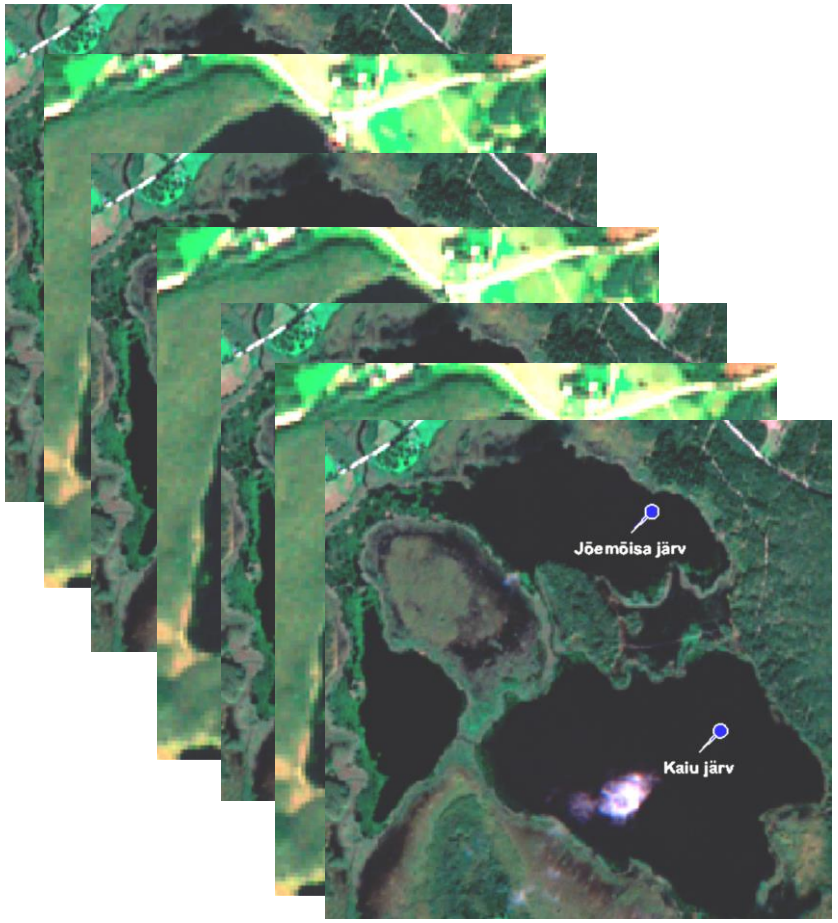
UNIVERSITY OF TARTU
Tartu Observatory

Using ESTHub for science and studies

Ave Ansper-Toomsalu

Information day of ESTHub

23.04.2021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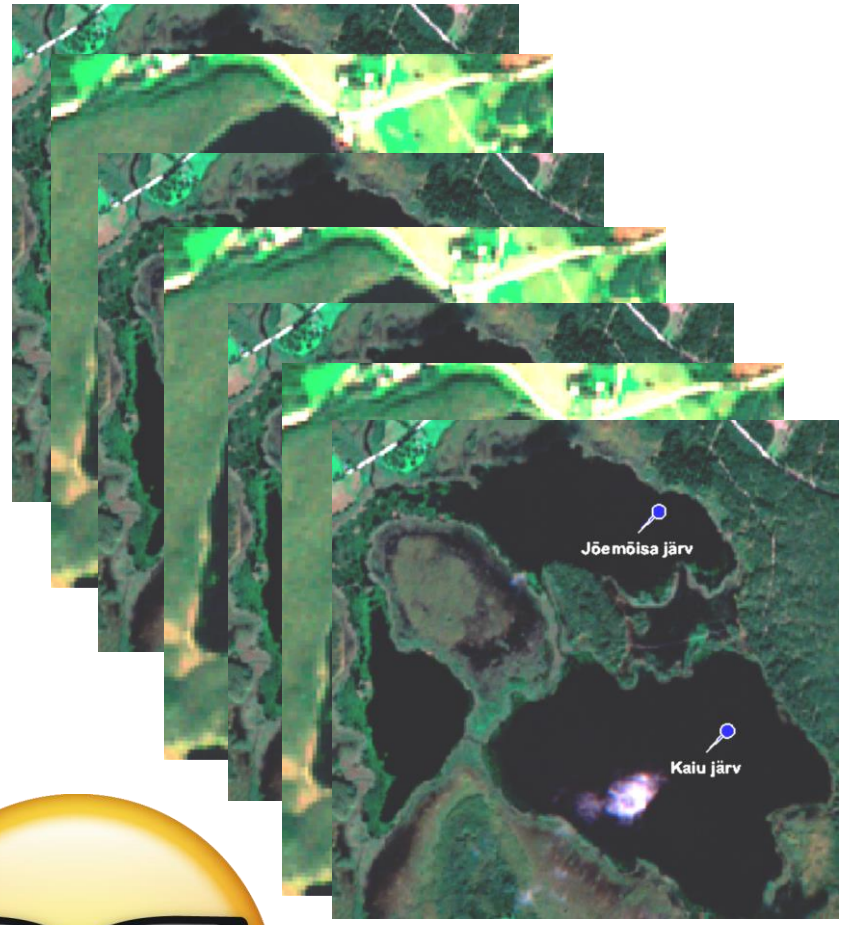
Kaiu järv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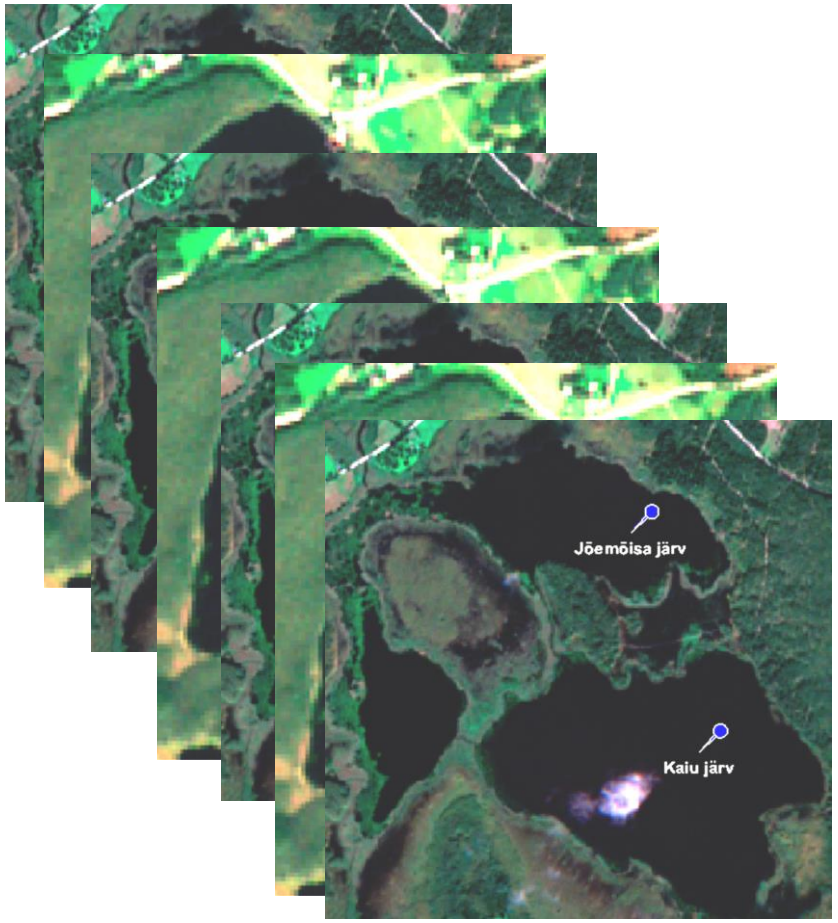
