EO Applications for Integrated Maritime and Territorial Spatial Planning in the Baltic (BalticAIMS)

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HELCOM-VASAB MSP Data group meeting
14 Oct 2021

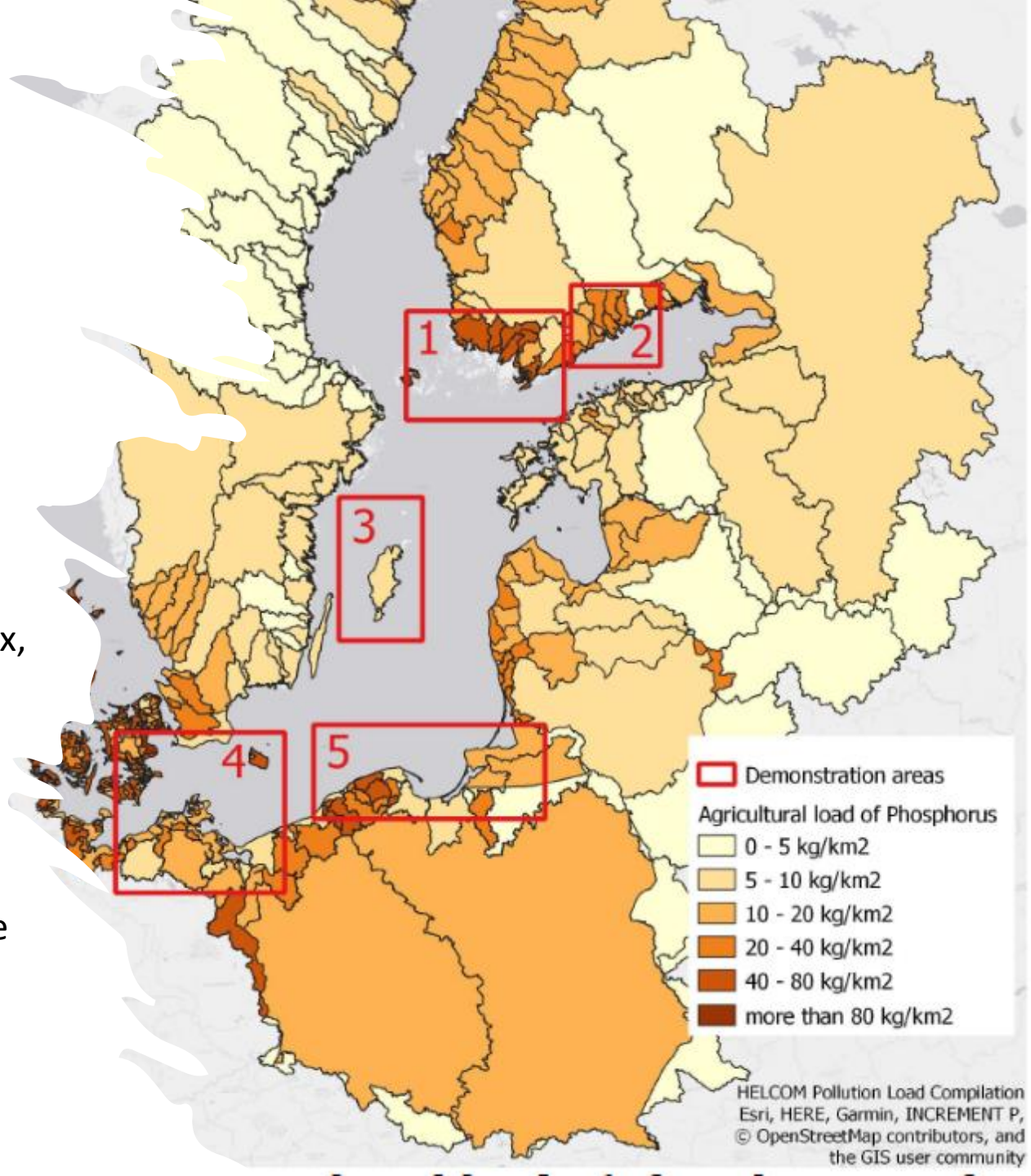
SYKE Brockmann Consult Brockmann Geomatics Sweden AB esa European Space Agency

Project basics

- Funded by European Space Agency (ESA)
- One of ESAs Baltic-focused projects (Baltic+)
- Duration 02/2021 – 02/2023 (24 months)
- Coordinated by Finnish Environment Institute (SYKE) (FI)
  - sampsa.koponen@syke.fi
- Partners
  - Brockmann Consult (GE), Brockmann Geomatics Sweden (SE)
- Webpage: www.syke.fi/projects/BalticAIMS

