HYDRO-POWER-SUITE (HYPOS)

Supporting Hydropower from SPACE

Webinar: Boosting Hydropower: Best Practices for Research

2025-05-14 | Karin Schenk | EO Service Line Manager EOMAP

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HYPOS PROJECT 2019-2022

EOMAP
Project lead; remote sensing service, software provider

STUCKY- Gruner
Engineering and design company specialized in dam/hydropower

Swedish Meteorological and Hydrological Institute
Operational hydrological modelling

Norges Teknisk-Naturvitenskapelige Universitet
in situ and three-dimensional modelling

Consiglio Nazionale dellle Ricerche (CNR)
Calibration/Validation activity for optical EO products

The project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 870504

HYPOS CONCEPT

hypos.eoapp.de

SATELLITE + DRONE DATA

HYDROLOGICAL MODELLING

IN SITU/ FIELD MONITORING

MARKET/CAPACITY ASSESSMENTS

IMPROVE

HYDROPOWER

DESIGN + PLANNING
OPERATION

→ Cost-efficient
→ Easy access
→ Data worldwide

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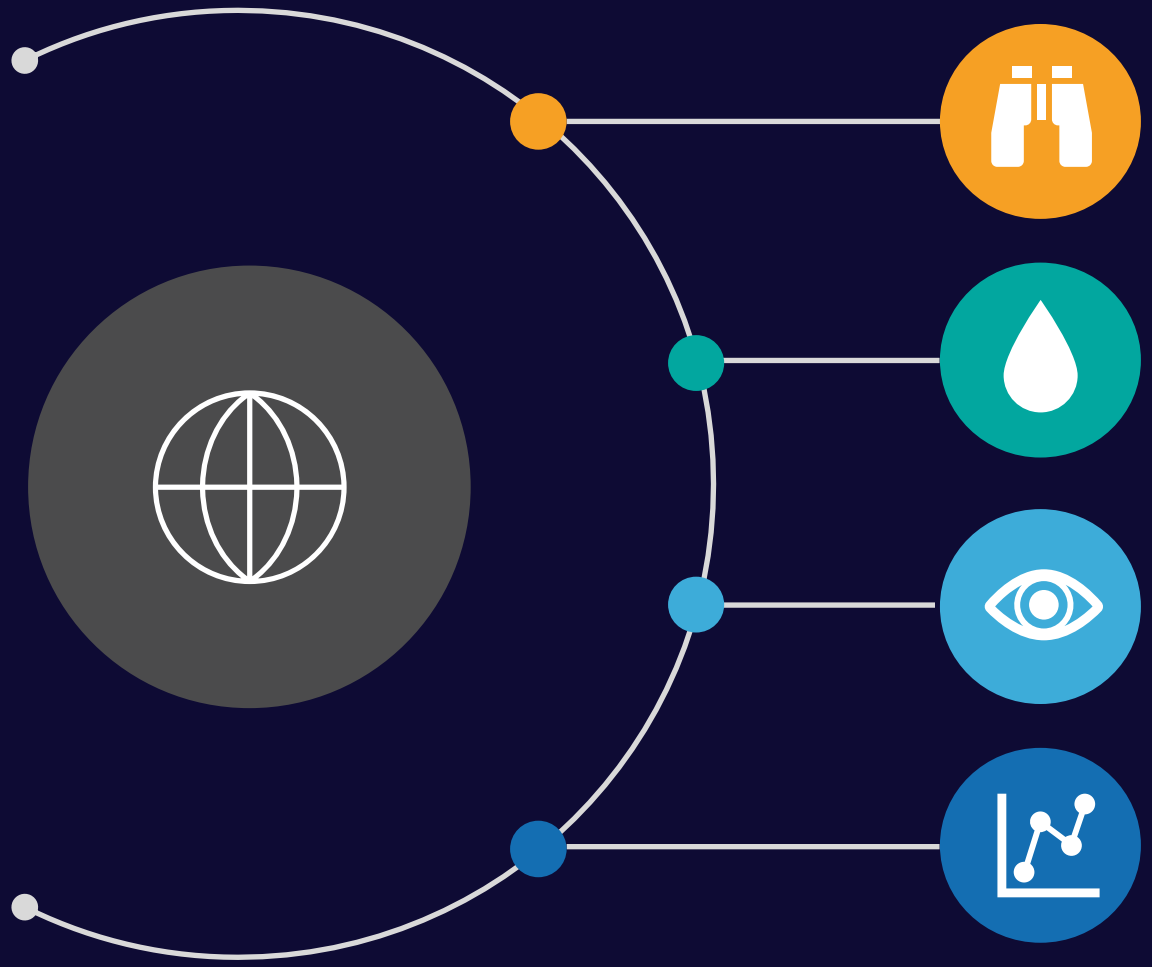
HYPOS PORTFOLIO



Operational Monitoring of reservoirs and river systems

Near real-time hydrological and sediment states

Near real-time monitoring of sediment management activities

Baseline environmental information based on historical data

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Use Cases

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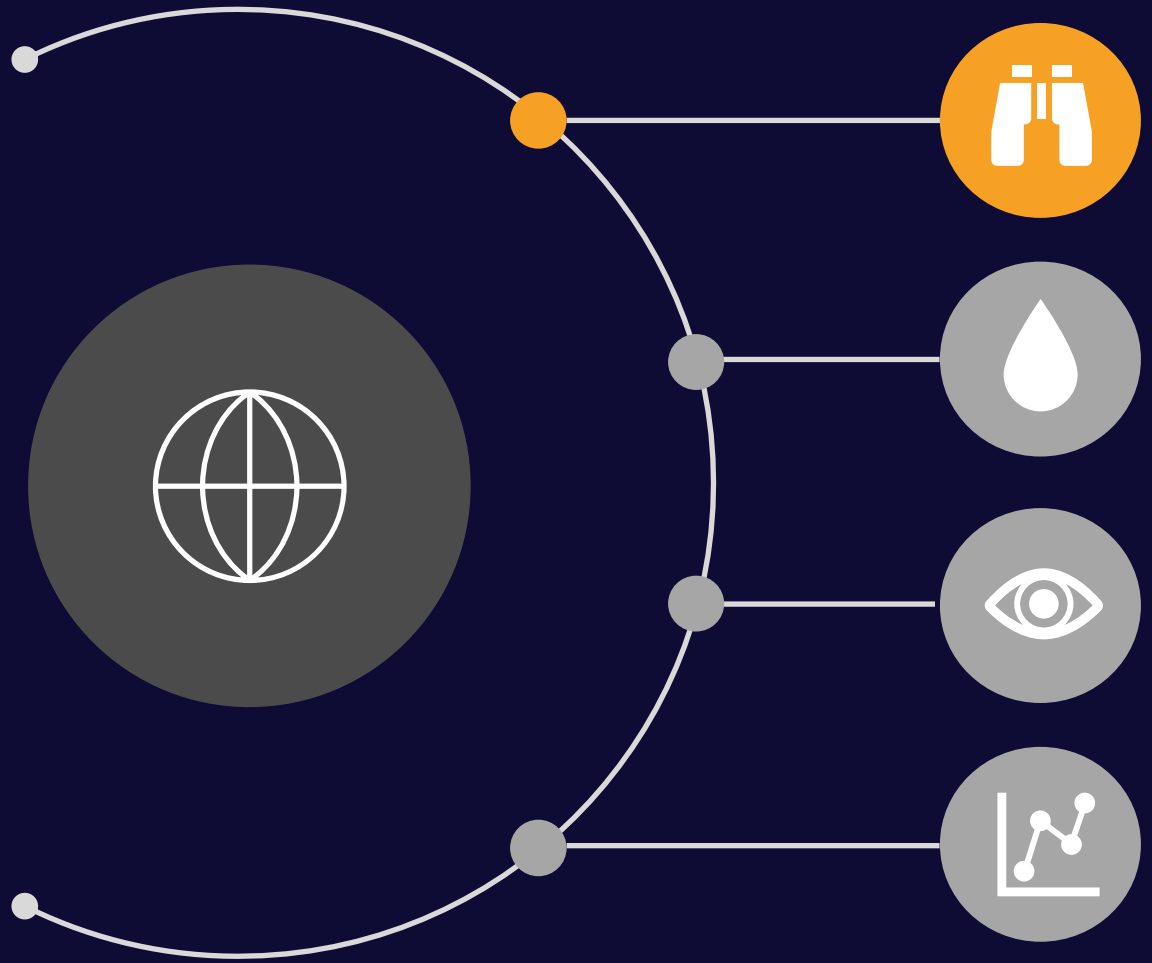
HYPOS PORTFOLIO



Operational Monitoring of reservoirs and river systems

EO-based monitoring of basic water quality parameter on a regular basis delivered as online accessible maps and time series