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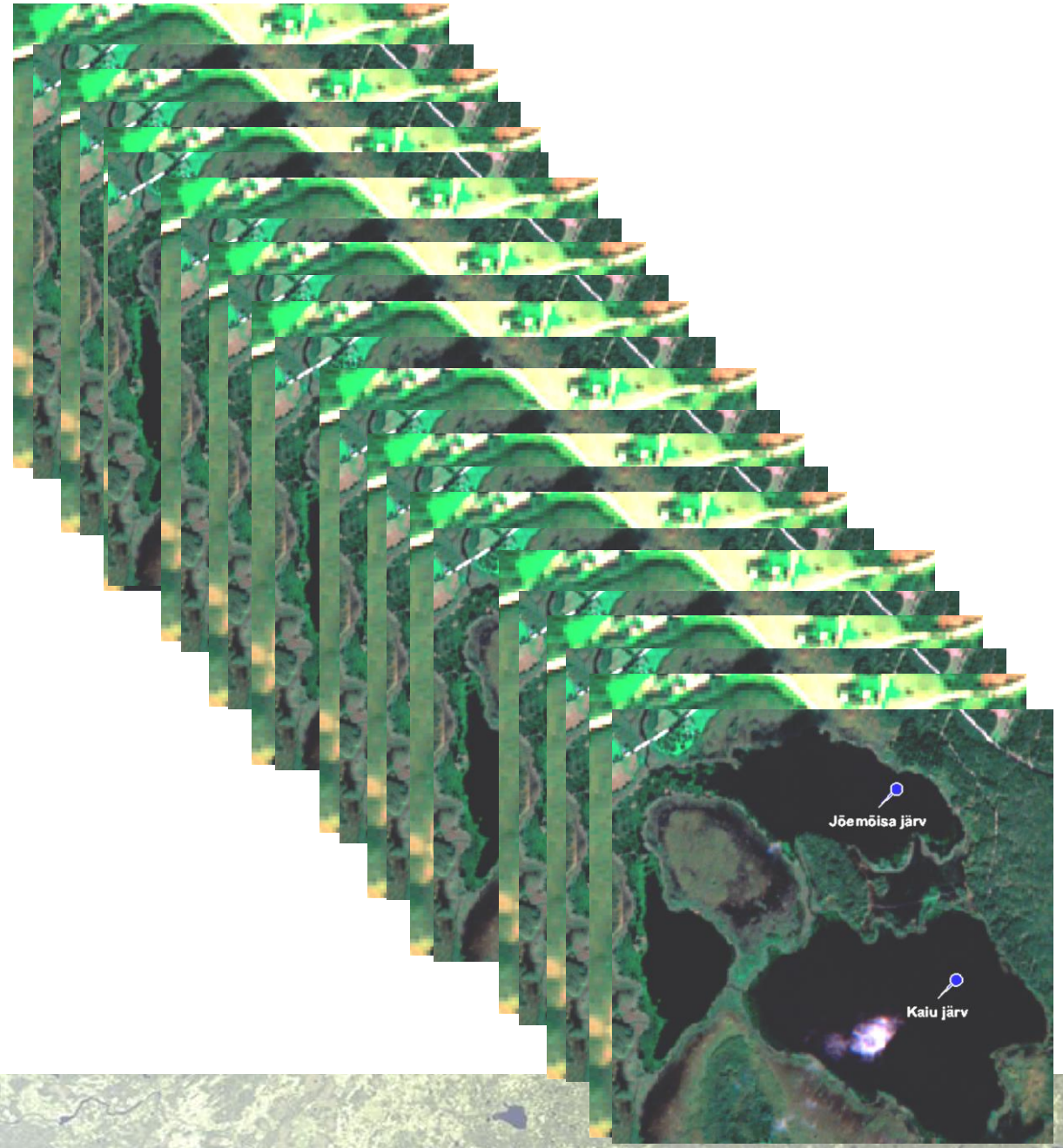
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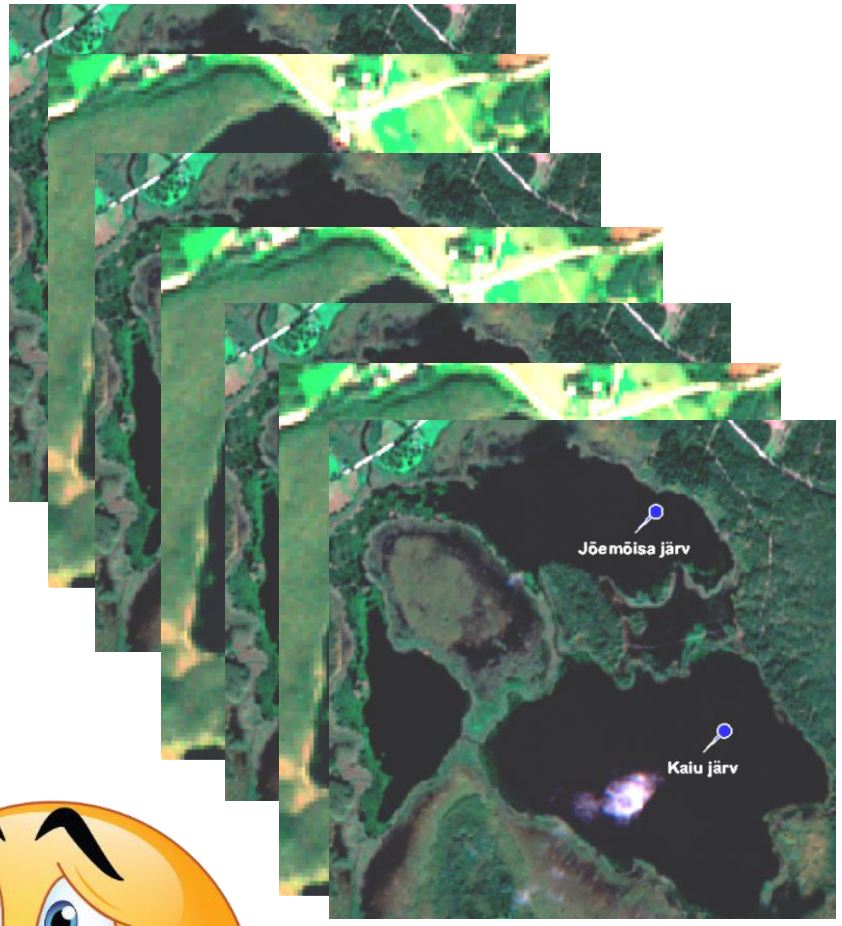
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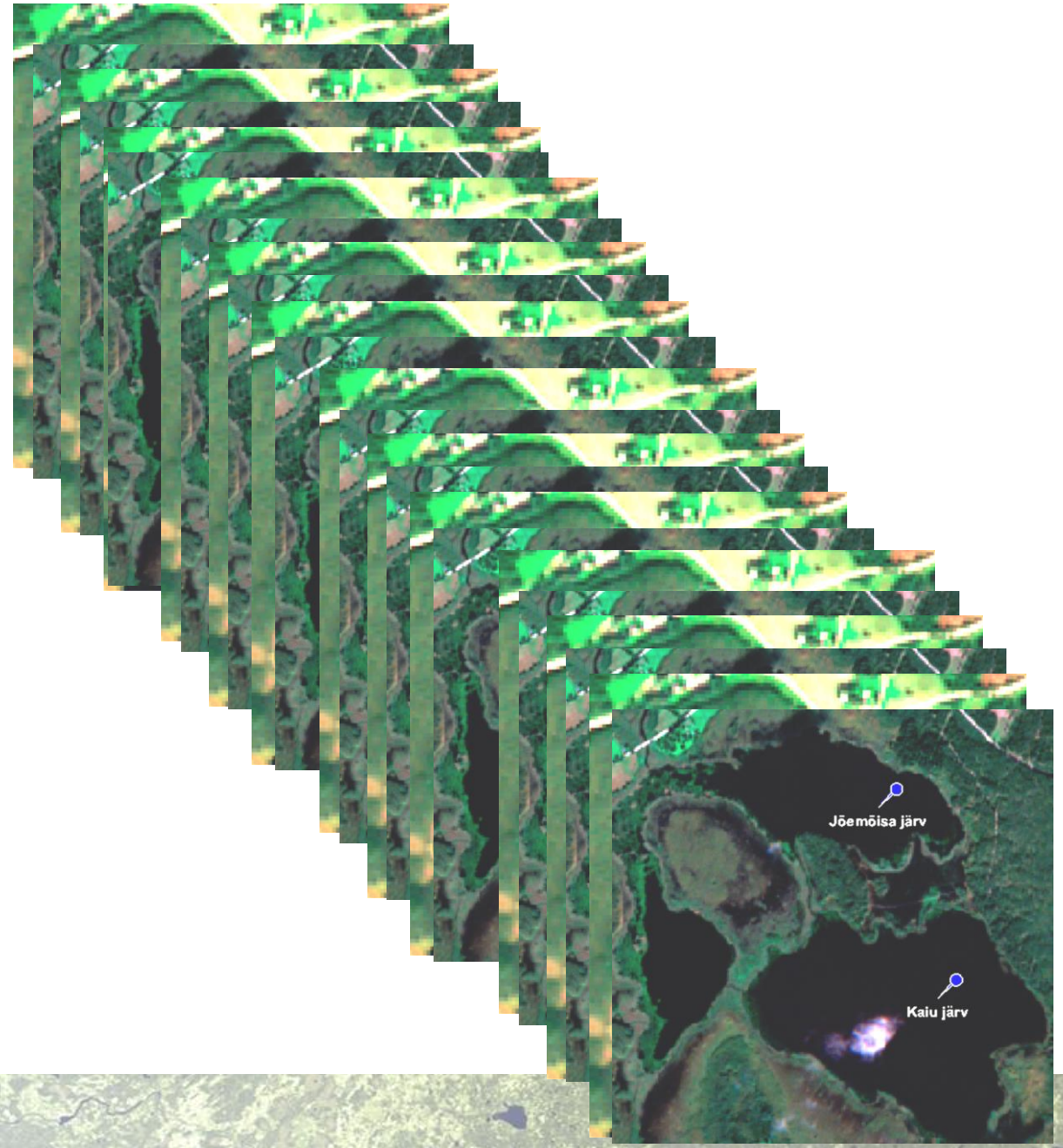
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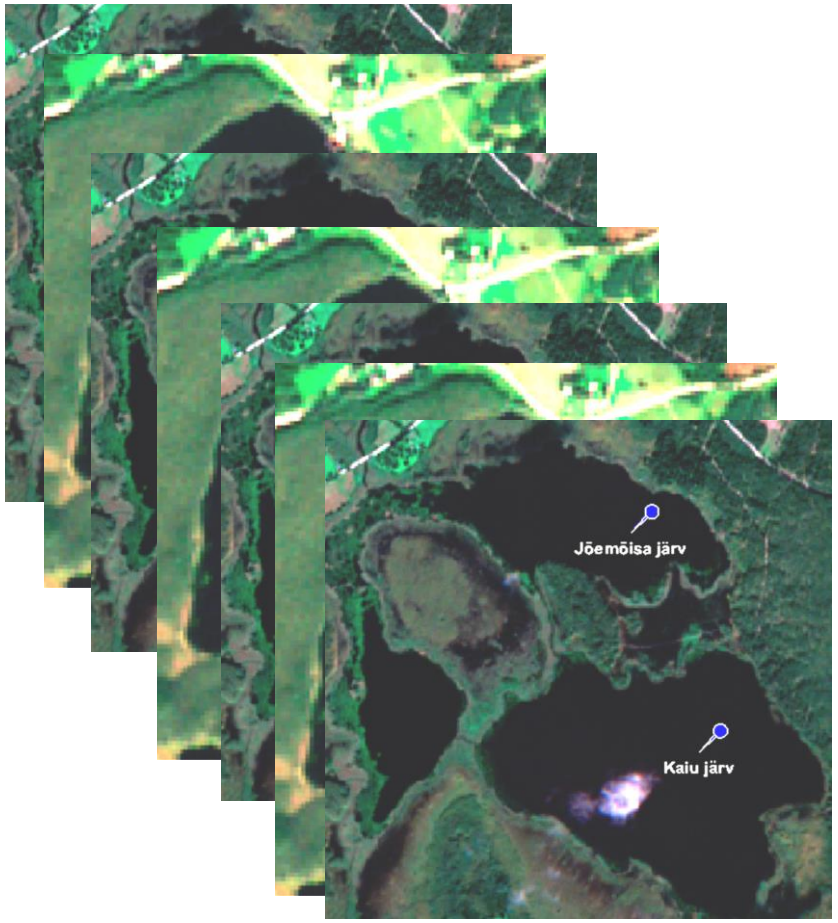
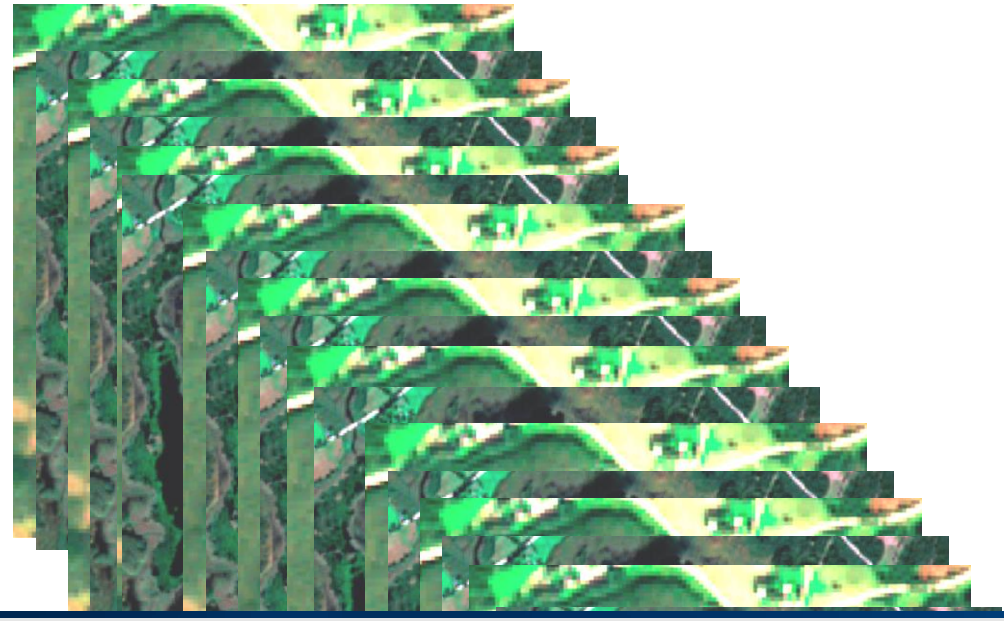