Objectives

- **Demonstrate** an integrated data approach for essential processes of land and coastal water areas
- Create data access, visualization and analysis systems and tools
  - GIS material relevant for MSP, human impacts and pressures
  - Water quality (monitoring stations, Alg@line ferrybox, automated stations)
  - EO and model datasets.
- **This meeting**
- Inform about our project and plans
- Get feedback & ideas for MSP related data needs for future



BalticAims Schedule

Spring 2021

User requirement specification

- e.g. HELCOM groups (VASAB-MSP, Agri, Pressures) & national authorities (~30) were interviewed

Current phase

We are developing an information service based on user needs (e.g. MSP)

Mar. – Oct. 2022

Demonstration : users can access the data

Demo interface & data access

Jul. 2022 – Feb. 2023

User comments and further recommendations

Baltic Workshop (Oct 2022)

2023/2024? →

Towards a larger scale project

Main requirements by large group of national authorities and HELCOM group experts

- Main interest was on receiving more observations on coastal processes related to
  - Separating human impacts from natural background changes
  - More information on water quality & human impact on coastal waters
  - Data gaps particularly in spring and wintertime
- How much of this can be achieved with satellite observations?
  - Many of the requirements can be met by combining satellite observations of turbidity, chl-a, temperature, ice cover to available GIS material & monitoring information

    -> EO can be utilized to complement the existing coastal GIS material for MSP
  - BalticAims-project works on the demonstration areas, but most cases can be expanded to Baltic Sea wide material later.

Showcases

- A: EO based information to be used in user legacy systems for spatial planning
- B: Monitor the effects of nutrient flow from the drainage basin to the coastal waters
- C: Monitoring the impacts of coastal activities
- D: Combination of Coastal Zone mapping and CMEMS coastal water quality material
- E: Monitoring of temperature anomalies -> upwelling & input of heat

A1: Material to support the review of MSP Plans
A2: Human impact
A3: Hotspots

B1: Impact of agriculture
B2: PLC subgroup
B3: Monitoring of nutrient reduction measure

C1: Dredging Helsinki
C3: HELCOM dredging & dumping
C2: Water quality coastal Finland
C4: HELCOM human pressures

D1: Wind park
D2: Aquaculture footprint
D3: Coastal land use

E1: Helsinki city coastal water temperature
E2: Climate change

Coastal city use case (Helsinki region)

Interests are in human impacts on coastal water quality and water temperature

EO
- Demonstrative set of
- RGB, EO turbidity
- Cases, where human impact are clear
- Seasonal (summer, spring turbidity, chla)
- Also some good wintertime RGBs

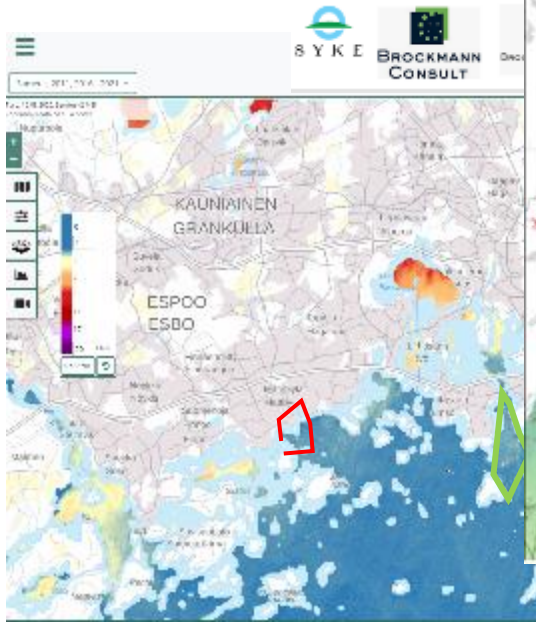
GIS
- Available GIS material on coastal activity (human pressures)
- GIS material, where human impacts identified from EO material are indentified (TBD)

