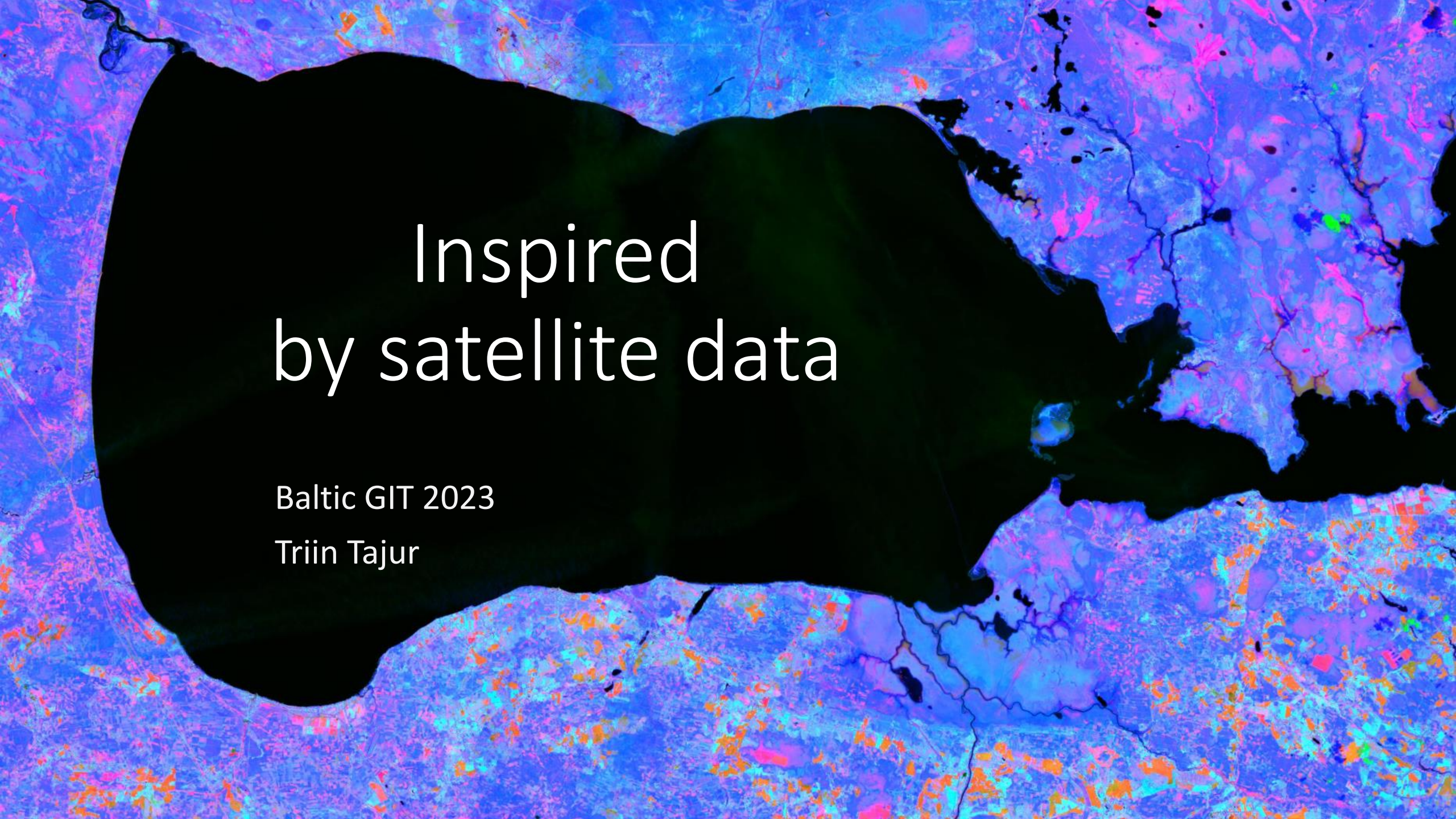