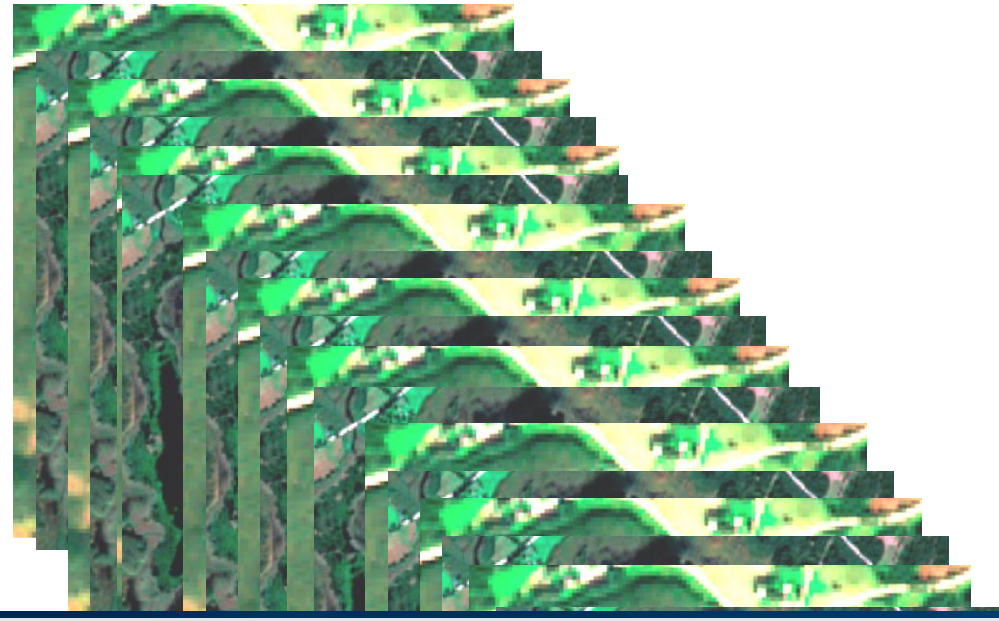


Microsoft Windows

Your computer is low on memory

To restore enough memory for programs to work correctly, save your files and then close or restart all open programs.

OK



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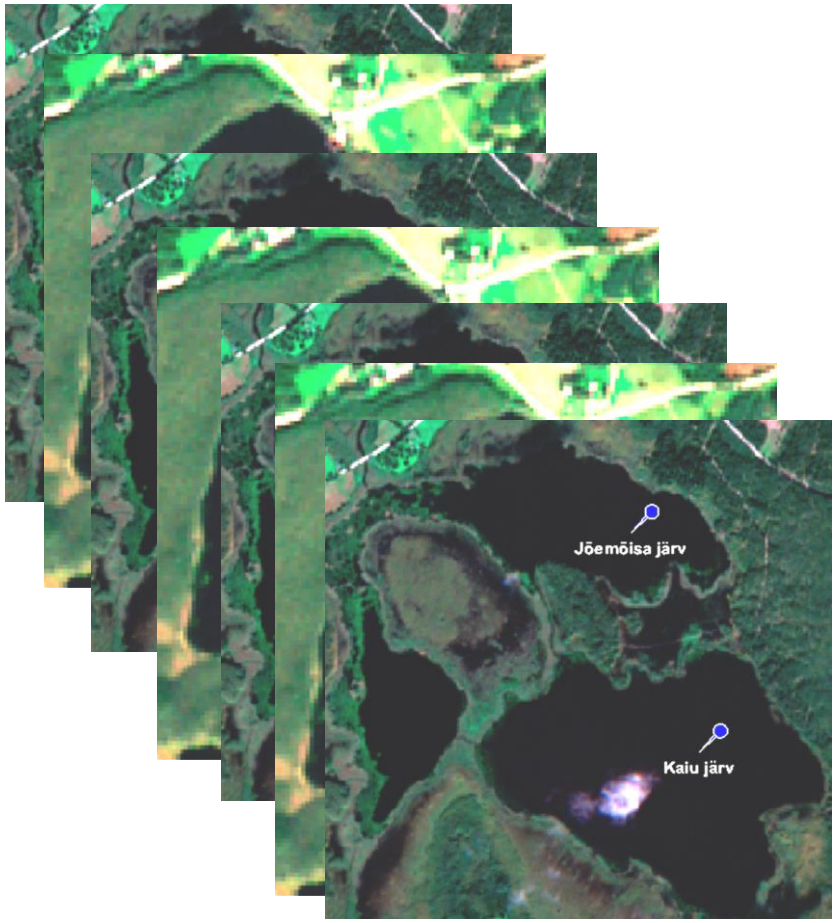
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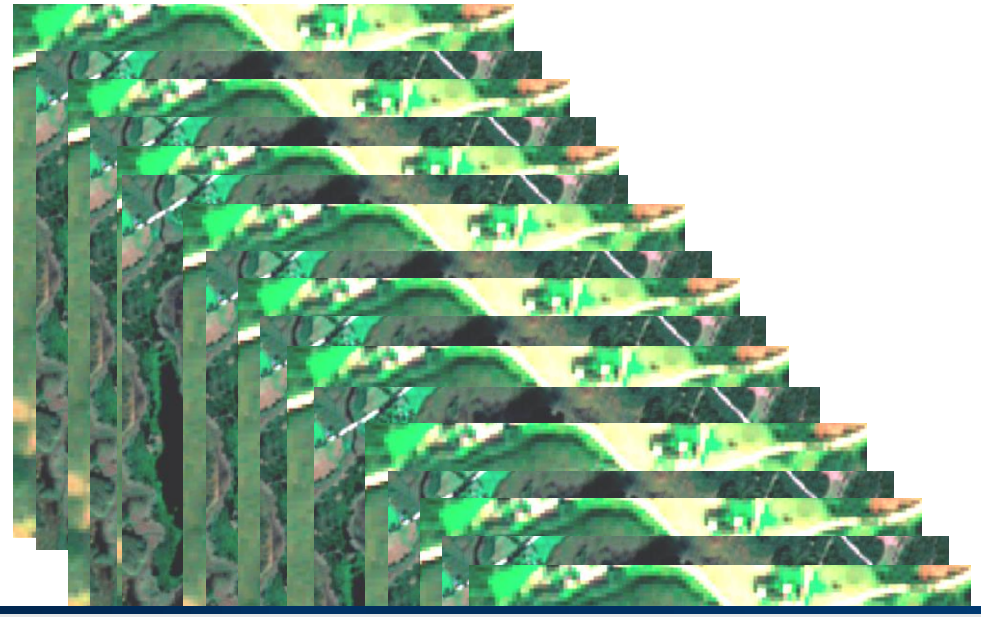

