

# 12-minute Earth Observation Demo

From “pretty pictures” → indicators → decision-ready maps



## Demo flow (live):

- 1) NASA Worldview (near-real-time imagery)
- 2) Earth Observing Dashboard (indicator stories)
- 3) Copernicus EMS Rapid Mapping (operational response)
- 4) Frontier sensor: ESA Biomass (P-band SAR for forest carbon)
- Optional: MethaneSAT portal (methane emissions transparency)

Goal: show how different satellites + products fit together in an end-to-end monitoring workflow.

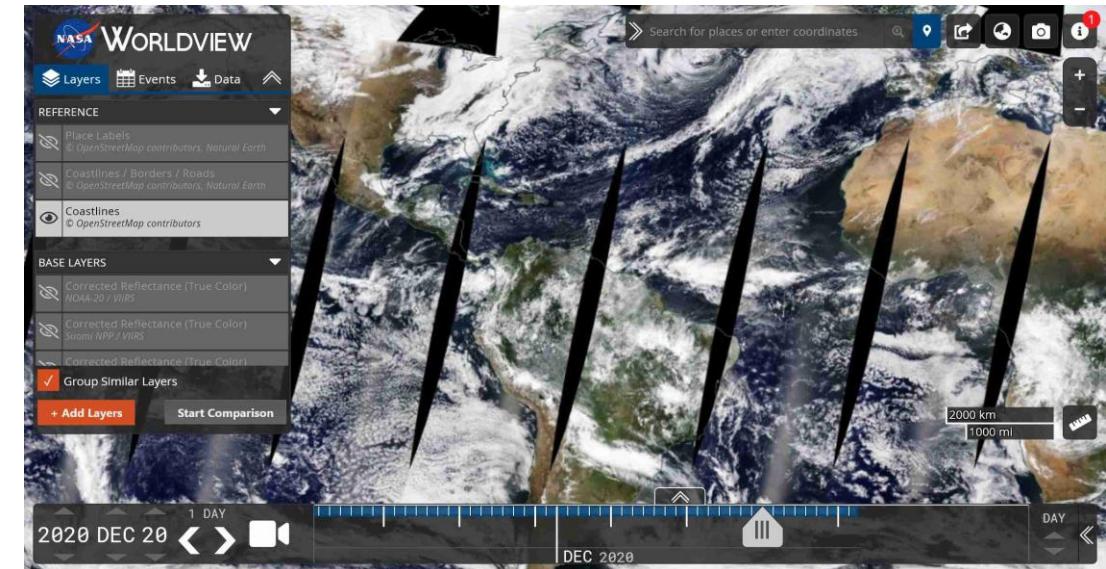
# NASA Worldview: near-real-time imagery you can animate

Live: pick a current event (fires / smoke / dust / floods) and scrub time

STEP 1

## What to do (live):

- Open Worldview → search a place (home region, recent wildfire area, etc.)
- Add an overlay (e.g., “Fires (VIIRS)” or smoke/aerosol layers) and compare to true color.
- Use the time slider → animate the last 7–14 days to show dynamics.
- Teaching point: imagery → layers → time series (monitoring, not just mapping).



Open NASA Worldview

<https://worldview.earthdata.nasa.gov/>



# Earth Observing Dashboard: indicators + stories (ESA–NASA–JAXA)

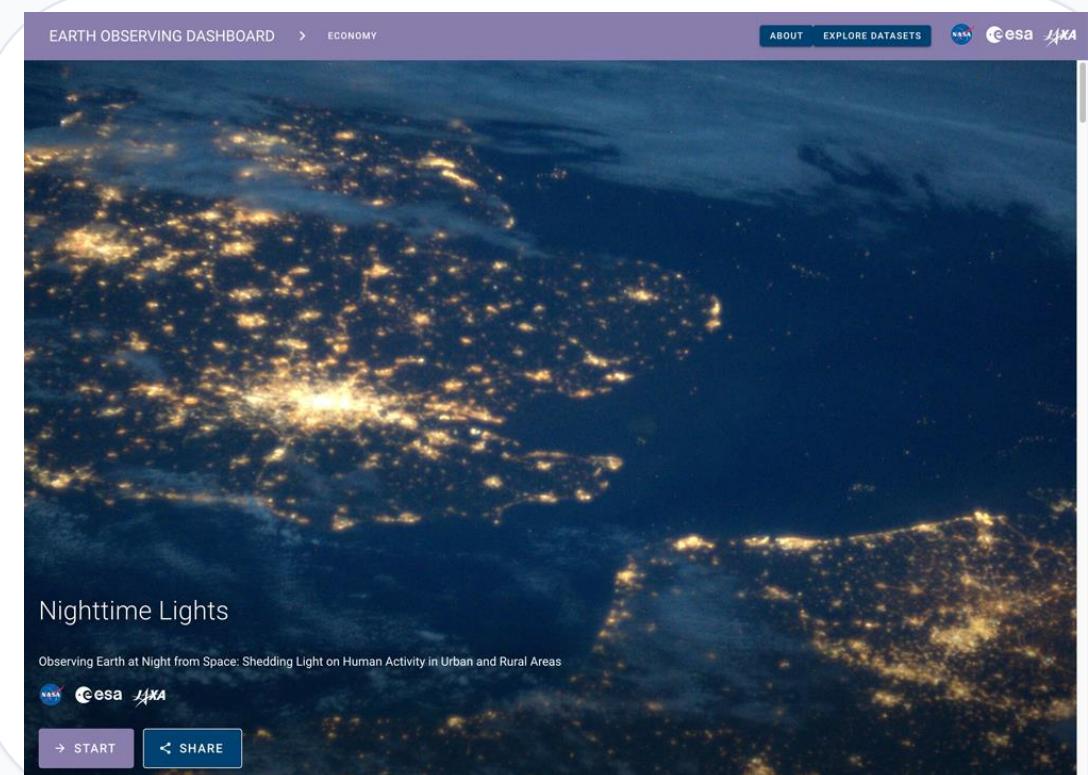
Live: open a story and connect “indicator” to sensor + method

