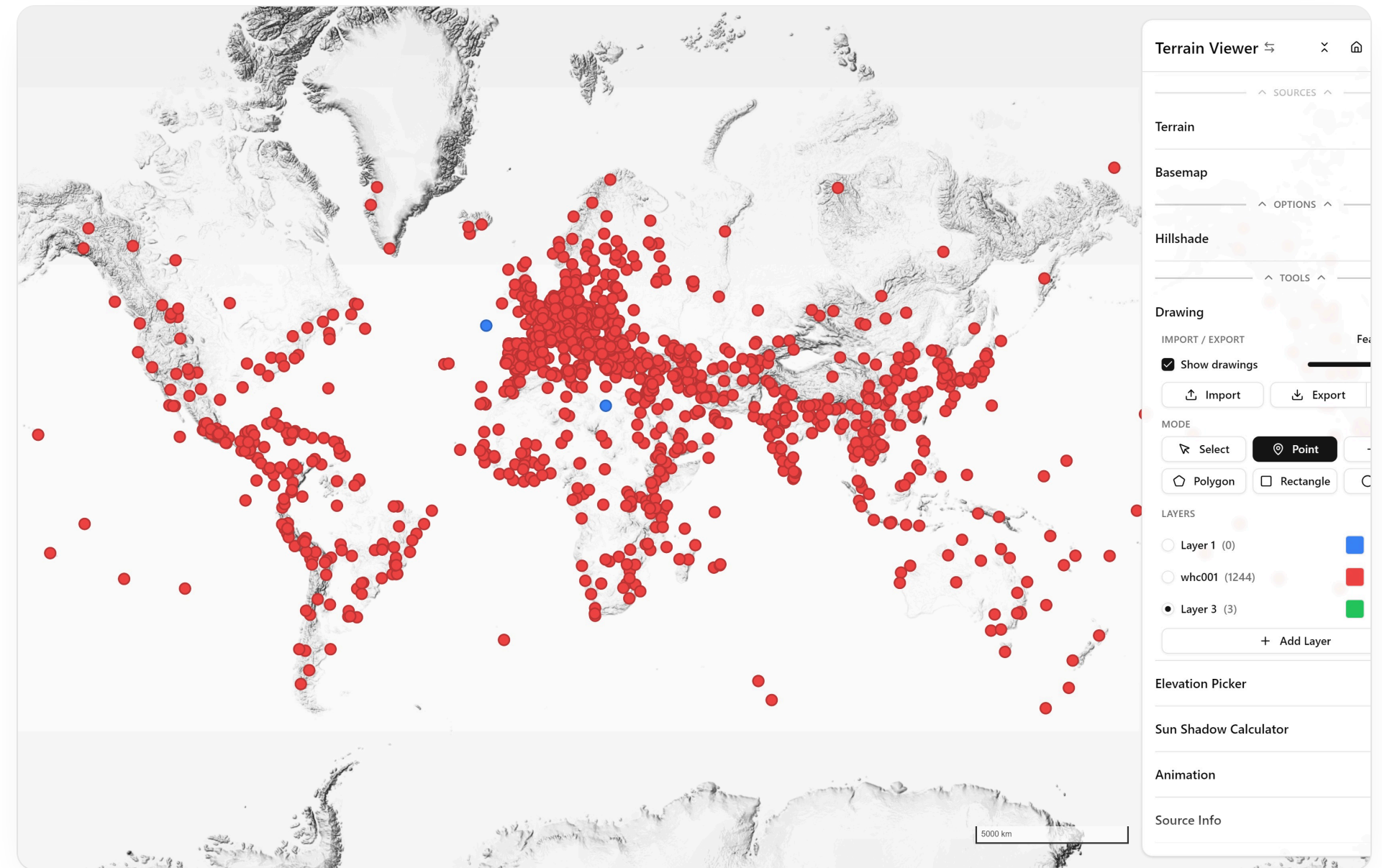
Named layers visibility, style, zoom-to-bounds; GeoJSON, KML, GPX, FlatGeobuf, Shapefile in and out.

In the link `?drawingUrl=https://host/features.geojson`, re-fetched on every load.

Persistence session by default, OPFS when you ask.

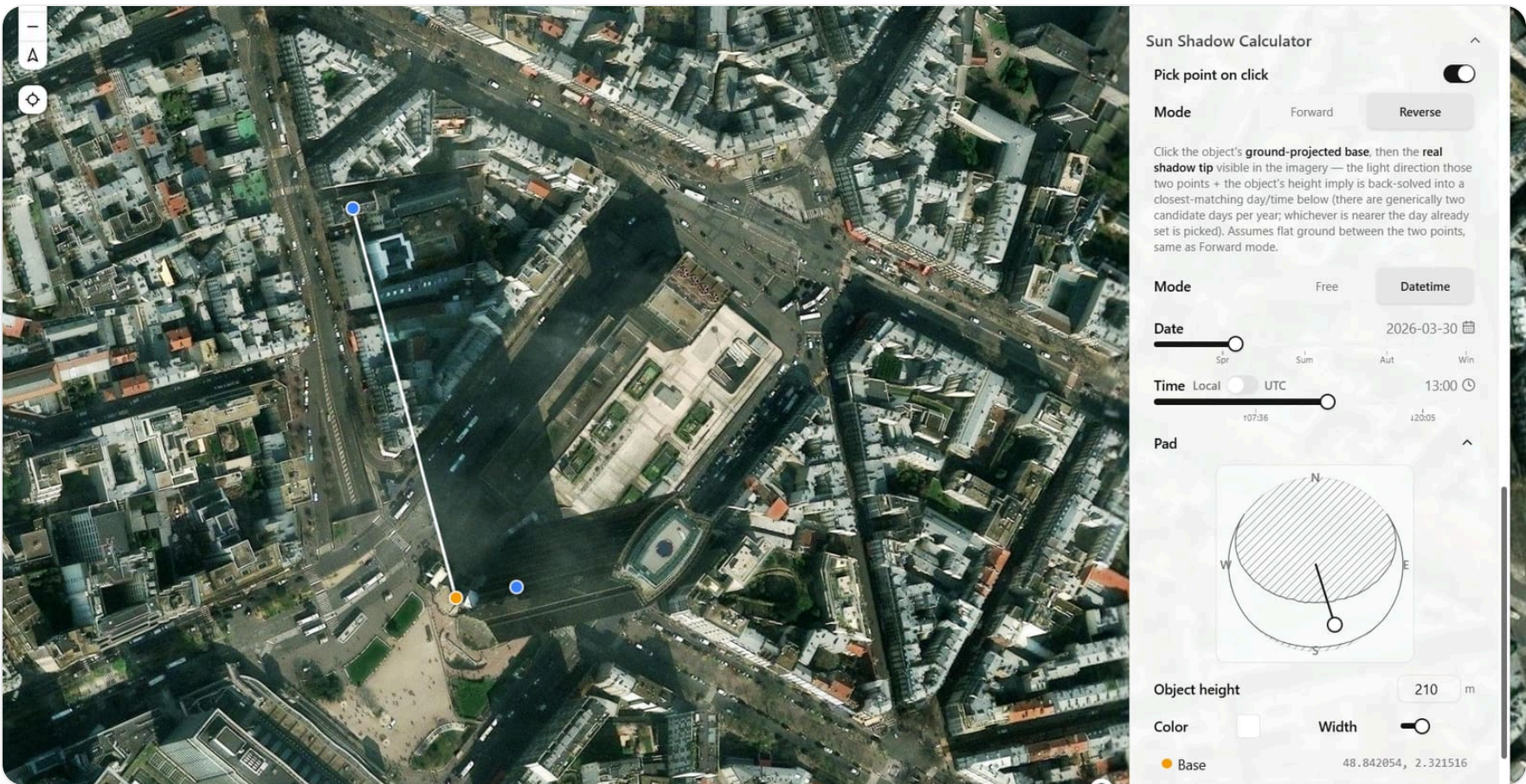
Feature iterator the loop toggle frames each feature in turn: → or N, ←, D to delete. Review an inventory of sites one by one.