Near real-time hydrological and sediment states

Near real-time monitoring of sediment management activities

Baseline environmental information based on historical data

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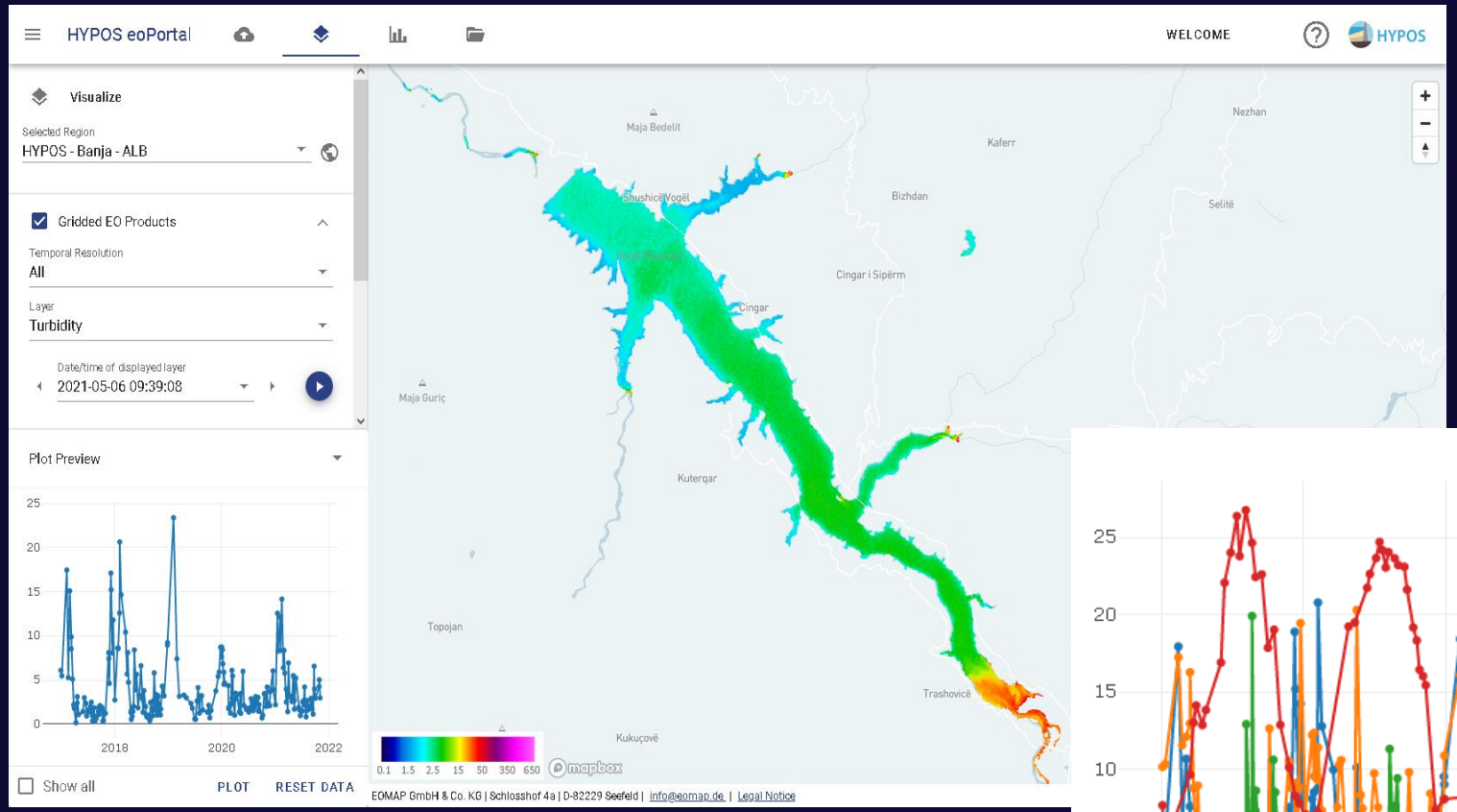
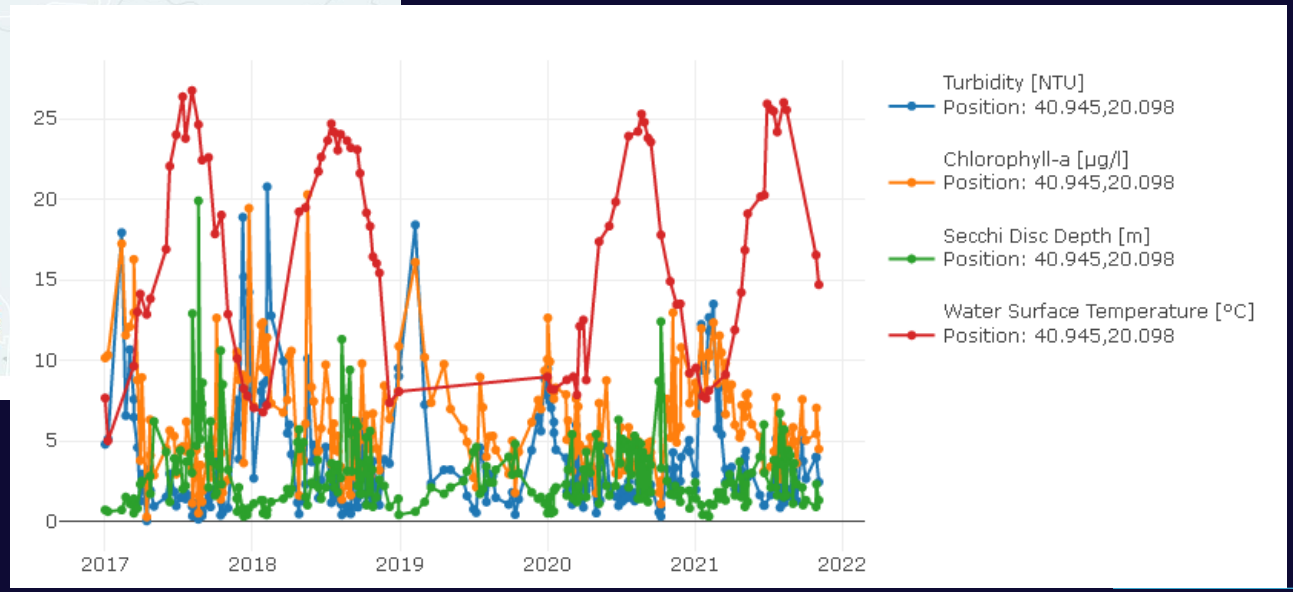
OPERATIONAL MONITORING OF RESERVOIRS AND RIVER SYSTEMS





Data Source:

Copernicus Satellites Sentinel-2, 10 m, every 5 days

USGS Landsat 7/8, 30 m, every 8 days

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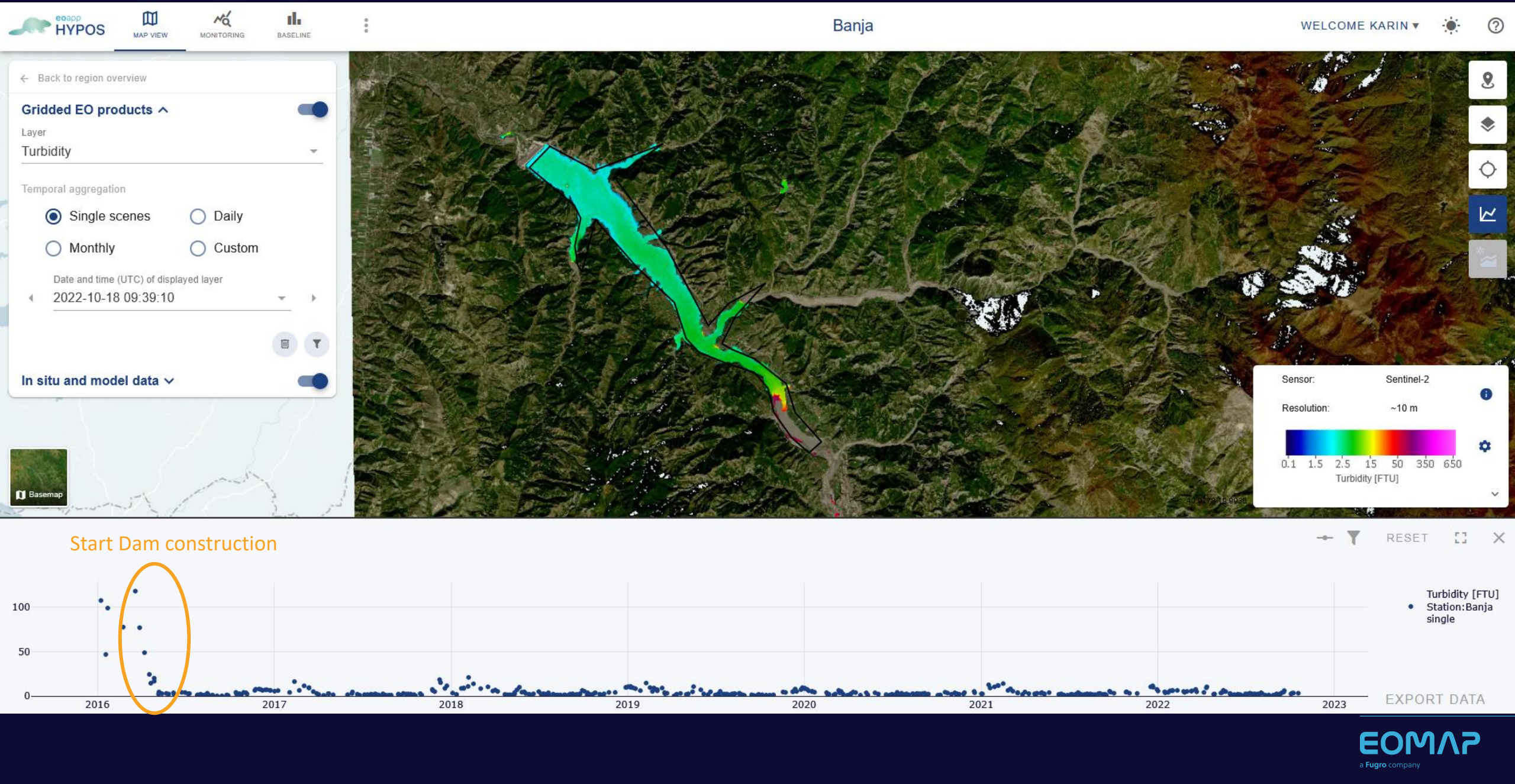

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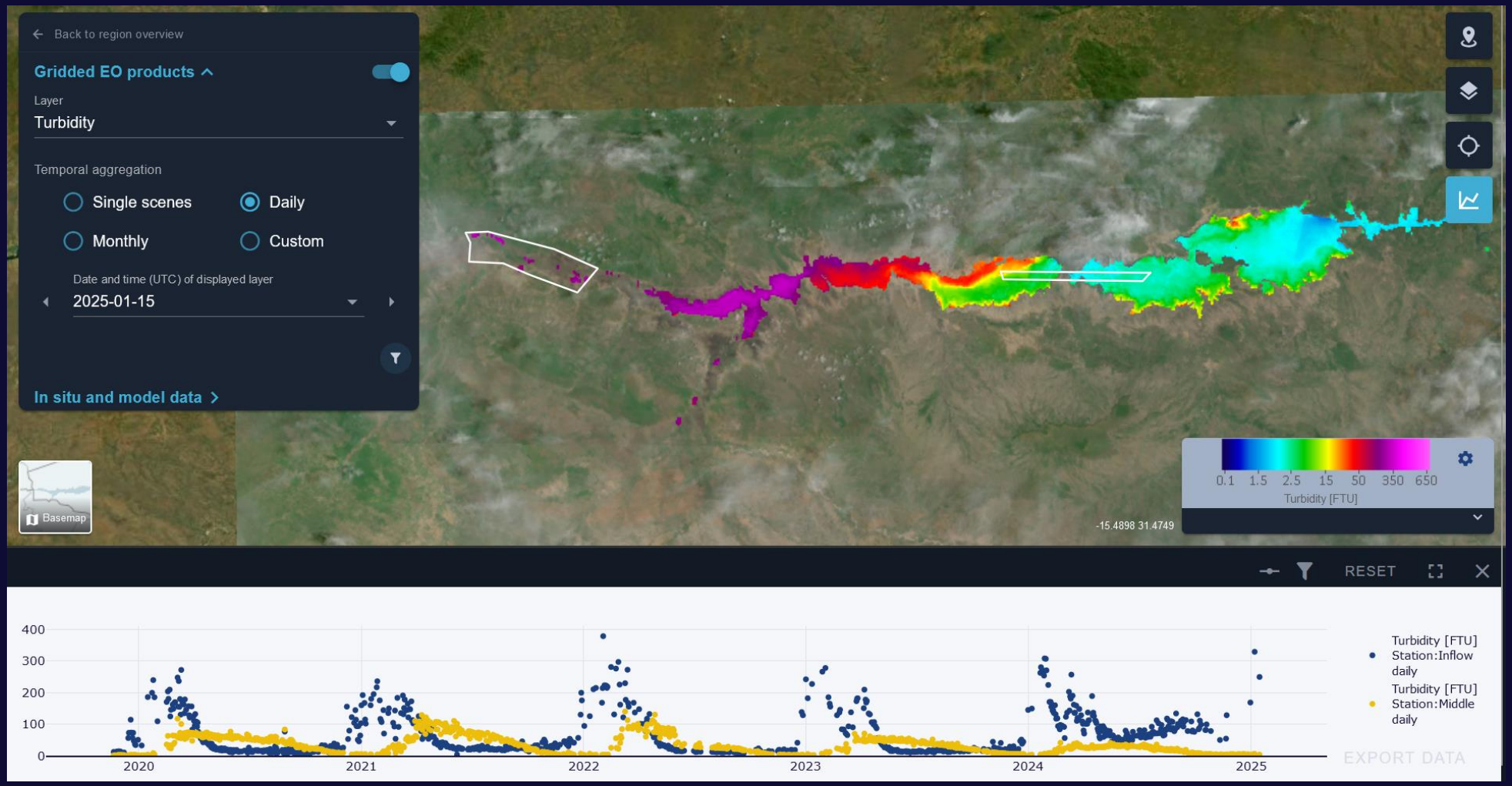
CAHORA BASSA HYDROPOWER RESERVOIR DAILY MONITORING



Data Source:

Copernicus Satellites Sentinel-2, 10 m, every 5 days and Sentinel-3, 300m, up to daily

USGS Landsat 7/8/9, 30 m, every 8 days

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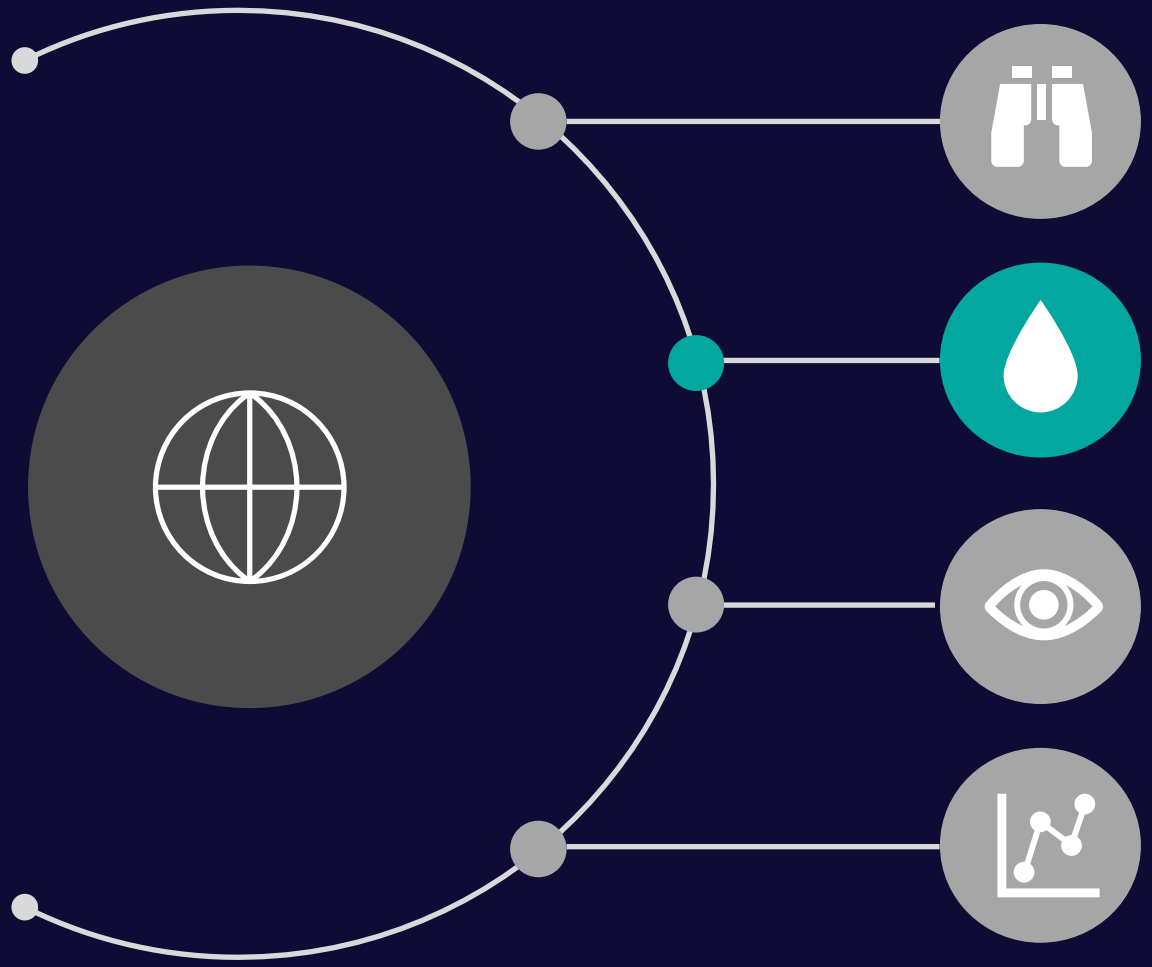
HYPOS PORTFOLIO



