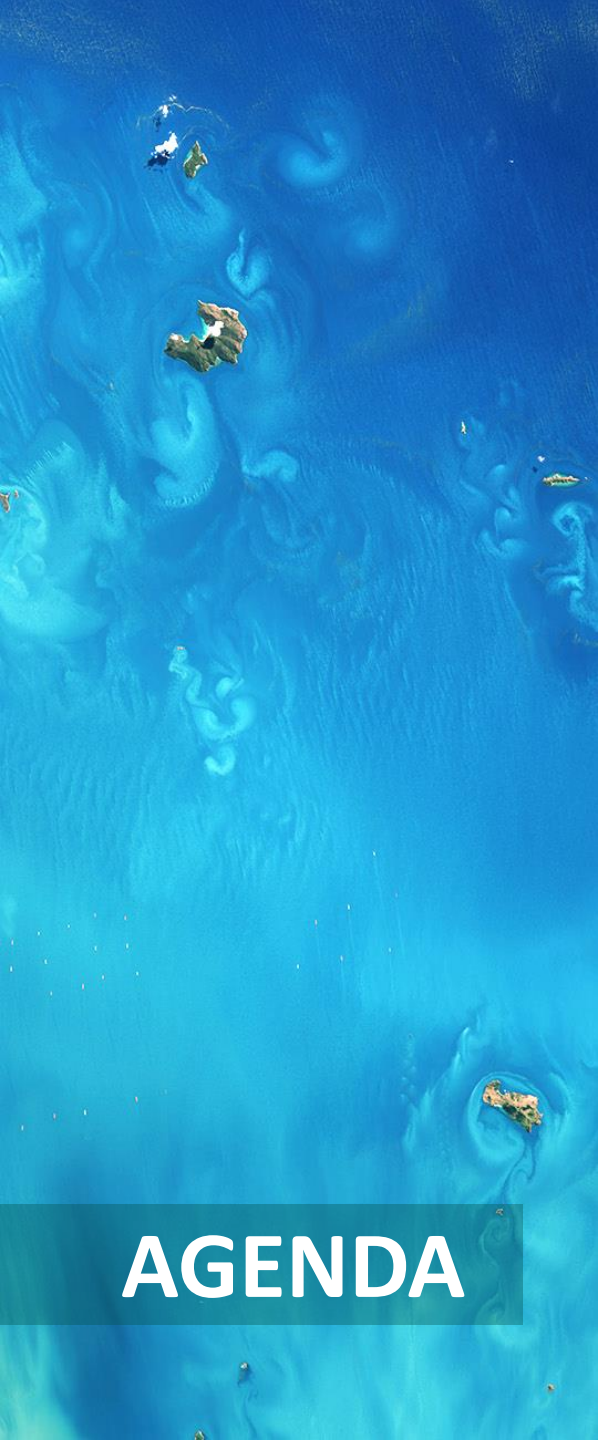
New integrated digital solutions, connecting ecological and hydrological data for better water management

Karin Schenk | *EOMAP*
Head of Water Quality

WATER DAYS
SDB Day &
EO Technology
Conference

NEW INTEGRATED DIGITAL SOLUTIONS, CONNECTING ECOLOGICAL AND HYDROLOGICAL DATA FOR BETTER WATER MANAGEMENT

2022-10-05 | Karin Schenk

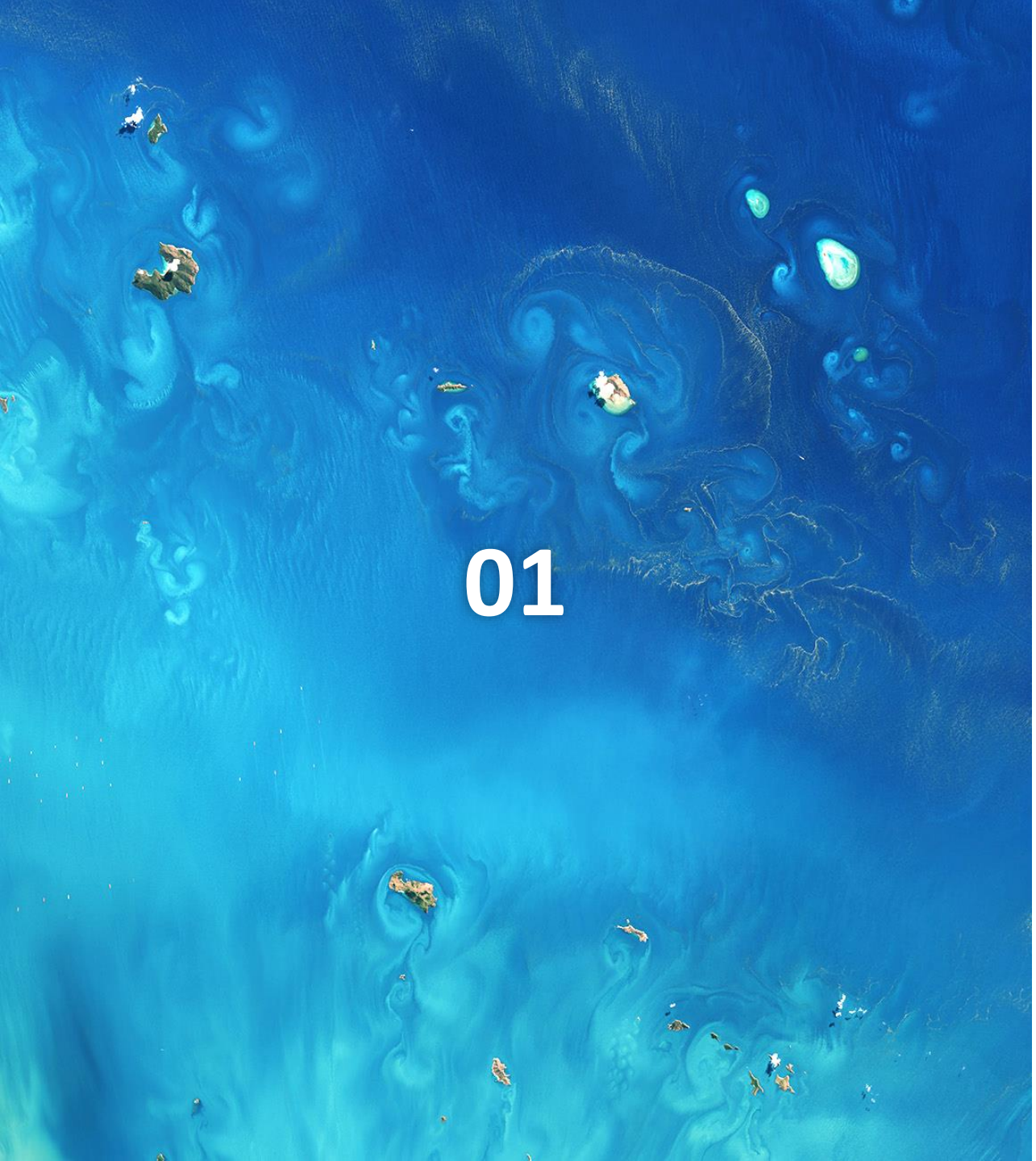


AGENDA

01 Ambition

02 Digital Solutions in use

03 Roadmap



01

AMBITION

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AMBITION

DIGITAL EARTH

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USER TESTIMONIALS

"

Earth Observation will increase the number of lakes we can monitor by the factor of 10 and more.