Batch targets drawn features become per-feature export extents in Historical mode.

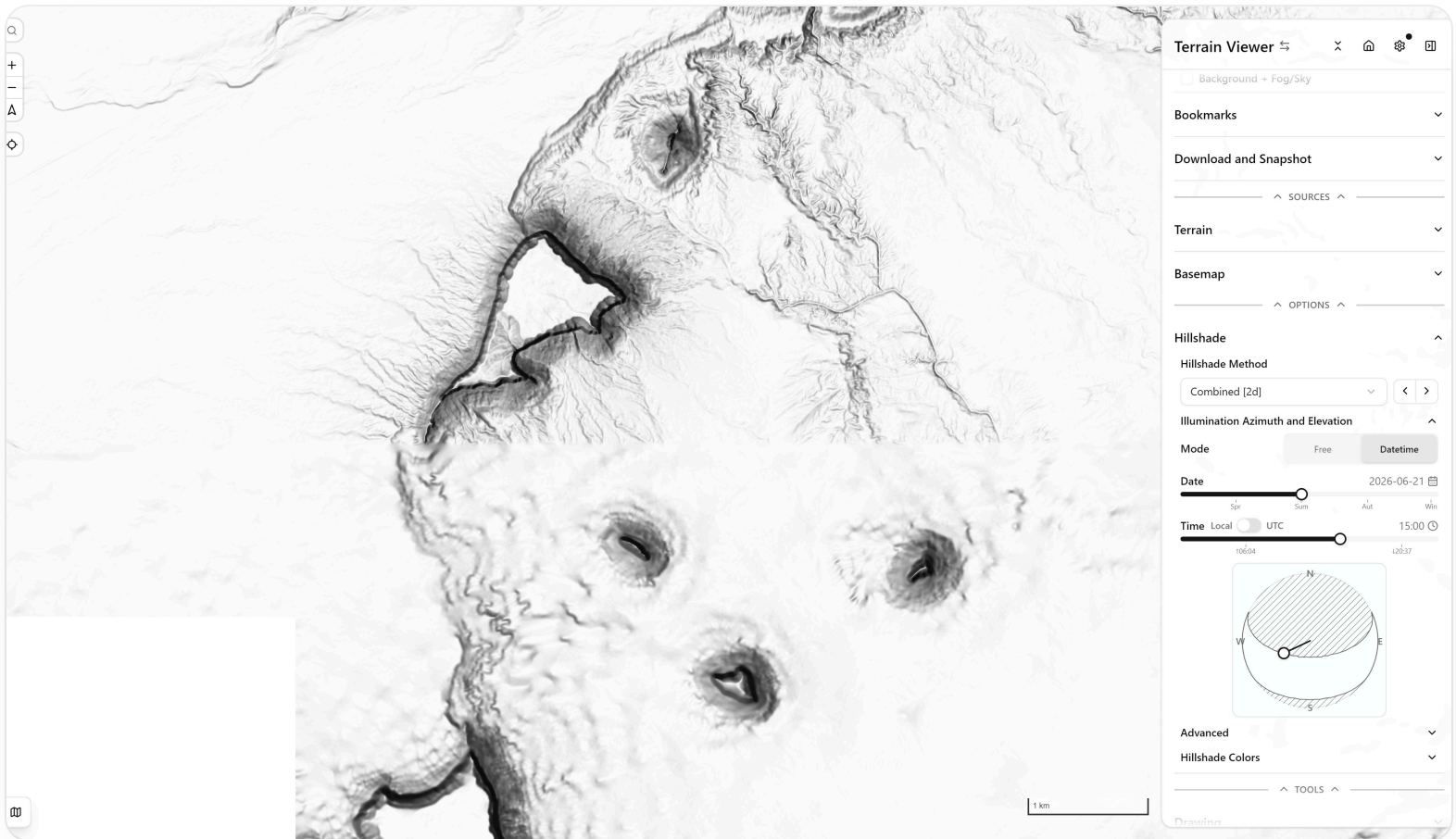


An imported GeoJSON layer of world heritage boundaries beside a hand-drawn point layer

Give it a shadow, it gives you the time



Reverse: Tour Montparnasse, 210 m, a 222 m shadow → 30 March, 13:00



Forward: date and time sliders bound to the light pad

■ Forward

A date, a time and a height: the shadow is drawn base to tip from the real sun position.

