

European Pavilion
**Digital
Ocean**
Nice | France
2 - 13 JUNE 2025

Taking the Pulse of
the Ocean
*Sea Level Rise and
Satellite Altimetry*

11 July 2025

Inspire
sea level rise





Inspire

sea level rise



Fabien Lefèvre

CLS



Why This Matters



Photo from [Dibakar Roy](#) in [Unsplash](#)

Why care about sea level?

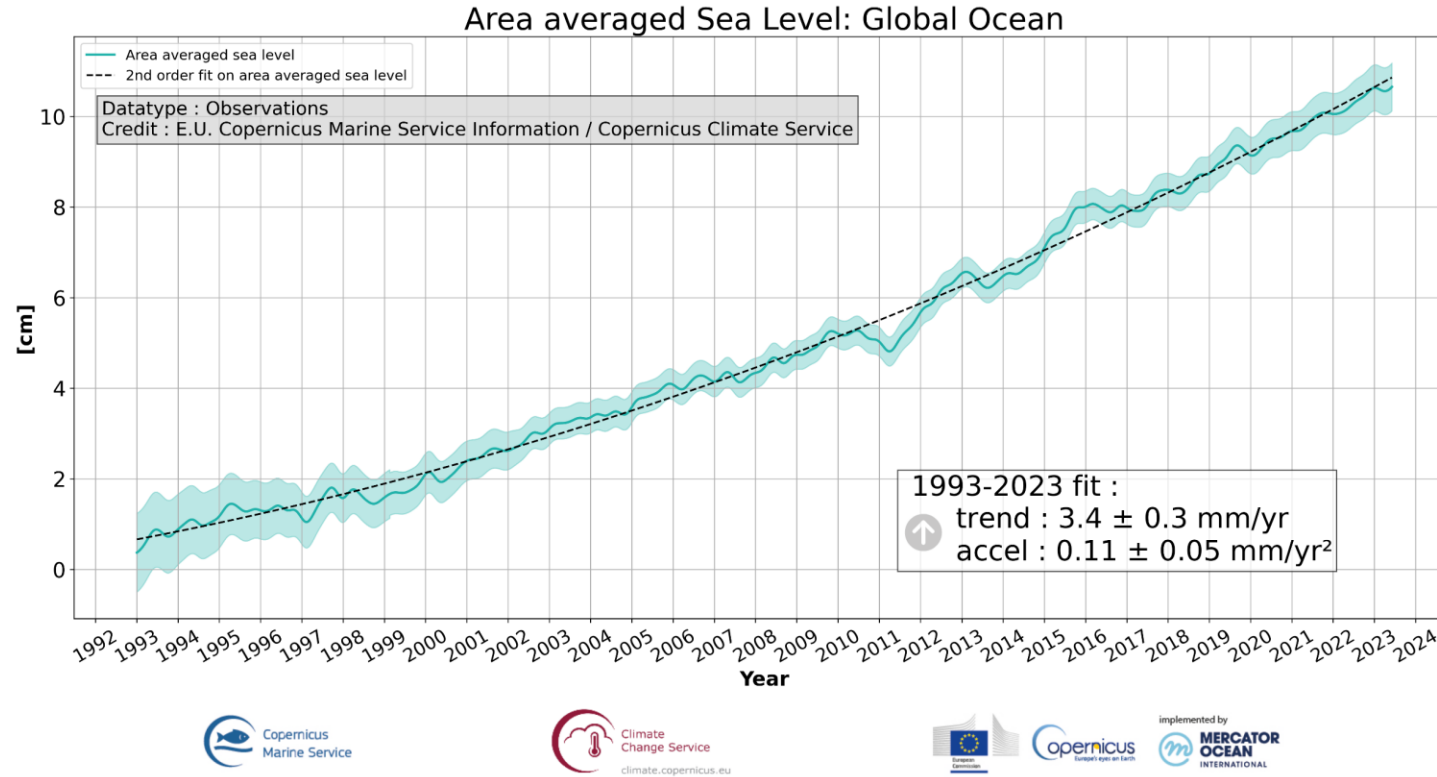
- 10% of humanity lives <10m above sea level
- Coastal cities and ecosystems are at risk
- We need accurate data to anticipate change



Inspire
sea level rise



Sea Level Is Rising



What do we observe?