Operational Monitoring of reservoirs and river systems

Near real-time hydrological and sediment states

Up-to-date reporting on flows and sediment concentrations provide important information to managers in their daily operational decisions

Near real-time monitoring of sediment management activities

Baseline environmental information based on historical data

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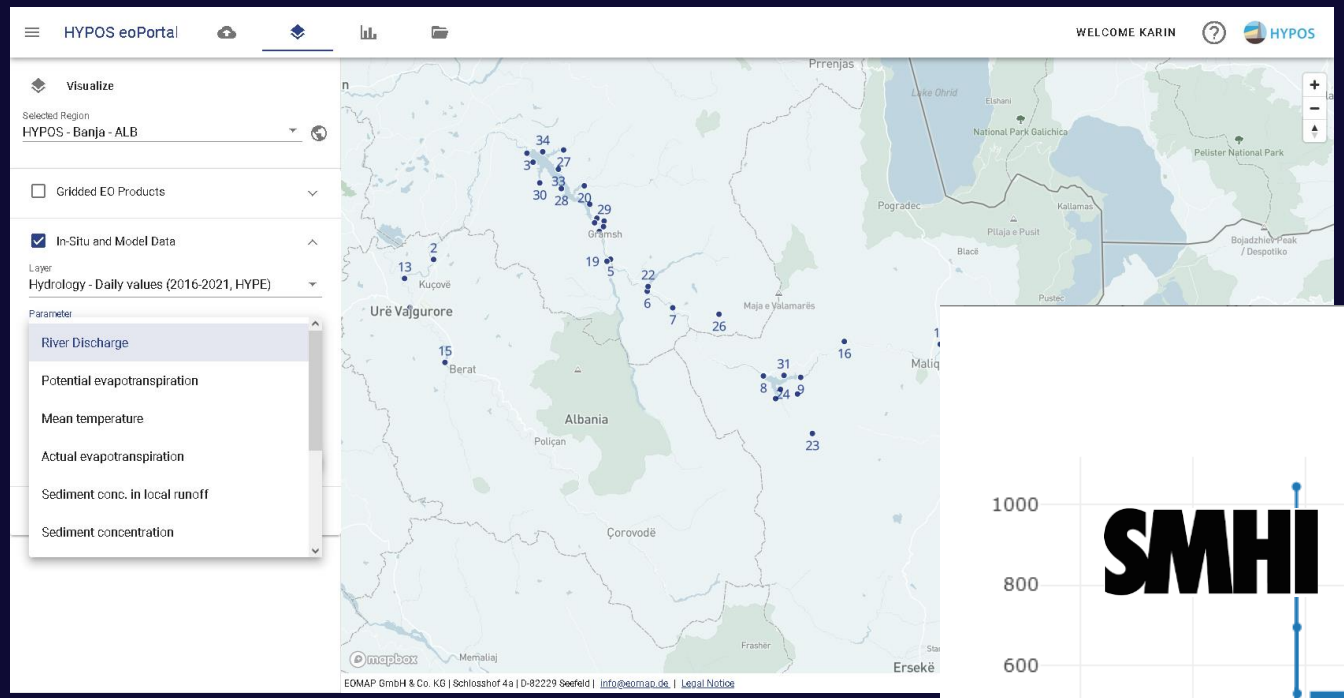
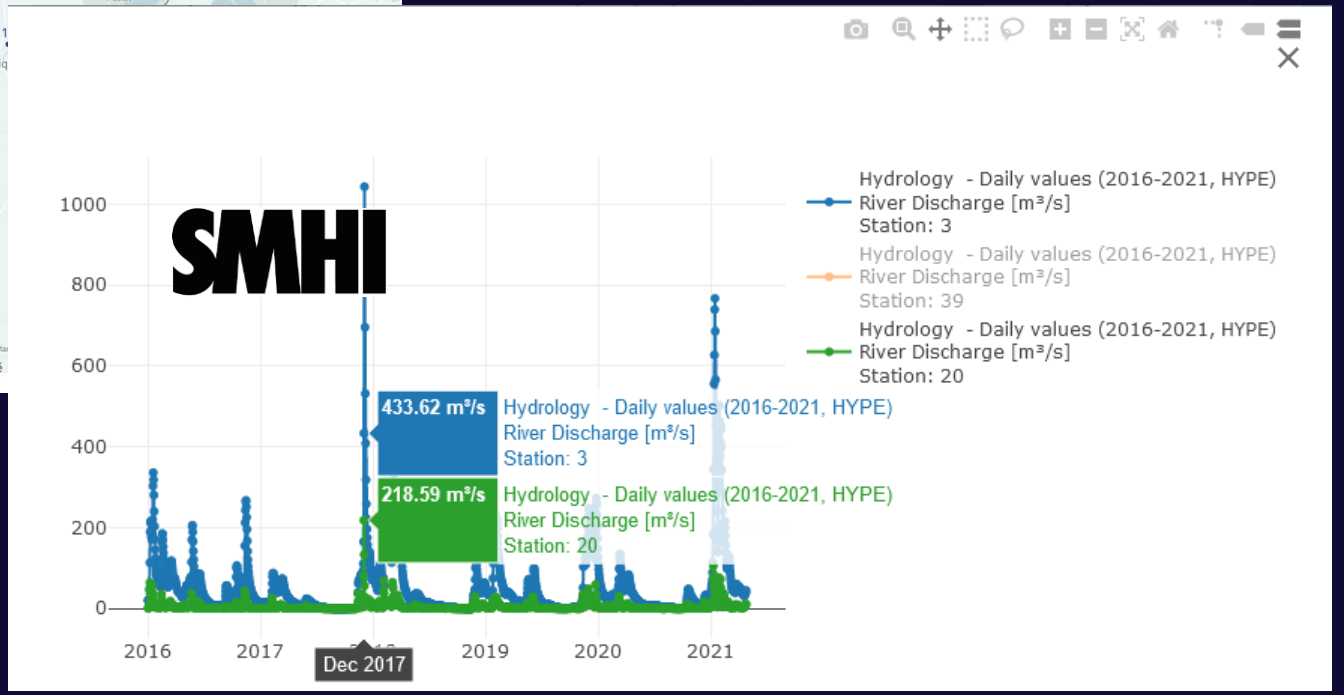
NEAR-REAL TIME HYDROLOGICAL AND SEDIMENT STATES