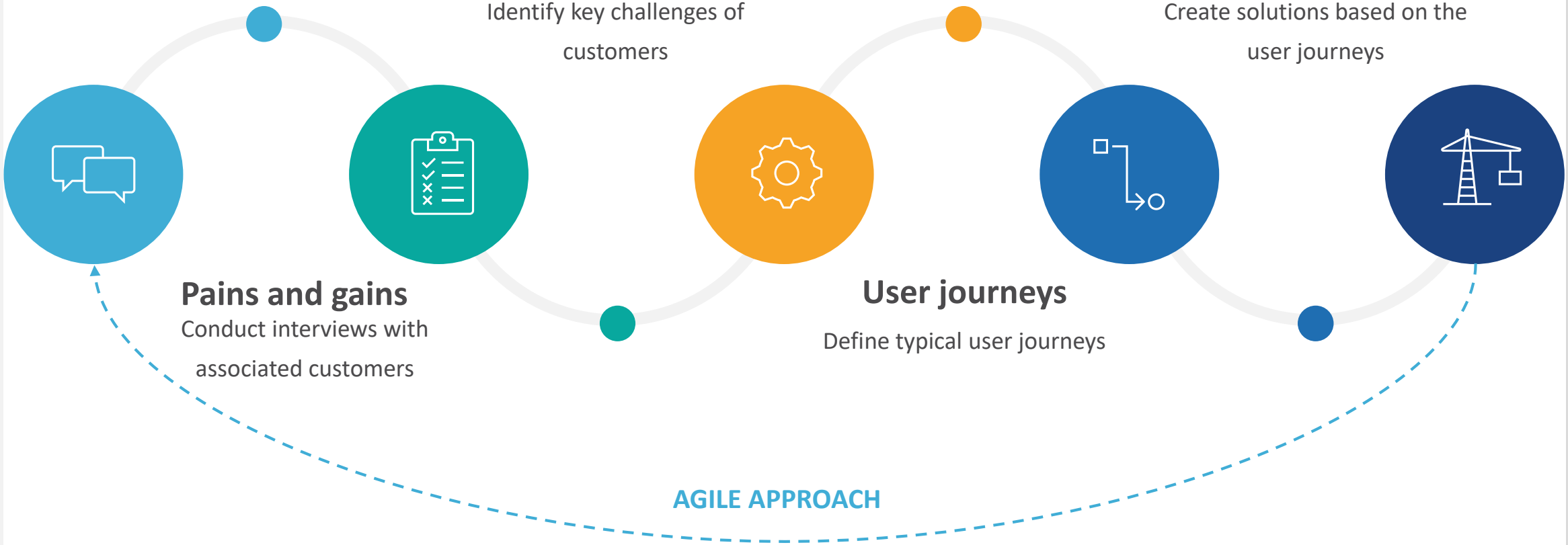
It enables an intuitive and easy access to EO data and can therefore clearly simplify the application for environmental monitoring.

Head of bathing water monitoring, German Province

I am sure that all our operations managers will use such an alert app on their phone.

Environmental Engineer, Dredging Company

DEVELOPMENT WORKFLOW



BACKGROUND

- Back in time over decades
- Data everywhere even for small water bodies
- Interoperability (file)
- Timely and affordable

→ **A data treasure which can be used for monitoring and baseline**

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02

DIGITAL SOLUTIONS IN USE

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eoSmart –
water quality data at your fingertips

- ➜ readily available
- ➜ high quality
- ➜ easy to use
- ➜ tailored to your needs

Icons based on Icons by flaticon.com

The eoApp

- Cloud backend, scalable
- Connected to public and commercial satellite archives
- Professional & validated EO data analytics
- Easy data assimilation and decision support tools
- EOMAP inside — Physics based data analytics

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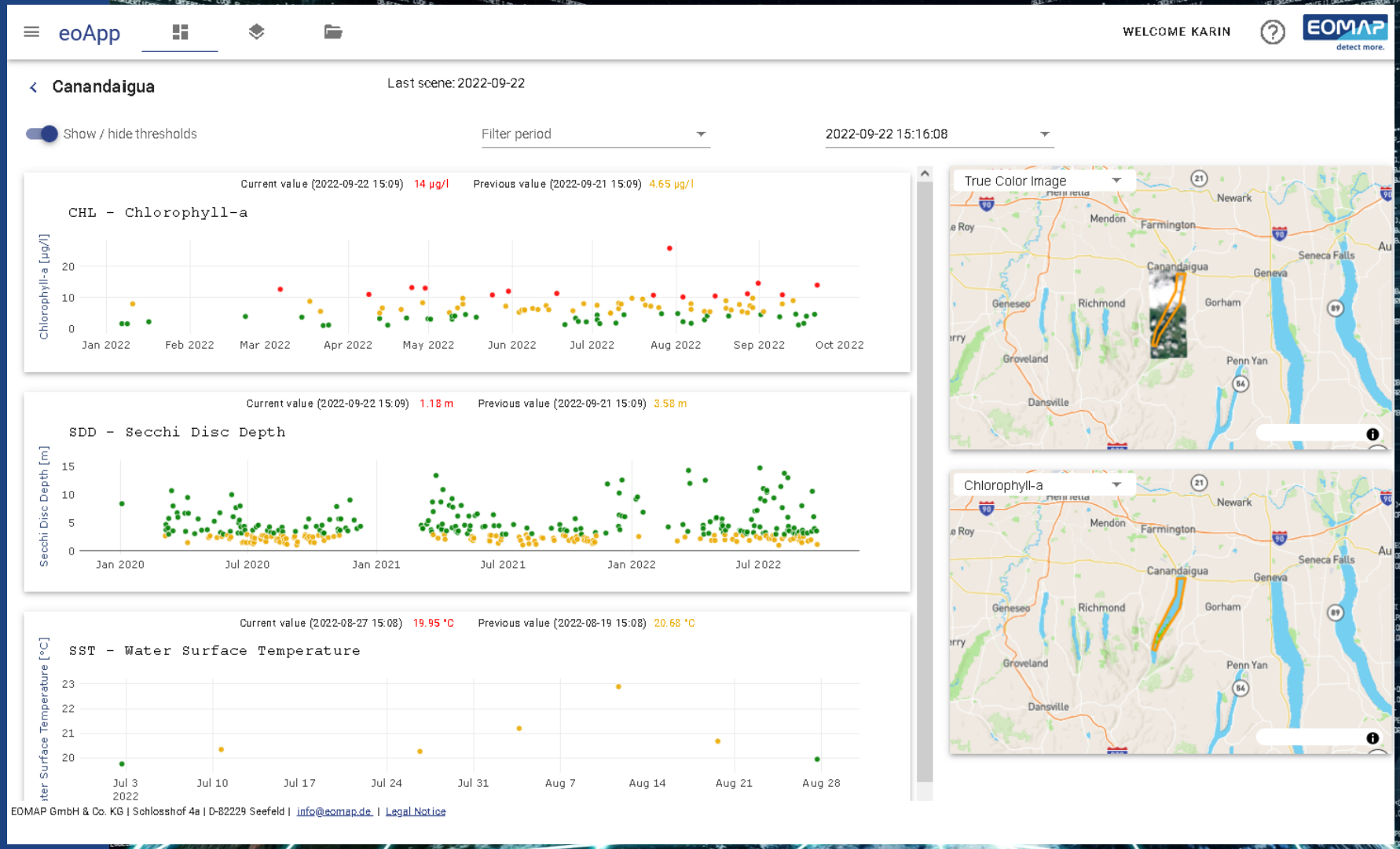
The eoApp