■ Reverse

Base, tip and height: azimuth from the bearing, altitude = atan2(height, length), then back to a day and an hour.

■ One light

Writes illuminationDir / illuminationAlt: hillshade, Phong and cast shadows snap to it. Two candidate days per year.

A plain image, placed from control points

Any image a figure from a paper, a scanned plan, a drone JPEG: from disk or a URL, in a floating window.

Pairs the n-th image click pairs with the n-th map click; both draggable afterwards.

Fits Allmaps transform library: similarity (2 points), affine (3), projective (4), polynomial, thin-plate spline.

Residuals in metres per point once over-determined.

Drawn under the relief hillshade and contours read through it.

World file .pgw / .jgw + .prj for QGIS or GDAL; points and fit travel in the link.

```
georefGcps=...    georefType=projective
georefImage=https://host/figure.jpg
```

■ Rule of thumb

Similarity for a map figure. Projective for a photo of a flat map taken at an angle.

Keyframes, a flight, a rendered fly-through

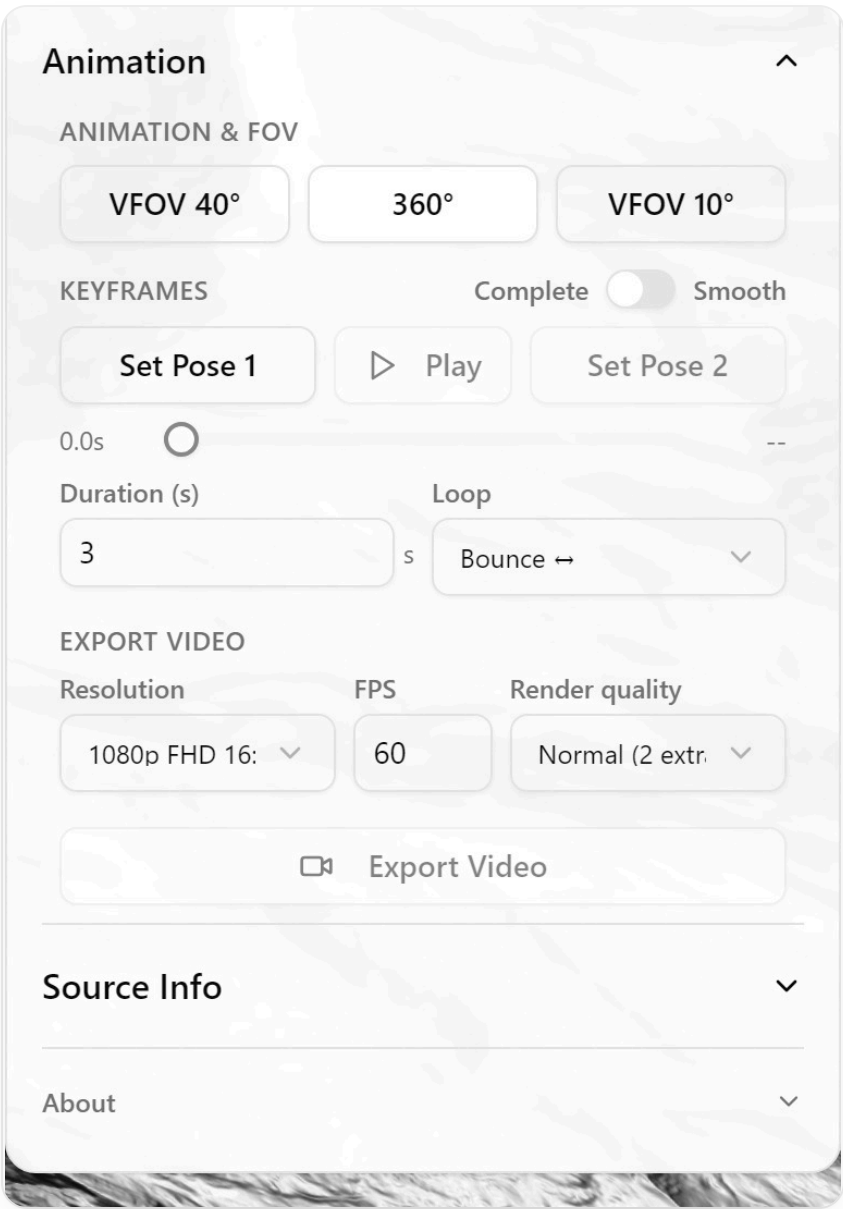
Keyframes camera poses, interpolated.

Scrub preview the path before rendering.

Export a rendered fly-through video.

Terrain mode only Historical mode has no continuous surface to fly over.