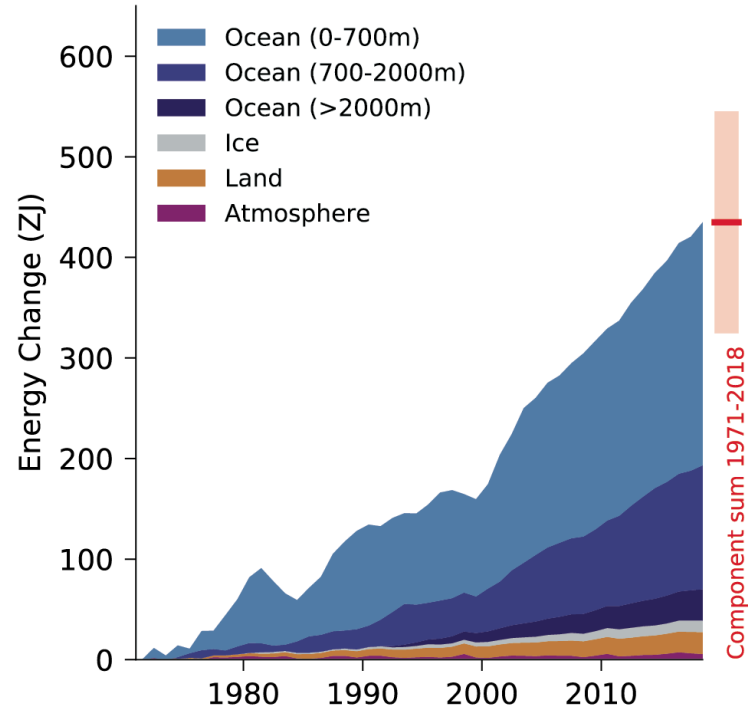
- **+3.4 mm/year since 1993**
- **+10 cm total rise (1993–2025)**
- **Acceleration observed in last decade**