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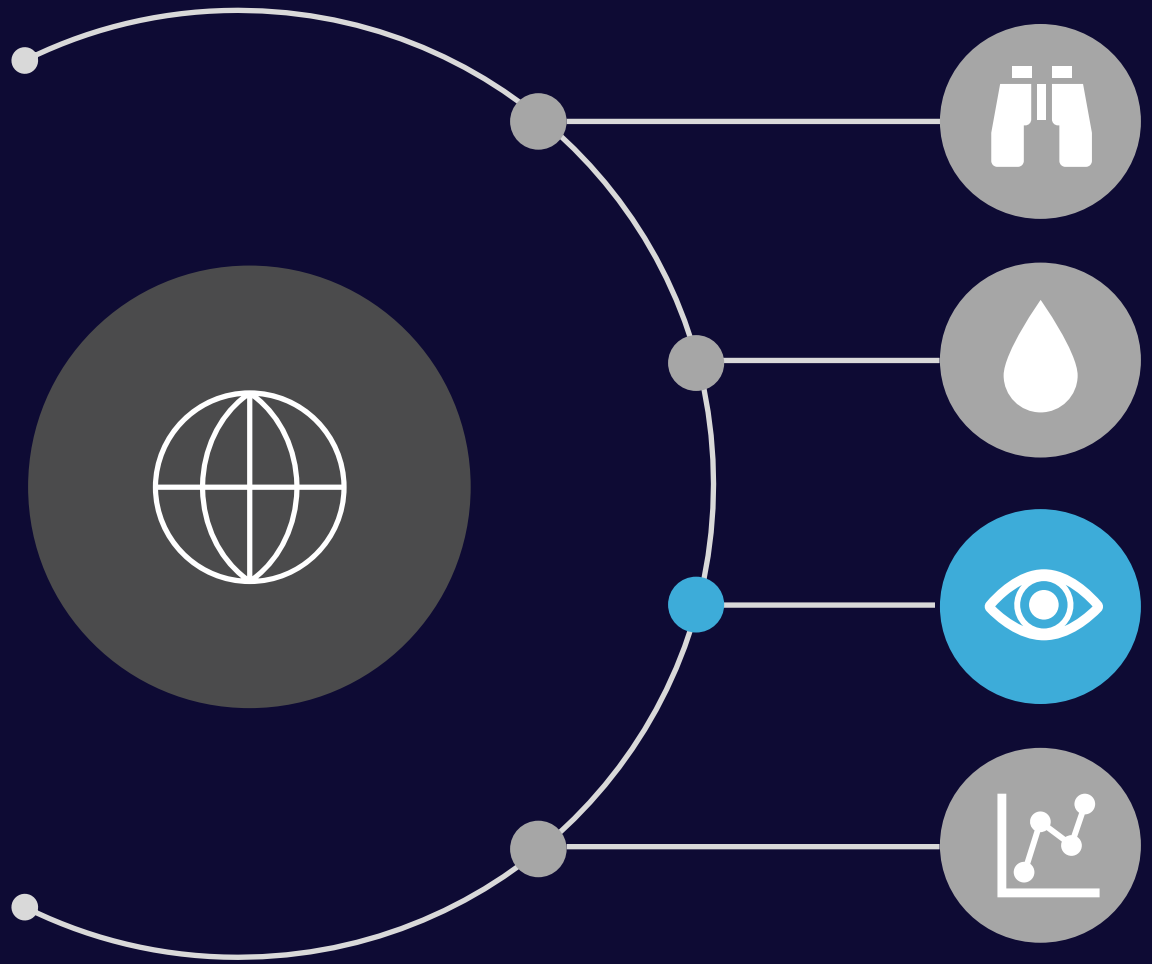
HYPOS portfolio



Operational Monitoring of reservoirs and river systems

Near real-time hydrological and sediment states

Near real-time monitoring of sediment management activities

Special targeted data gathering with VHR satellites will help to analyze fast dynamics of single events

Baseline environmental information based on historical data

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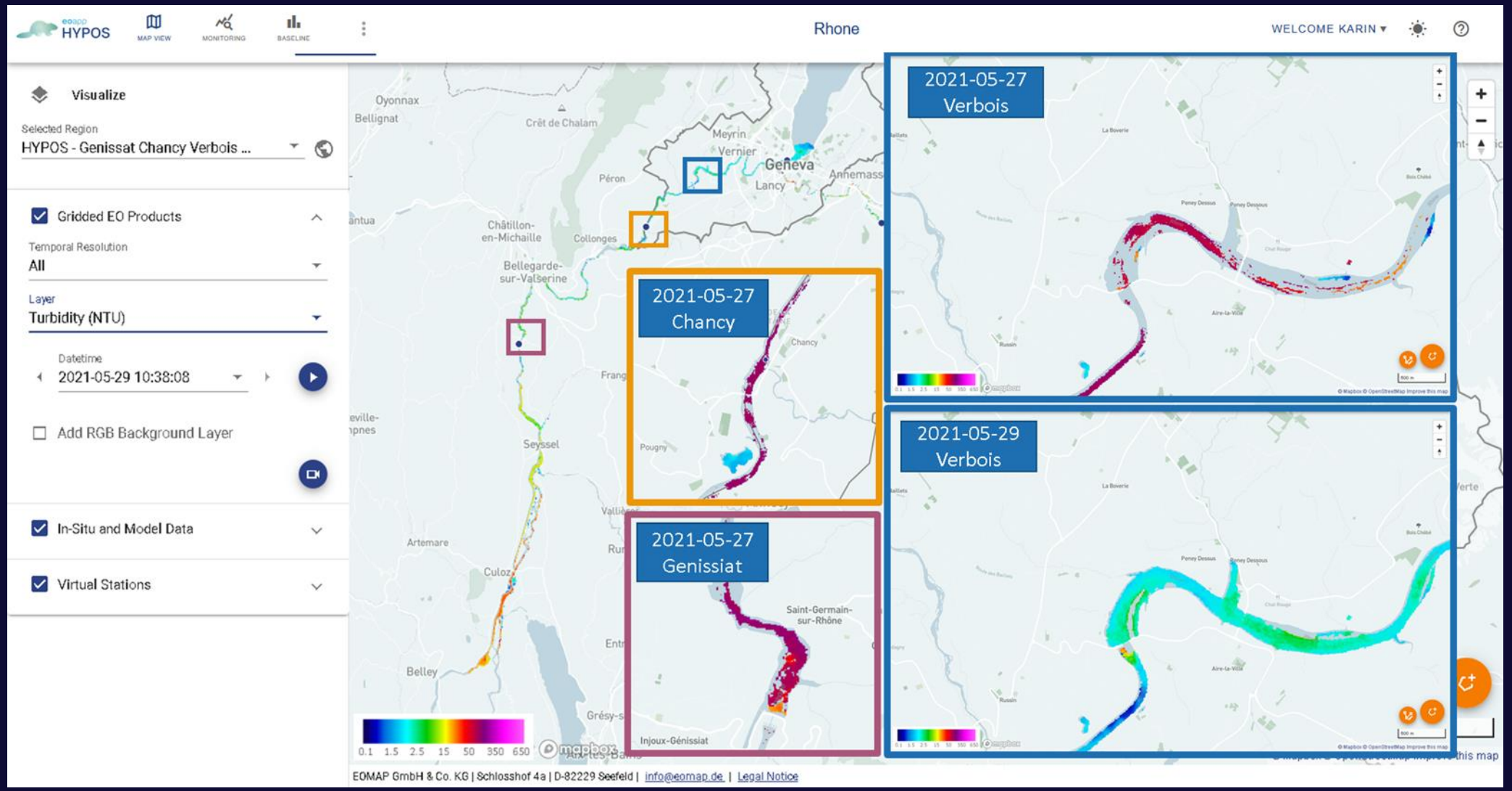
SEDIMENT INFORMATION ALONG THE RHÔNE DURING FLUSHING



Data Source:

Planet SuperDoves, 3m resolution

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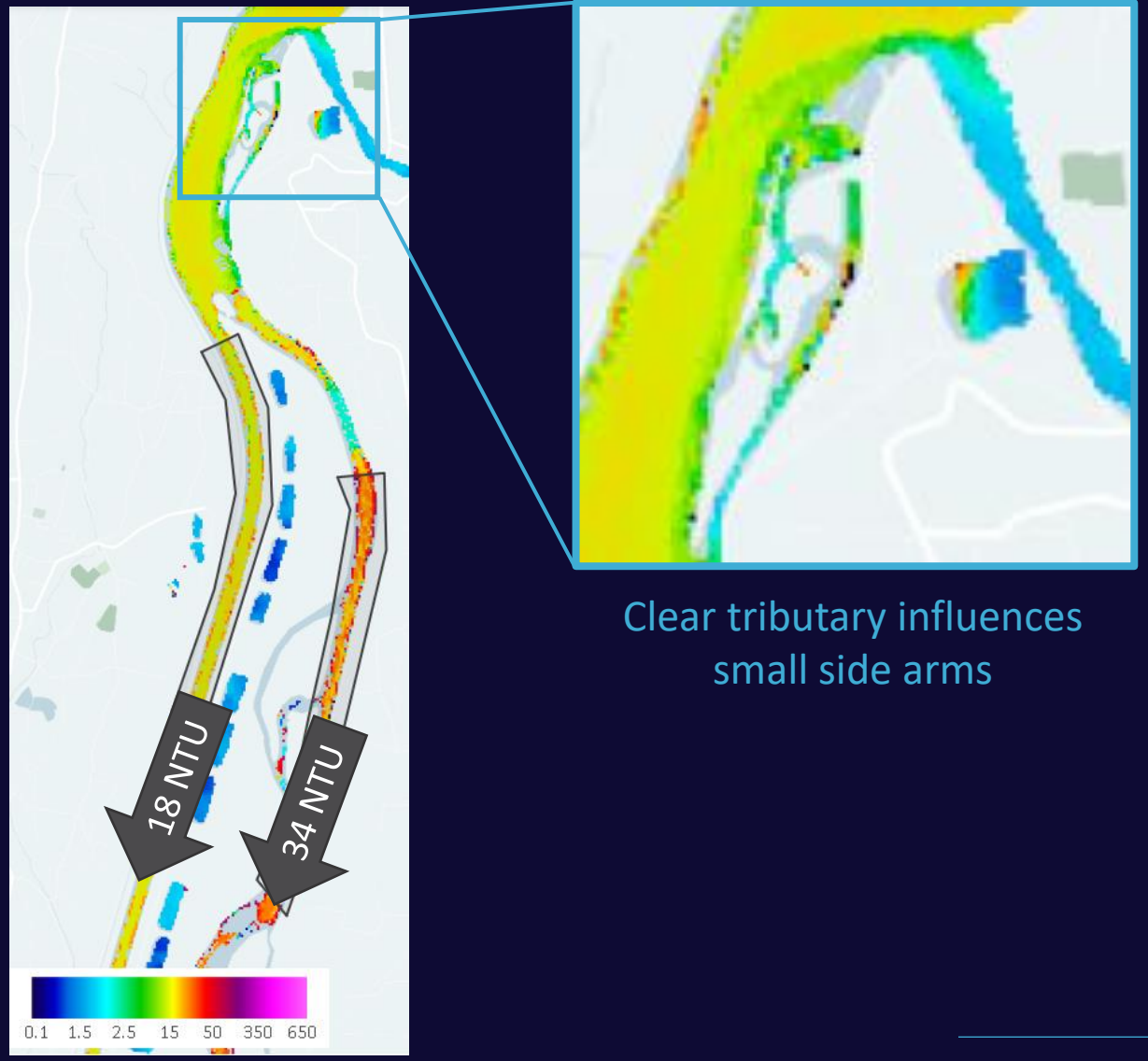
TURBIDITY IN RIVER BRANCHES