Comfort-Access

- Online data access
- Alert-Dashboard
- In-situ-data / modelling data integration



Canandaigua Lake, USA

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eoPortal | EOMAP

https://www.xylem.eoportal.de/#/

Anmelden

Xylem eoPortal

WELCOME THOMAS

xylem

Layer
Chlorophyll

Date/time of displayed layer
2019-10-24 15:40:16

Add RGB Background Layer

In-Situ and Model Data

Layer
Harbor Water Quality

Category
EO Related

Parameter
Chlorophyll Top Sample Field (YSI)

Start Date
2019-03-01

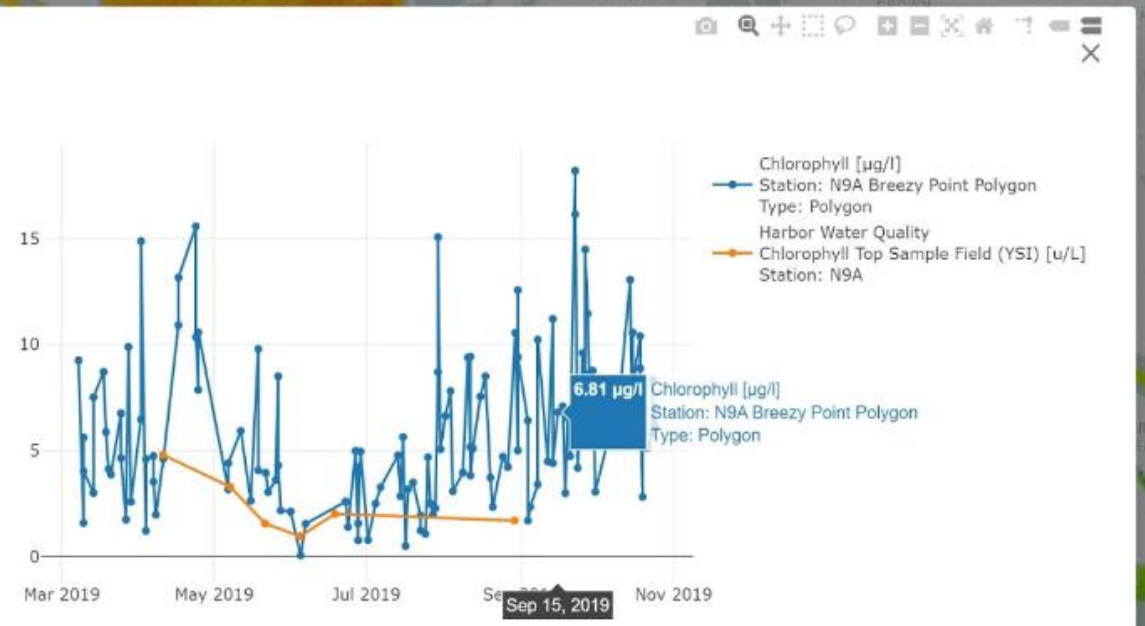
End Date
2019-10-31

Show labels

Virtual Stations

Station	Actions
Hudson N3B Polygon	
Hell Gate Polygon	
N9A Breezy Point Polygon	

Plot Preview



CREATE REPORT EXPORT DATA RESET DATA

GC3 GC4 GC6 HC2 HC1 SP1 BB4 J7 GHC JA1 F1 F5 HC3 J8 J9A J3 J10 J18 J16 J2 J11 J1 J5 N9A

Barclays Center Jamaica Bay Wildlife Refuge Coney Island Beach Gateway National Recreation Area

0.1 0.3 1 4 15 45 150

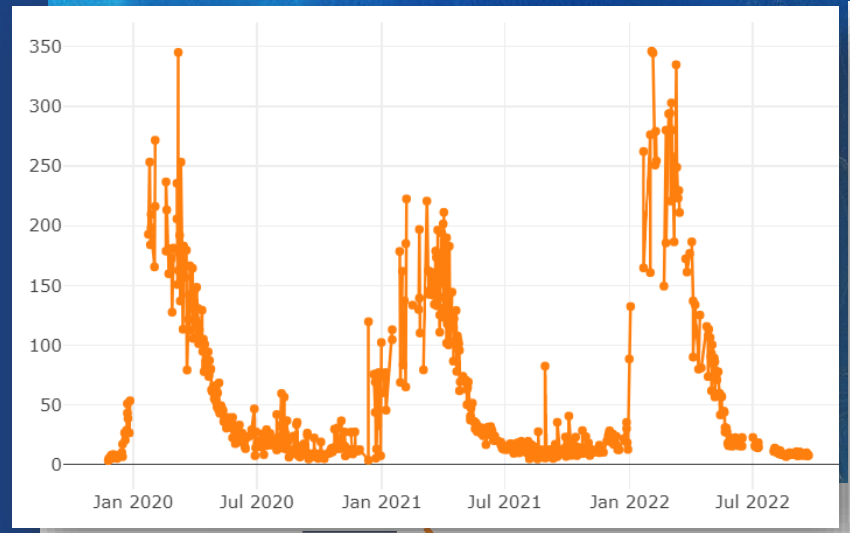
mapbox

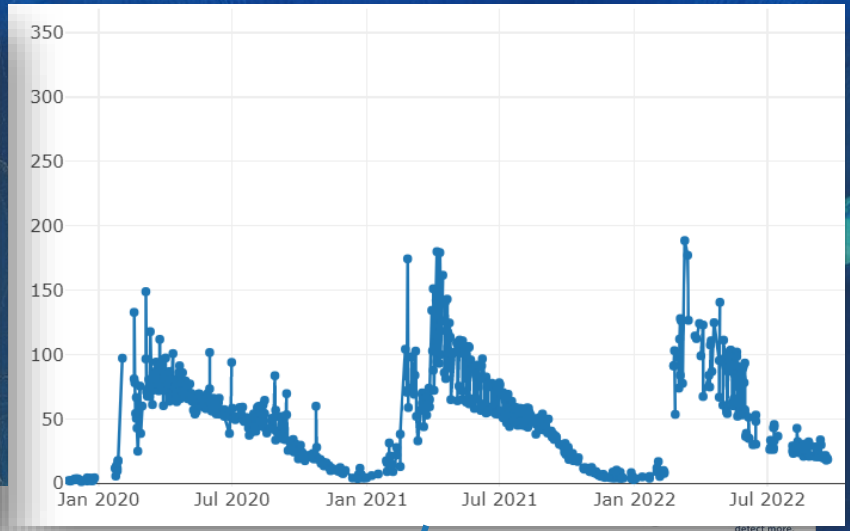
2 km

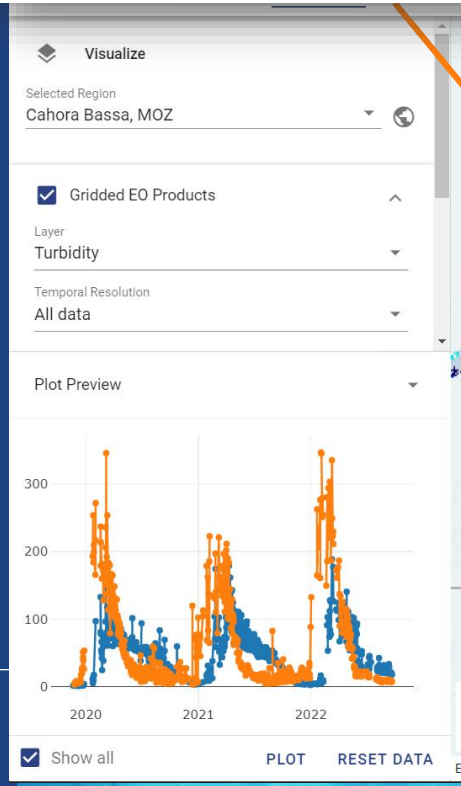
40.6109 -74.0033 © Mapbox © OpenStreetMap Improve this map