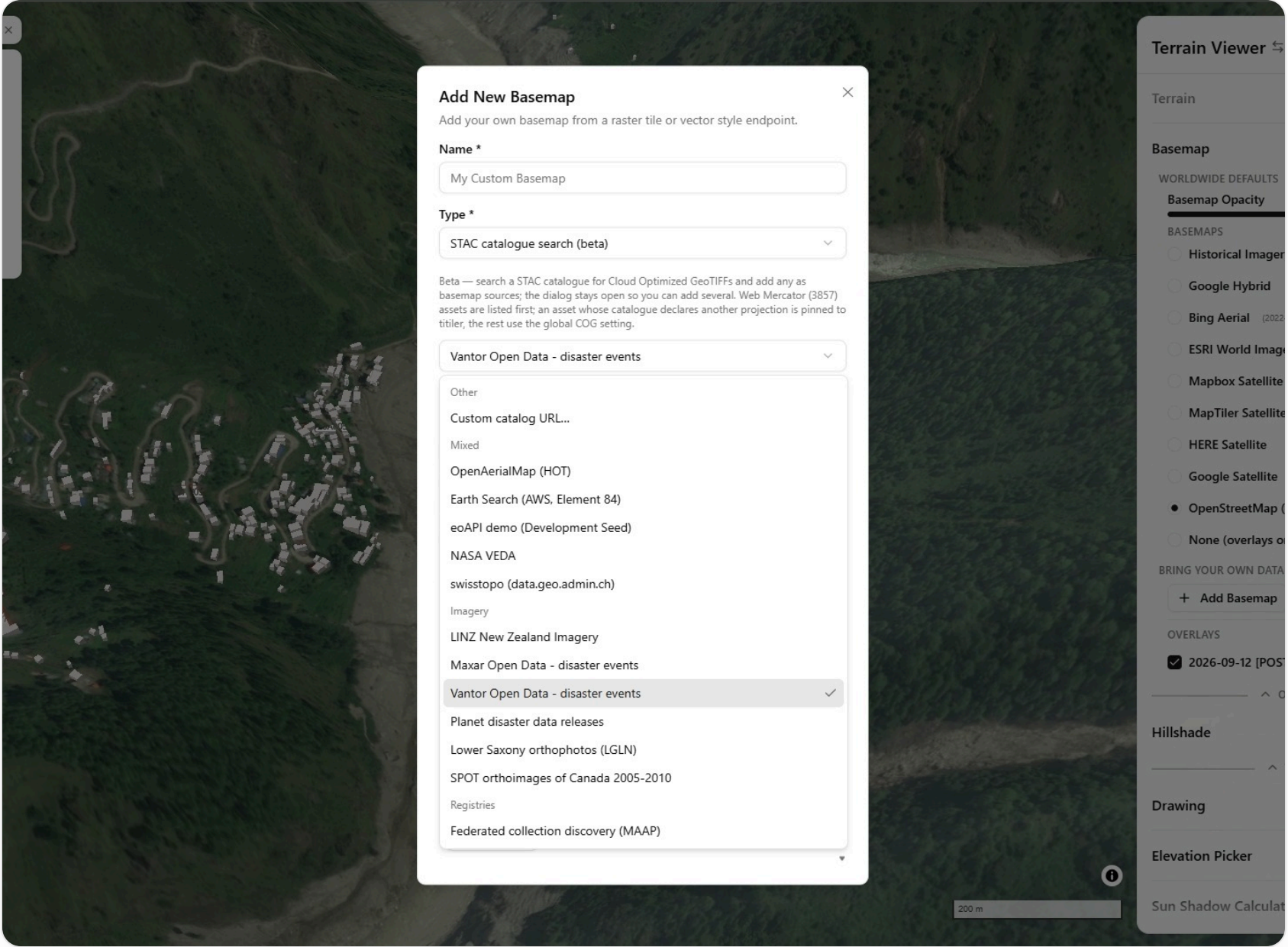
Hillshade direction the light pad can be animated the same way.



The Animation panel

Find scenes over the view, add the COG, no download

Mixed	OpenAerialMap, Earth Search (Element 84), eoAPI, NASA VEDA, swisstopo
Imagery	LINZ, Maxar and Vantor open data, Planet disaster, Umbra and Capella SAR, Lower Saxony, SPOT Canada
Elevation	OpenTopography rasters, LINZ elevation, PGC ArcticDEM, REMA, EarthDEM
Registries	federated collection discovery (MAAP); or paste any API or static catalog.json
API paged /search with bbox and datetime. Static: child links crawled breadth-first.	
Web Mercator first other projections pinned to titiler; terrain filtered to single-band rasters.	



17 presets, grouped; a tab in Add Terrain and Add Basemap

■ Bring your own data

Every shape a browser can read

XYZ tiles Terrarium or Terrain-RGB, custom RGB factors (Mexico's baseShift 1000).

COG in-browser range reads (geomatico), or titiler when not in EPSG:3857.

WMS / WCS float32 a GeoTIFF per tile, re-encoded in the browser (float32dem:///).

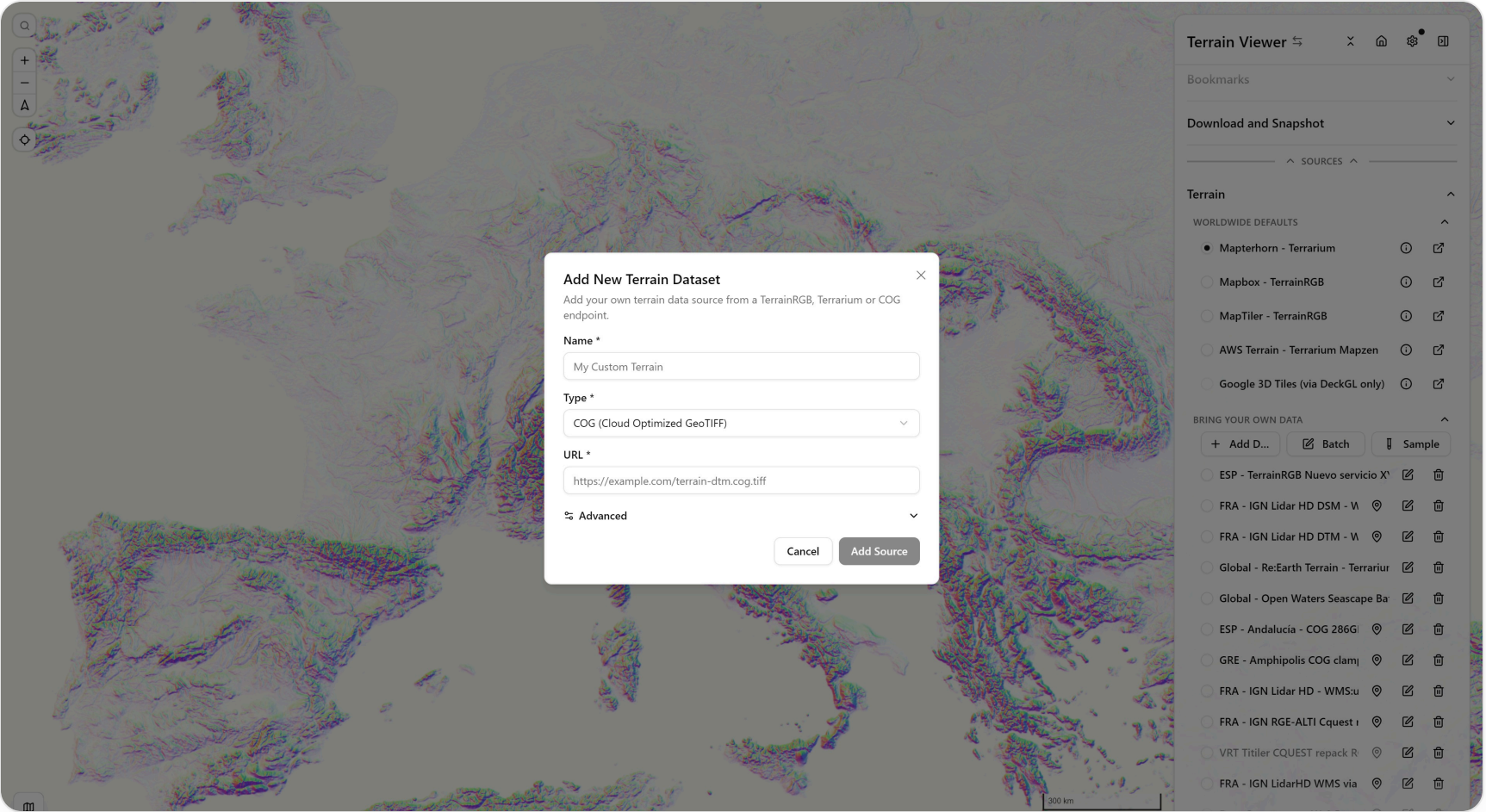
ArcGIS ImageServer exportImage tiff, or LERC tiles (lerc:///).