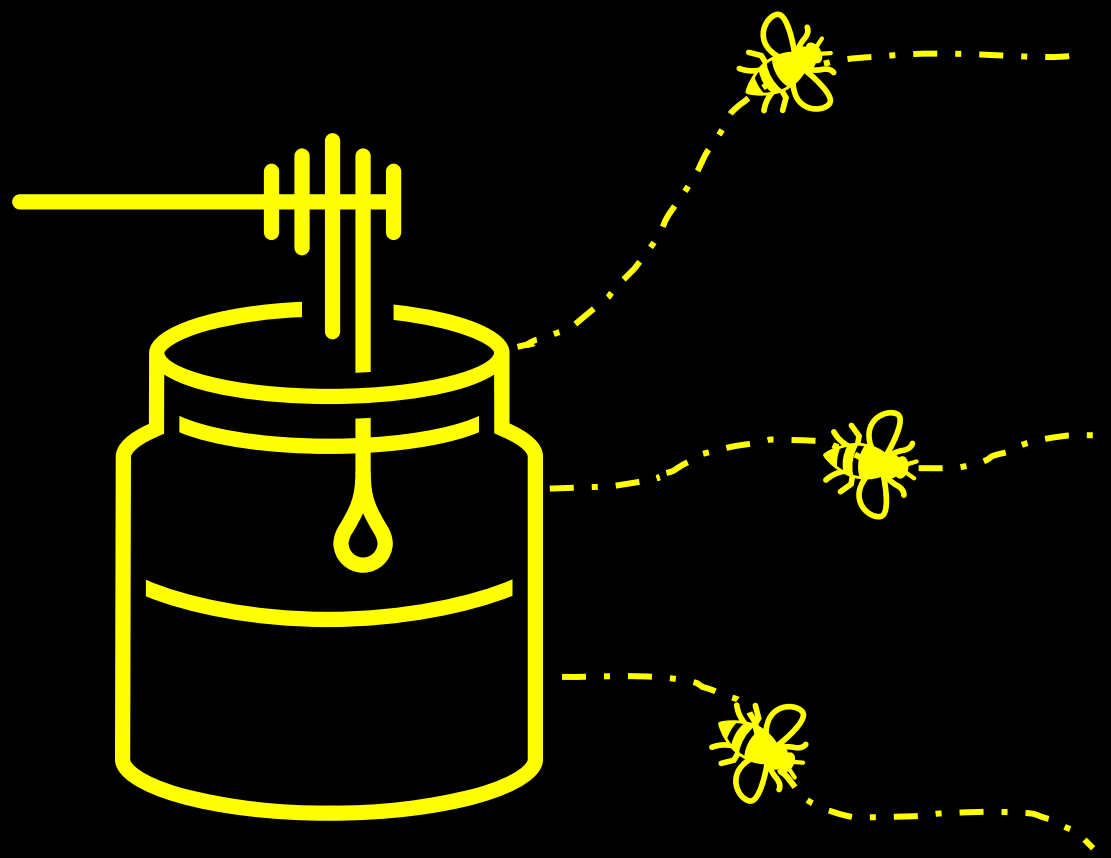