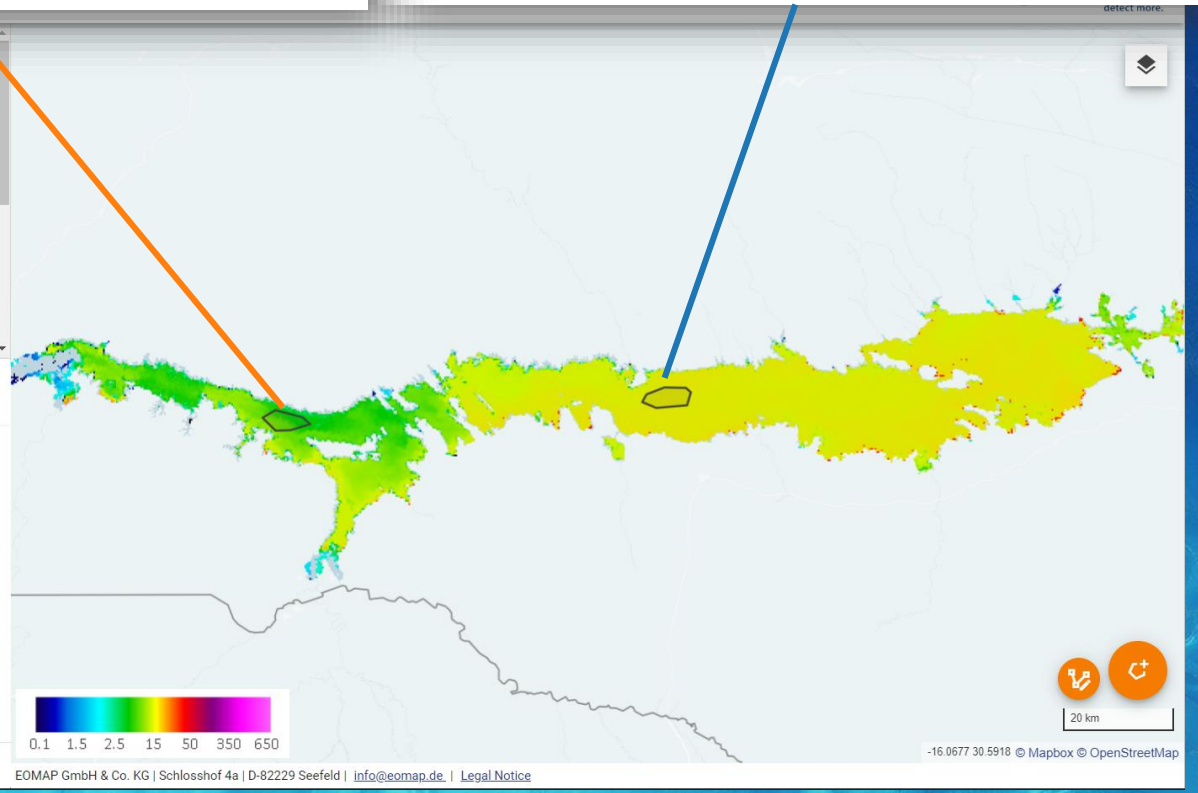
ROUTINE MONITORING CONTRACTS

- Support Routine Monitoring
- Environmental Impact Assessments
  - Shift in turbidity peak
  - Difference in amplitude of turbidity values









Cahora Bassa, Mozambique

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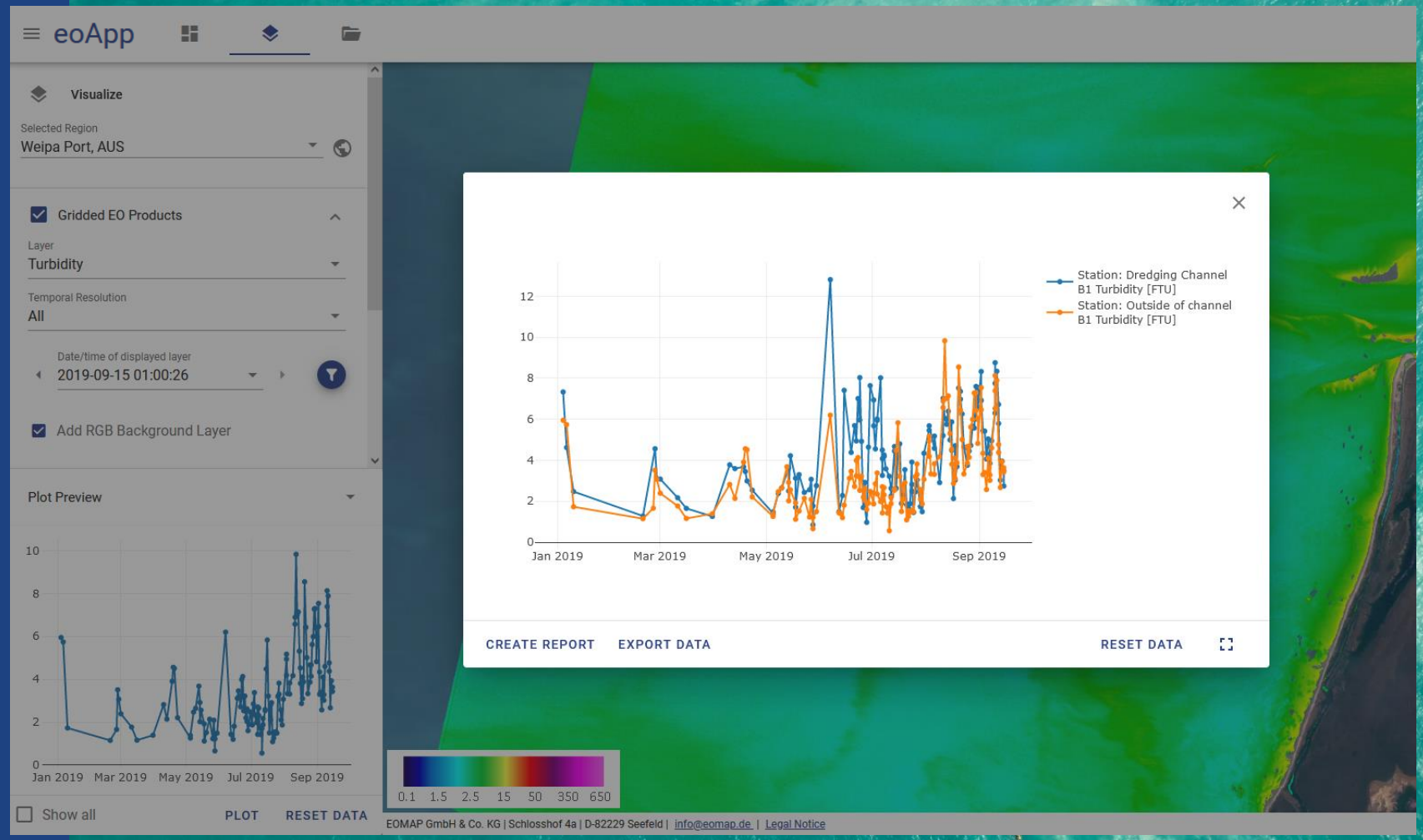
DREDGE MONITORING