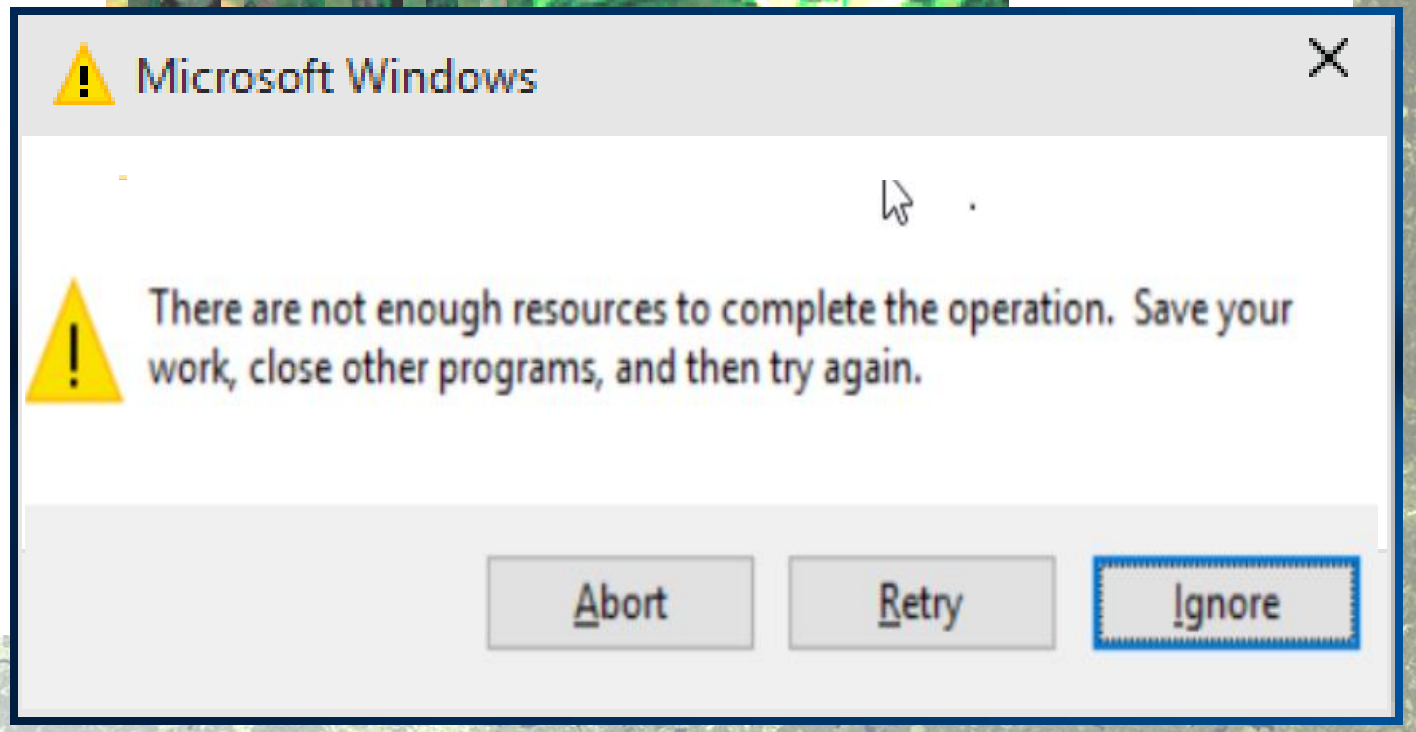
Microsoft Windows
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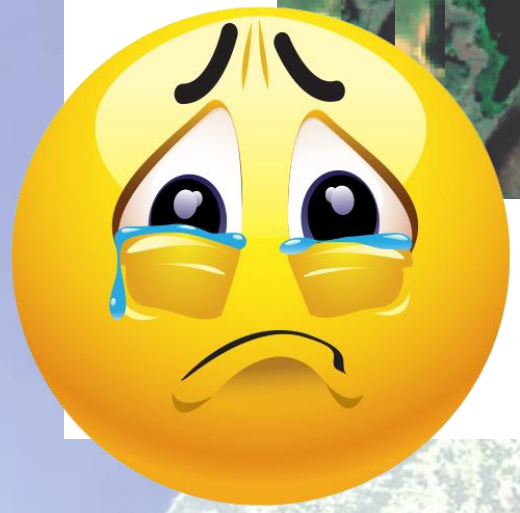
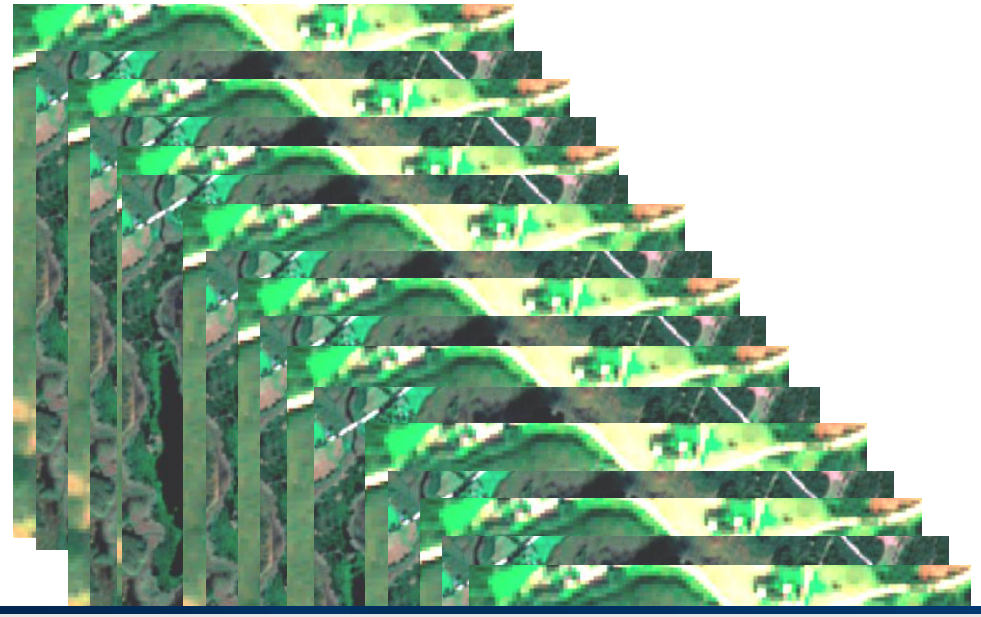
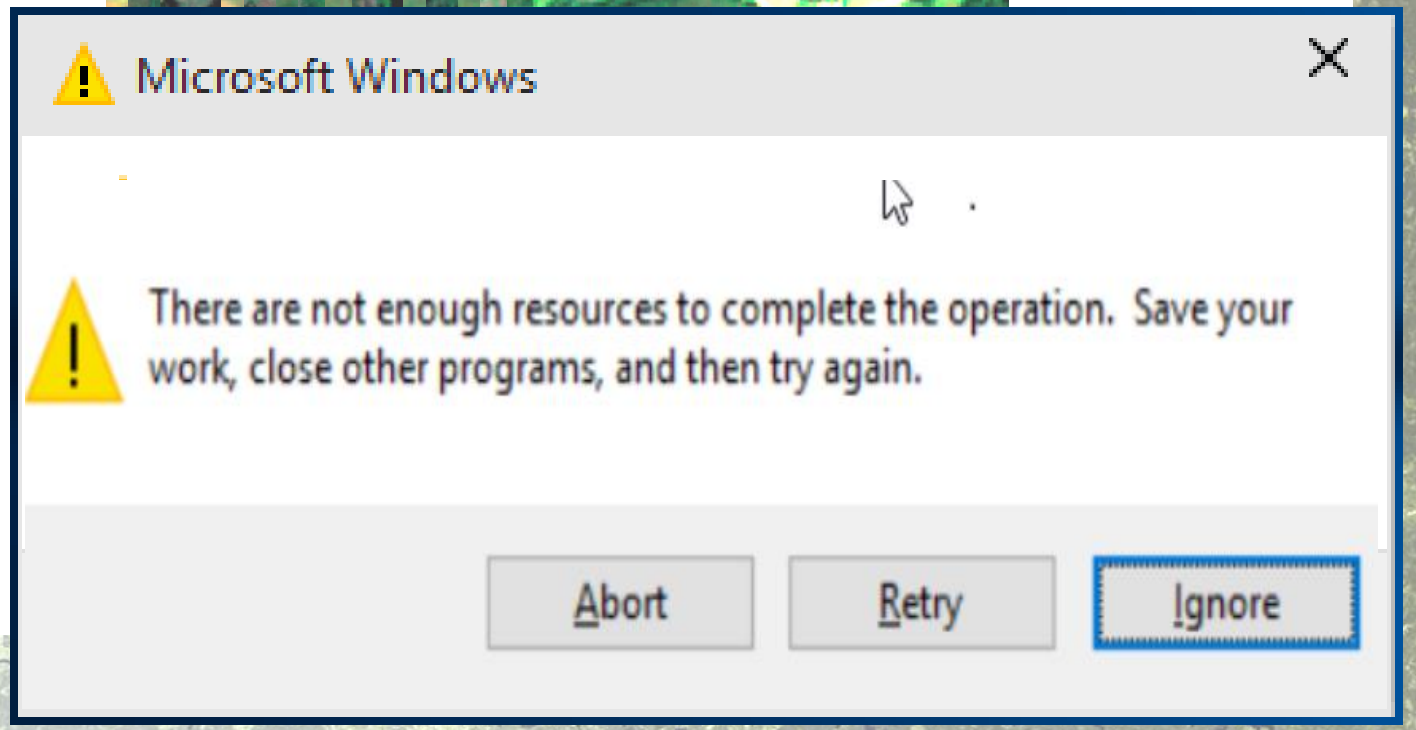
Abort
Retry
Ignore