Inspire
sea level rise

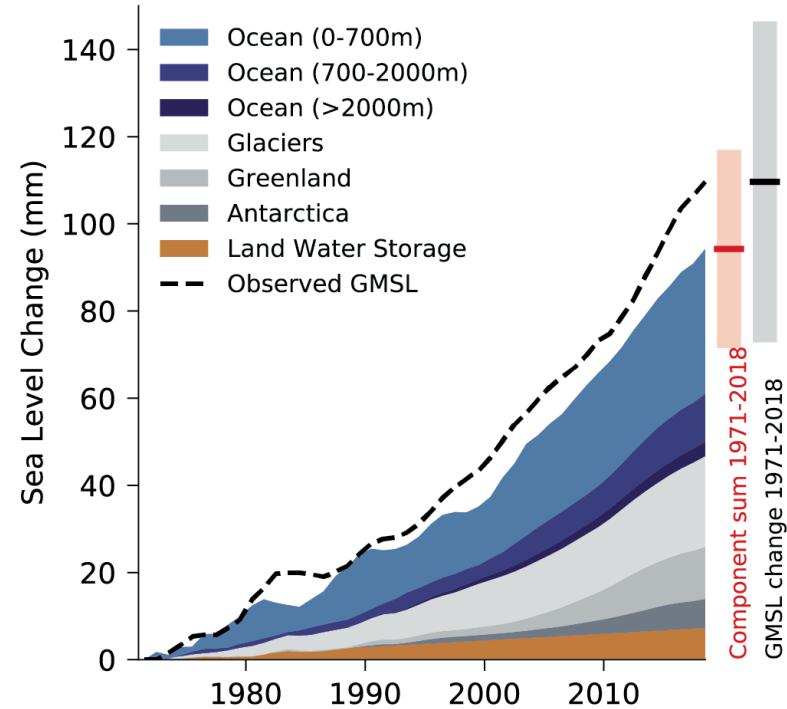


What Drives Sea Level Rise

(a) Global Energy Inventory



(b) Global Sea-Level Budget

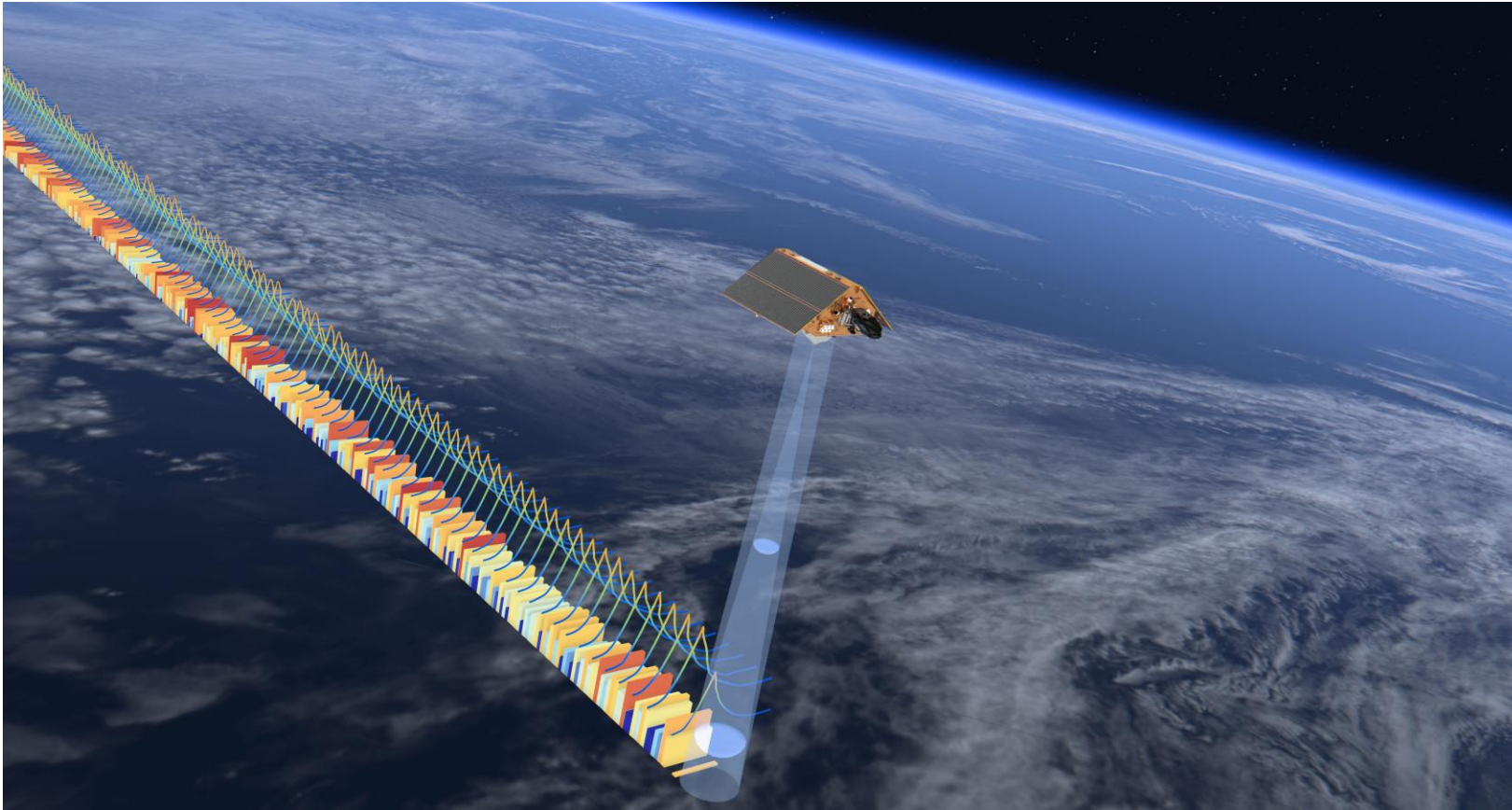


What is sea level rising?

- Thermal expansion (ocean warming)
- Ice sheet and glacier melt
- Land water storage changes



How Do We Measure It?