- Baseline of seasonal dynamics of turbidity
- Monitoring impact of turbidity caused by dredging or construction
- Quantification of extent and intensity
- Monitoring surrounding critical habitats over time



Port Weipa, Australia

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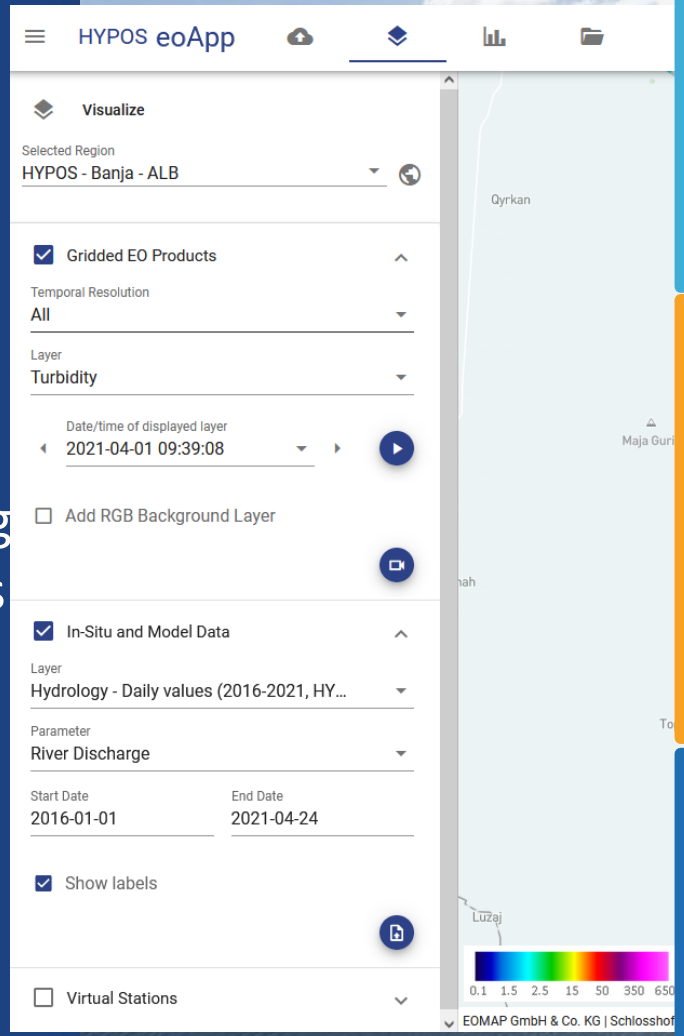
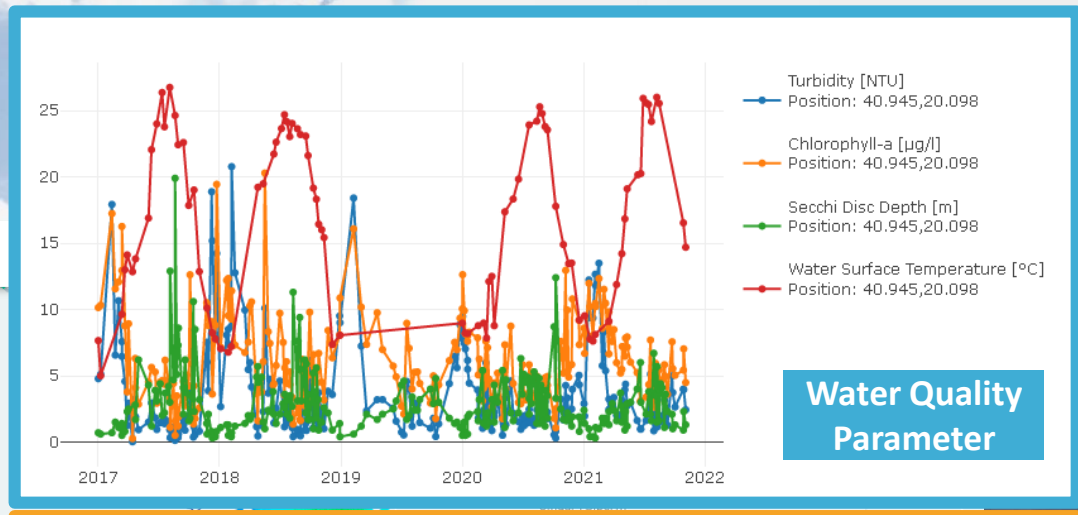
www.dredgingtoday.com/2020/08/03/monitoring-dredging-plumes-from-space/