Jõemõisa järv
Kaiu järv



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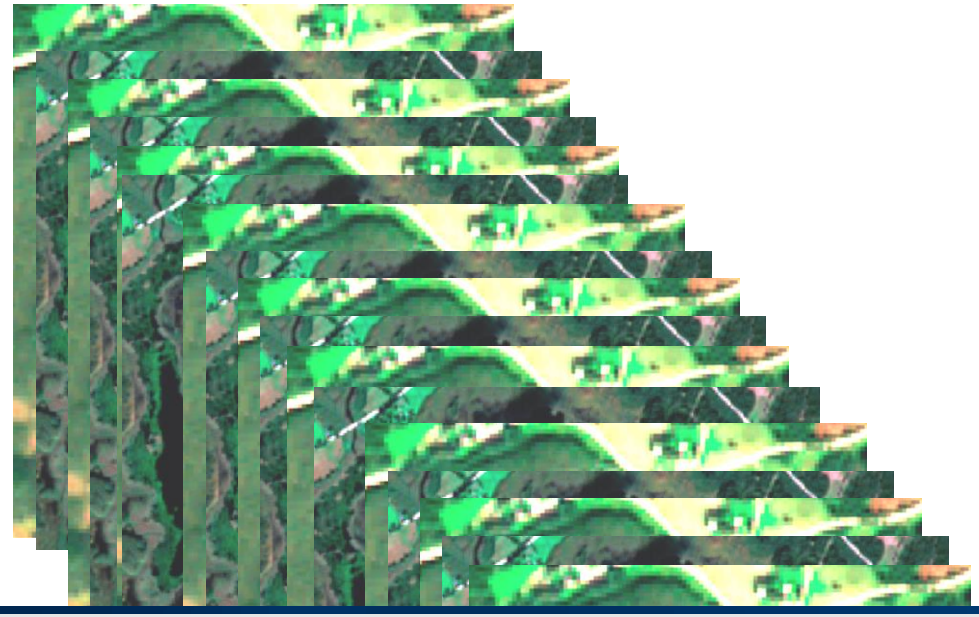

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OK

REPUBLIC OF ESTONIA
LAND BOARD

Processing Service

- Order
  - L2 Processing
  - Match-up Analysis
  - Regional Statistics
  - L3 Processing
- Management
  - Regions

Input File Set

Show predefined file sets

Show my outputs and of other users

- Sentinel-2 MSI L1C
- Landsat 8 OLI and TIRS L1
- Sentinel-1 SLC
- Sentinel-1 GRD
- Sentinel-1 OCN
- Sentinel 3 OLCI EFR Level 1
- Sentinel 3 OLCI LFR
- Sentinel 3 OLCI WFR

Name: **Sentinel-2 MSI L1C**
Type: **S2_MSI_L1C**
Start Date: **2015-07-01**
End Date: **2020-12-31**
Region name: **Estonia**
Geo Inventory: **Yes**

SOLUTION: ESTHUB

By date range

Start date: 2017-06-01

End date: 2017-06-30

By date list

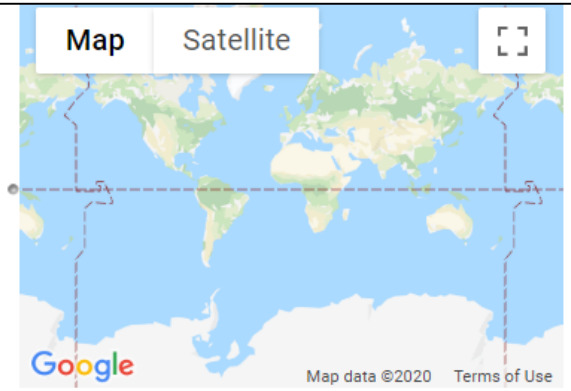
2017-06-01
2017-06-02
2017-06-03

30 days

Show Help

- EstHUB
- training
- user

Add and manage user regions



Advantages of ESTHub:

Three different environments:

- Satellite data portal
- Processing platform
- Satiladu (satellite imagery warehouse)

Advantages of ESTHub:

- Reduces problems connected with computer such as insufficient memory and low computing power
- Allows to run different processes and calculations at the same time
- Special web-based environment, which is not connected with personal computer

Advantages of ESTHub:

- Access to Copernicus data over Estonia from one database
- Sentinel-1, Sentinel-2, Sentinel-3 and Landsat-8
  - Different processing levels (L1, L2, L3)
- Data for different users (water and vegetation remote sensing)

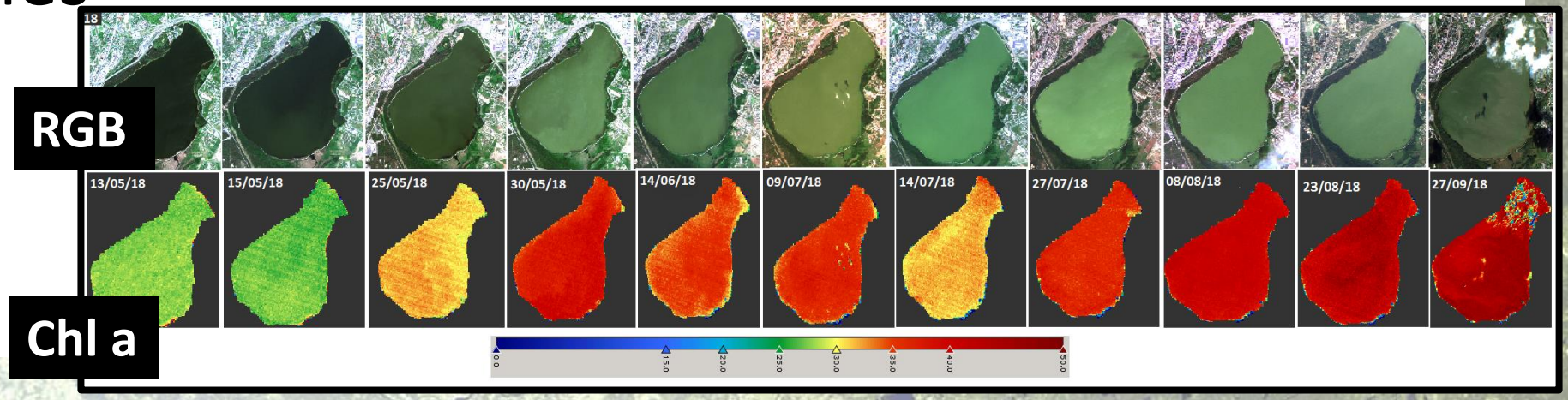
Advantages of ESTHub:

- Quick communication and feedback
- Solutions for technical issues
- Adjusting the processing platform according to users needs

Advantages of ESTHub:

- Pre-processing: Rayleigh correction, IDEPIX
- Atmospheric correction processors: C2RCC, Polymer, Sen2Cor
- Statistical analysis
- Time series

Lake Ülemiste



Advantages of ESTHub:

- Possibility to download large amount of data and save as different formats
- Unneccessary to download data for statistical analysis → output text file
- Possibility to open satellite images in SNAP programme; text-files in common word processing programmes

Advantages of ESTHub:

- Retrieving data from multiple tiles simultaneously

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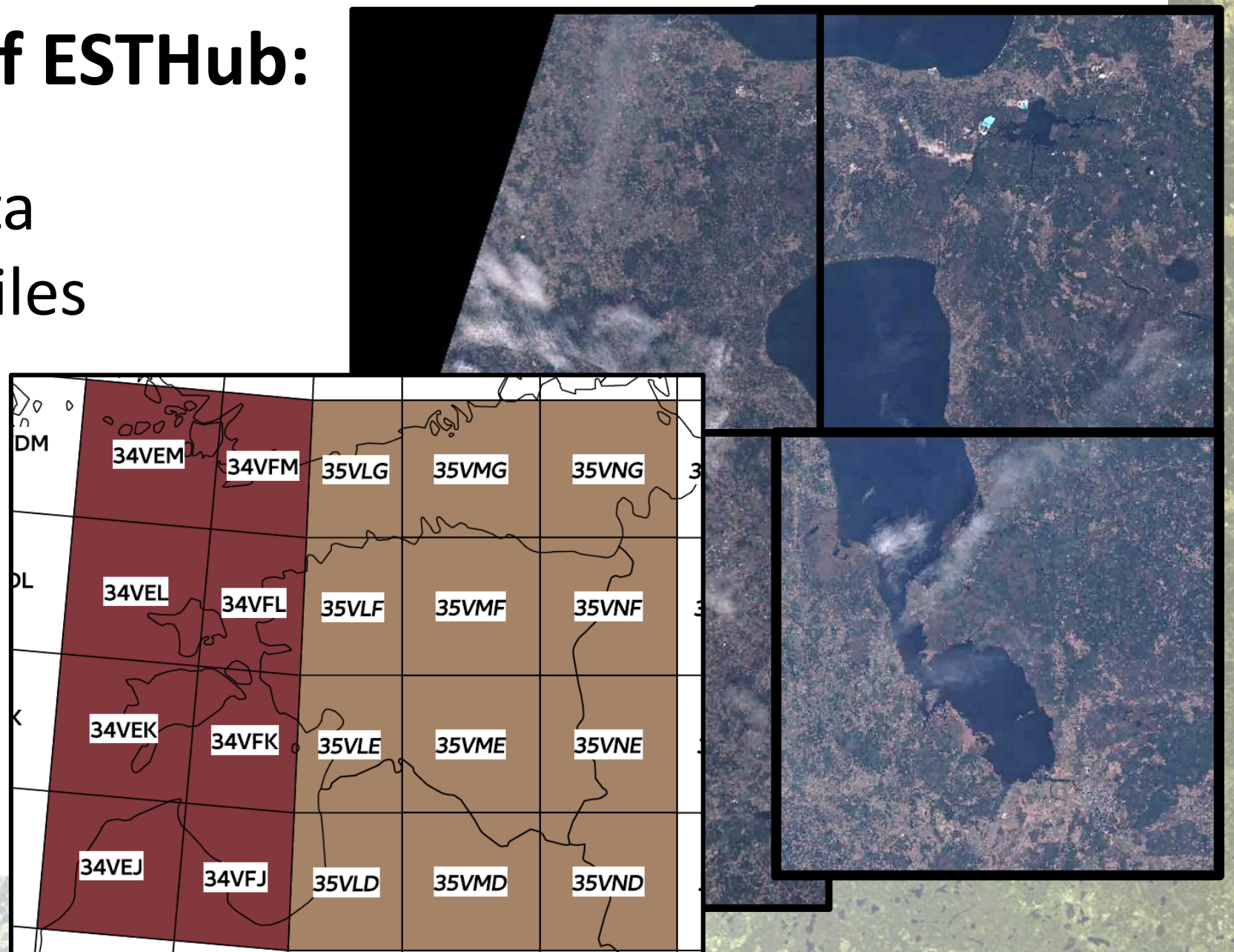
- Retrieving data from multiple tiles simultaneously



Advantages of ESTHub:

- Retrieving data from multiple tiles simultaneously
- Retrieving data from polygons as well as from point measurements and defined area (3x3)

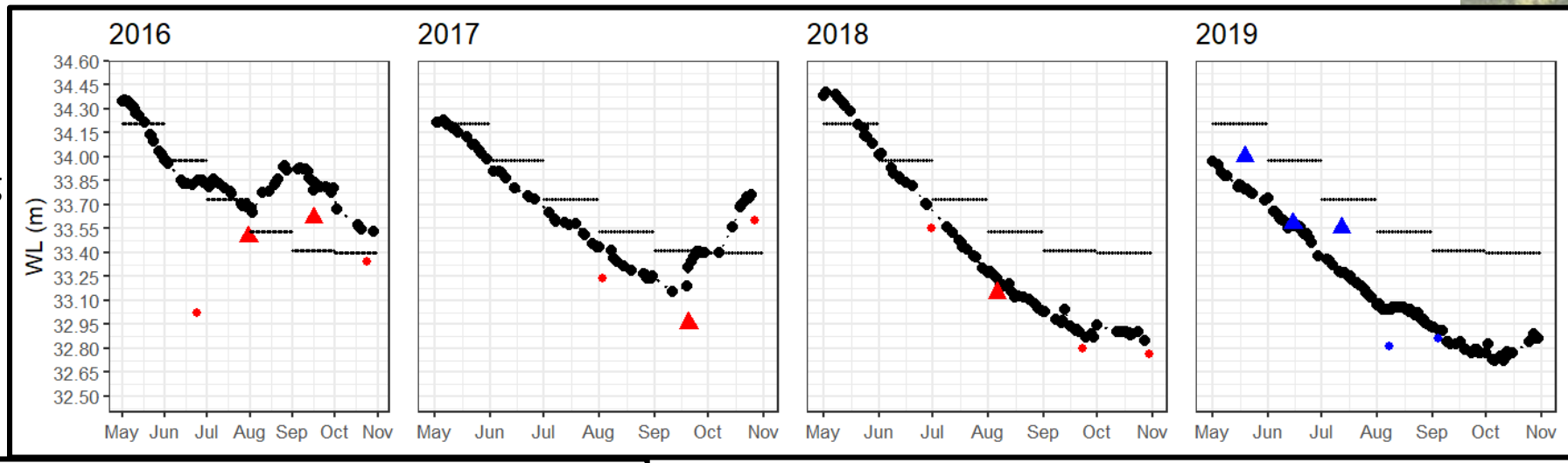
Project: RITA1/02-52:

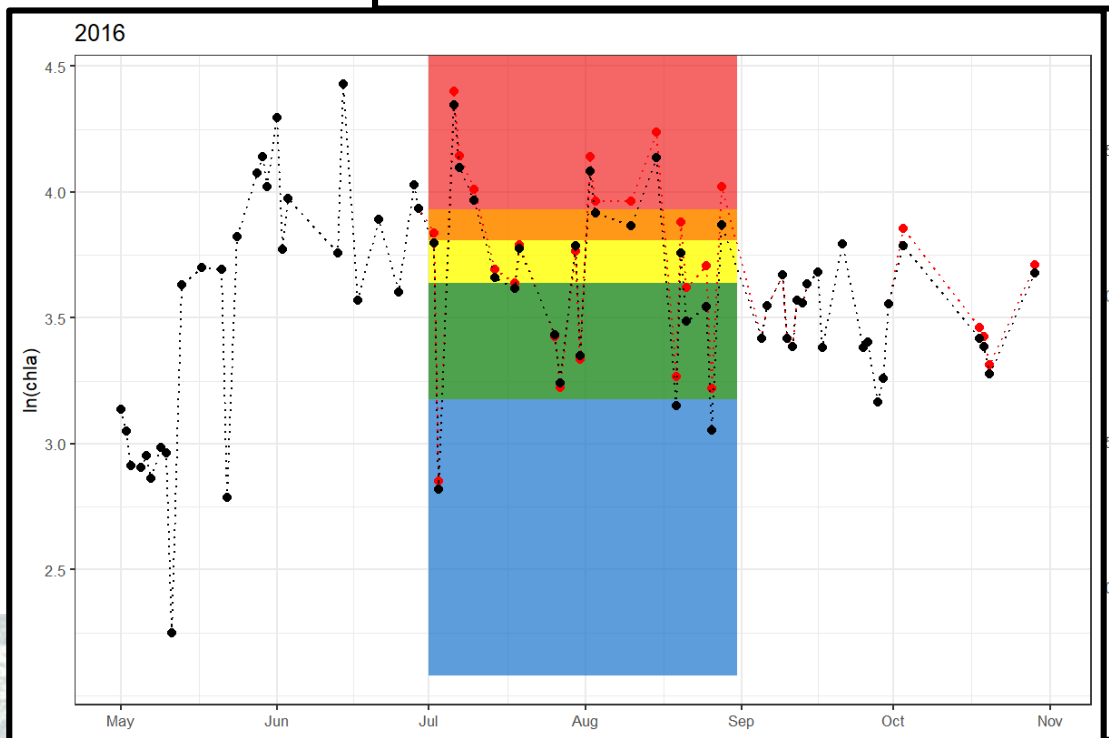
D3.4: Report on methodology for correcting the phytoplankton and transparency estimates (and related ecological status) according to the water level in lakes.