Inspired by satellite data

Baltic GIT 2023

Triin Tajur

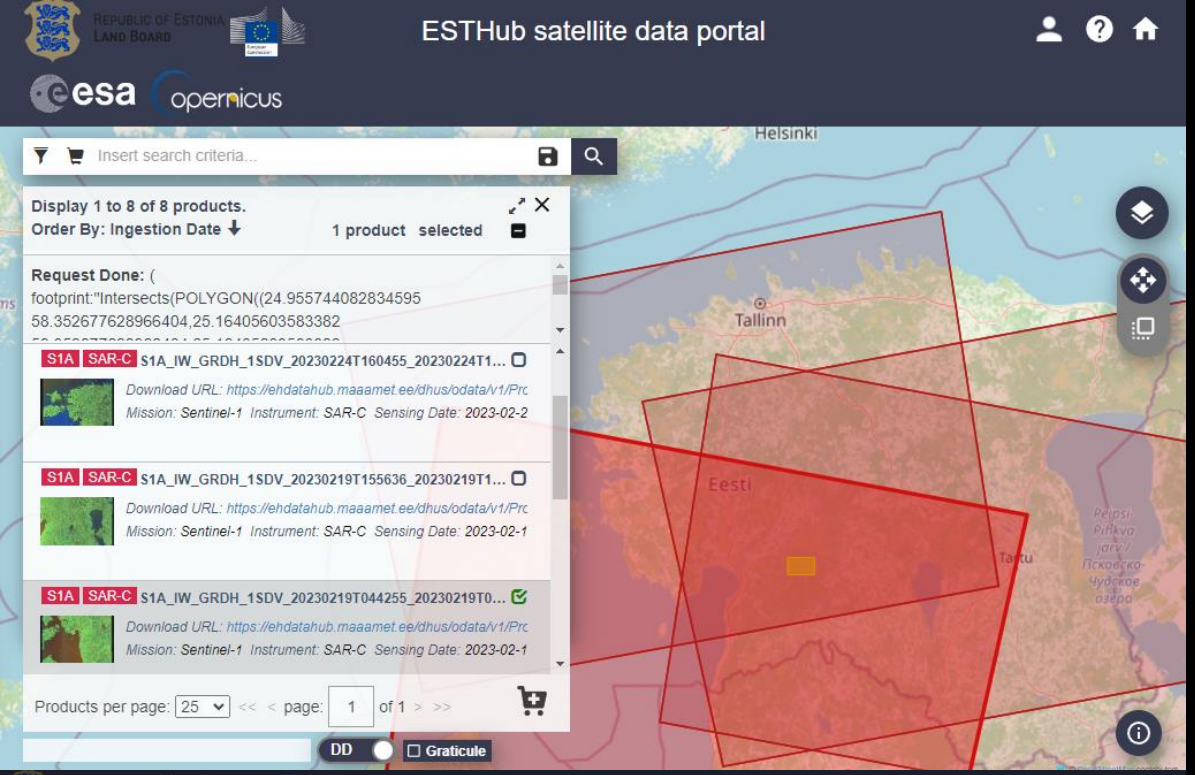
ESTHub

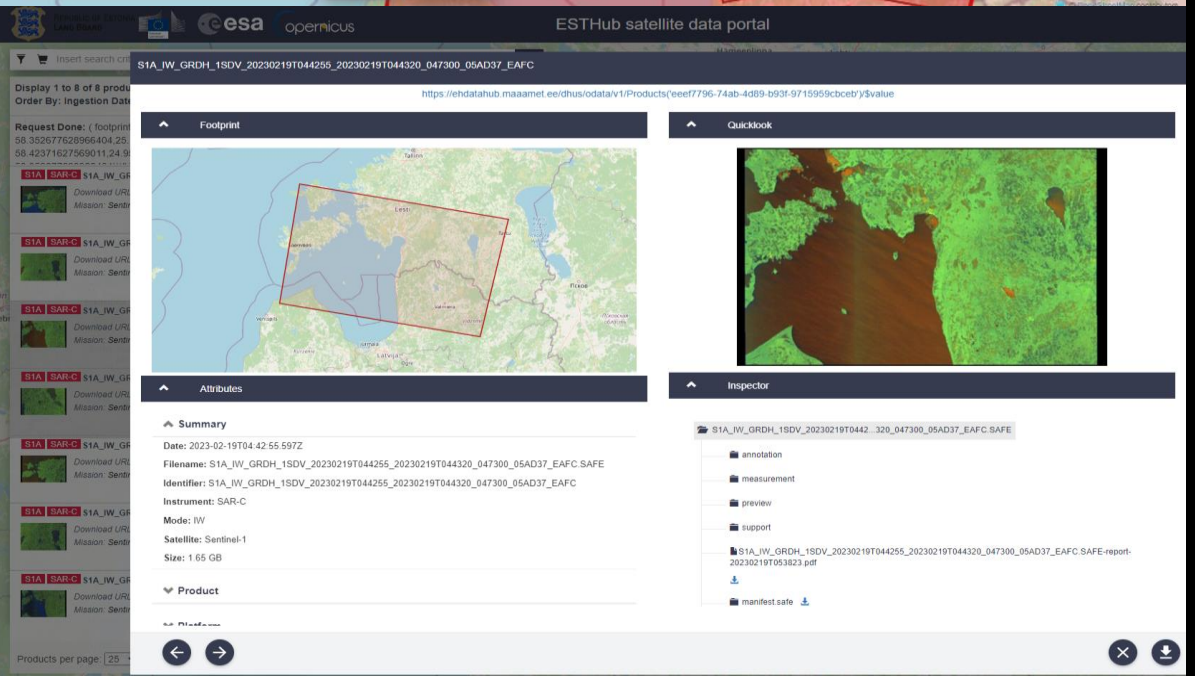


Satellite data portal
https://**ehdatahub**.maaamet.ee/