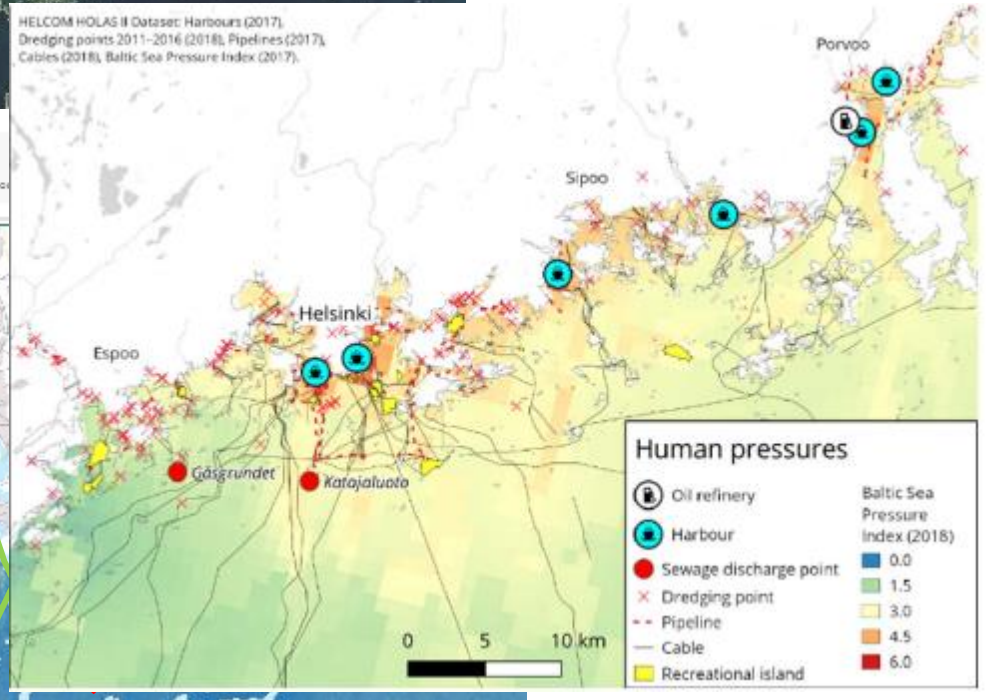
Stations
- Coastal stations (WQ)
- Automated temperature network