Measuring the ocean from space

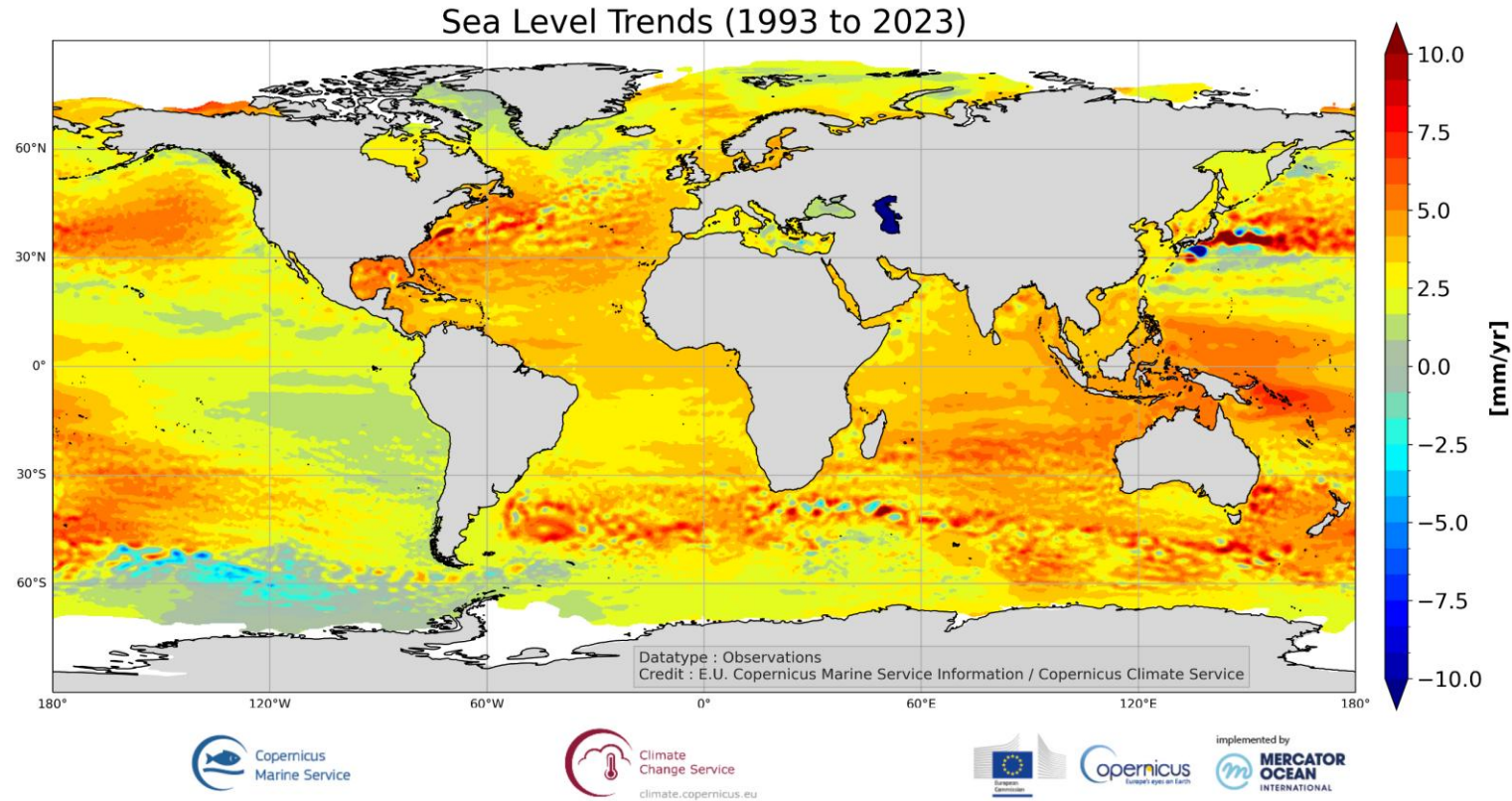
- Satellite altimetry = radar from orbit
- Measures sea surface height globally, every several days
- Institutions and private companies process & analyze this data