Satellite data processing
https://**ehcalvalus**.maaamet.ee/

Satiladu
https://**satiladu**.maaamet.ee/





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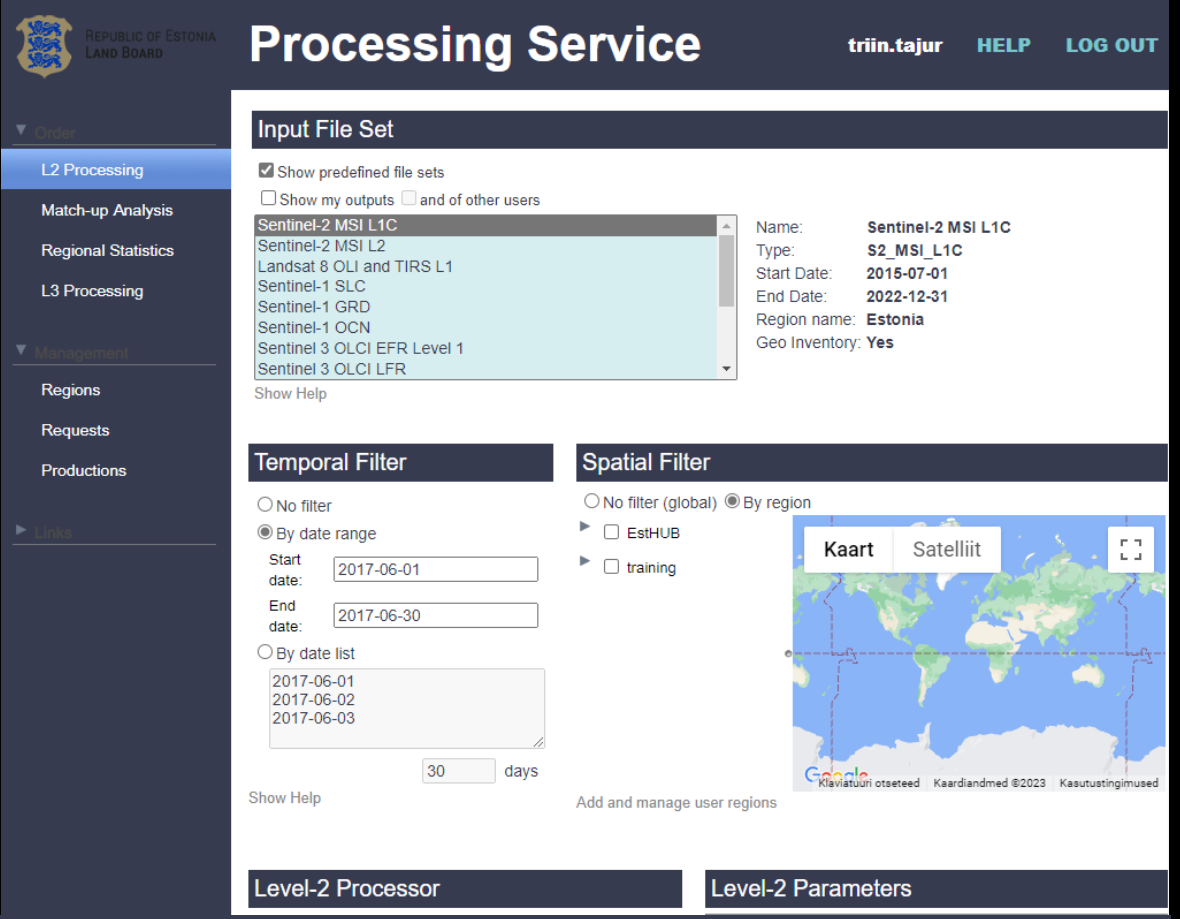