Get information for all parts of the Rhône and its tributaries

Assess representativeness of in-situ measurement locations

Save costs by reduction of in-situ measurements needed



Clear tributary influences small side arms

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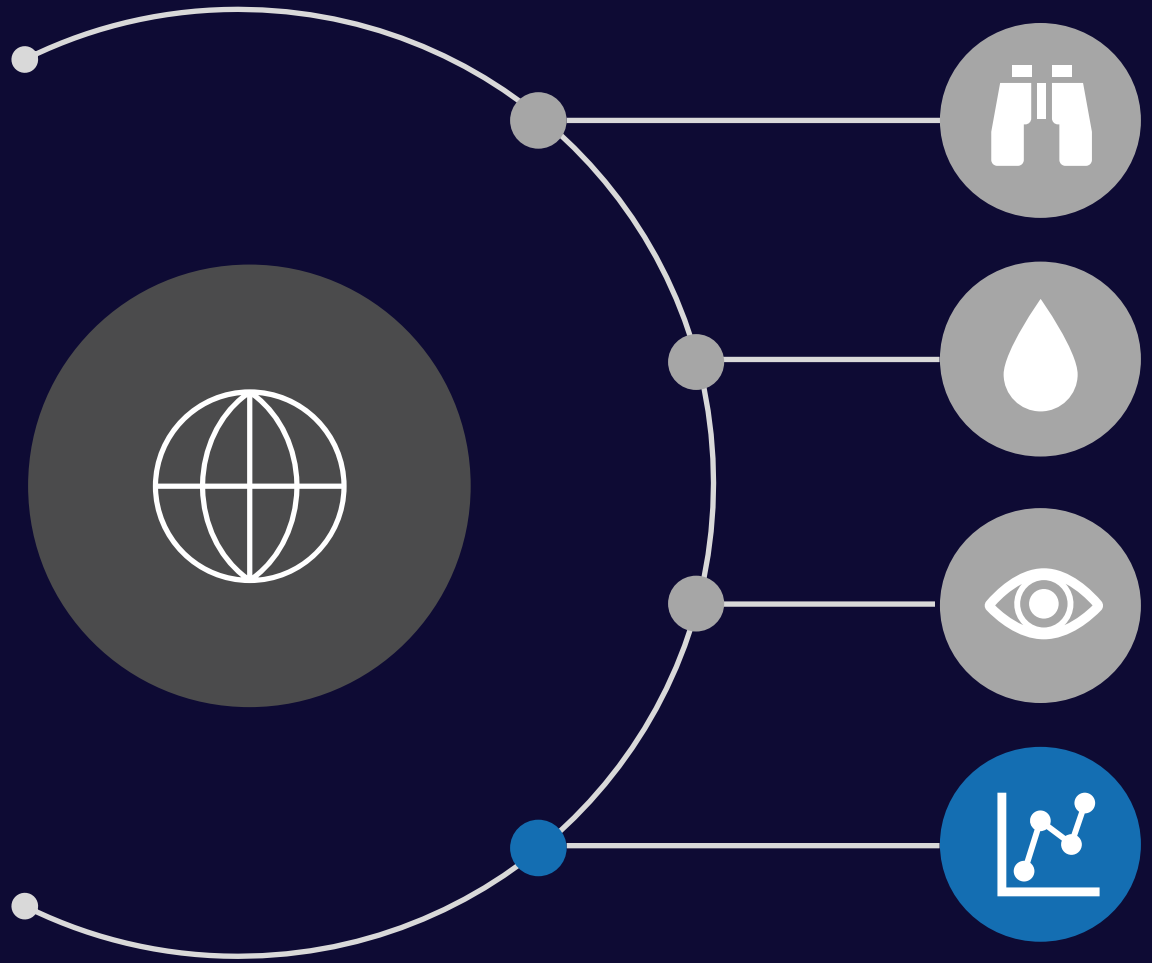
HYPOS PORTFOLIO



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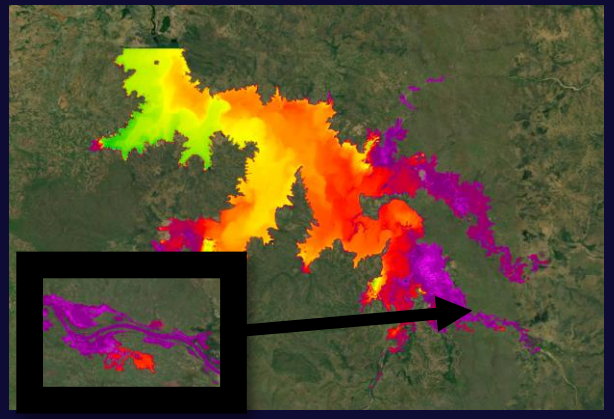
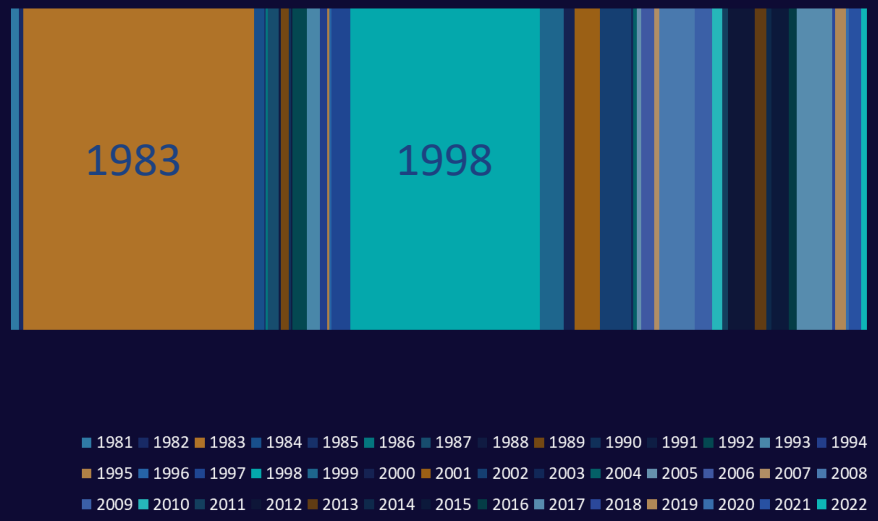
LONG-TERM SEDIMENT FLUX