Inspire
sea level rise



Altimetry in Action

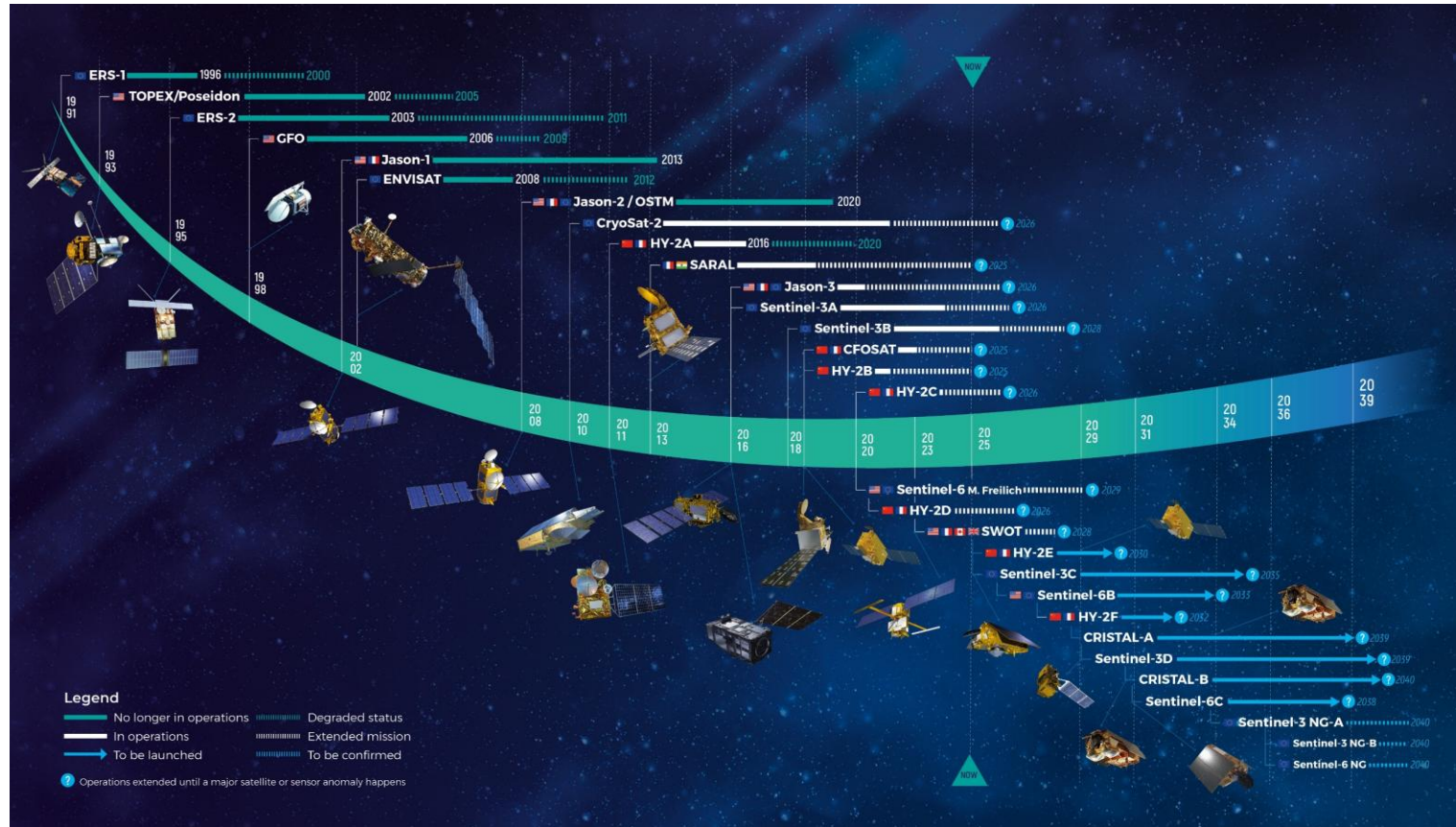


Why altimetry is essential?

