

EARTH TO DATE

EarthToDate is your single source for cost-effective, enhanced Earth observation — optical, radar, thermal, nightlight, atmospheric and elevation — with analytics for your industry.

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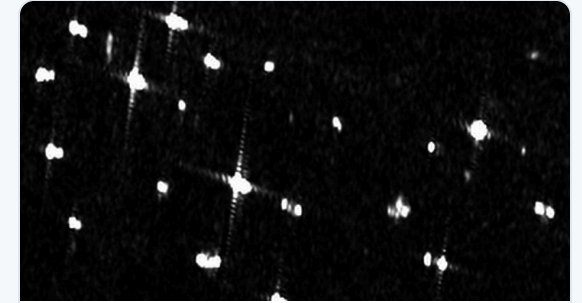
Basemap



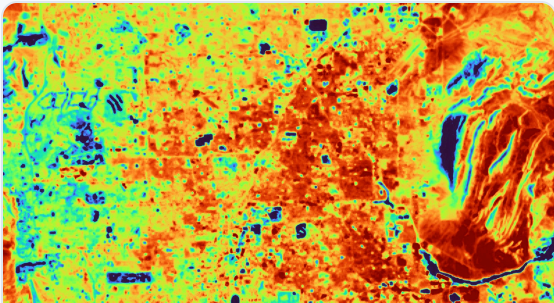
Visual



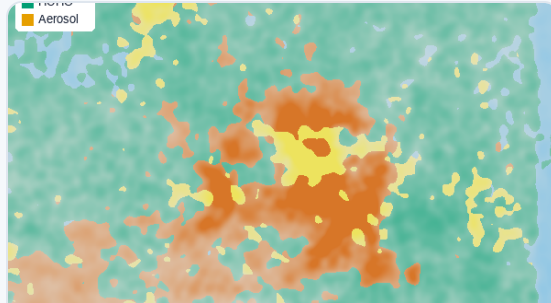
Multispectral



SAR



Thermal



Pollution



Nightlight



Elevation



Enhanced Imagery



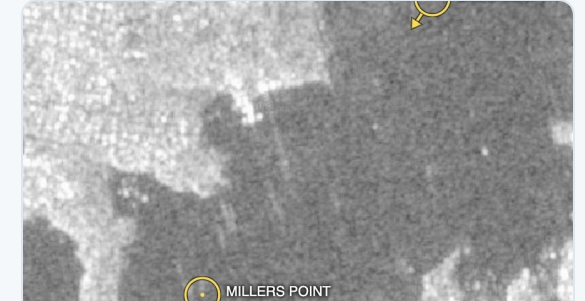
Land Cover Classification



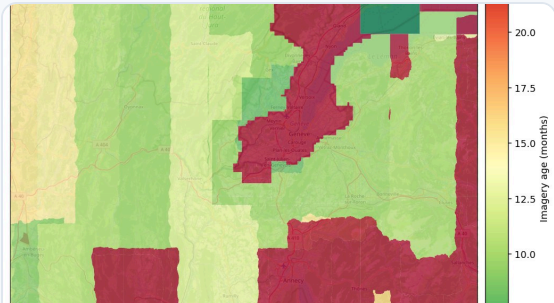
New Construction Detection



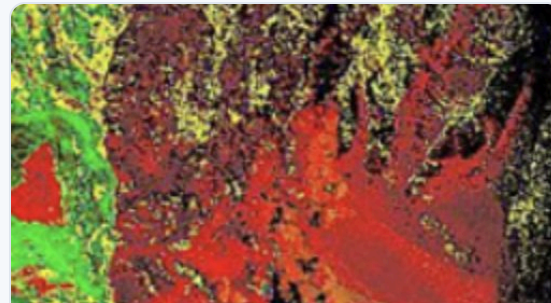
Critical Infrastructure Monitoring



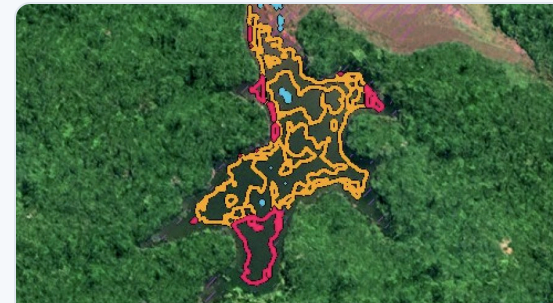
AIS (Automatic Identification System) over SAR



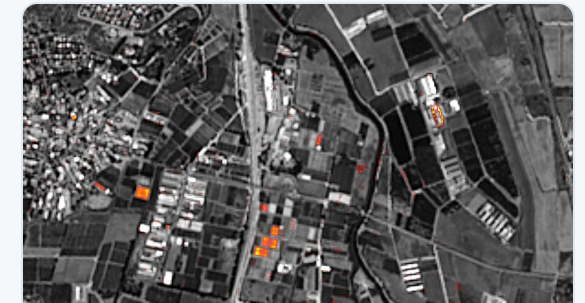
ESRI Basemap Age



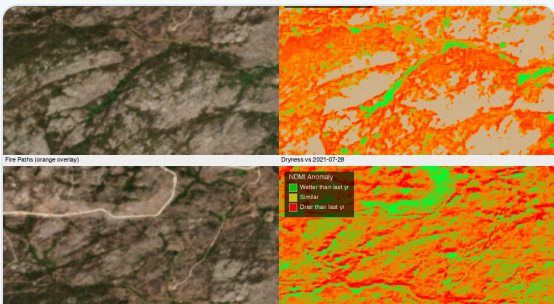
Surface Mineral Map



Mining Monitoring



Infrastructure



Natural Hazards and Disasters



Forest Classification & Deforestation Tracking



Agriculture

Data

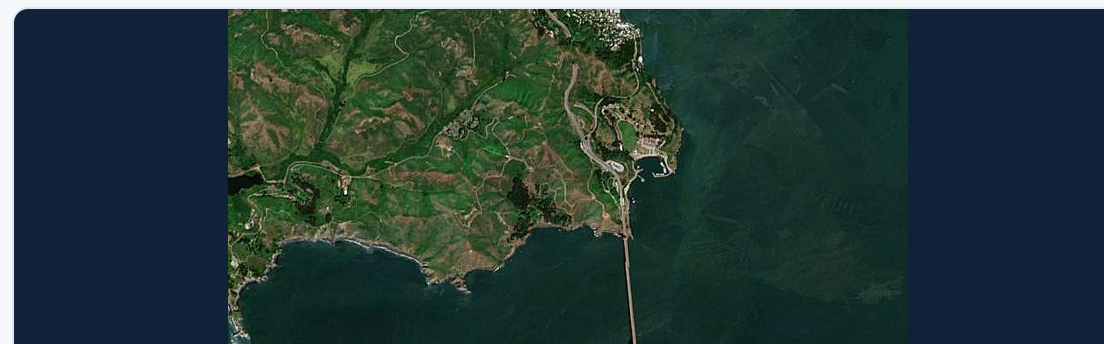
EarthToDate data is processed, packaged and delivered in an optimal manner for consumption, such as through pre-rendered web map tiles or easy to query AOI APIs.

Quarterly Cloudless Visual Basemap

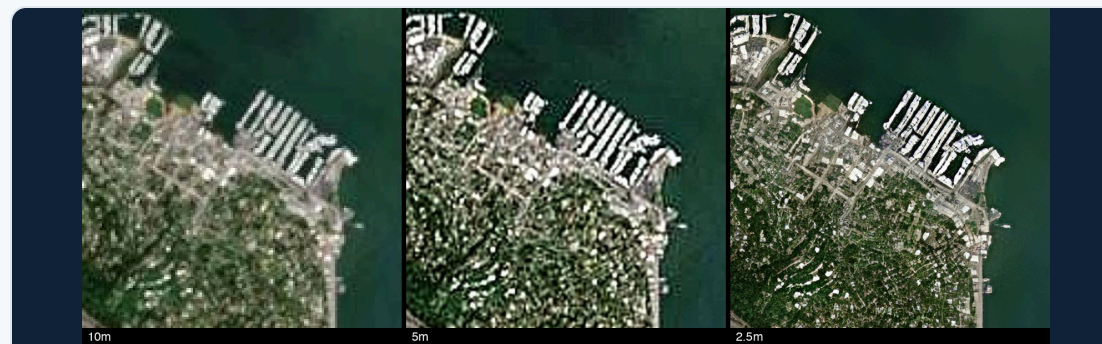
A quarterly, fully cloud-free worldwide basemap at 10m non-saturated true-colour, with 5m physics-based enhancement and 2.5m Fidelity Reconstruction (FR).