Lagdo, Cameroon and Poechos, Peru

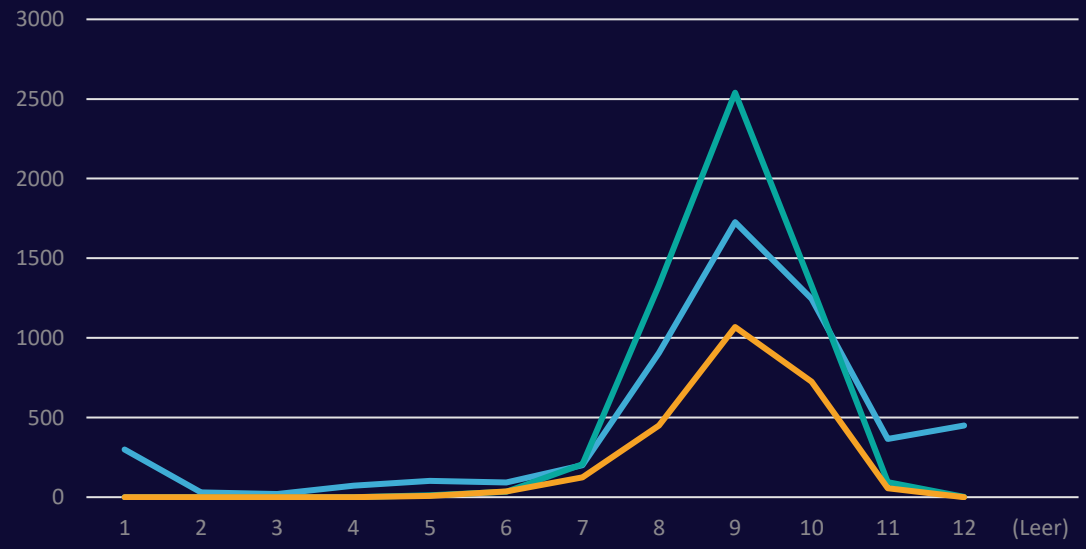
Pilot projects performed for the World Bank in ESA's GDA programme



Two extreme El-Nino years contributed almost 50 % of the total sediments from 40 years



Seasonal patterns visible



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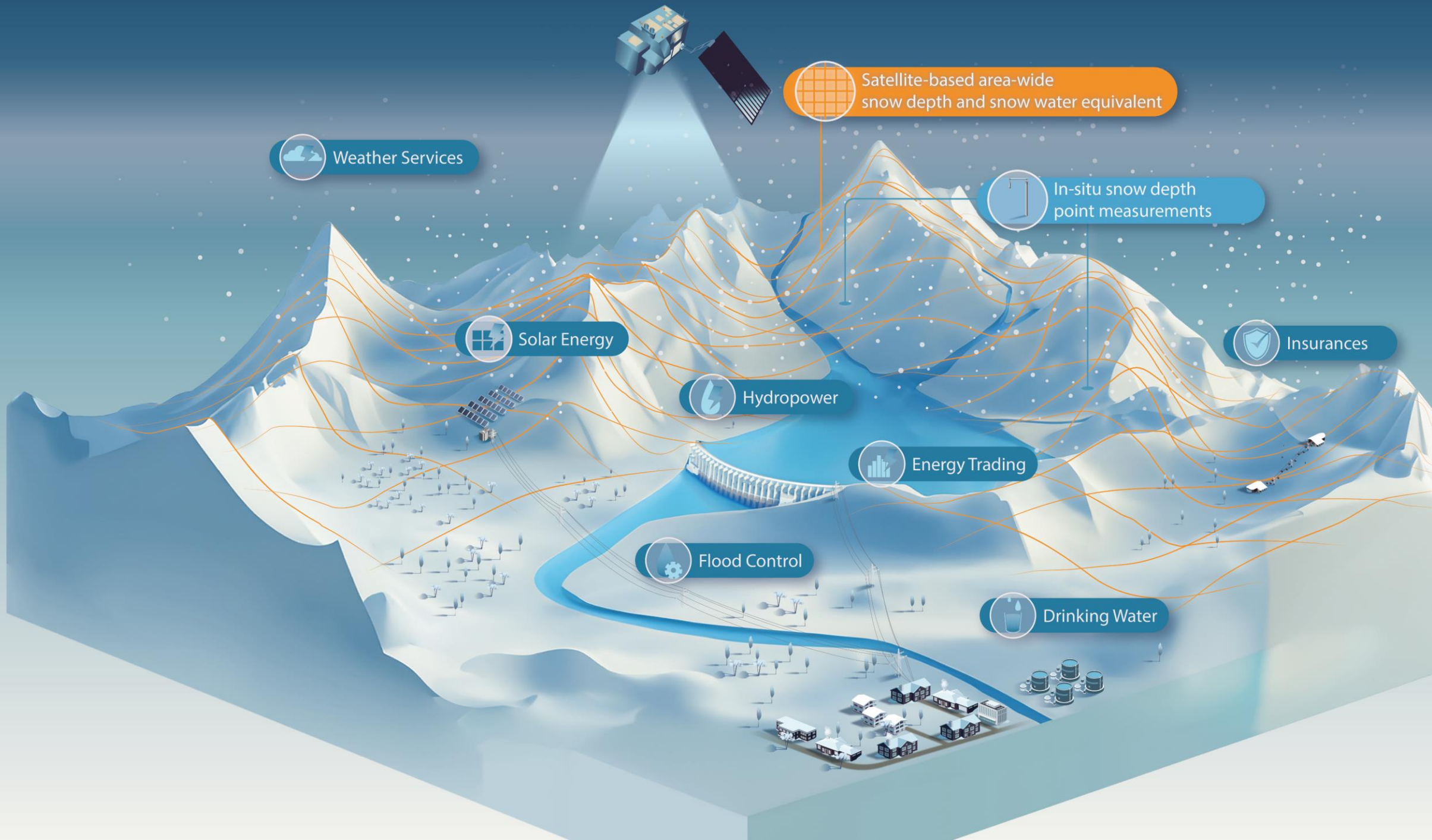
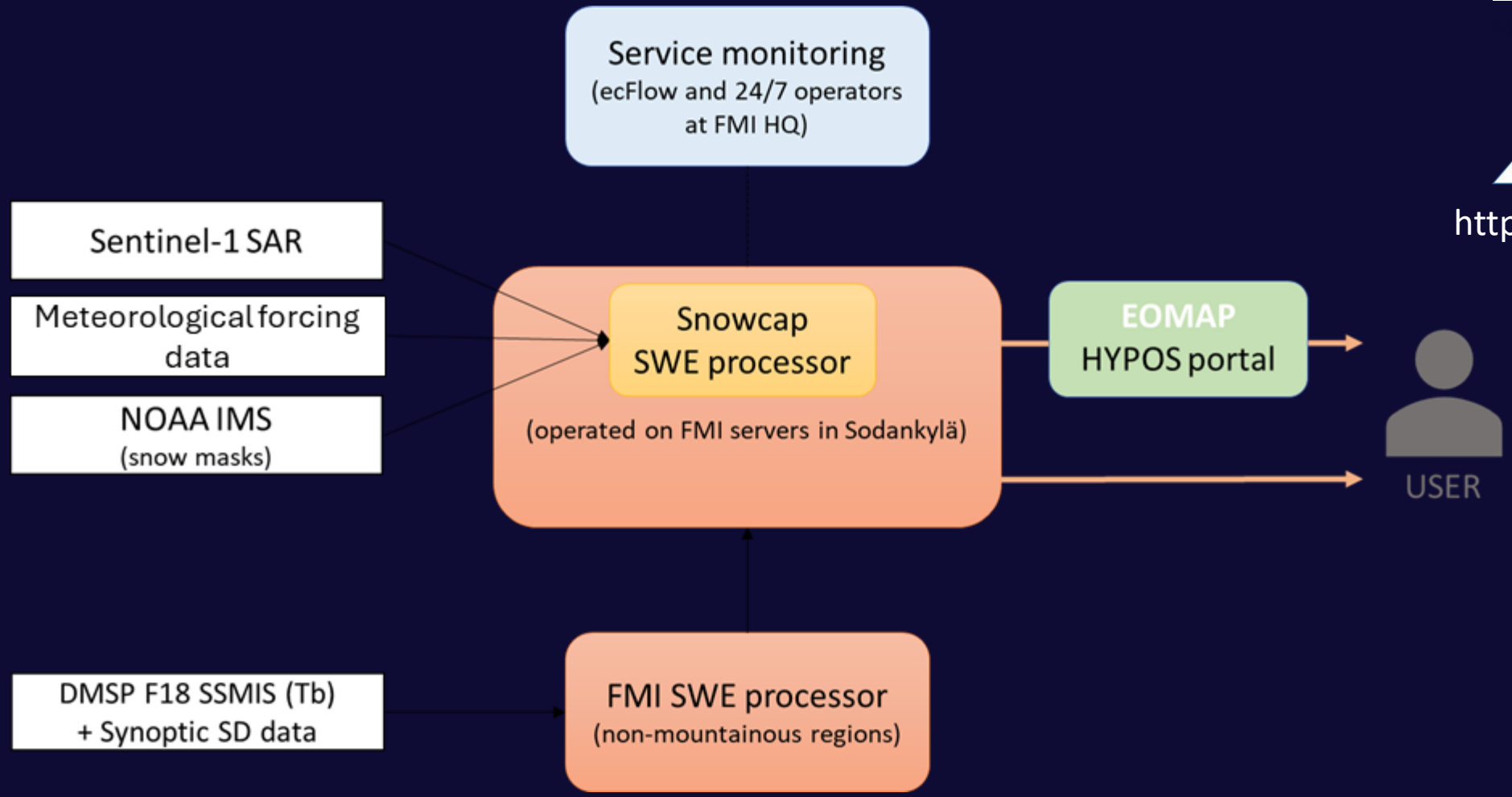
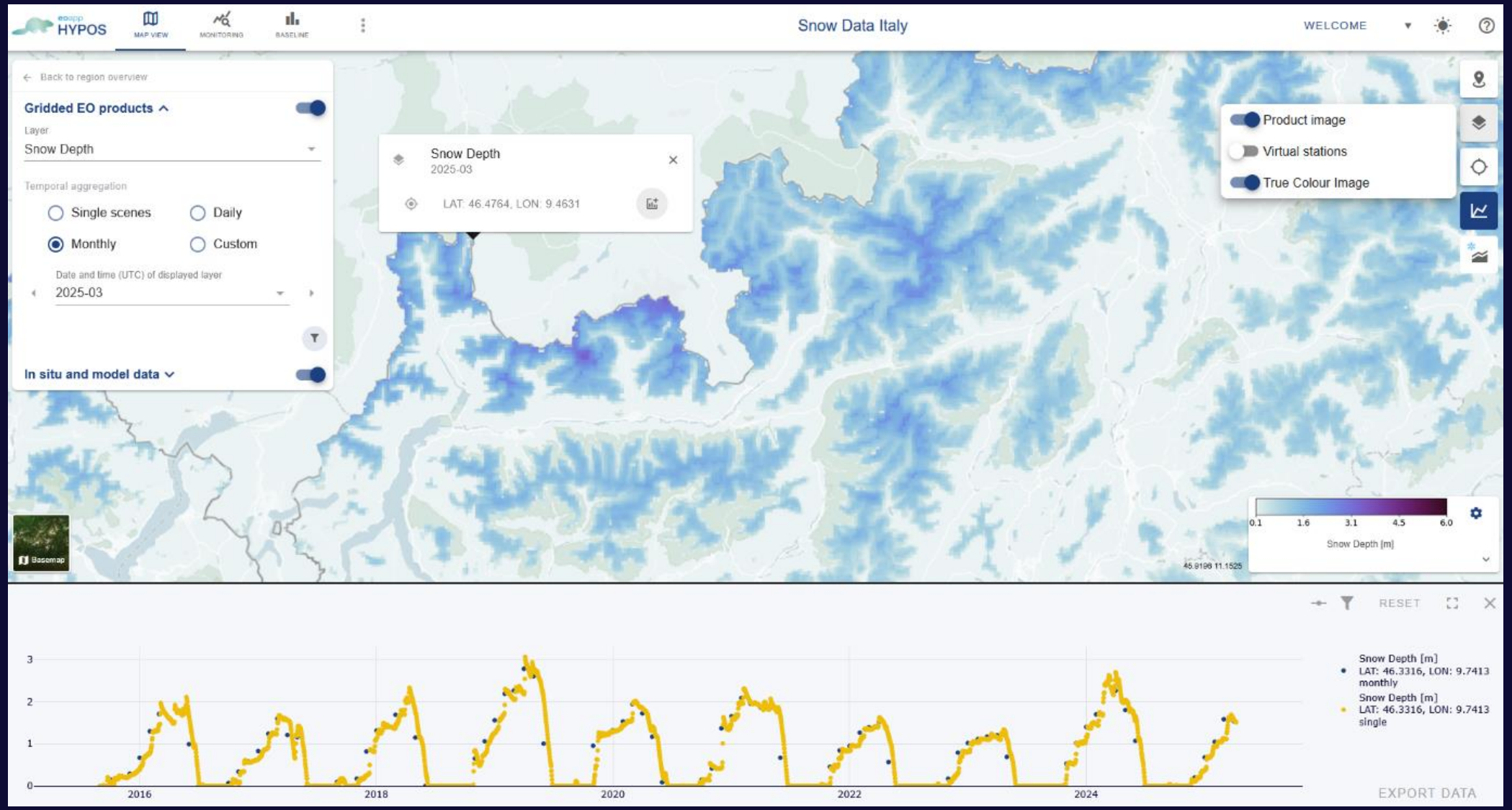

