

COPERNICUS THEMATIC WORKSHOP

Introduction on EO for event footprint evaluation

Branimir Radun

Evenflow

#EUSpace 

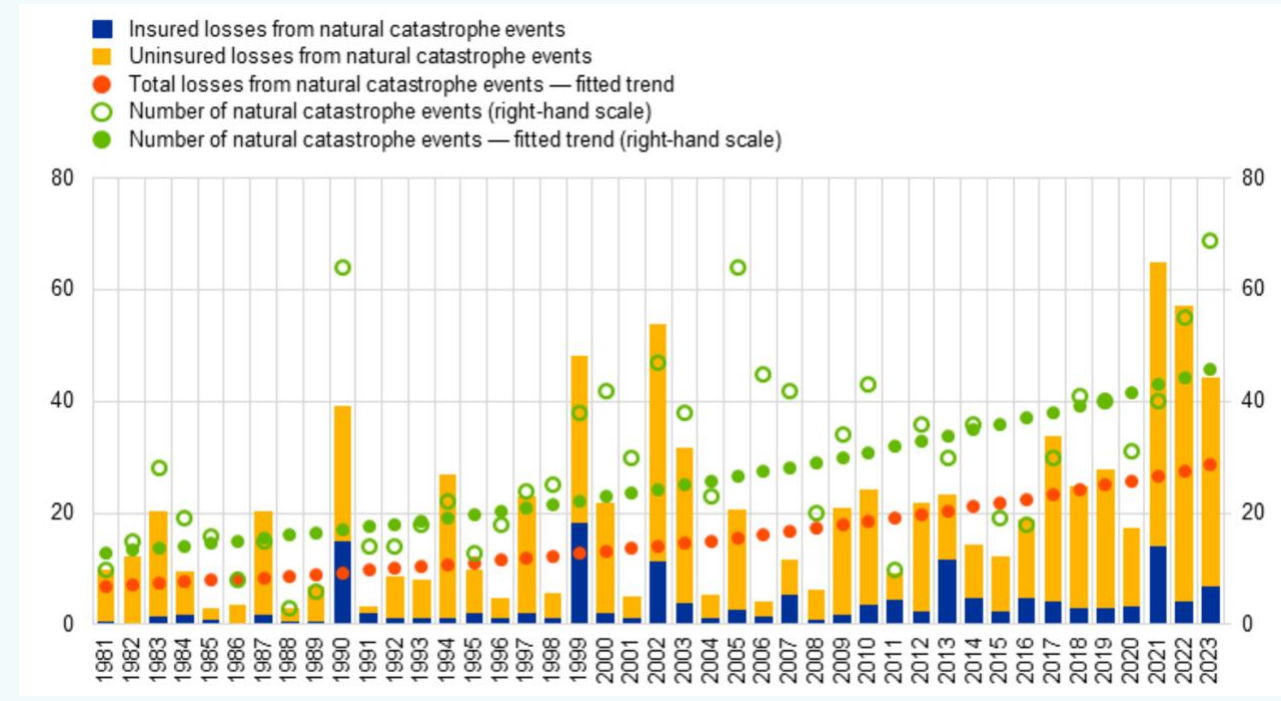
 Copernicus
Europe's eyes on Earth

The pricing question

Natural catastrophes caused over €900 billion in direct economic losses in the EU between 1981 and 2024.
(ECB, EIOPA, 2024).

After every major event, insurers face the same three questions: where did the event happen, how severe was the impact, and which assets were impacted.

Catastrophe models give a probabilistic answer.
Observed footprints give the empirical one. Both are needed.



20%

of the reported €900 billion is concentrated in the last four years alone (EIOPA 2024).