The quarterly cloudless visual basemap is based on Sentinel-2, and has the following capabilities:

- True-color without saturation, even over bright locations like snow and deserts
- Source non-saturated 10m imagery
- Physics-enhanced 5m (physics only, using no machine learning)
- 2.5m machine learning enhancement (no hallucinations unlike standard super-resolution)



Marin Headlands, San Francisco



Sausalito — same area at 10m / 5m / 2.5m

Fresh Optical Basemap

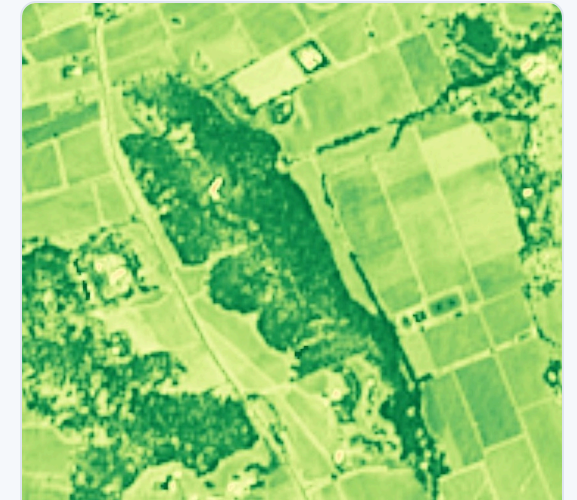
Customer-specified freshness, such as monthly — cloudless mosaic of latest data, visual at 1m GSD and multispectral indexes like NDVI at 2–4m GSD, at 50% of Enhanced Multispectral pricing.

The Fresh Optical Basemap lets you control freshness and provides visual and multispectral data, including the following capabilities:

- Customer-specified freshness, such as monthly
- Cloudless mosaic of latest data captured
- Visual data at 1m GSD
- Multispectral data and indexes like NDVI at 2-4m GSD



Visual view — true-colour



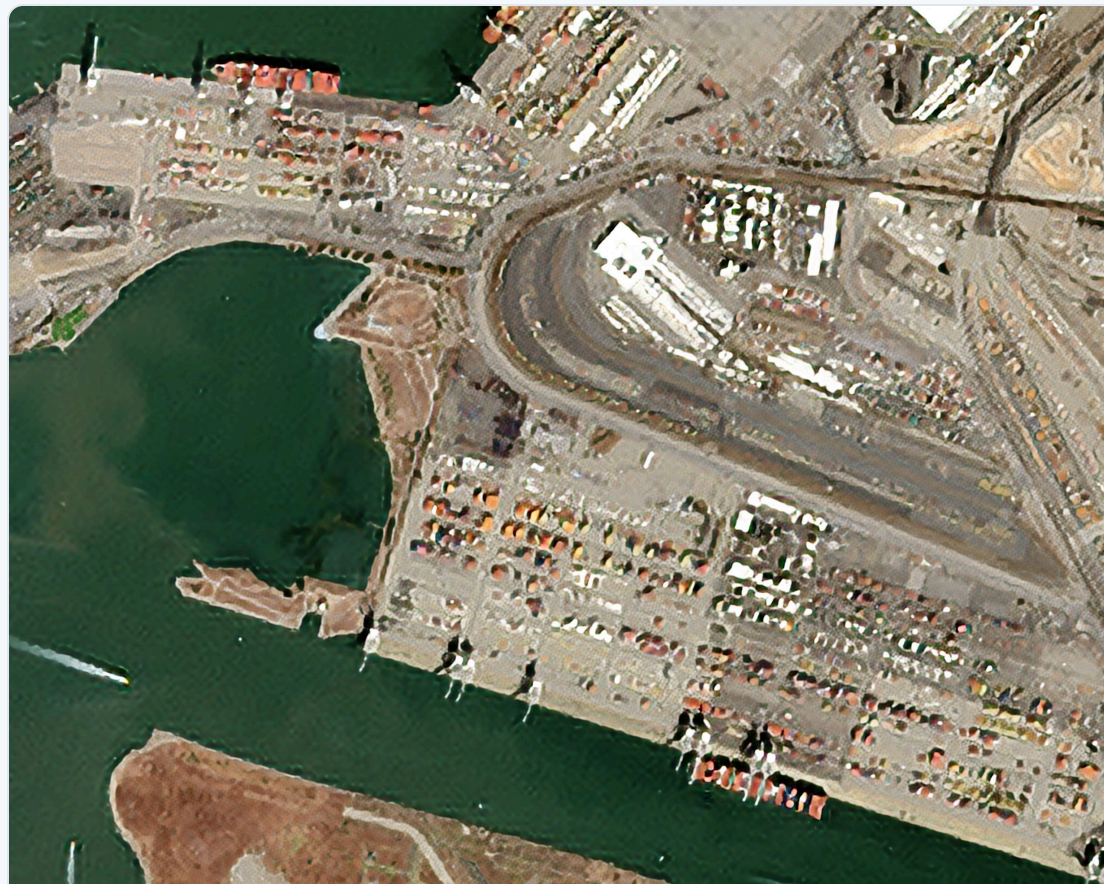
NDVI view — 2m multispectral

Live Visual Basemap

Continuously updated basemap from ESA Sentinel-2 or PlanetScope — latest minimally-cloudy data per tile, latest stable data, and the previous image before a terrain change.

The Live Visual Basemap processes ESA Sentinel-2 or PlanetScope visual data continuously and provides an up-to-date basemap of the latest minimally-cloudy data captured, with the following capabilities:

- True-color preventing saturation, including in bright locations like snow and deserts
- Latest minimally-cloudy per-tile data, dated
- Latest stable data where the terrain was unchanged
- Previous image before current terrain change



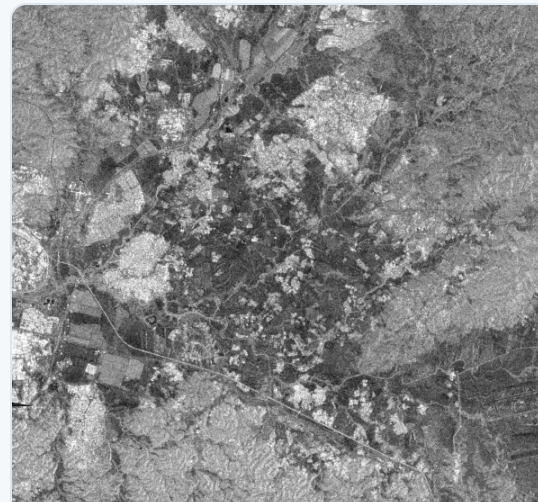
Port of Oakland — Sentinel-2 at 2.5m, 12 Sep 2026

Live All-Weather Basemap

An ever-fresh worldwide SAR basemap from Sentinel-1 (and soon NISAR) — updated live with every new pass, 3–12 days everywhere, day, night and through cloud.

Many locations and seasons are extremely cloudy, where all satellite imagery other than SAR sources is not available. SAR data uses active radar which penetrates clouds and rain, but its data is different from optical and often requires expertise to interpret.

- Live now: Sentinel-1 10m C-band VV and VH, 3 to 12 days refresh depending on geography (about 3 days over Europe, up to 12 days in lower-priority regions)
- Coming soon: NISAR 10m and 5m L-band and S-band HV and HH, 6 days refresh
- Terrain correction of the raw GRD data, fixing pixel location errors of 50m to 5km to match reality
- VV and VH polarisations available
- Ascending and descending available
- Latest and previous capture of pixel-aligned data available for change visualization



Live all-weather SAR basemap

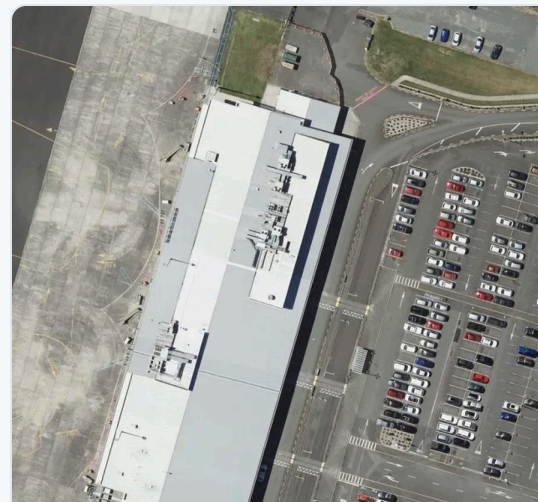


Haifa anchorage — Sentinel-1 VV on 29 Sep and 23 Sep 2026; change view: red = present only on 29 Sep, cyan = present only on 23 Sep

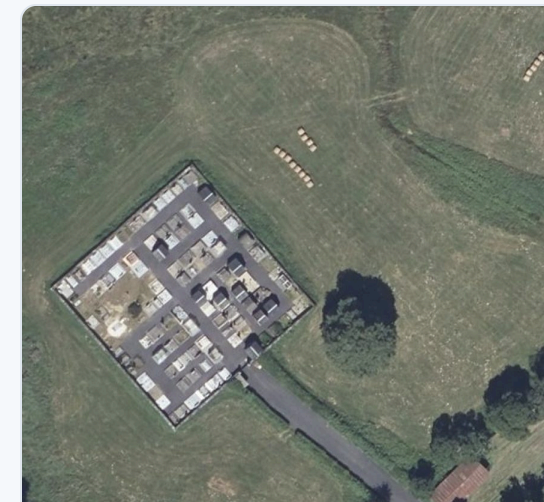
Aerial Basemap

Government aerial basemaps from 25 countries (18 working at last check, March 2026) through a single standardized tile server; GSD varies widely, up to 1cm in specific locations. Flat \$50,000/year tile access.