- Global coverage impossible by tide gauges alone
- Altimetry reveals trends, anomalies, and acceleration
- Used in climate models, risk mapping, and operational oceanography

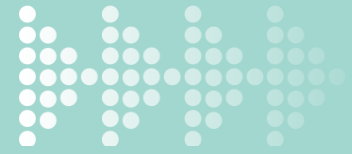


Continuity Is Key



A long-term commitment

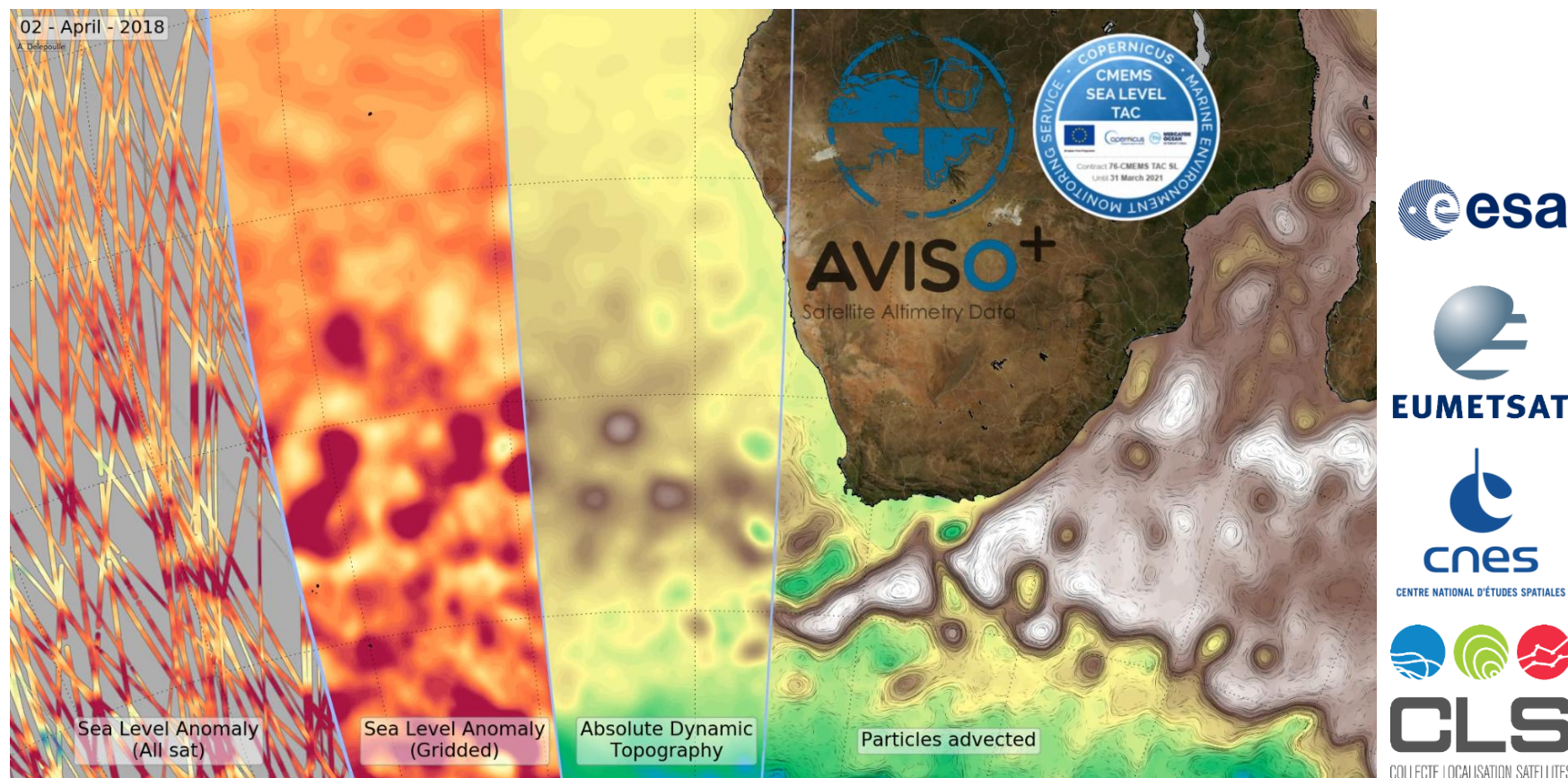
- 30+ years of uninterrupted data (TOPEX to Sentinel-6)
- CLS & other ensure cross-mission consistency
- Climate trends need stable, calibrated records