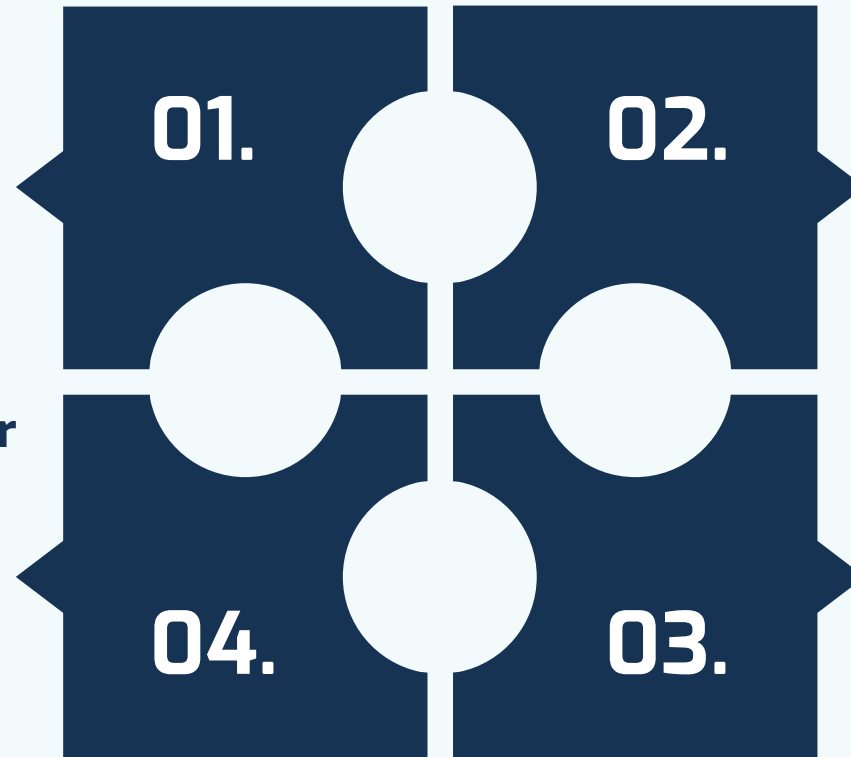
Why event footprints matter

Pre-event (source of information)

Risks tested against historical event hot-spots, Exposures mapped against corridors of prior damage, Rates set against observed loss-per region

Reinsurance and risk transfer

Treaties priced against observed accumulation patterns, Parametric triggers verified by satellite evidence, ILS payouts settled on auditable footprints



Post-event

Claims triaged against the observed footprint, Reserves anchored to measured damage extent, Models recalibrated against the actual event

Supervisory and reporting

ORSA inputs grounded in observed exposure, Risk supervision built on independent evidence, Cross-market comparability and transferable reporting practices

Event footprints across hazards

Floods

Inundation extent and water-depth mapping. Sentinel-1 SAR delineates flooded area in all weather, day or night.

Sentinel-1 | Sentinel-2 | Copernicus DEM | CEMS Rapid Mapping

Wildfires

Burned-area perimeter, severity from indices derived from multispectral imagery, active fire detection, and smoke plume tracking.

Sentinel-2 | Sentinel-3 SLSTR | EFFIS (CEMS)

Windstorms

ERA5 hourly reanalysis provides the wind footprint for insurance loss validation and catastrophe modelling. Sentinel-1 SAR and Sentinel-2 optical verify the actual damage on the ground for large scale events

Sentinel-1 InSAR | C3S / ERA5 reanalysis | Sentinel-2

Droughts

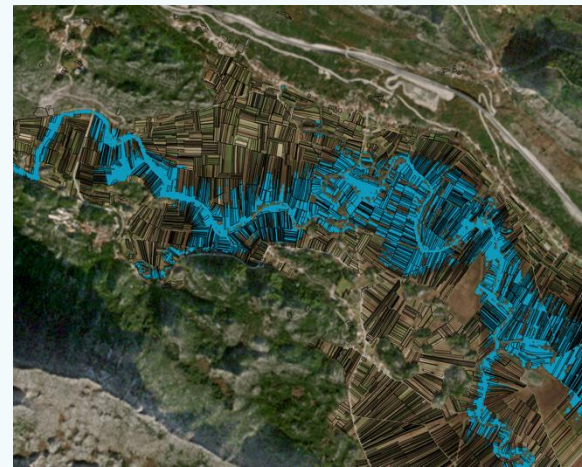
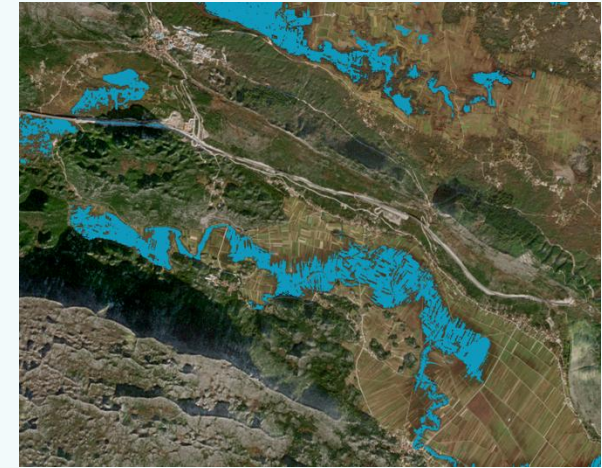
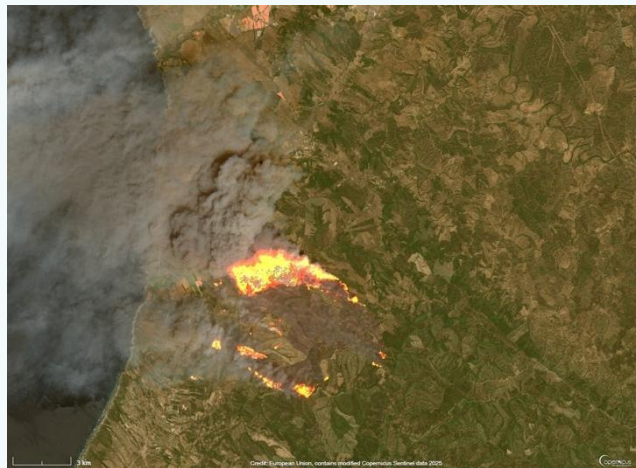
Vegetation stress through anomalies in Vegetation Indices, soil moisture deficit, shrinking surface water and reservoir levels.