VRT mosaics · quantized mesh · PMTiles vrt://, quantized-mesh://, pmtiles:///.

IIIF + Allmaps annotation an old map warped on the GPU, always an overlay.

Local COG a blob: URL off your disk, OPFS-persisted on request; never uploaded.

Registries QMS and the OSM Editor Layer Index, filtered to the view, licence carried over.



Add New Terrain Dataset

```
gdalwarp -t_srs EPSG:3857 -of COG src.tif out.tif
npx serve --cors -p 8080 .    # localhost is exempt from
mixed content
```

The difference of two sources, tile by tile

nDSM = DSM – DTM height of what stands on the ground;
IGN and AHN pairs ship ready-made, 0.5 m.

Change same model, two dates: erosion negative, deposition positive. Bhotekoshi 2026 DSM minus GLO-30.

Any operands COG, tiles, WMS, titiler; the coarser one upsampled from its nearest ancestor tile.

Vertical offset sample a stable spot on both and move the zero back.

- Datum

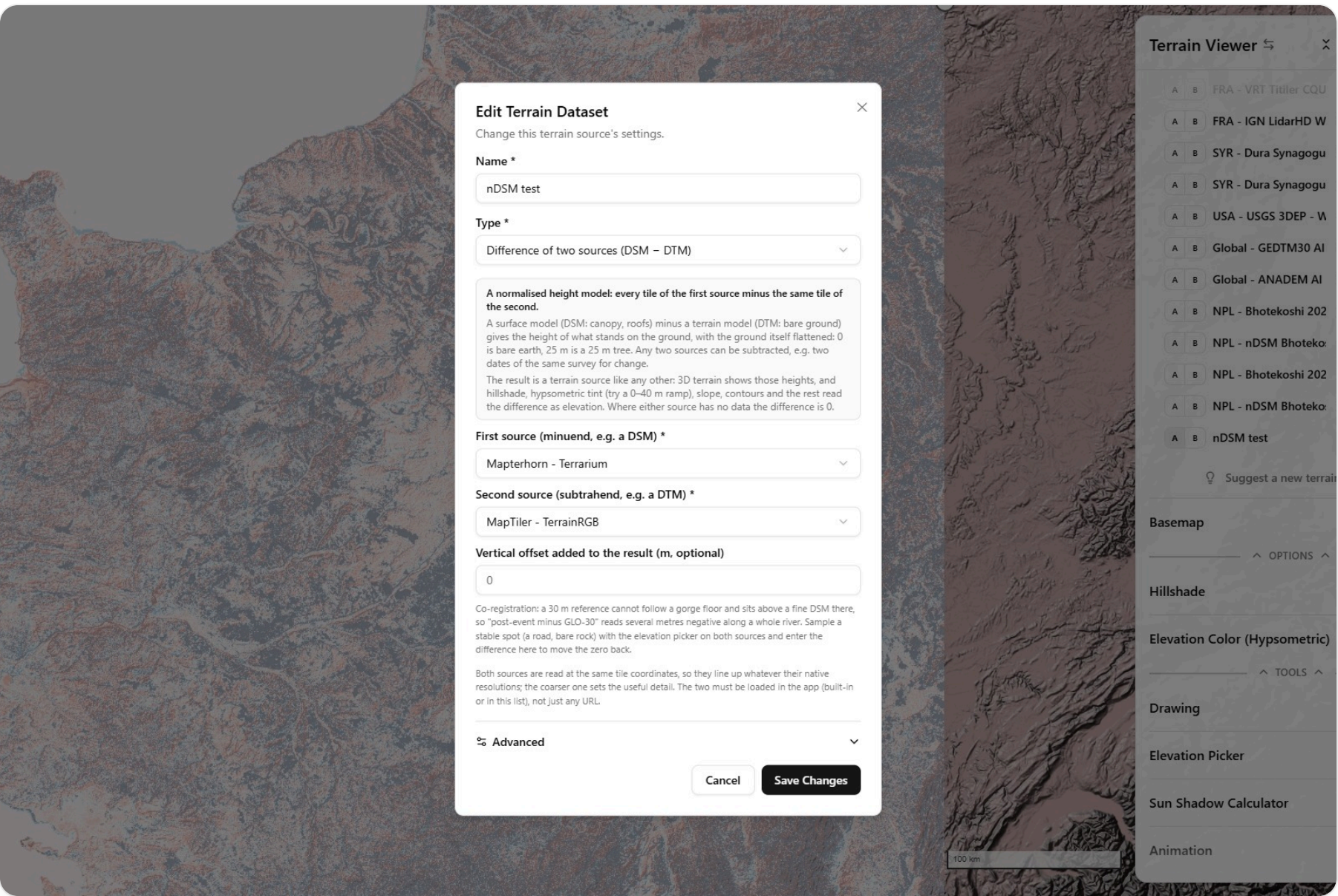
ellipsoid vs geoid:
tens of metres.