Many countries make an aerial basemap of some or all of their territories available, some as tile servers and some as accessible AOIs, using different access methods.



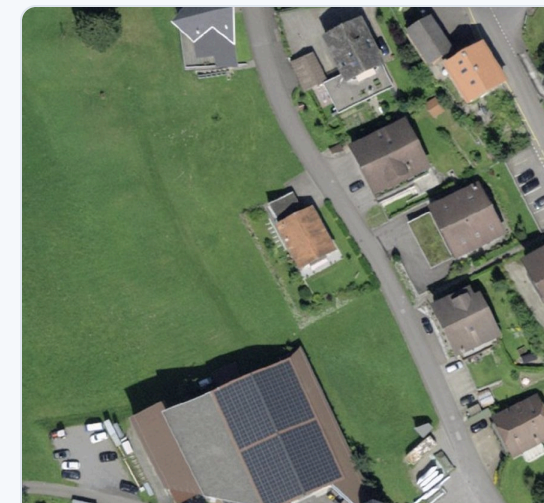
New Zealand — 1cm visual



France — 20cm visual



Spain — 11cm visual



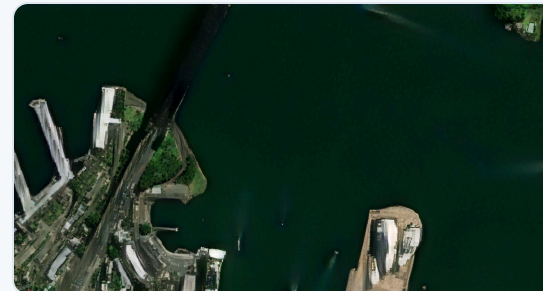
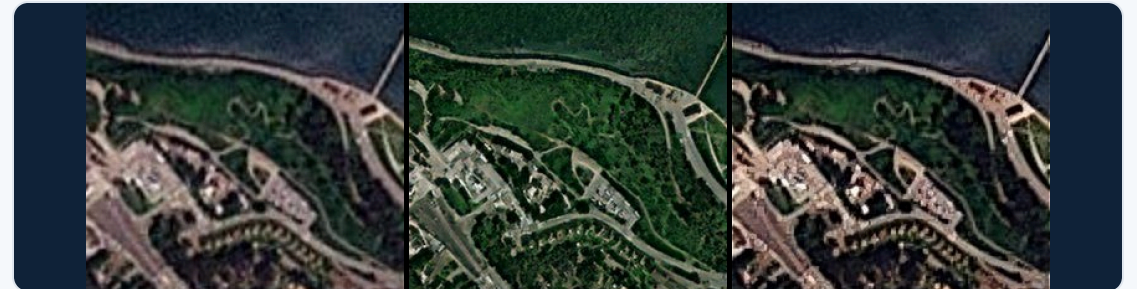
Switzerland — 10cm visual

Visual

Worldwide visual imagery in more detail than the source — Sentinel-2 to 1m (50cm with x2 super-resolution), PlanetScope to 1.5m, Landsat to 3.75m; archives from 1995.

Visual satellite data has many uses, including:

- Mapping of buildings, roads and infrastructure
- Change detection: construction, demolition, disaster damage
- Object detection: buildings, ships, large aircraft
- Defense and intelligence monitoring
- Insurance claims and property assessment



Multispectral

Ten calibrated spectral bands at 2–4m, includes 1m Enhanced Visual — the analytical engine behind NDVI, moisture, burn and mineral indices.

Multispectral satellite data has a wide range of uses, including:

- Crop health and vigor (NDVI, red-edge indices)
- Yield estimation and crop-type classification
- Land cover and land use mapping
- Deforestation and forest health
- Water quality: chlorophyll, turbidity, algal blooms
- Mineral and geological mapping (SWIR)



NDVI at 2m — farmland near Davis, California, July 2025



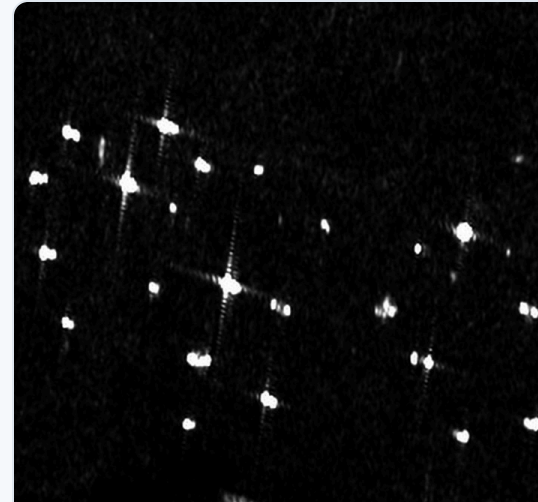
SWIR-NIR-Red crop / soil moisture — 4m multispectral

SAR

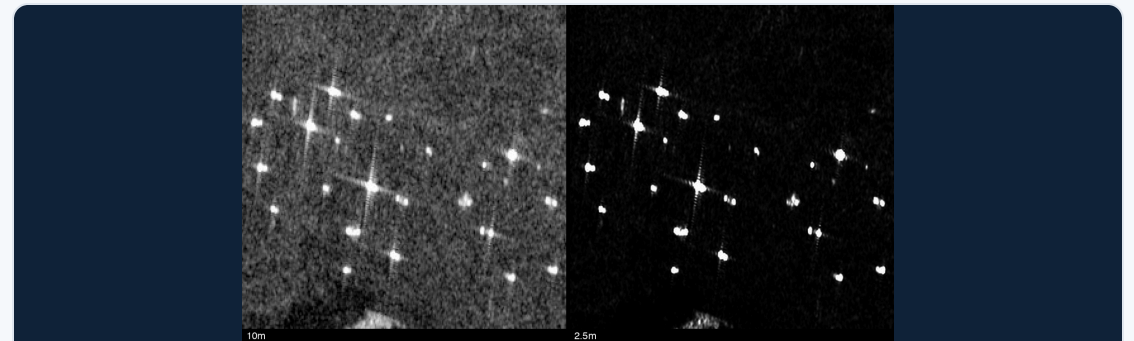
All-weather Sentinel-1 C-band radar at 2.5m Fidelity Reconstruction (FR), terrain-corrected (RTC), both polarities and both orbit passes — day, night, through cloud, every 3–12 days.

Synthetic Aperture Radar has a wide range of uses, including:

- All-weather, day/night monitoring
- Flood mapping
- Ship detection and dark-vessel tracking
- Oil spill detection
- Soil moisture and crop structure
- Sea ice monitoring



Ships at anchor, Singapore Strait — Sentinel-1 VV at 2.5m, 16 Sep 2026



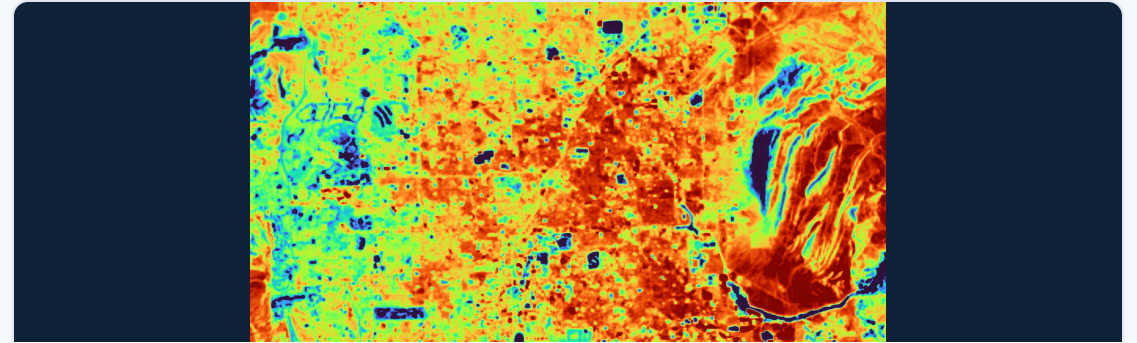
Ships at anchor, Singapore Strait — Sentinel-1 VV at 10m and 2.5m, 16 Sep 2026

Thermal

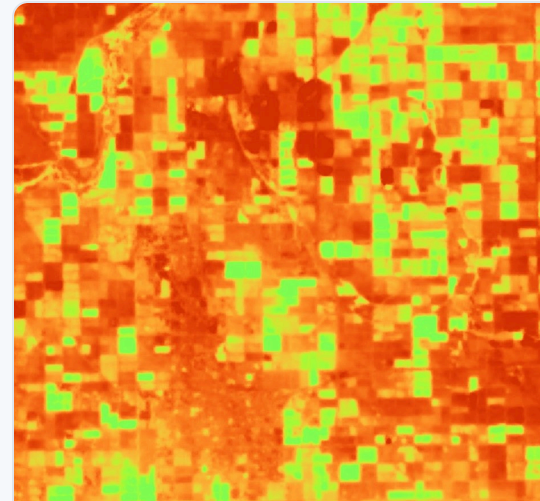
Landsat two-band thermal-infrared at 25m faithful super-resolution — surface temperature and thermal anomalies.