Inspire
sea level rise



Copernicus Makes It Possible



The role of Copernicus

- Guarantees free, open, high-quality data
- Supports climate services, coastal planning
- Partners: EUMETSAT, CNES, ESA, CLS...

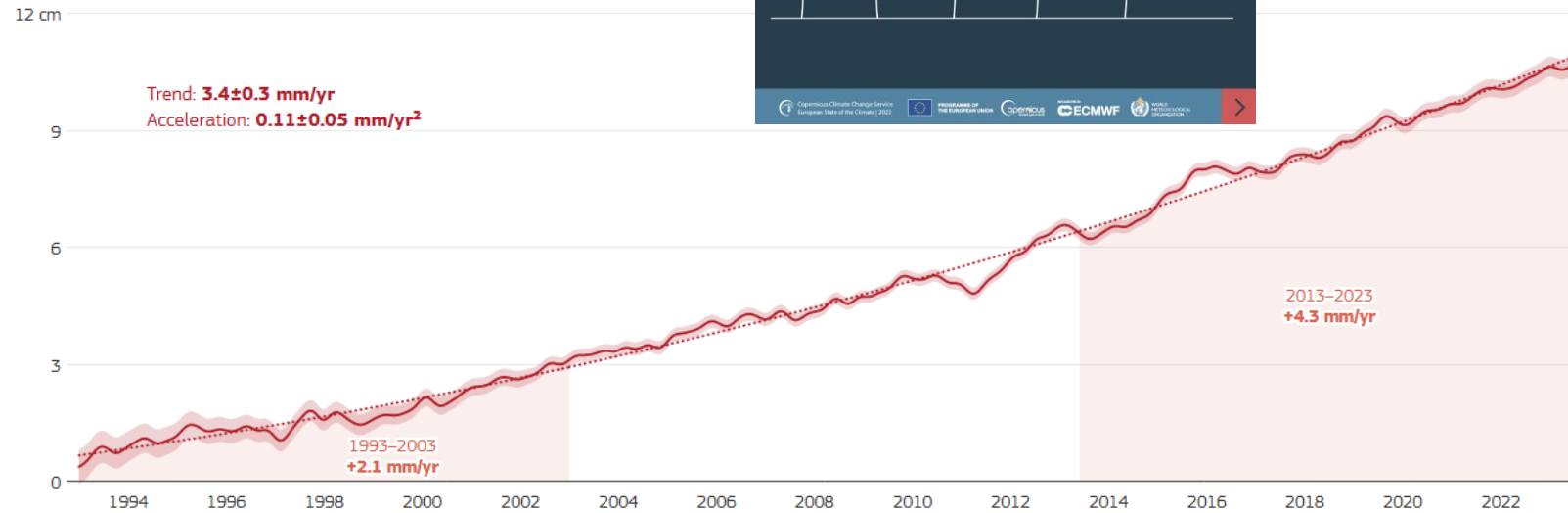


Inspire
sea level rise



Real-World Impact

Mean sea level globally



Data: CMEMS Ocean Monitoring Indicator based on the C3S sea level product • Credit: C3S/ECMWF/CMEMS

