

COPERNICUS THEMATIC WORKSHOP

Introduction on EO for Long- term risk modelling and planning

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Europe's eyes on Earth

Why EO Improves Risk Modelling?



Traditional Models (The Hindsight Bottleneck)

- **Backward-Looking Basis:** Depend heavily on historical claims data and sparse physical weather stations.
- **Static in a Dynamic Climate:** Struggle to account for rapidly evolving, unprecedented climate patterns.
- **Coarse Spatial Granularity:** Rely on regional or zip-code level averages, missing asset-specific variations.

EO-based Models (The Physical Reality)

- **Continuous Observations:** Uninterrupted, automated tracking of planetary and asset-level changes.
- **Large-Scale Spatial Coverage:** Seamless global mapping that monitors remote portfolios and transboundary risks.
- **Decadal Time-Series Archives:** Decades of consistent environmental baselines to accurately measure volatility trends.
- **Near-Real-Time Hazard Alerts:** Instant mapping of floods, wildfires, and structural subsidence as they occur.

How EO feeds Climate Risk Models?

01- Data Input

Earth Observation data serves as the dynamic foundation for the model, replacing static historical averages.

Hazards: High-res metrics for flood depth, drought indices, fire fuel.

Exposure: Automated mapping of asset locations and land-use patterns.

02-Risk Engine

Simulating thousands of scenarios generates a range of probabilistic outcomes (**Risk Distributions**) instead of single static estimates.

Vulnerability: Damage curves based on EO-derived structural profiles.

Scenarios: Continuous stress tests across various future climate paths.

$$\text{Risk} = H \times E \times V$$

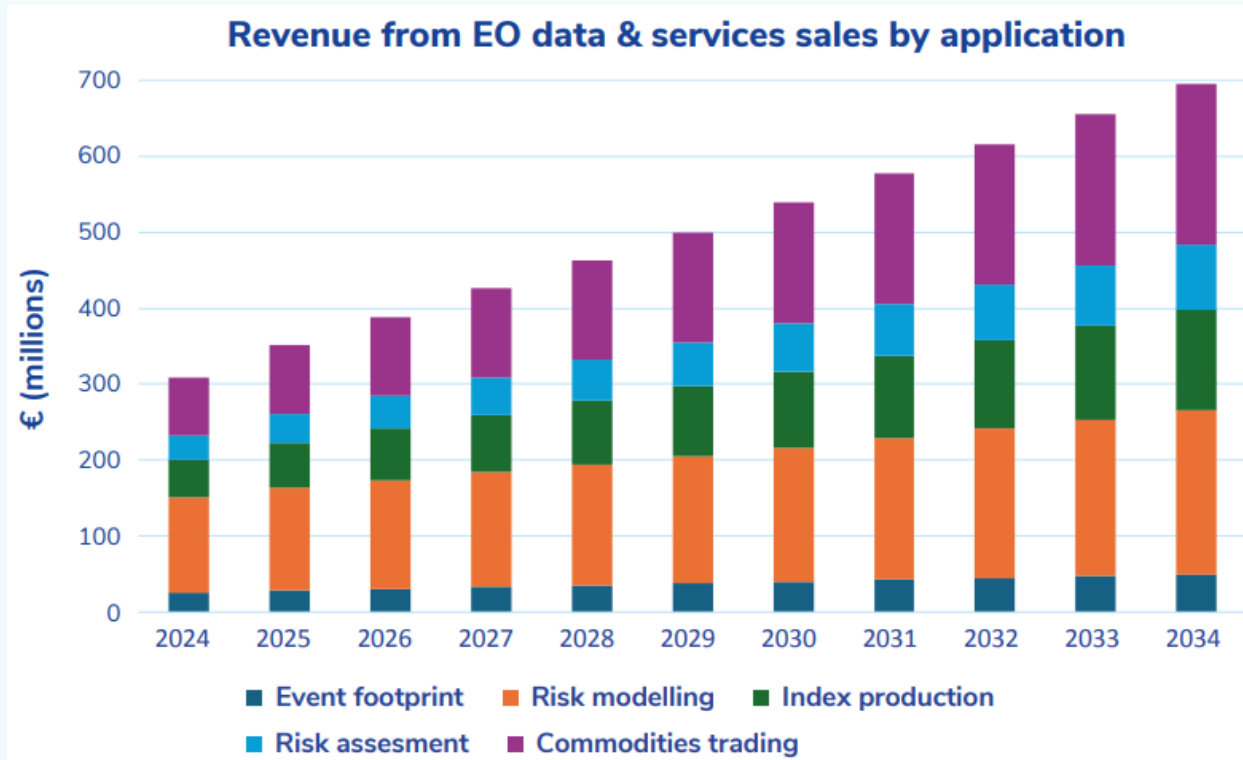
03 - Value Output

Translating physical simulations into audit-ready financial liabilities and strategic insights.

Loss Metrics: Expected Losses (EL) and Tail Risk for underwriting.

Credit Risk: Climate-adjusted Loan-to-Value (LTV) ratios and mortgage impairment forecasting

Market Adoption of EO for Risk Modelling



Main Drivers of Adoption

- Regulatory Compliance & Climate Stress Testing
- Insurability & Closing the "Protection Gap"
- Granular Asset-Level Risk Pricing



EU Space Market Report 2026

Download it for free at:
<https://www.euspa.europa.eu/market-report>



Thank you!

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