Thermal satellite imagery has special uses, including:

- Urban heat islands
- Crop water stress and evapotranspiration
- Burn scars, and hot spots on the day of a pass
- Industrial activity monitoring (power plants, factories)
- Volcanic activity
- Sea surface temperature



Las Vegas, July 2025 — 25m surface temperature (Landsat-8/9 band 10); parks, lakes and irrigated land cool, desert and roofs hot



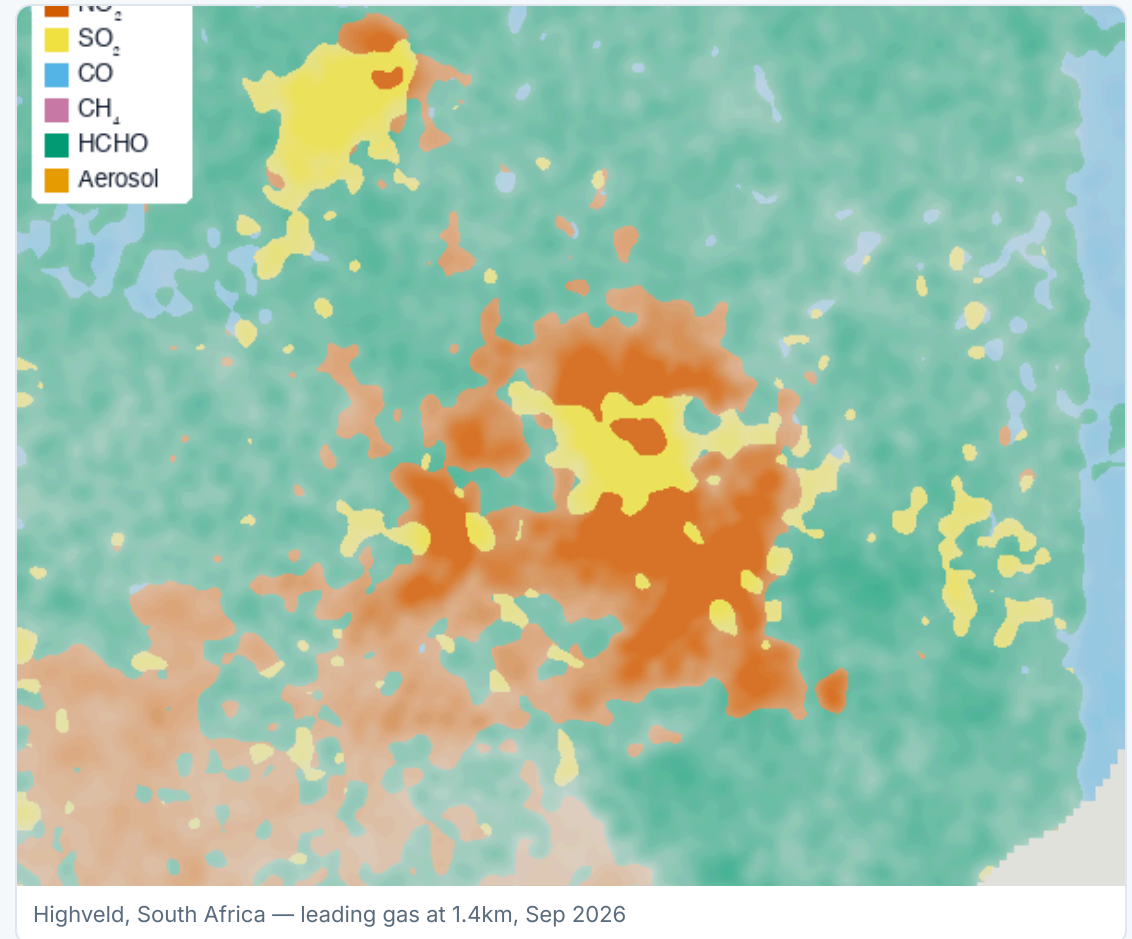
Imperial Valley, California — farm fields at 25m (Landsat-8/9 band 10), 15 Aug 2026

Pollution

Up-to-date (last 2–4 weeks running average) global 6-gas monitoring — NO_2 , SO_2 , CO , CH_4 , HCHO and aerosols — at 1.4km faithful machine learning projection, absolute and year-on-year.

Satellite air-quality data has a unique set of uses, including:

- NO_2 tracking for air quality and industrial output (Sentinel-5P)
- Large methane super-emitters (oil and gas, coal mines, big landfills)
- SO_2 from volcanoes and smelters
- Aerosols, dust storms and wildfire smoke
- ESG and regulatory compliance verification
- 1.4km faithful machine learning projection



Nightlight

Nightly 125m night-lights, faithful projection from VIIRS, for power, outage and activity tracking.

Nightlight satellite imagery has capabilities not available otherwise, including:

- Economic activity and GDP proxies
- Power outage and disaster impact assessment
- Conflict impact monitoring
- Urbanization and electrification tracking
- Gas flaring detection
- Illegal fishing fleets (lit boats)



Cairo and the Nile — 125m, 16 Sep 2026

Elevation

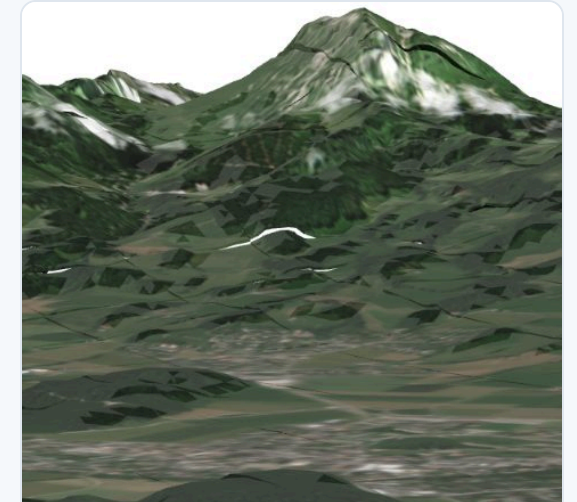
Worldwide DSM at 3m grid posting (often resampled to 1m), 0.5–1m absolute vertical accuracy in most locations, circa 2015.

Digital elevation maps include the Digital Surface Model (DSM) and the Digital Terrain Model (DTM), which is built on the DSM. Note EarthToDate only provides DSM at this time.

- Flood risk and hydrological modeling
- Terrain analysis for construction and routing
- Line-of-sight and telecom tower planning
- Orthorectification of imagery
- Landslide and erosion risk
- Slope/aspect analysis



Marin Headlands and the Golden Gate Bridge — 3D view of the DSM with 1m imagery



Elevation (DSM)



Elevation (DSM) — 3D view

Enhanced Imagery

Upload your own scene — ×2 or ×4 enhancement, your choice at the same price, or PlanetScope 1.9m — from satellites, aerial and drone visual images.

EarthToDate is using faithful reconstruction using physics and machine learning sharpening to recover hidden details and add clarity to all sensors, including satellites, aerial and drone visual images.



PlanetScope



Cartosat-2



Cartosat-3



BlackSky

Analytics

Land Cover Classification

Bi-weekly land cover classification of any area size at 2m GSD and 1m visualization — buildings, roads, water, forest, vegetation, soil, greenhouses and more.

A wide range of uses requires identifying how different areas are being used past and present, such as water bodies, constructed areas, forests, and more. The change of areas is the basis of some uses, such as new construction and deforestation detection.