- Resolution

a 30 m reference
floats above a
gorge floor.

- Co-registration

paired stripes
along ridges.



Edit Terrain Dataset for a difference source, over a symmetric hypsometric ramp

One line where a measure crosses a value

Contours minor and major interval, maplibre-contour;
reference absolute or LRM.

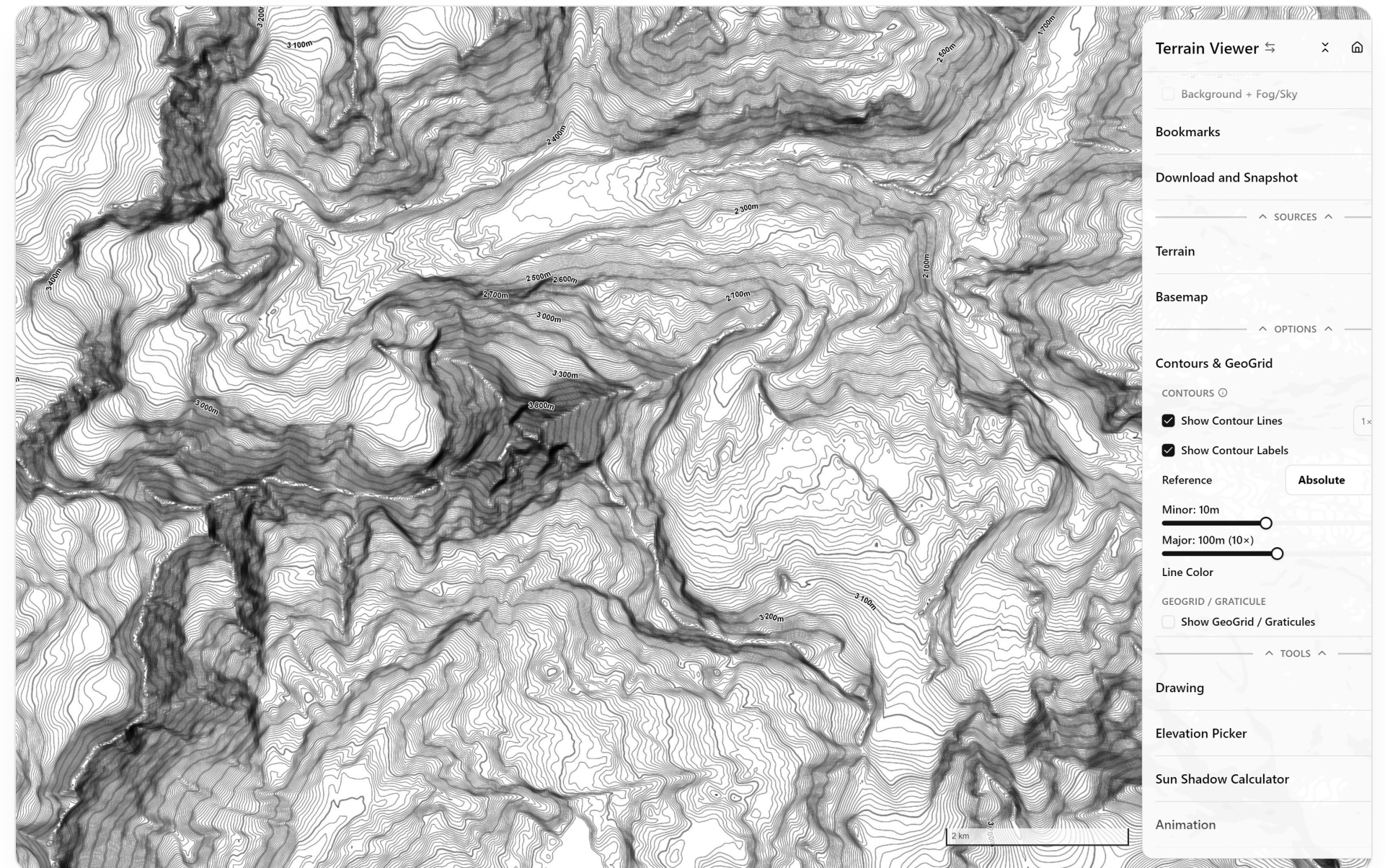
Iso-line over any measure: the elevation (a lake level, canopy at 1.5 m on an nDSM), slope (30° avalanche terrain, 80° cliffs) and every terrain-analysis and relief mode, or a light's brightness (Phong, Matcap, shadow) through luma://.

At a value, or every interval one line where the measure crosses the value, or the contours of the measure itself (slope every 10°, a curvature every 1).

Fill above the polygons whose boundary is the line (isoband://), so the fill stops exactly on it.

Export GeoJSON, segments stitched across tile edges.

Graticule lat/lng grid with labels.



Contours + GeoGrid, 10 m minor, 100 m major

■ Building shadows

OSM footprints swept from the sun, on the GPU

Source OpenFreeMap's building layer, OSM height or levels, read once per settled view from z13.

Sweep each footprint extruded away from the sun by height / $\tan(\text{altitude})$.

Mask drawn once as a union: overlaps never darken twice, roofs stay lit.

Live the light is two uniforms; moving the sun slider is a repaint.