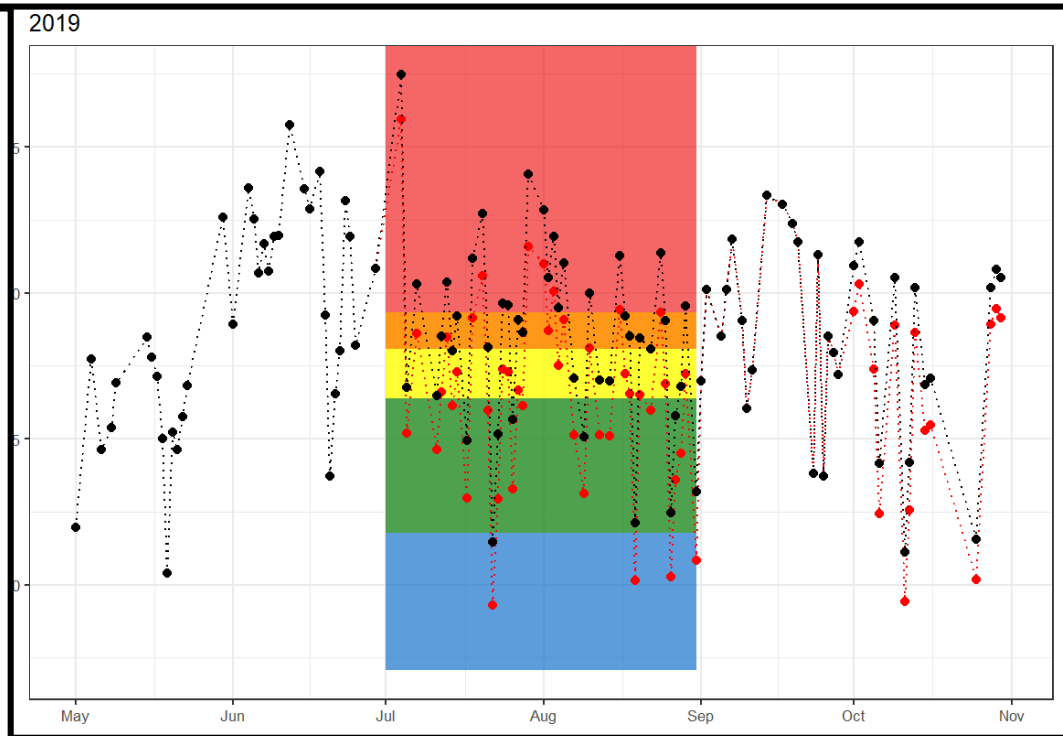
↓

scientific article

Ansper-Toomsalu, A., *et. al.* 2021

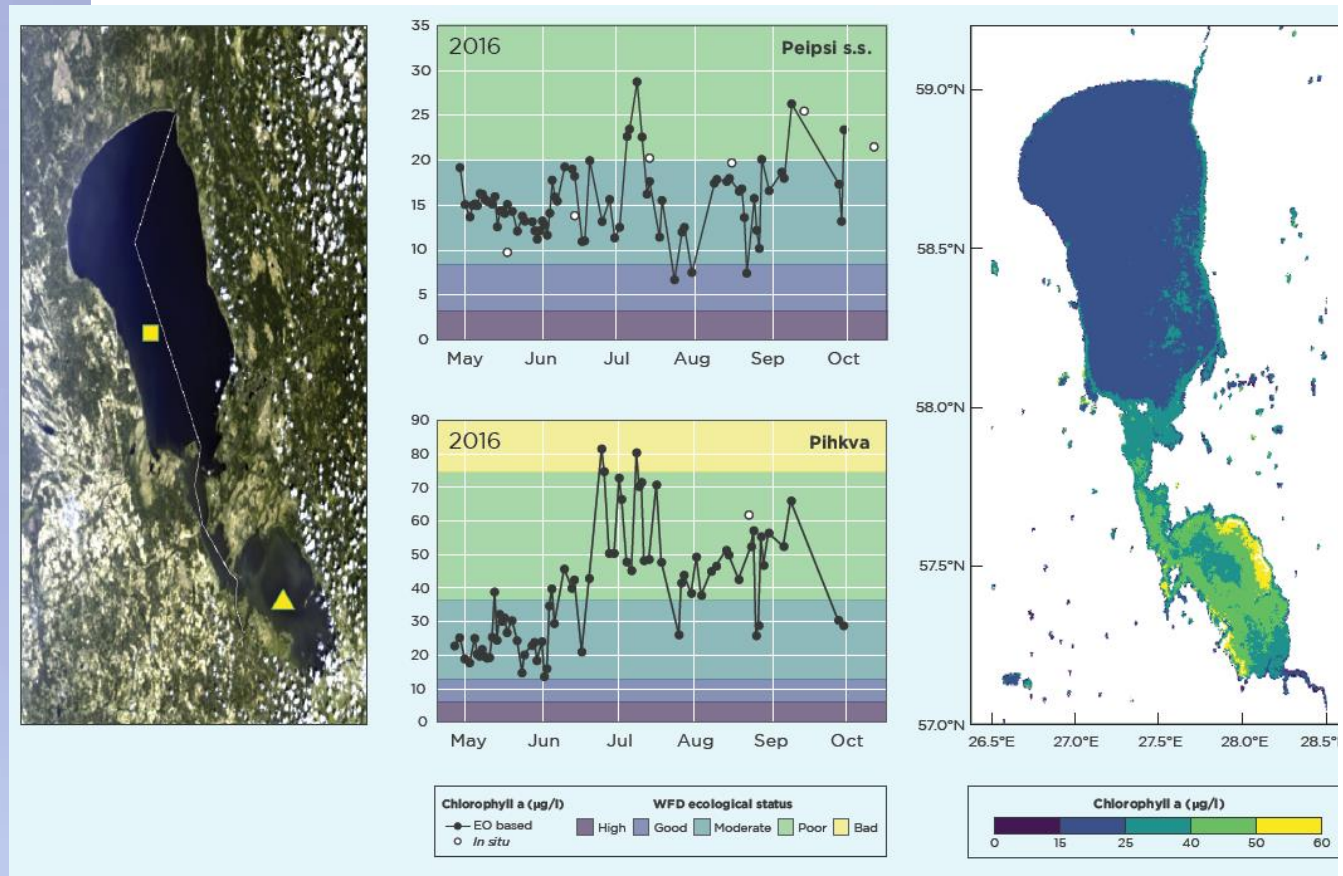


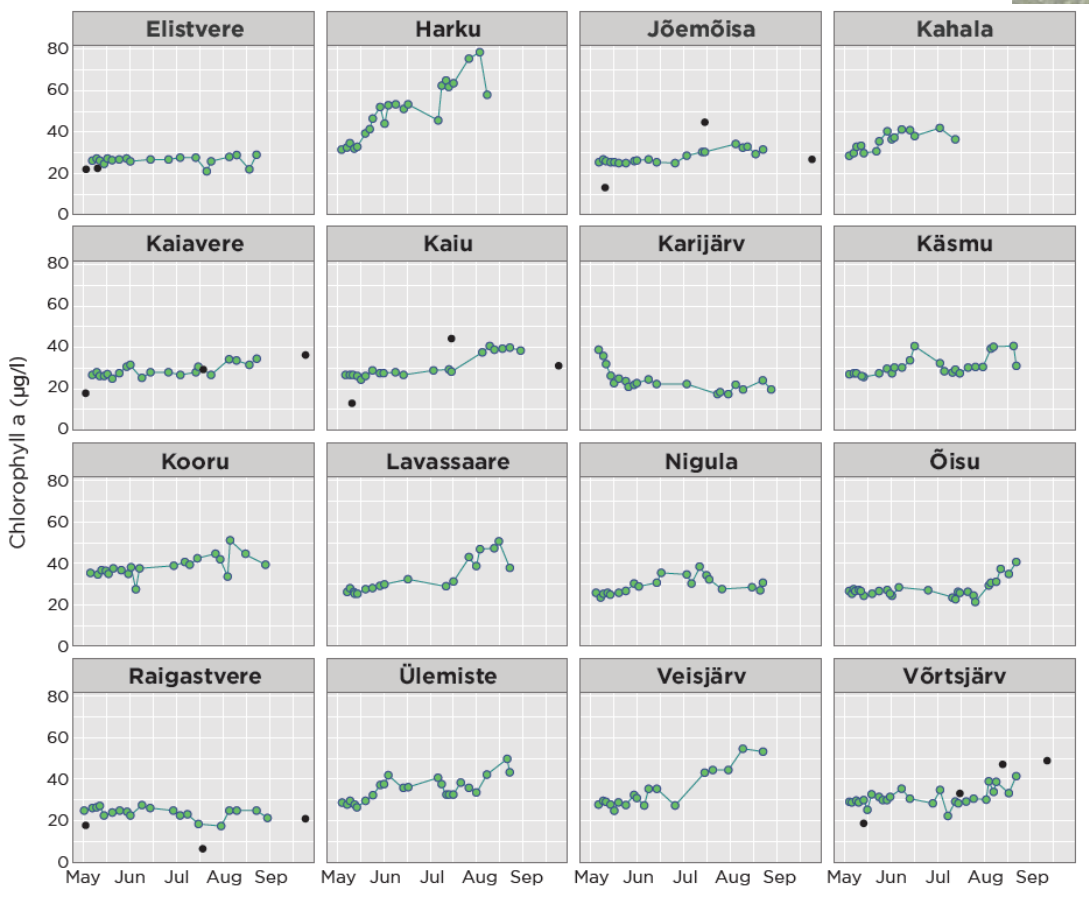




Project: EOMORES

White Paper (Papathanaopoulou, E., Simis, S. et al. 2019. Satellite-assisted monitoring of water quality to support the implementation of the Water Framework Directive. EOMORES white paper. 28pp. doi: 10.5281/zenodo.3463051)