- Building
- Cluster (dense built-up)
- Paved road
- Dirt road
- Water
- Forest



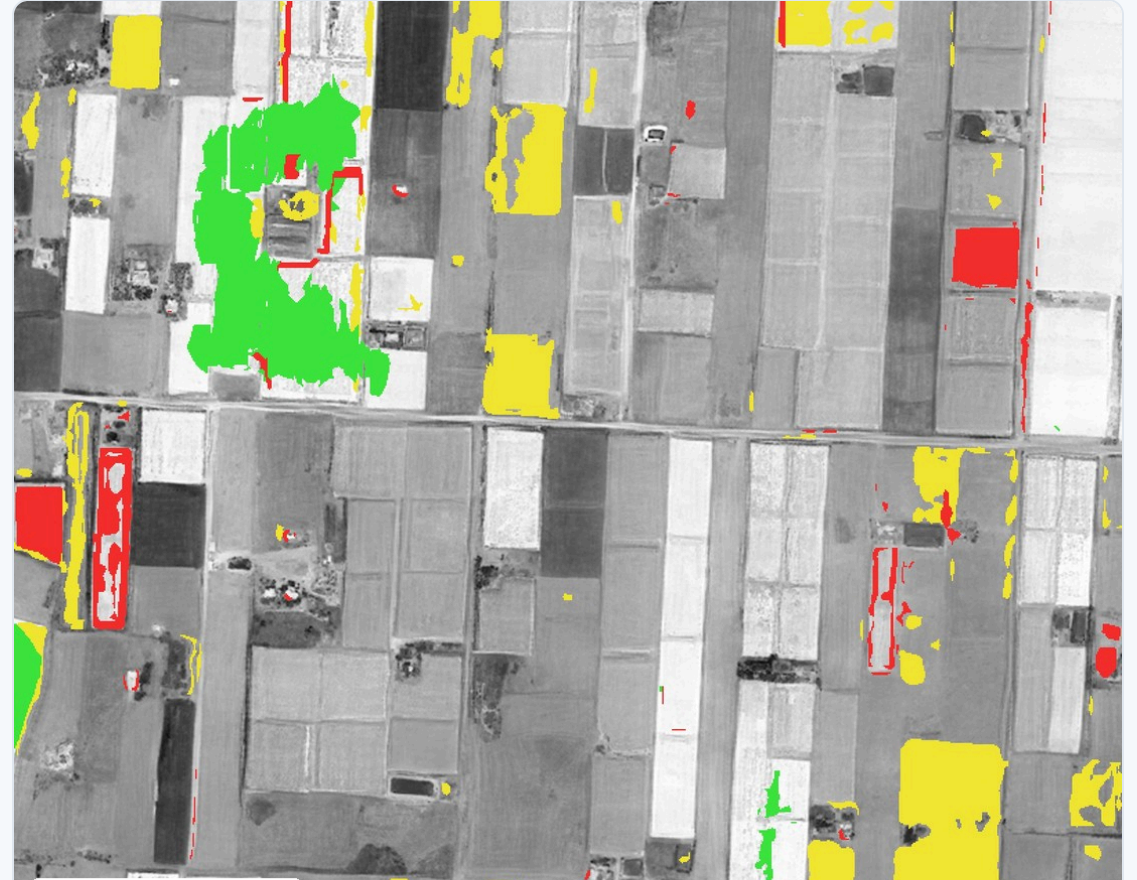
Lausanne, Switzerland — 1m visual and land cover classes

New Construction Detection

New construction, greenhouses, land preparation and reclaimed land labelled between any two dates at 2m GSD.

New construction identification is a concern for many, including municipalities, national agencies and NGOs, and domain-specific organizations such as utilities and defense. New construction may be legal and tracking it serves needs such as urban sprawl, or illegal and serves needs such as tax and registration conformance.

- New construction
- New greenhouses
- New land preparation
- New emerging land (reclaimed from sea, post-flood, etc.)



Chtouka, Morocco — new construction, land preparation and greenhouses, 2022 to Sep 2026

Critical Infrastructure Monitoring

Monitoring of corridors and key sites — railroads, highways, pipelines, power lines, ports and more — for new construction, vegetation encroachment, floods, fires and slides.

Corridor monitoring is the responsibility of many organizations owning a pathway along significant stretches, most of which have Right of Way (ROW) over their corridor. Critical site monitoring has a similar responsibility over a large number of isolated installations.

- Railroads
- Highways
- Water authorities
- Electricity transmission
- Gas and oil pipelines
- Rivers



Trees in power line right of way — Pennsylvania, USA, 2021-09-07 to 2024-08-27 (before, after, detections: Trees in ROW, Trees at ROW edge)



New woody growth along 230kV line — New Brunswick, Canada, 2018-07-21 to 2024-07-19 (before, after, detections: New woody growth, Trees at ROW edge, Trees in ROW)

AIS (Automatic Identification System) over SAR

Worldwide reported ship identity, location, heading and speed over the last 14 days on basemaps; coming up: matching ships seen in SAR, including dark ships.

AIS (Automatic Identification System) is an international standard under which ships are required to frequently broadcast their identity, location, heading and speed.

- Fishing when and where not permitted
- Transfer of sanctioned goods at sea, like oil from sanctioned sources, or weapons
- Military activity where the operator wants to conceal their presence
- Smuggling of people, drugs or goods
- Identity spoofing — broadcasting a false name or position
- Up-to-date ship identity, location, heading and speed, as reported, presented on basemaps

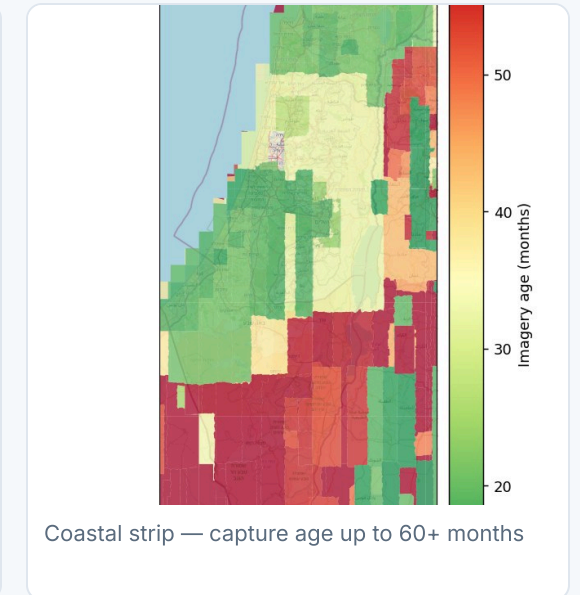
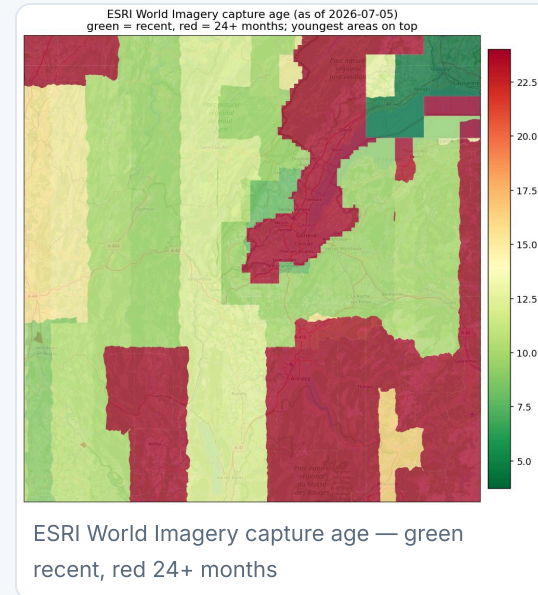


ESRI Basemap Age

An age map of ESRI World Imagery, so users know how current the imagery is for their use case; a fused up-to-date version is coming soon.

ESRI has licensed various satellite imagery sources, most notably the Vantor (formerly Maxar) Vivid basemap, and provides it as ESRI World Imagery: 0.3m in select metropolitan areas, 0.5m across the United States and parts of Western Europe, and 1m elsewhere.

- Non-artificial areas like fields, forests and parks presented as up-to-date EarthToDate 1m visual data
- Artificial areas not present in ESRI World Imagery presented as up-to-date EarthToDate 1m visual data, which is not equal in quality to ESRI World Imagery but does give an indication of the truth on the ground
- Artificial areas like urban areas, houses and roads keeping their original ESRI World Imagery clarity and detail

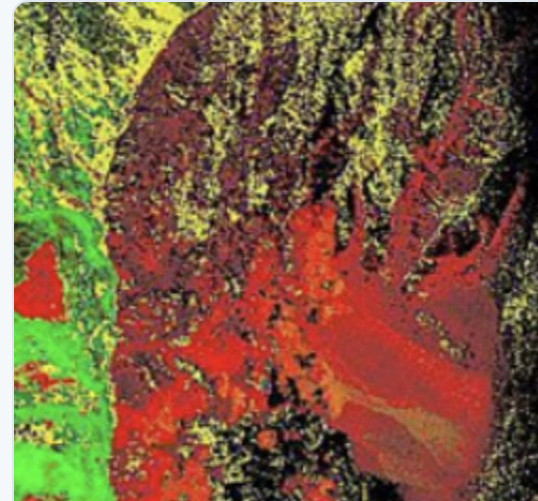


Surface Mineral Map

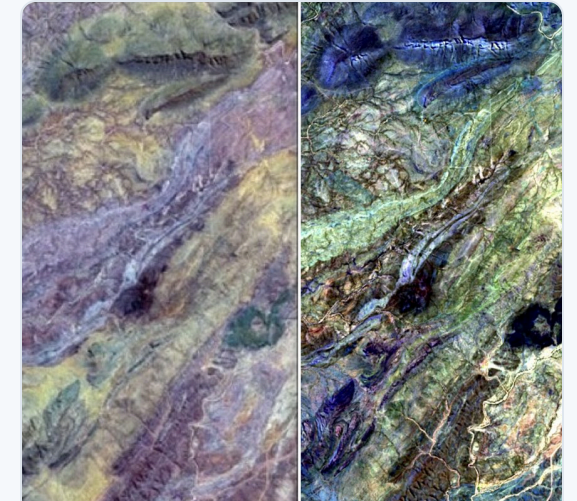
Hydrothermal alteration mapping at 2–4m from enhanced Sentinel-2 — four alteration indices, a composite score and a 7-class map; a sub-5m SWIR source since WorldView-3 retired.