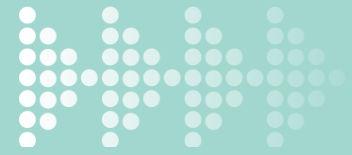


PROGRAMME OF
THE EUROPEAN UNION



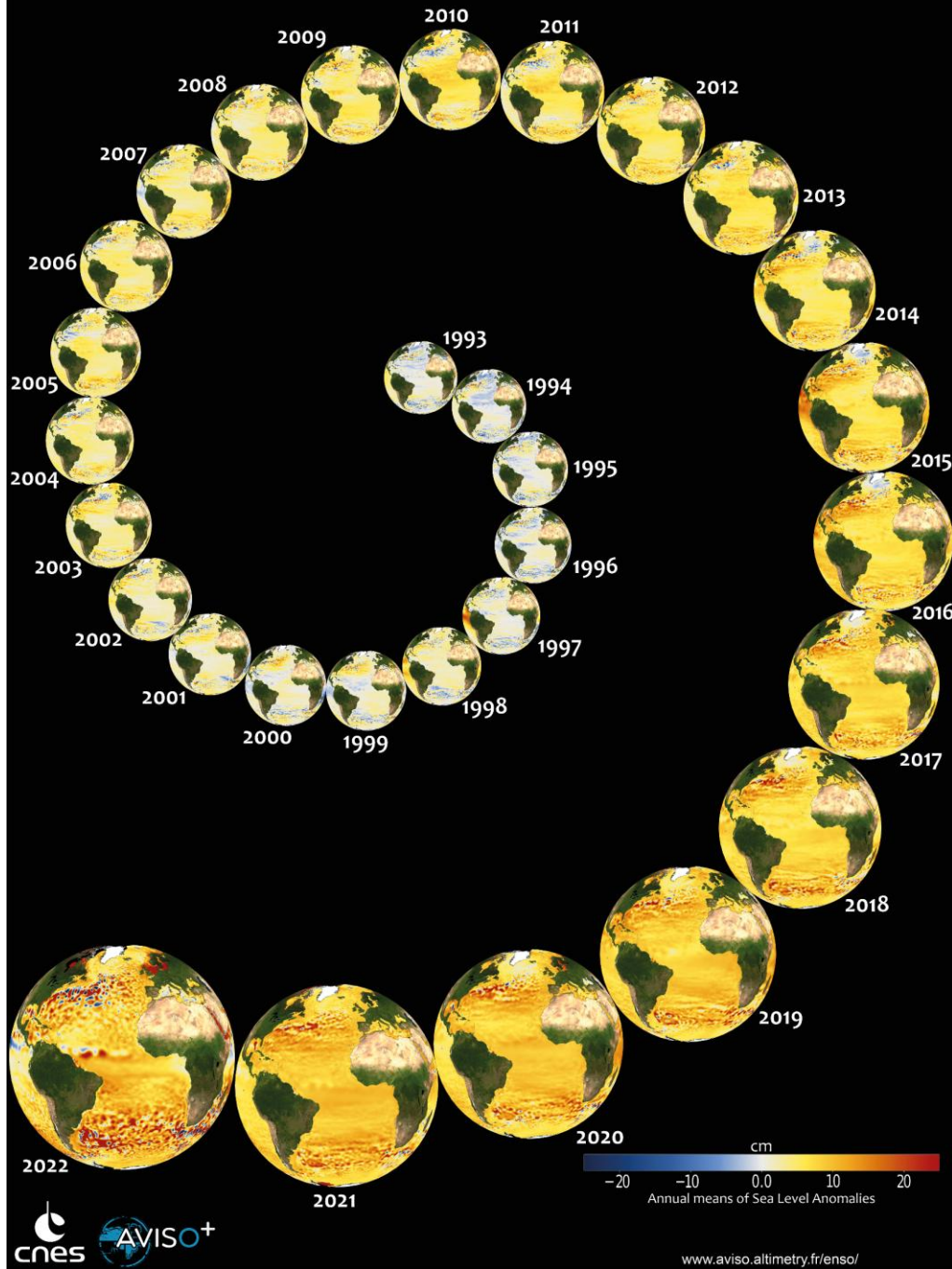
From space to the coast

- Used by: Copernicus Climate, UN, IPCC, governments...
- Supports resilience and adaptation
- Ocean data = societal value!



Inspire
sea level rise





Conclusion

- **Sea level is rising !**
But we are watching,
measuring, and informing
- **Altimetry is essential**, and
Copernicus makes it
sustainable
- **"Turning satellite data into
ocean knowledge"**



Inspire

sea level rise

Thank you !

More info : flefevre@groupcls.com