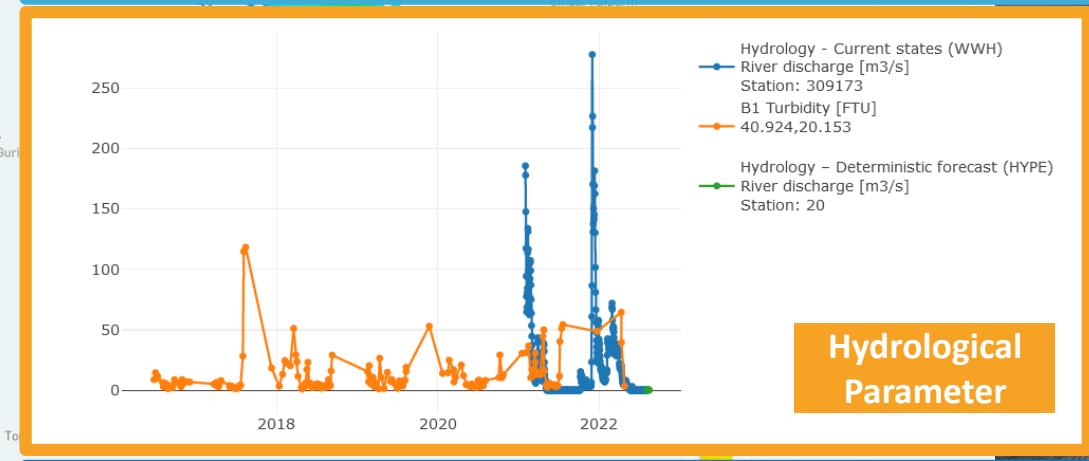
HYDROPOWER SECTOR

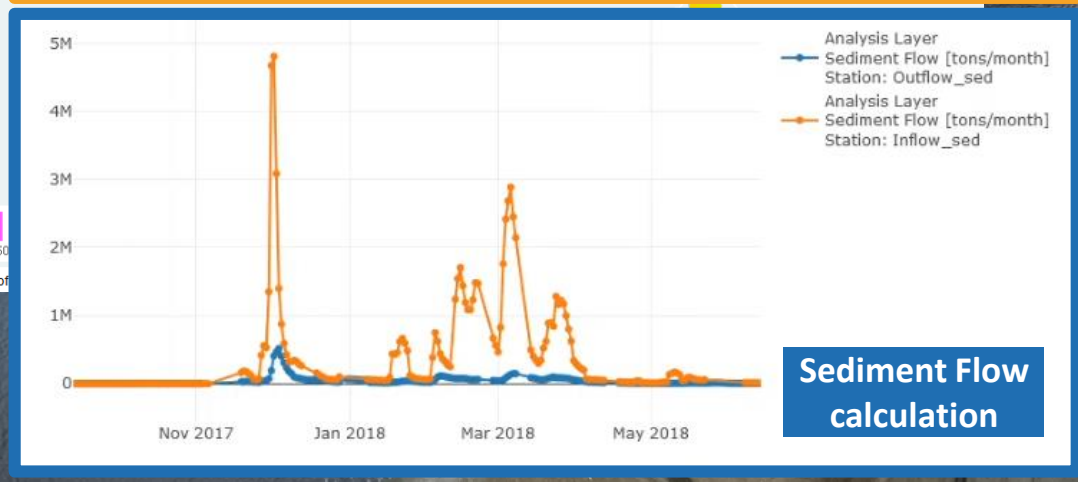
Applications

- ❑ Design of hydropower plants
- ❑ Near-real-time monitoring for management activities
- ❑ Ecological impact assessments