Sentinel-2 / Sentinel-3 | EDO (CEMS) | C3S ERA5

Copernicus based examples

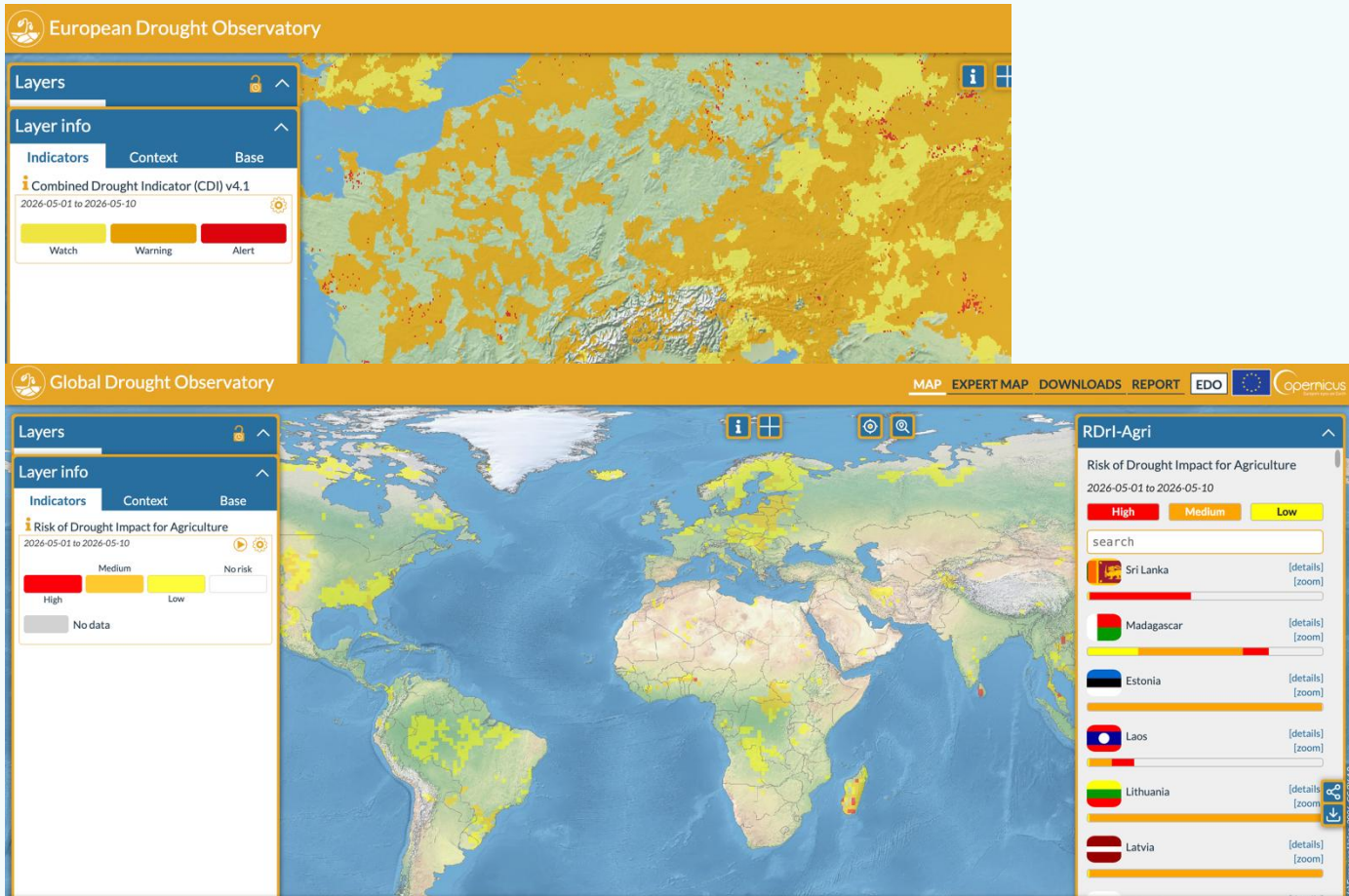
Wildfires with Sentinel-2

Floods with Sentinel-1

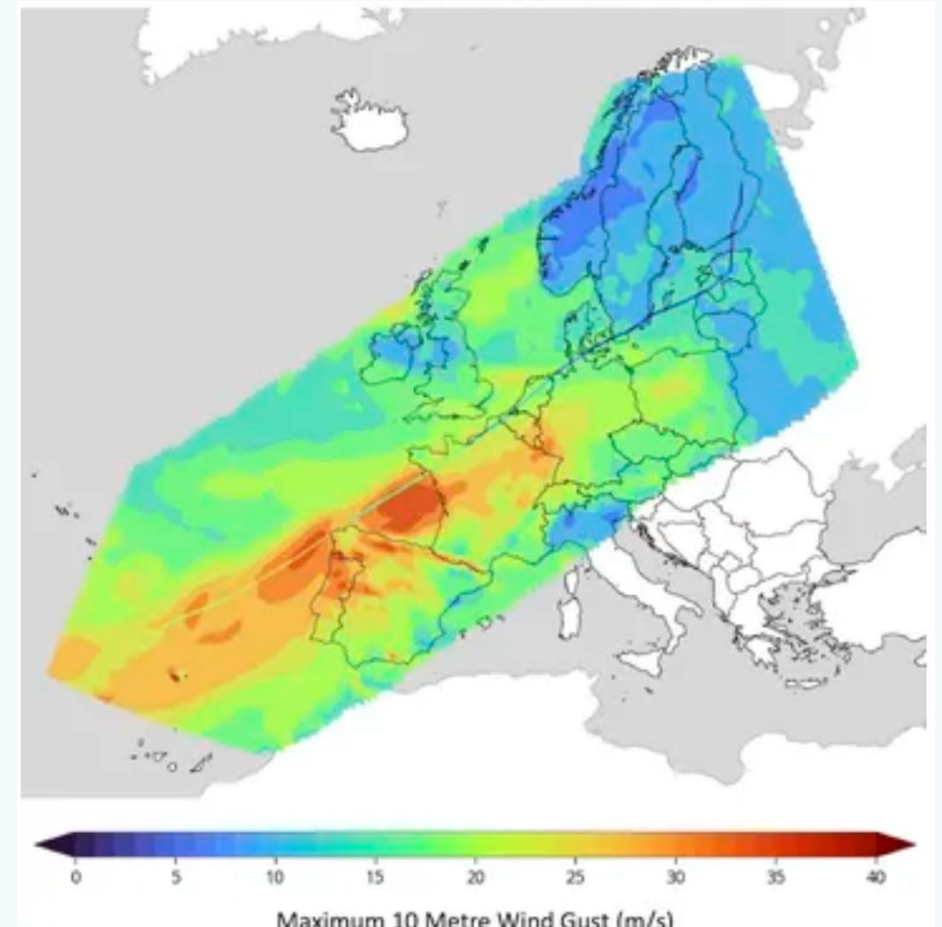


Copernicus based examples

Droughts with CEMS



Windstorms with C3S



Market adoption of EO in event footprint evaluation

Earth Observation is moving from research demonstration into operational insurance workflows.

Focus on:

Reinsurance and parametric capacity as early movers

Emerging EO-insurance specialists partnering with major carriers

Copernicus CEMS as the open European reference for declared events

Insurance flagged as a downstream growth segment in EUSPA market reports.

Growth driven by:

Rising catastrophe losses and a widening protection gap

EIOPA and EBA climate-risk supervision tightening

Free Copernicus data lowering the barrier to entry



Thank you!

Branimir Radun

Head of Sector | Evenflow

branimir@evenflow.eu

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COPERNICUS THEMATIC WORKSHOP - CLIMATE RISKS FOR INSURANCE & FINANCE