STEP 2

## What to do (live):

- Open EO Dashboard → choose a story (e.g., Nighttime Lights, Lakes & Climate, etc.).
- Zoom to a location → show time charts + map layers together.
- Ask: “What satellite(s) and retrievals sit behind this indicator?”
- “EO product” ≠ one image; it’s a curated pipeline + interpretation.

[Starter story: Nighttime Lights](#)



**Open Earth Observing Dashboard**

<https://eodashboard.org/>



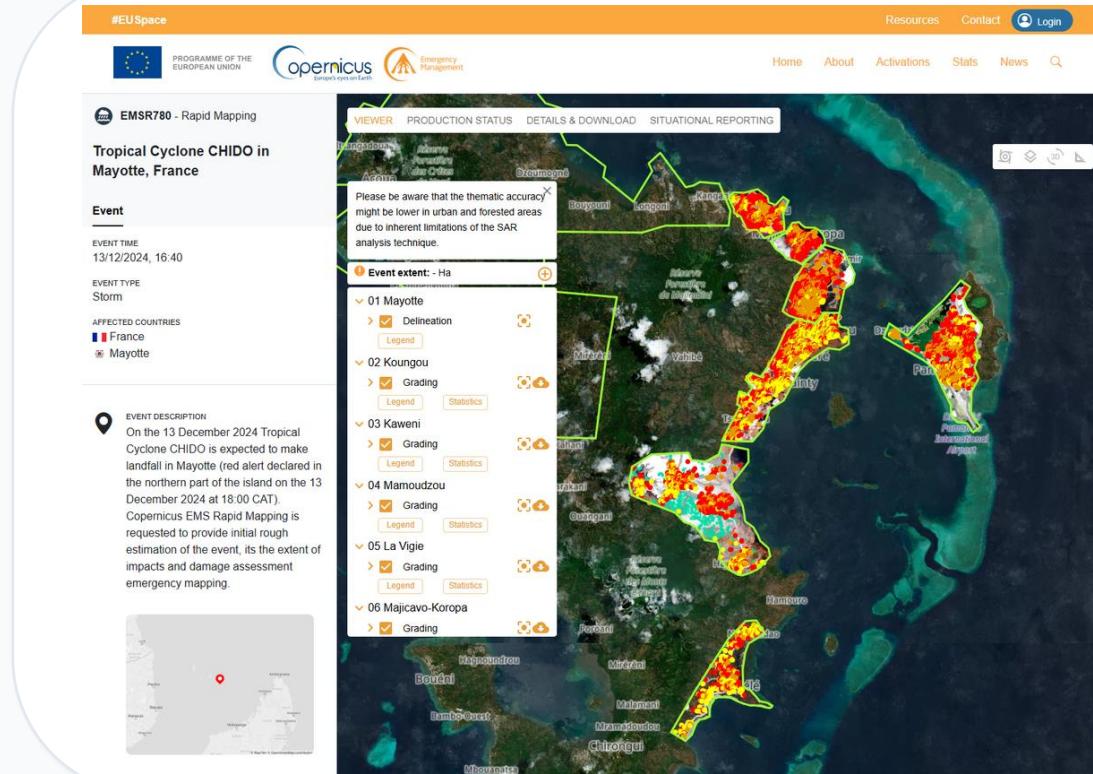
# Copernicus EMS Rapid Mapping: decision-ready disaster maps

Live: pick a recent activation → open Viewer → toggle impact layers

STEP 3

## What to do (live):

- Open Activations → choose the most recent flood/fire/cyclone in the list.
- Open the Viewer → turn layers on/off (event extent, damage assessment, imagery).
- Download a PDF map product (shows how EO becomes an operational deliverable).
- uncertainty + AOI limits (maps answer a specific question, fast).