Surface mineral mapping finds exposed rock and soil whose spectral signature points to hydrothermal alteration — the surface footprint of many buried ore deposits — and is the basis of exploration targeting before drilling.

- Ferric iron — iron oxides such as hematite and goethite
- Iron species — separates hematite/jarosite-type from goethite-type iron, using Sentinel-2's narrow red-edge bands
- Hydroxyl-bearing minerals — clays, micas and carbonates
- Ferrous / propylitic — the outer alteration halo



Surface Mineral Map



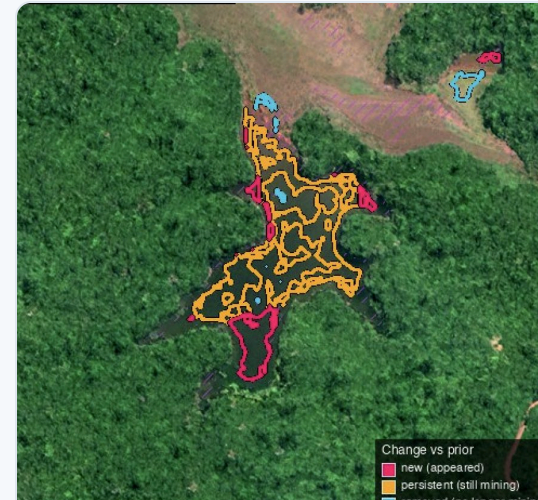
Sentinel-2 / EarthToData

Mining Monitoring

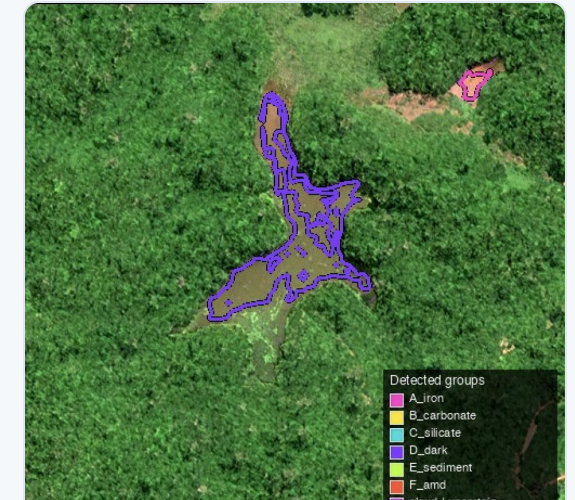
Monitoring of licensed and illegal mining, including small artisanal sites, for governments, operators and NGOs.

Mining is conducted at scale in many countries, licensed and illegal, often in remote places. When illegal, operations are usually artisanal, small and hard to identify. Mining monitoring is used for various purposes:

- Government-level monitoring of licensed sites progression and potential license violation and impact on the surrounding area, such as nearby tree logging, road and infrastructure expansion, nearby natural terrain like waterways and pools, and open pit progress
- Government-level monitoring of illegal sites, often artisanal and small
- Commercial operation monitoring of own mines, sometimes a large number distributed over a large area and possibly multiple countries
- Commercial operation monitoring competitors' activity and progress
- NGOs monitoring mining, licensed and illegal, and its impact on the environment
- Supply-chain due diligence (proving where minerals come from)



Mining changes — new, retired and still active

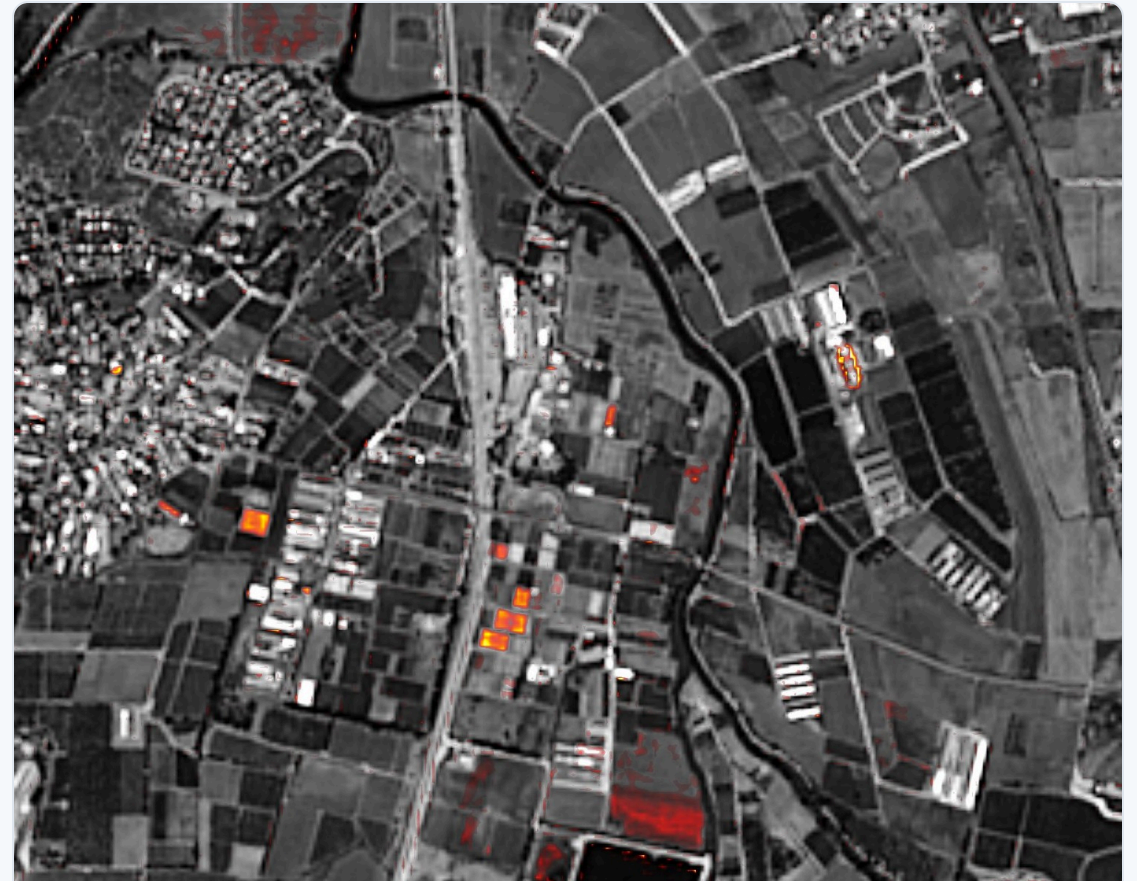


Mining detection — six spectral groups

Suspected Underground Water Leak Warnings

National-scale continuous warning of suspected underground water leaks, from local soil moisture increase in 2m multispectral data.

Water utilities lose about a third of the water they supply before it reaches users — an average of 35% in urban systems, about 126 billion m³ a year worldwide. Various methods are employed, such as water pressure sensors, but the problem is still very much present.



