Satellite data: the future of water data?

Find out more about OiEau's key figures at https://chiffrecle.oieau.fr/

OiEau International Office for Water

SOUTIEN FINANCIER · OFFICE FRANÇAIS DE LA BIODIVERSITÉ

Satellite data on water

Water applications

- Land use monitoring
- Meteorology
- Climate study
- Qualitative and quantitative monitoring
- Flood management
- Withdrawal management

Map of **irrigated crops** at **10 m resolution** in southwestern France

Weather forecast at **a resolution of 1.3 km** in Western Europe

Heights water levels **centimetric accuracy** for rivers > 100 m wide and water bodies > 250 x 250 m

Map of snow heights at 2 m resolution to an **accuracy of ≈ 50 cm** in France

Daily status and 3-day drift forecast for **blooms** in the Baltic Sea.

Estimation **surface temperature** with an error of ±1.2°C in France.

27,05 mwe
Average **melting** of metropolitan **glaciers** between 2001 and 2021

9,43 cm
Mean **sea level** in 2020

Interest

- Harmonization of data formats, analysis methods and definitions
- Freedom from borders and difficulties on the ground
- Densification of monitoring networks Increased collection frequencies

Some satellites

Trishna — Planned for 2025
Measuring the surface **temperature** of continental surfaces and coastal zones

CO3D — Planned for 2025
(Constellation Optique en 3D)
Observes the Earth and **maps** it in 3D

SWOT — Launched in 2022
(Surface Water and Ocean Topography)
Measures **water levels** in rivers, lakes, flooded areas and oceans

SMOS — Launched in 2009
(Soil Moisture and Ocean Salinity)
Measures soil **moisture**, vegetation water content and ocean salinity

Grace — Launched in 2002
Tracking masses of **water**, **snow** or **ice** by studying the Earth's gravity field

Sentinel-2 — Launched in 2015-2017
Monitoring **vegetation**, **land use** and the impact of global warming