## Open Rapid Mapping Activations

<https://mapping.emergency.copernicus.eu/activations/>



[New Viewer info \(Jan 2026\):](#)

# Frontier example: ESA Biomass (P-band SAR for forest carbon)

Live: explain why P-band SAR matters → show “open data now available”

STEP 4

## Key message:

- Biomass carries a P-band SAR instrument designed to improve estimates of forest structure and above-ground biomass.
- This connects sensor physics → woody biomass → carbon cycle relevance.
- Use as a “what’s new in EO” moment (commissioned; data opened to all).
- Prompt: “What can SAR retrieve that optical struggles with in dense forests?”



ESA Biomass: open data  
announcement

<https://www.esa.int/Applications>



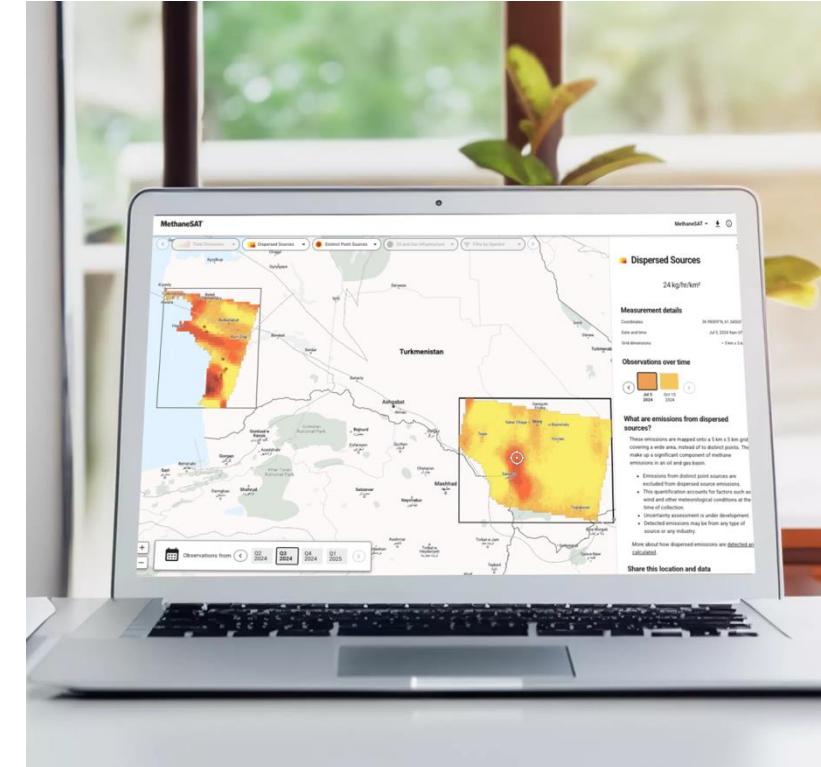
# Optional (if time): MethaneSAT portal (methane emissions transparency)

Live: explore a basin → compare “area” vs “point source” layers

STEP 4b

## What to do (live):

- Open the portal → zoom to a known oil & gas basin (or pick a highlighted region).
- Toggle layers: dispersed area emissions vs distinct point sources; show infrastructure overlays.
- accountability, uncertainty, and “open data as climate infrastructure.”
- Note: the mission ended early, but the portal still publishes collected datasets.



Open MethaneSAT map portal

<https://portal.methanesat.org/>



# Wrap-up: what students should take away

Use these prompts to turn the demo into discussion / assessment

## 3 takeaways

- Imagery → products: satellites feed retrieval pipelines, not just pictures.
- Time matters: monitoring is animation, trends, and change detection.
- Decisions matter: operational maps answer specific questions under constraints.

## Discussion prompts

- Pick one layer you used today: what is the measurement, and what are the main error sources?
- What ground data would you need to validate (or calibrate) one of these products?
- Which use-case needs: (a) higher spatial resolution, (b) higher temporal resolution, (c) better retrieval physics?

## Quick links

Worldview: <https://worldview.earthdata.nasa.gov/>

EO Dashboard: <https://eodashboard.org/>

Copernicus EMS Activations: <https://mapping.emergency.copernicus.eu/activations/>

ESA Biomass open data:

[https://www.esa.int/Applications/Observing\\_the\\_Earth/FutureEO/Biomass/ESA\\_s\\_Biomass\\_goes\\_live\\_with\\_data\\_now\\_open\\_to\\_all](https://www.esa.int/Applications/Observing_the_Earth/FutureEO/Biomass/ESA_s_Biomass_goes_live_with_data_now_open_to_all)

MethaneSAT portal: <https://portal.methanesat.org/>