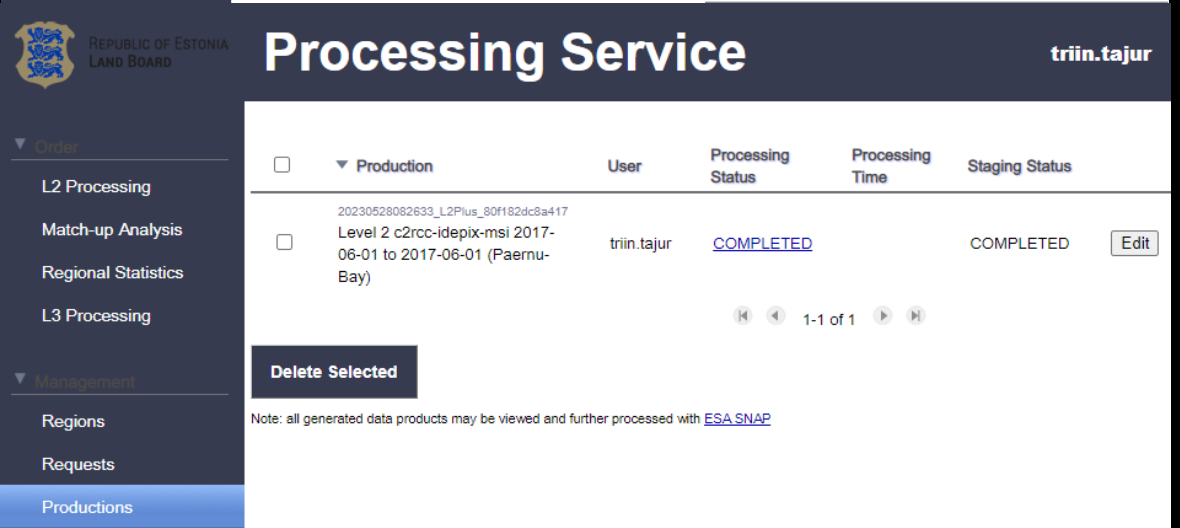

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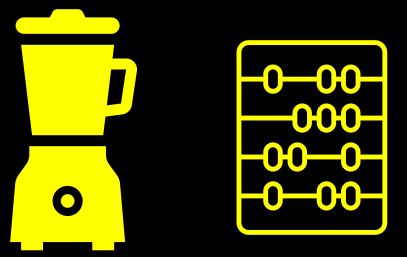

Satellite data processing

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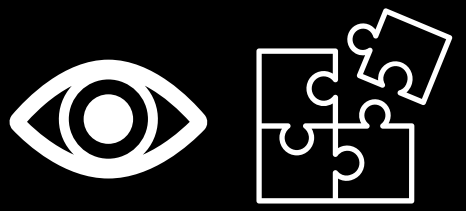
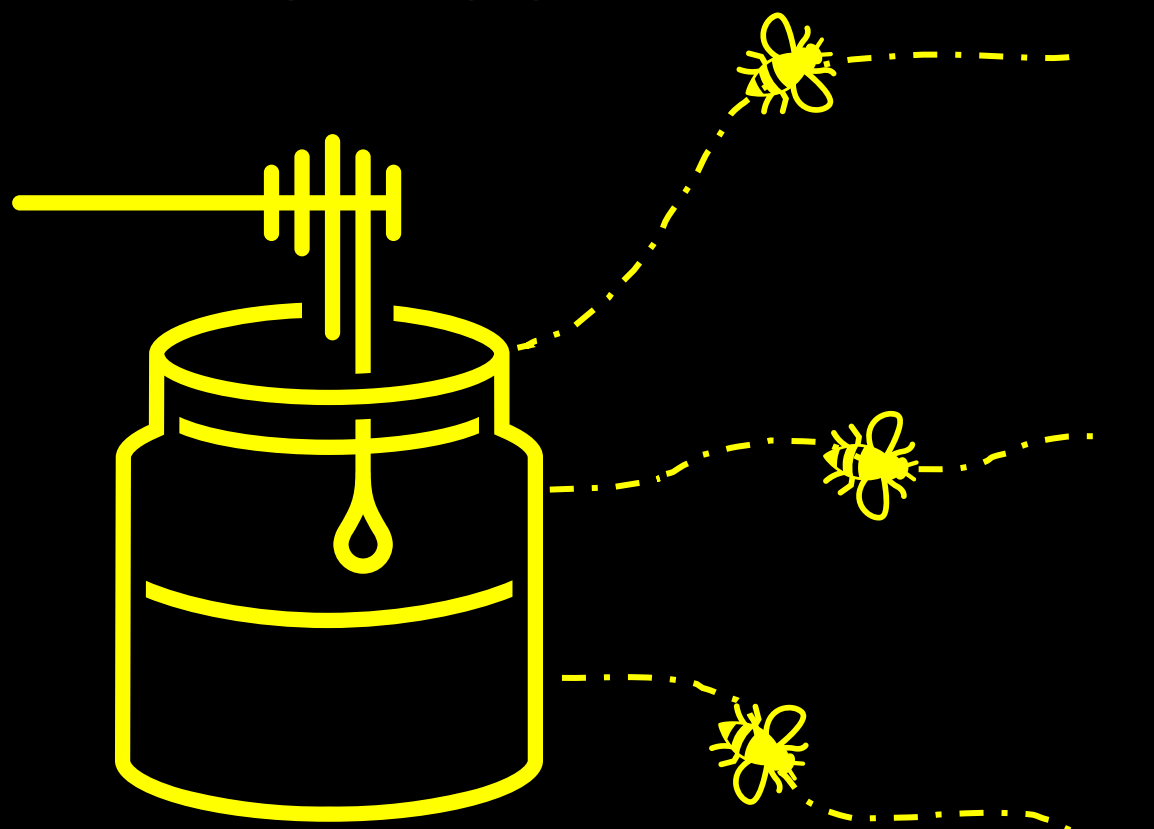