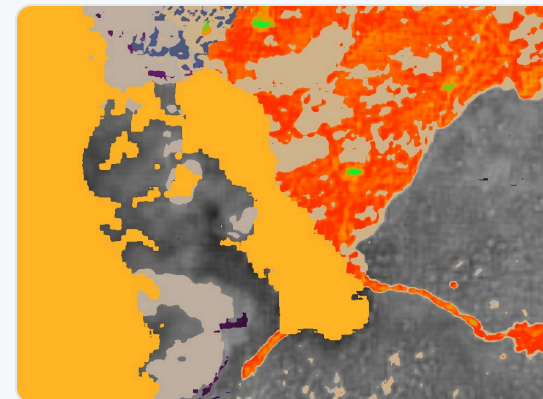
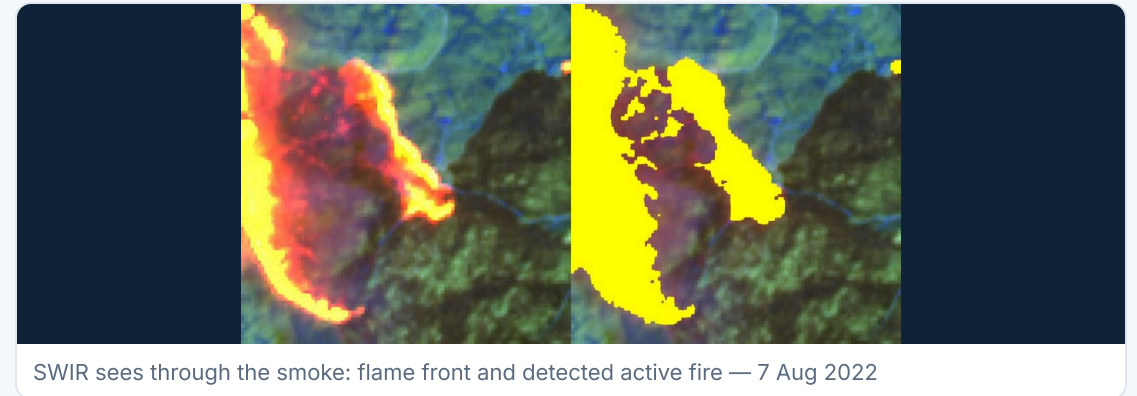
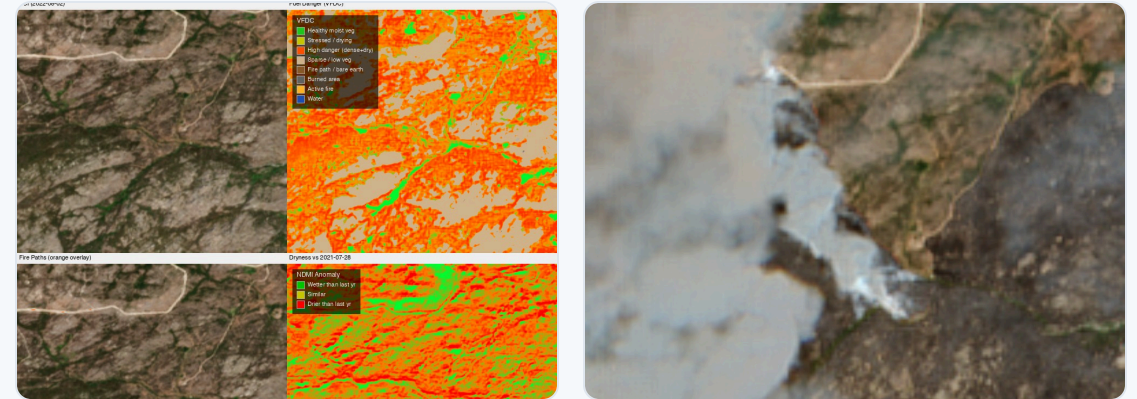
Farmland and villages, Sharon plain, Israel, 16 Sep 2026 — local moisture increase at 2m; users overlay their pipe network and check the spots along it

Fire Hazard Intelligence

End-to-end fire hazard analysis — vegetation dryness, firebreaks, active fire through smoke, baked ground, post-fire debris flow and recovery time.

Many locations have ongoing concerns regarding managing fire hazard. The issue is primarily created by dry vegetation, and a major countermeasure is firebreaks. This obviously affects different locations at different times of the year.

- Map the level of vegetation dryness as compared to last year as baseline, to monitor primary danger zones
- Present vegetation throughout the area, including over firebreaks that may need clearance which are invisible without EarthToDate enhanced GSD
- Identify active fire if present at capture time, and visualize terrain through smoke using SWIR bands
- Map baked ground post-fire
- Project the direction of potential post-rain floods with post-fire debris, using bare terrain and the elevation map
- Project the time to full pre-fire recovery of each area once initial recovery starts



Flood Simulation

Simulate floods from seas, lakes, rivers and streams on a worldwide elevation map with 0.5–1m vertical accuracy.

Potential floods from water bodies like seas and lakes, rivers and streams can be simulated using EarthToDate's worldwide elevation map with 0.5–1m vertical accuracy. The simulation raises the water level over the area to show the potential flood footprint; it does not model rainfall runoff or river flow.



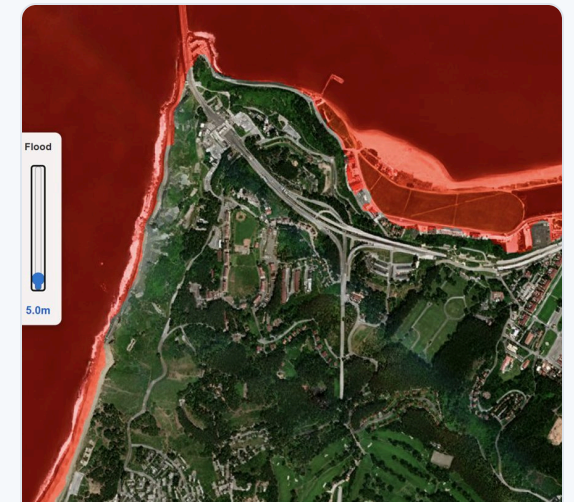
Flood Simulation



Miami, USA — flooding at 2.8m above sea level



Venice, Italy — flooding at 2m above sea level



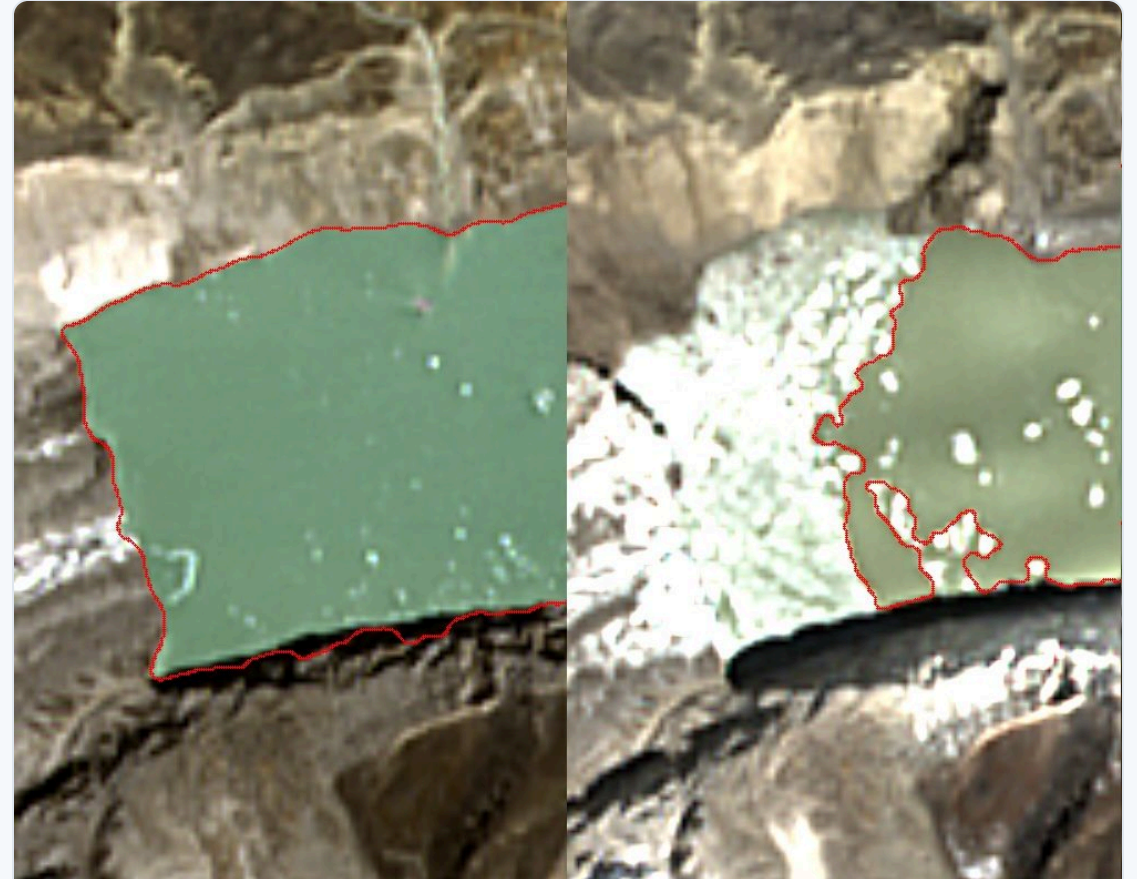
Sydney, Australia — flooding at 5m above sea level

GLOF (Glacial Lake Outburst Flood) Early Warning

Glacial lake monitoring that estimates the excess water a failing moraine would release and where it would flow, using accurate worldwide elevation data.