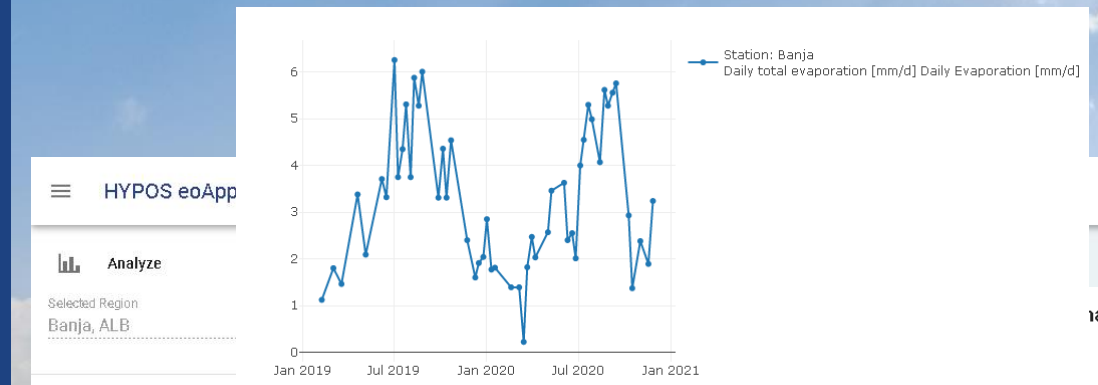


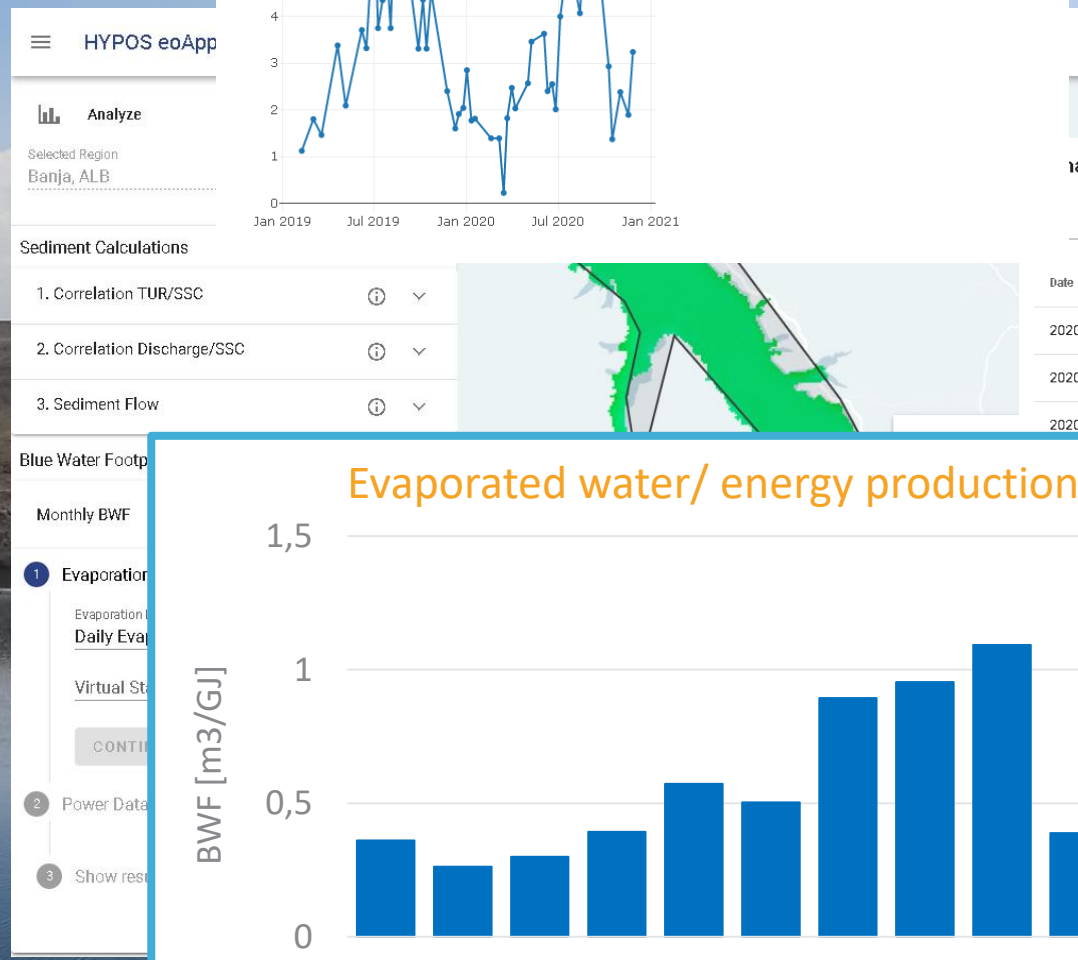
Banja, Albania

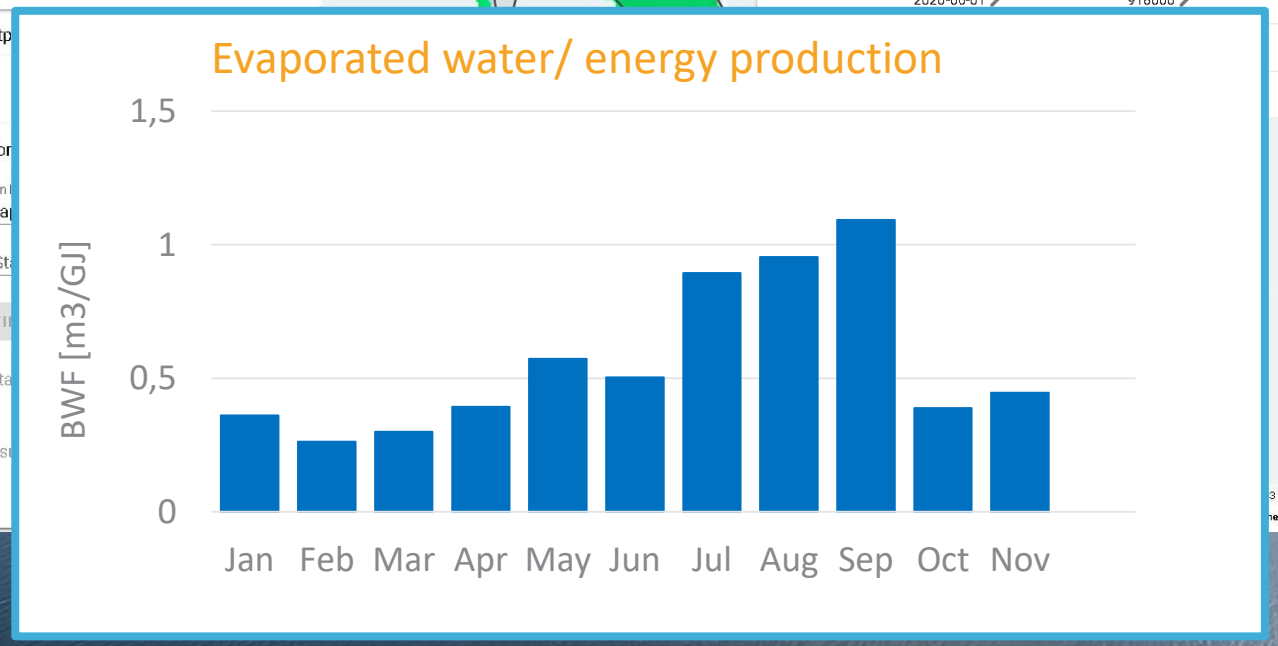
EOMAP stucky a Gruner company SMHI NTNU

ESTIMATION OF MONTHLY BLUE WATER FOOTPRINT

- Monthly evaporation time series obtained from satellite images
- Modelled Meterological data included
- Power Production data
- Output: BWF