Satellite-based area-wide
snow depth and snow water equivalent
Weather Services
In-situ snow depth
point measurements
Solar Energy
Insurances
Hydropower
Energy Trading
Flood Control
Drinking Water

SNOWPOWER



https://snowcap.info/

SNOW DEPTH



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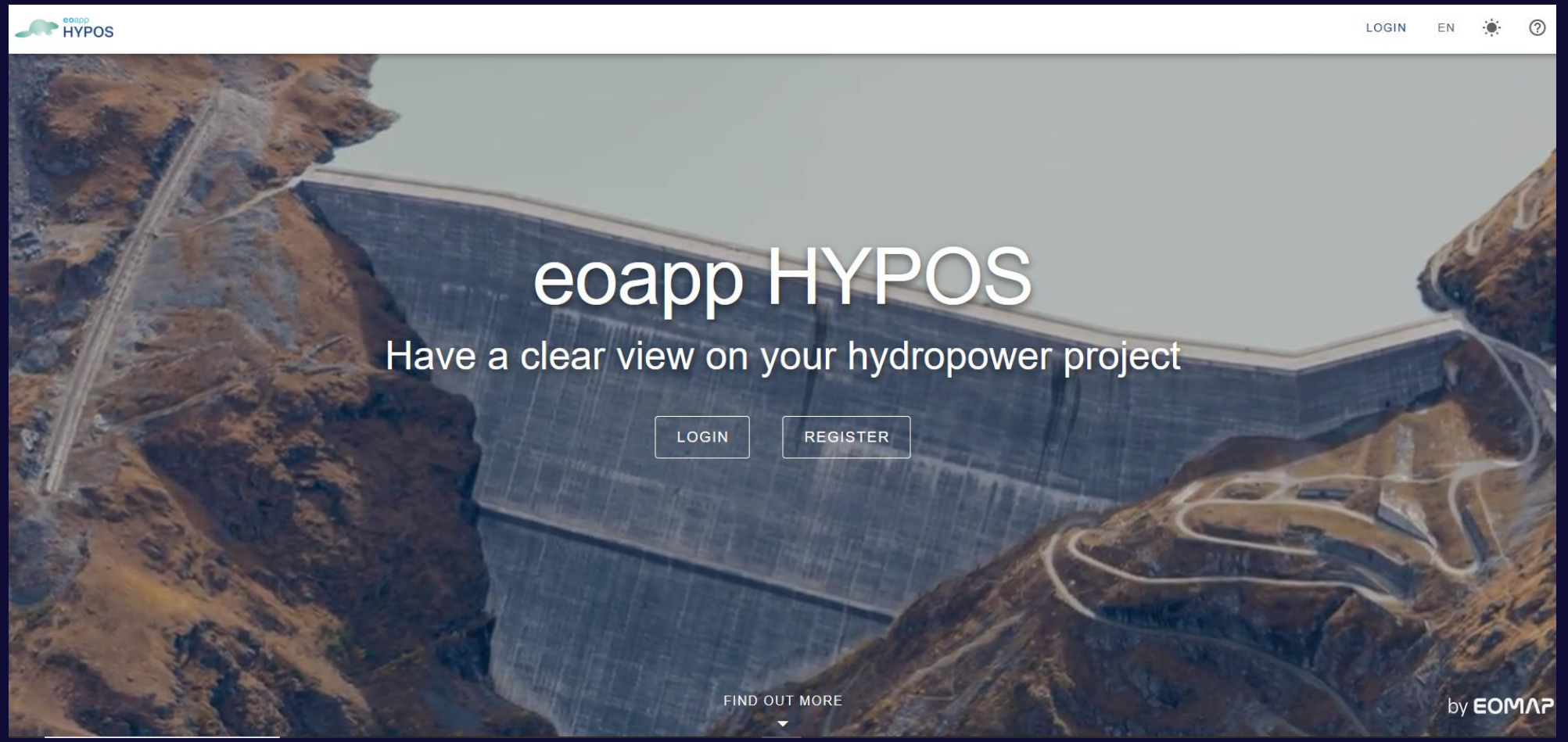
FREE REGISTRATION WITH DEMO DATA



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Thank you for your attention

Detect more with EOMAP – a Fugro company.

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