Active dredging and dumping areas identified

Riverine impact areas

Regular ship route in harbor





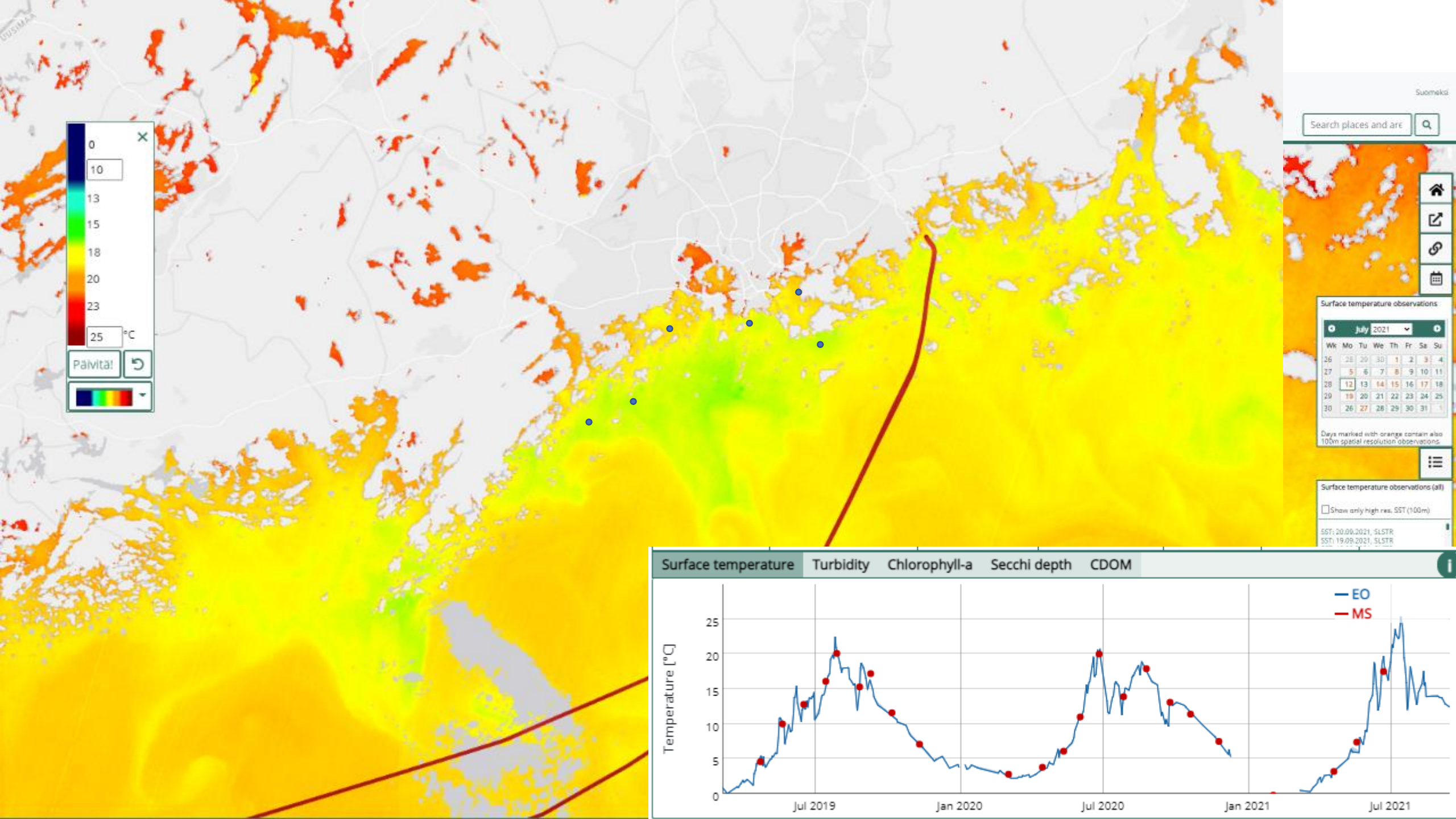
BALTIC AIMS interface

EO
- RGB
- EO turbidity
- Cases, where human impact are clear
- Seasonal (summer, spring turbidity, chl-a)
- Algae blooms
- Wintertime RGBs

GIS
- Available GIS material on coastal activity
- GIS material, where human impacts identified from EO material are identified (TBD)

Stations
- Coastal stations (WQ)
- Automated temperature network

TARKKA


0
10
13
15
18
20
23
25
°C
Päivitä!
Search places and are
Surface temperature observations
July 2021
Wk Mo Tu We Th Fr Sa Su
Days marked with orange contain also 100m spatial resolution observations
Surface temperature observations (all)
Show only high res. SST (100m)
SST: 20.09.2021, SLSTR
SST: 19.09.2021, SLSTR
Surface temperature
Turbidity
Chlorophyll-a
Secchi depth
CDOM
EO
MS
Temperature [°C]
25
20
15
10
5
0
Jul 2019
Jan 2020
Jul 2020
Jan 2021
Jul 2021

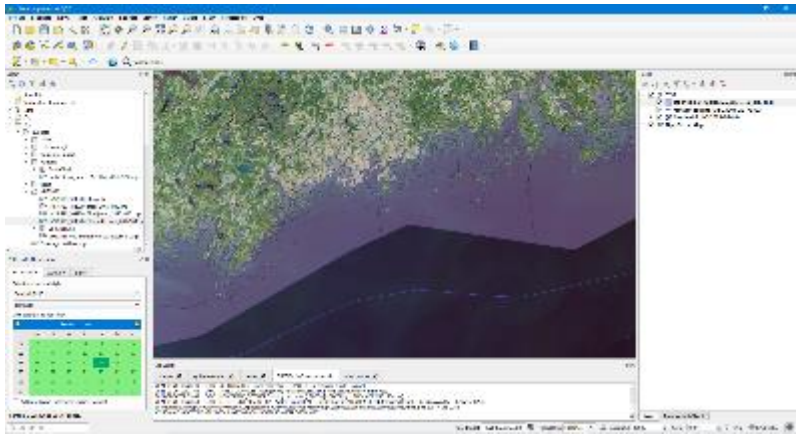
Dumping event: 24.08.2021, 10:25; 33UUA, German Coastal

Demo phase in 2022

Public viewer to familiarize with the datasets:

Syke.fi/TARKKA

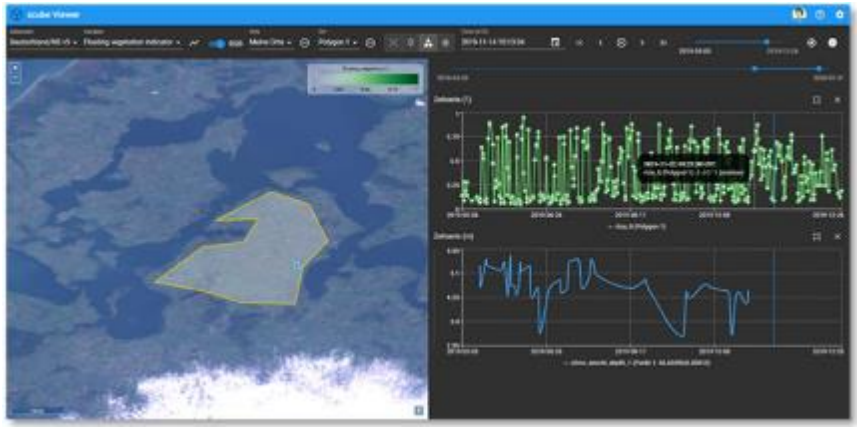
Expert legacy systems:
access the data in GIS applications



QGIS

ArcGIS

Cube viewer



Summary

- Material & interface development based on MSP and other expert needs is currently underway
- Demonstration material available in 2022 (from March to Oct)
  - Comments very welcome !
  - Welcome to our Baltic Workshop (Oct 2022)
- Demonstration could lead to a larger Baltic Sea wide project & service
- Contact & more info: sampsa.koponen@syke.fi