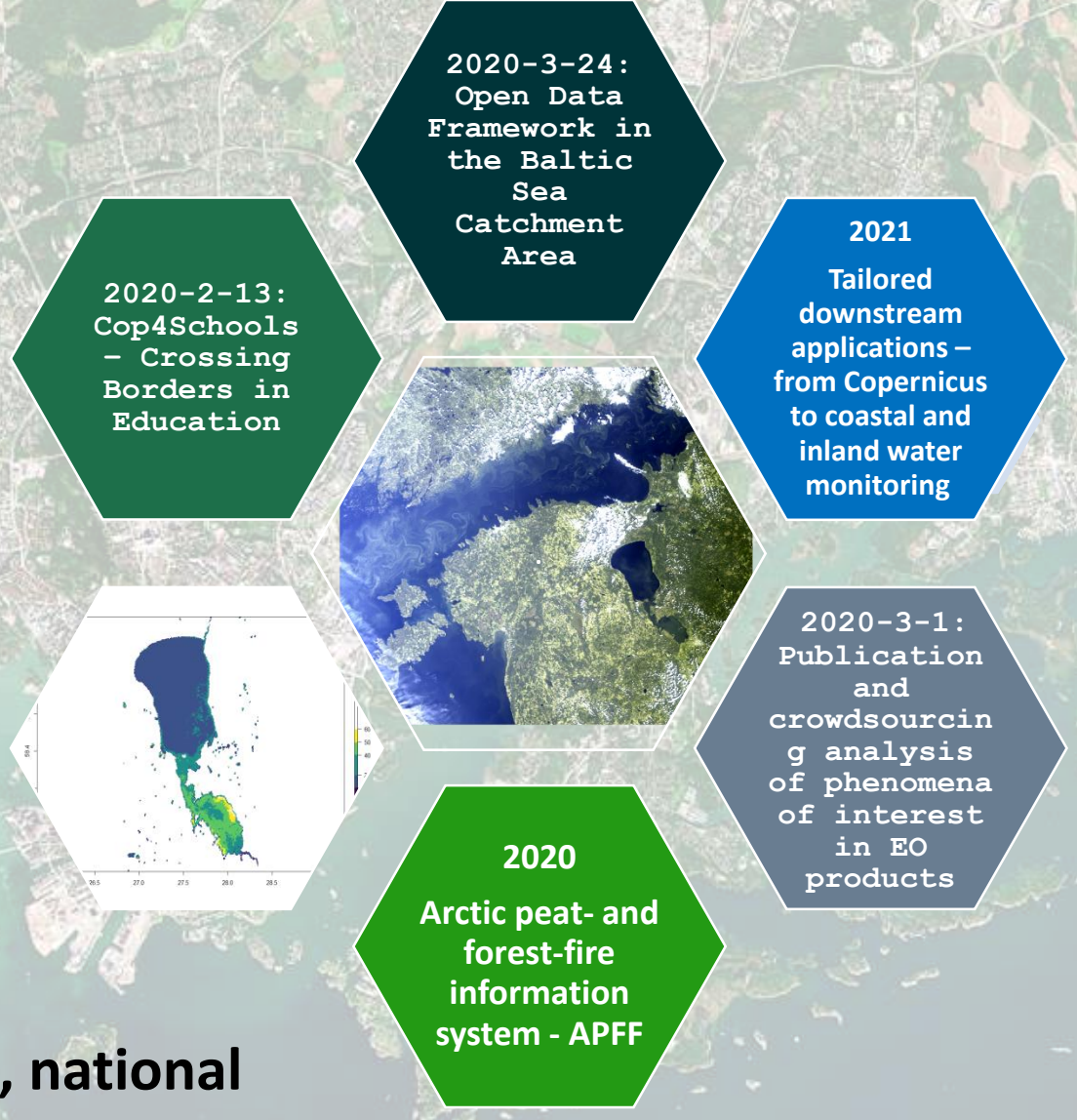




Project: FPCUP

Approved actions:

- **Action 2018-2-02: Advanced educational course at university level for both national and international students**
- **2019-1-51: Downstream service/application development for supporting implementation of EU Water Framework Directive in Estonia**



- **Uptake of Copernicus data**
- **Outreach to general public, national agencies**
- **Collaboration and cooperation in national and international level**

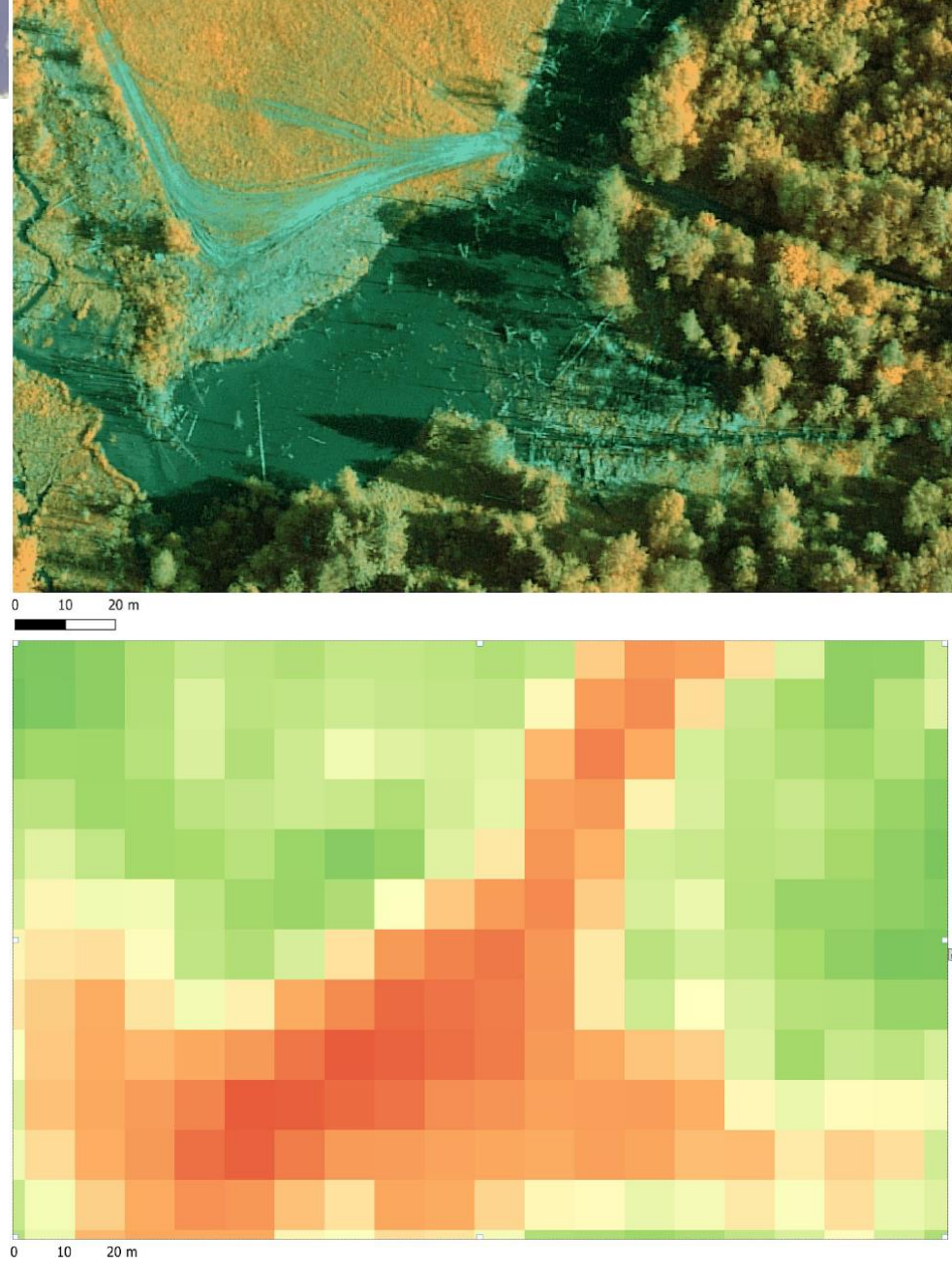
Project: FPCUP

2019-1-51: <u>Downstream service/application</u> development for supporting implementation of EU Water Framework Directive in Estonia

- S3/OLCI and S2/MSI data
- Chl a, phytoplankton biomass and transparency
- Lakes' ecological status class

Studies

- Environmental Remote Sensing
- Data Science in Remote Sensing



„Monitoring beaver induced flooding disturbances in forest land“ Nikita Murin, Kaarel Tark, Martti Praks. Supervisor Mihkel Kaha

Summary

- Simplifies the use of satellite data
- Solves problems with computer memory and computing power
- Saves time, combines different satellite data, processing levels and helps to test different algorithms quickly
- Possible to modify processing platform according to users needs in collaboration with ESTHub team
- Very useful tool for researchers, students, satellite data specialists etc…
- Incorporated already in many research and teaching activities

Thank you for listening!