Flat ground Mercator only; for a spire on a slope use terrain shadows with a DSM.



showBuildingShadows=true

Snapshot, DEM, every layer, raw or coloured

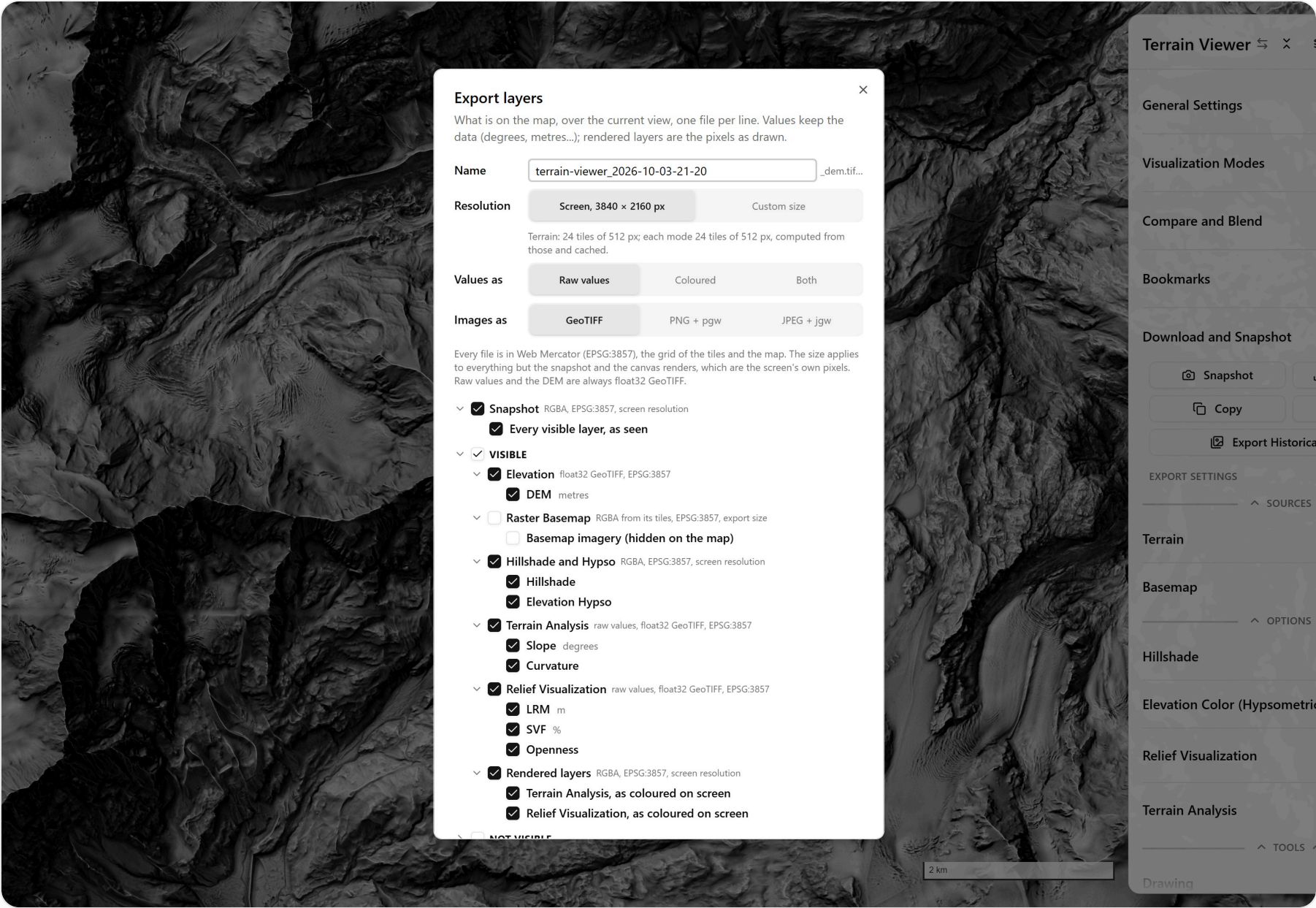
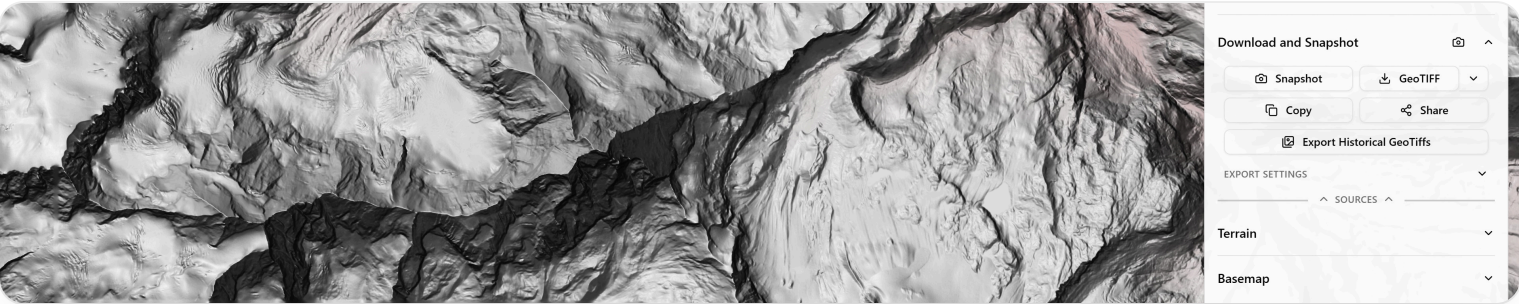
Snapshot JPEG as laid out, every view of a split; a .jgw world file in 2D.

DEM GeoTIFF float32 WGS 84, client-side mosaic or titiler /cog/bbox.

Visible layers one file per line: DEM, basemap, hillshade, hypso, each mode's raw values (NaN nodata) or coloured, contours as GeoJSON.

Size screen pixels in seconds, or a custom longest edge up to 16,384 px.

Grid everything EPSG:3857, so files line up without resampling.