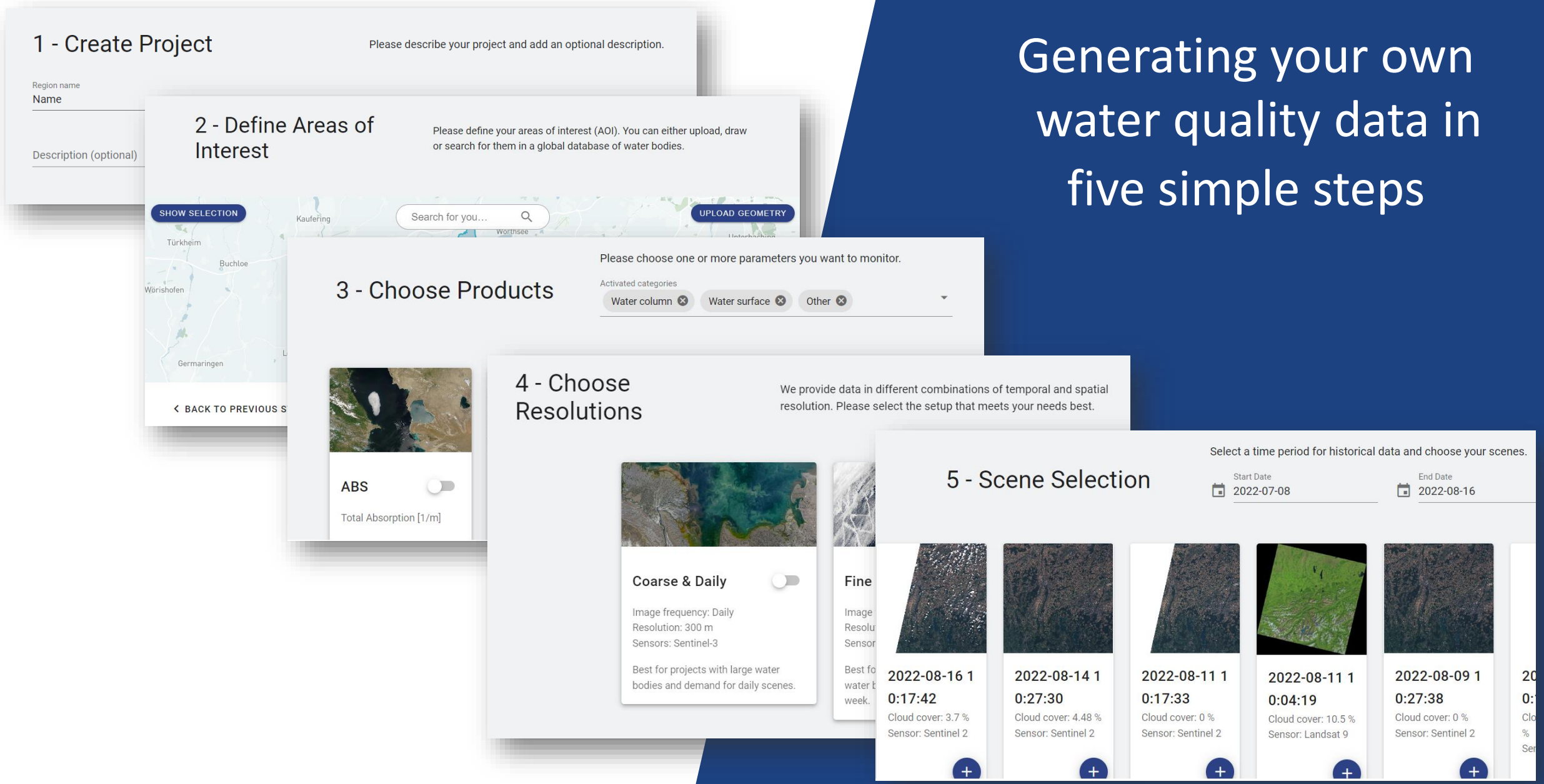




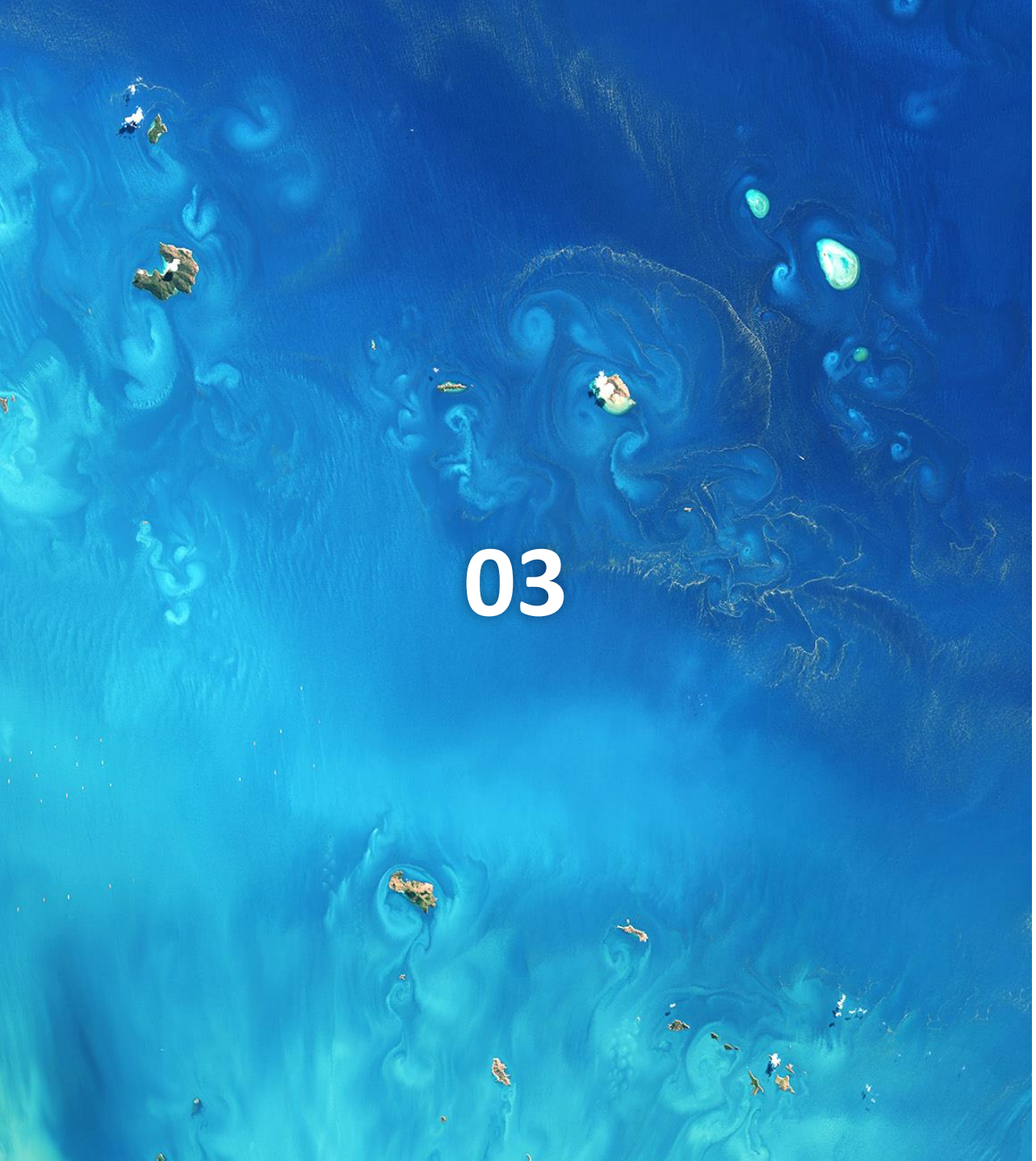


Banja, Albania

The eoApp – WQ Online



Generating your own water quality data in five simple steps



03

ROADMAP

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MAP AND MONITOR TO SUPPORT CLIENTS IN …

Drinking Water Safety

Habitat Protection (EIA)

Coastal Engineering

Monitoring ecological status

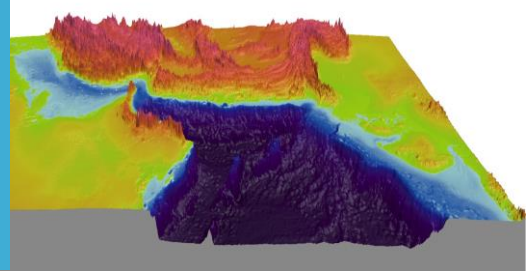
Offshore Projects

Hydro-power Projects

Safer Navigation

National Security

Hydro-dynamic modelling



Roadmap

- Satellite-based calculation of additional hydrological parameters like Water Level, Discharge, Morphology
- Update of functionalties for better decision support
- Digital Earth / Twin based on award winning solutions through interoperability of data sets between resolutions, institutions and proxies

-> User views?

Thank you for your attention

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Special thanks to

Erica Matta (CNR), Philipp Bauer, Hendrik Bernert, Fabian von Trentini, Minha Sultan, Jones Graosque, Eva Haas, Nico Osterberger, Florian Willkofer, Christoph Kleih, Marcel Siegmann, Moritz Steinsiek

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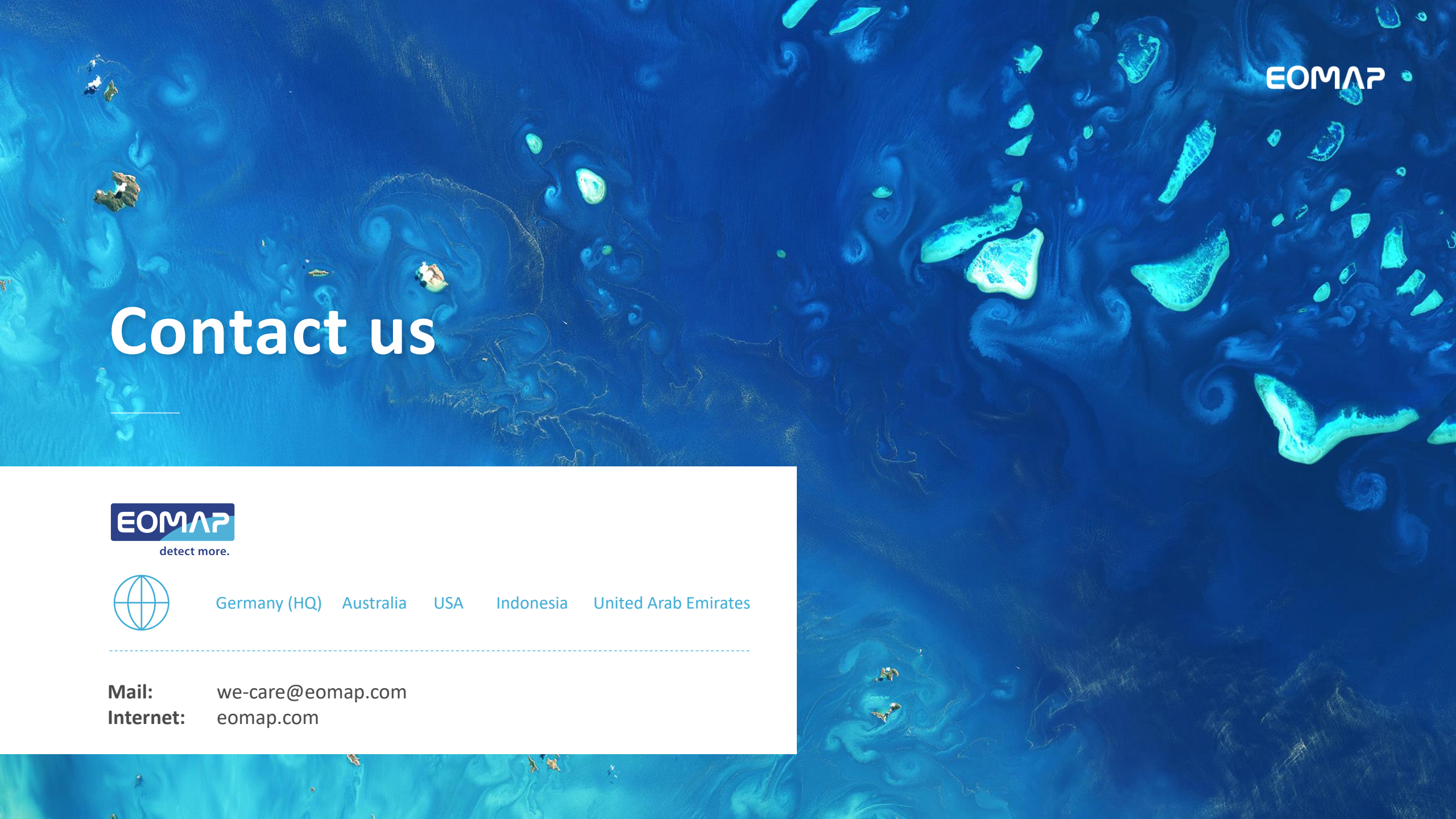

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