Satiladu

https://**satiladu**.maaamet.ee/

ESTHub



Satellite data portal
https://**ehdatahub**.maaamet.ee/

Satellite data processing
https://**ehcalvalus**.maaamet.ee/

Satiladu
https://**satiladu**.maaamet.ee/

Satiladu

Landscape change information service

Data

Sentinel-2

Filter

NGR

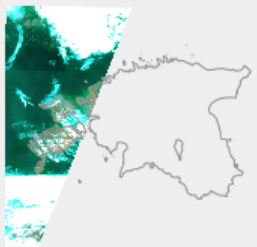
Start date

2023-05-22

End date

2023-06-05

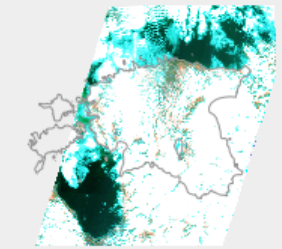
Search



04.06.2023 Sentinel-2 NGR

Preview | QGIS

WMS https://teenus.maaamet.ee/ows/wms-s



03.06.2023 Sentinel-2 NGR

Preview | QGIS

WMS https://teenus.maaamet.ee/ows/wms-s

Sentinel-2 bands and Satiladu

BAND	SPECTRAL	WAVELEN. [µm]	GEOM. [m]	SENSOR
1	aerosols	0.429 – 0.457	60	MSI
2	blue	0.451 – 0.539	10	MSI
3	green	0.538 – 0.585	10	MSI
4	red	0.641 – 0.689	10	MSI
5	red edge	0.695 – 0.715	20	MSI
6	red edge	0.731 – 0.749	20	MSI
7	red edge	0.769 – 0.797	20	MSI
8	NIR	0.784 – 0.900	10	MSI
8a	narrow NIR	0.855 – 0.875	20	MSI
9	water vapour	0.935 – 0.955	60	MSI
10	SWIR cirrus	1.365 – 1.385	60	MSI
11	SWIR	1.565 – 1.655	20	MSI
12	SWIR	2.100 – 2.280	20	MSI

[1]

Spectrum represented on Satiladu:

B4 Red - 665 nm – resolution 10 m

B3 Green - 560 nm – resolution 10 m

B2 Blue - 490 nm – resolution 10 m

B8 NIR - 842 nm – resolution 10 m

NDVI = (**B8** - **B4**)/(**B8** + **B4**) – resolution 10 m

NDPI = (**B12** - **B3**)/(**B12** + **B3**) – resolution 20 m

NDVI index on Satiladu

Normalized Difference Vegetation Index

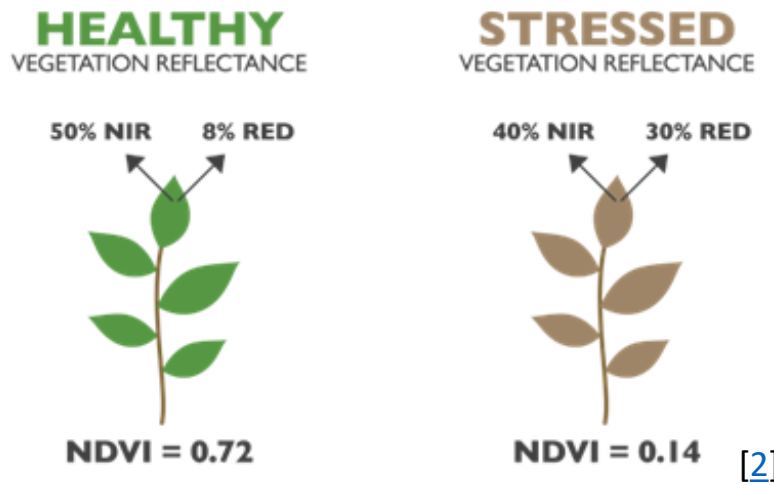
$$NDVI = \frac{(NIR - Red)}{(NIR + Red)}$$