Export layers: Visible and Not visible trees, Export 4

An iframe is the link in a src

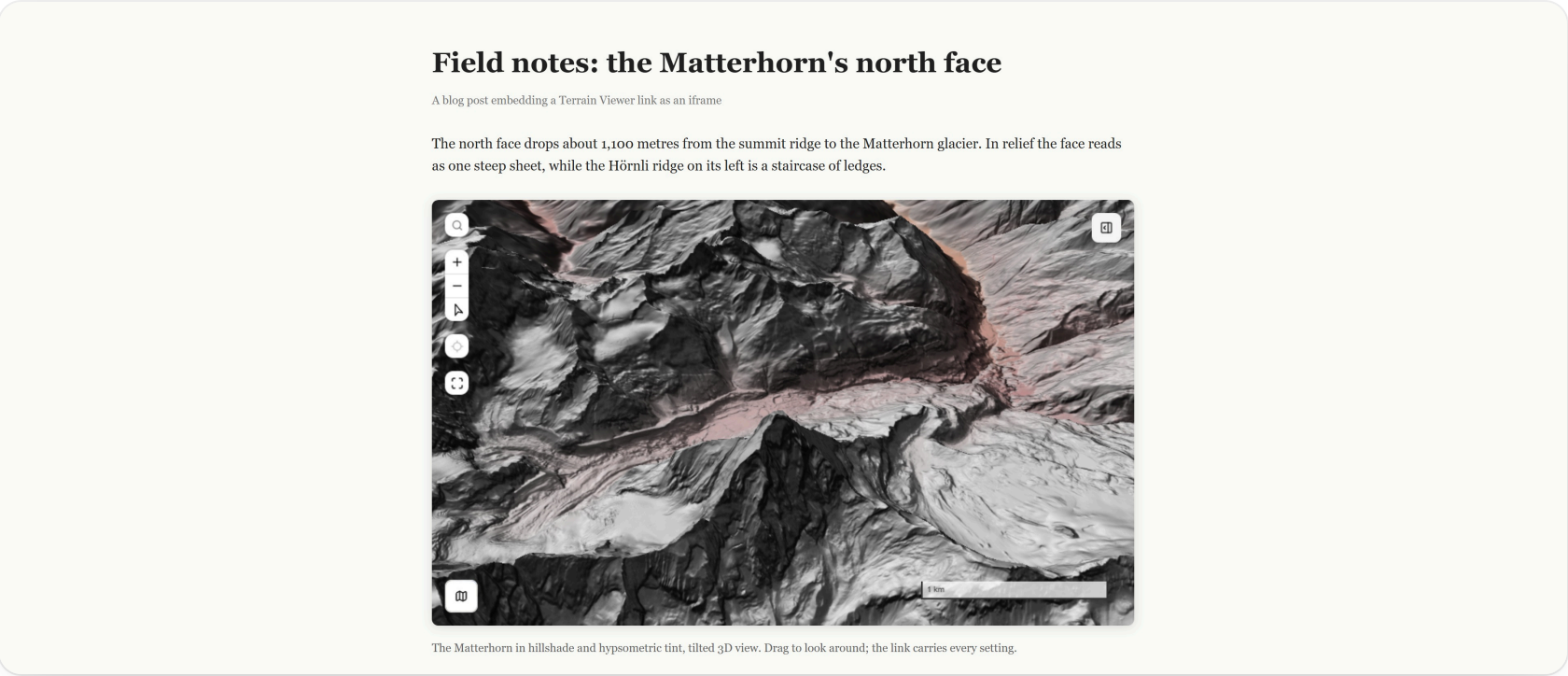
```
<iframe src="https://terrain-viewer.iconem.com/?
terrainSourceA=https://host/dem.tif
&viewMode=3d&showHillshade=true&sidebarCollapsed=true
&drawingUrl=https%3A%2F%2Fhost%2Fsites.geojson" width="100%"
height="480" />
```

Select a source terrainSourceA...H, basemapSourceA...H, a URL or a library id.

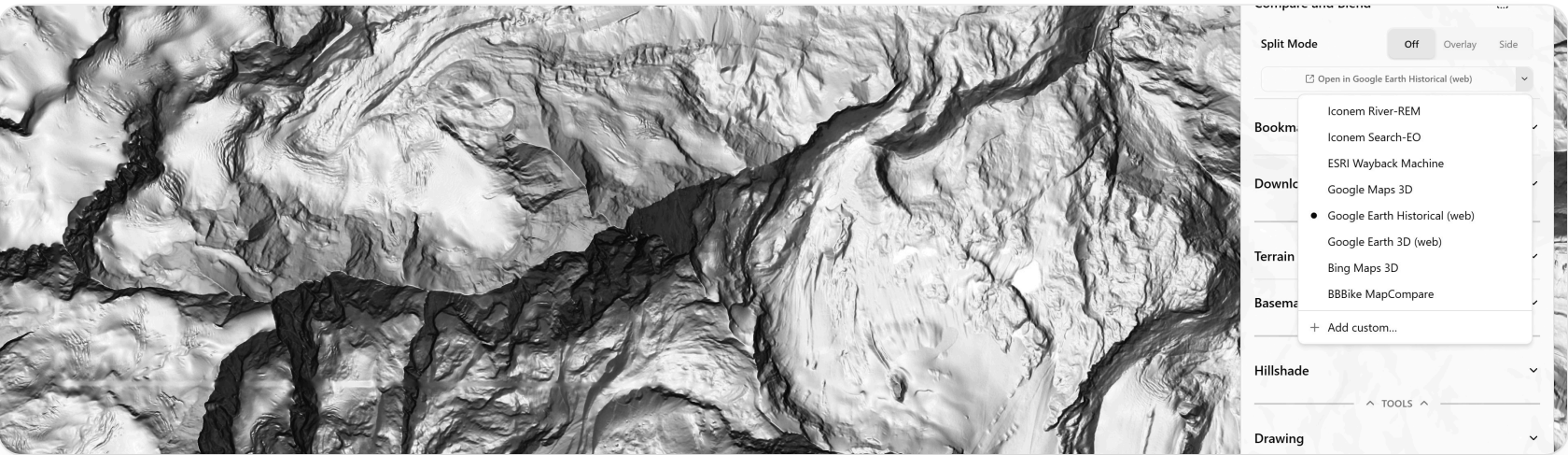
Make it available addSources, addTerrainUrl, addBasemapUrl, addOverlayUrl.

Instructions project=<preset>, openSections, scrollTo, startTour, bookmarksUrl, openLibrary.

Open In hands the viewport to River-REM, Wayback, Google Earth and more.



A blog post with the app in the middle of its text



The Open In launcher

Click twice. Read the profile.

-
- 01 `terrain-viewer.iconem.com/docs/features/tools`
 - 02 `terrain-viewer.iconem.com/docs/features/byod`
 - 03 `terrain-viewer.iconem.com/docs/features/export-and-share`
 - 04 `terrain-viewer.iconem.com/docs/features/embedding`
-