Glacial lakes pose an imminent danger to a large number of people and to infrastructure downstream. The Sikkim, India outburst of October 2023 (South Lhonak Lake) and the Rasuwa, Nepal flood of July 2025 are notable recent examples. Worldwide, about 15 million people live within 50km of a glacial lake and 1km of a potential flood path, across more than a thousand glacial lake basins in 30 countries.

- Identify the water edge using optical satellite imagery at enhanced higher resolution, with all-weather SAR sensor data to be added later
- Use EarthToData's worldwide elevation data, much more accurate than the free elevation data sources used today, to calculate added water volume from the growing water surface
- Patent-pending method of identifying the excess water volume expected to be discharged when the moraine fails
- Automated analysis of all potential breaking points along the lake's edge, projecting the water stream along the terrain using EarthToData's elevation map



South Lhonak Lake, Sikkim — before and after the October 2023 outburst

Forest Classification & Deforestation Tracking

Forest classification, deforestation and reforestation between dates, supporting EUDR proof that products were not grown on land deforested after 2020.

Many players track forests and their change, including government agencies, NGOs, commercial operators, agriculture stakeholders and others. All have similar basic needs:

- Classification: identifying forest terrain
- Deforestation: identifying lost forest area between dates
- Reforestation: identifying new forest area between dates
- EUDR: in particular, the EUDR requires proof that several commodities, and even products derived from them, were not produced on land deforested after 31 December 2020; it covers cattle, cocoa, coffee, oil palm, rubber, soya and wood



Forest map — non-forest areas hatched red

Field Anomaly Detection

Early detection of field spots developing unexpected higher or lower growth, tracked per field and period.

From government agencies to industrial agriculture growers, all large-scale agriculture operators have one universal need over the growing season — knowing as early as possible where something is potentially an issue in their fields and determining if and how to handle it. Over large areas, often distributed through an even larger region, this becomes a challenge in terms of cost and complexity.

- Weeds
- Disease outbreak
- Pest outbreak
- Fire
- Physical impact (such as natural or human unplanned activity in the field)



Davis, California, 11 to 18 Aug 2025 — growth anomalies at 2m (red: lower, blue: higher than expected)

Crop Classification

Crop types identified at scale from satellite imagery, as-is anywhere or fine-tuned where past ground truth exists.

Different parties are interested in identifying crop types cultivated, past and especially presently, usually over large areas up to entire countries. About 150 crop species are grown at scale for food and feed, out of some 7,000 plant species ever cultivated, and each comes in many varieties; the best practice at full scale is really self-reporting by growers, if at all, with the resulting delays and inaccuracies.



Field Boundaries

Actual field boundaries on the ground at any given time — the equivalent of expert human inspection.

Field boundaries change often in many situations, with fields divided and merged, part of crop rotation, ownership change and other conditions. With such frequent changes, it is difficult for relevant stakeholders such as government agencies and large-scale commercial operators to track the changes reliably and continuously.



Field boundaries

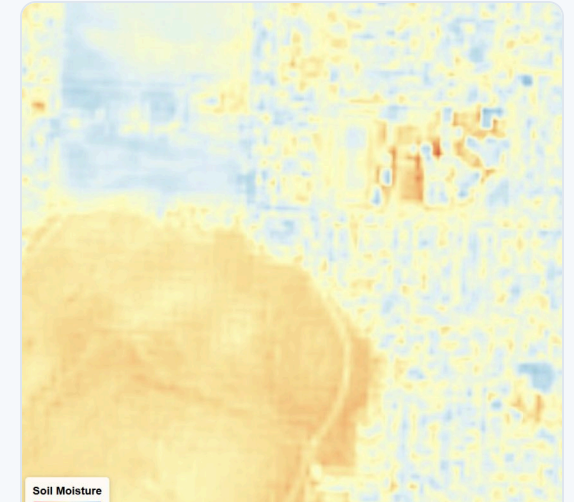
Soil Moisture

Soil moisture at 2m GSD, integrating multiple accepted methods beyond a single index for reliability across geographies and terrains.

There are many different uses and needs requiring reading soil moisture. Deploying a large number of physical sensors is expensive, complicated, and at some regions and scales impractical. Knowing soil moisture then supports irrigation planning, yield prediction and other valuable needs.



Davis, California, July 2025 — soil moisture at 2m (dark green: wetter)

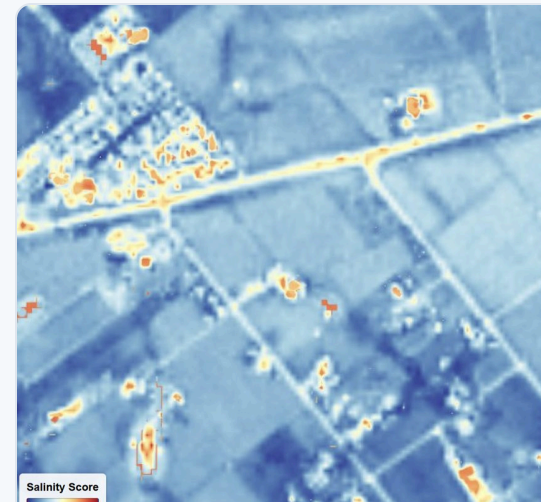


Nevada, USA — soil moisture at 2m

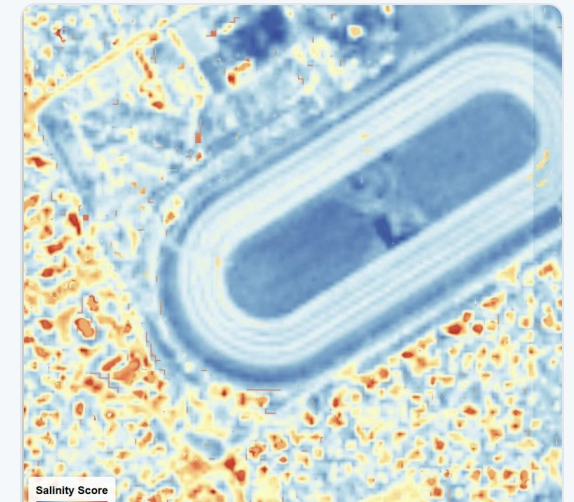
Salinity

Soil salinity at 2m GSD as a 0–100 score, five classes and a confidence level, for early detection.

Ground salinity is a growing concern in many geographies. It is also more present under specific conditions, such as along irrigation lines. Early detection is obviously crucial, as by the time it can be detected in tens of meters resolution it's likely already catastrophic in nature.



Napa Valley, USA — soil salinity at 2m

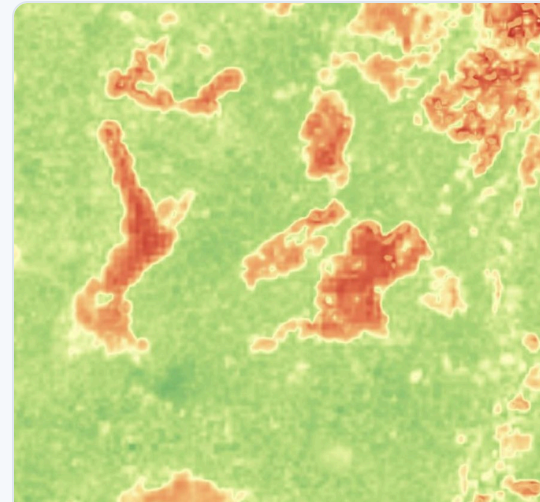


Buenos Aires, Argentina — soil salinity at 2m

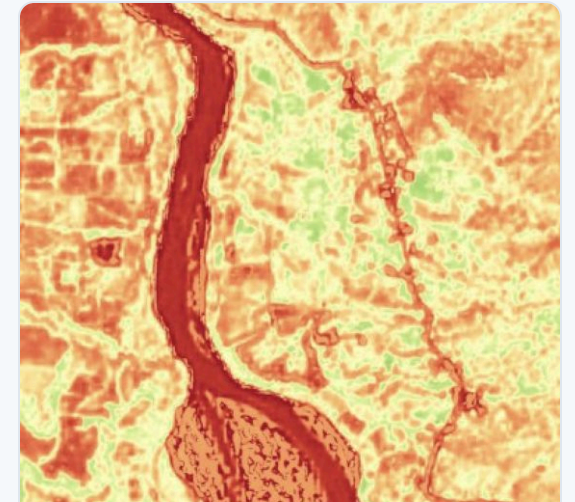
Grassland Biomass

Grassland biomass index at 2m GSD with no local adjustment
— reliable relative measurements for grazing decisions.

Grazing animals feeding means a continuous management of determining when potential feeding is being exhausted in one field and the animals need to be moved to another. The question is which one, and the answer is based on parameters such as distance but also, to a large extent, where the animals have more to eat.



Paraty, Brazil — grassland biomass at 2m



Pampas, Uruguay — grassland biomass at 2m