-1 ... -0.5

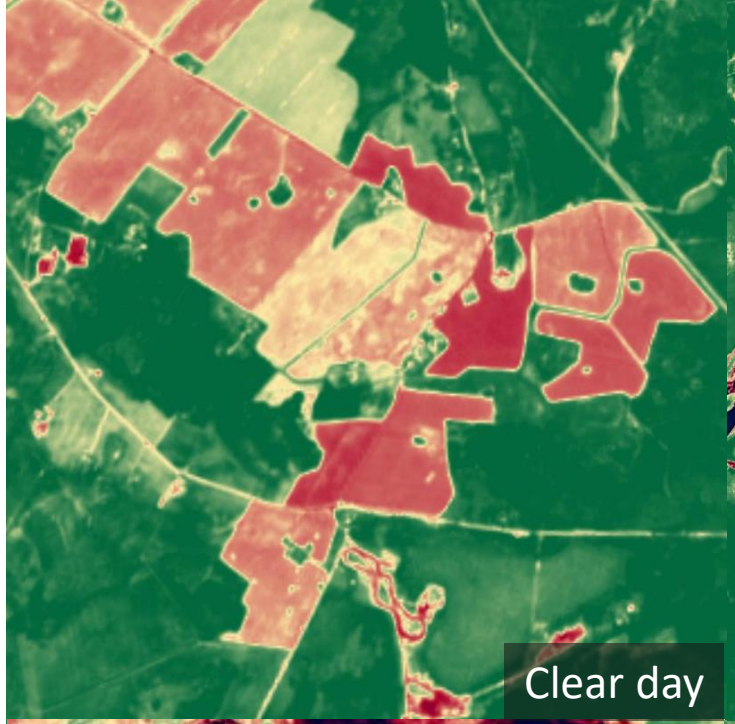
-0.5 ... 0

0 ... 0.5

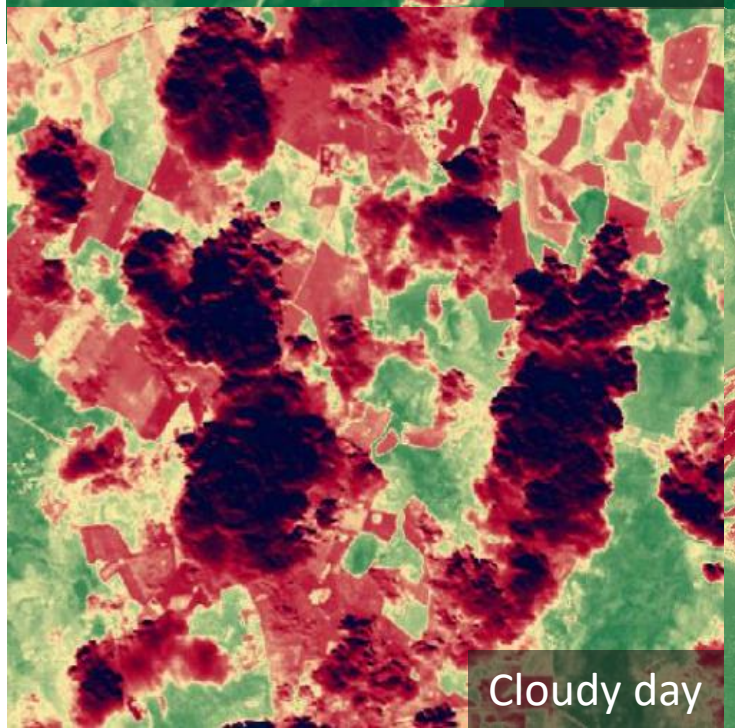
0.5 ... 1

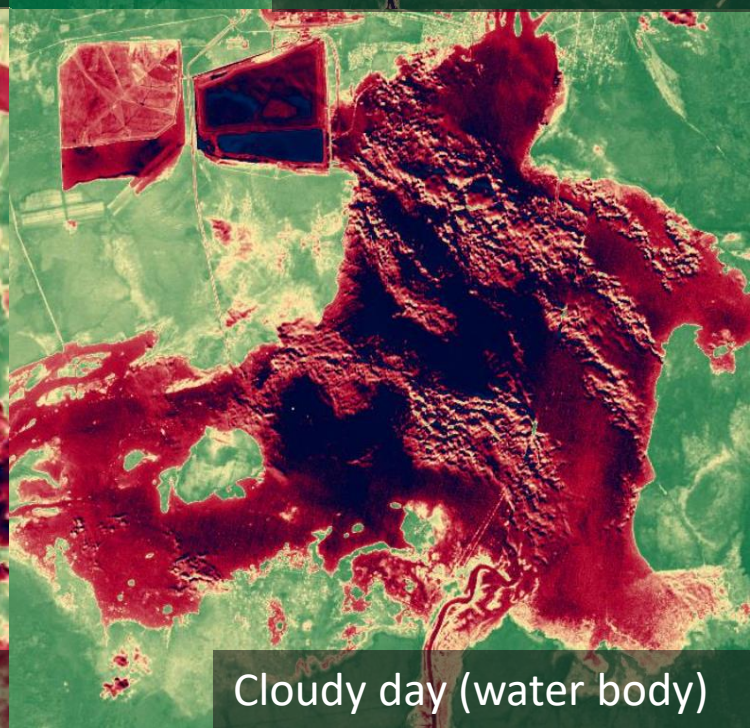


[2]


Clear day

Clear day (water body)


Cloudy day

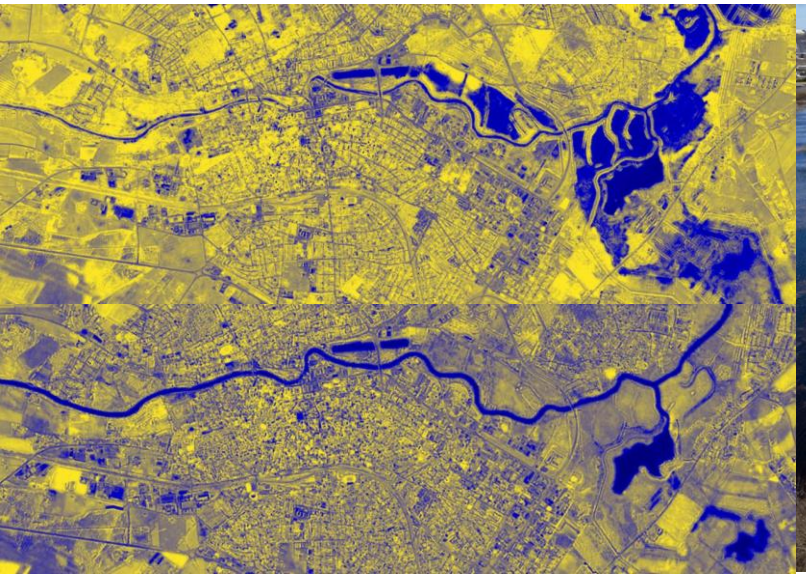

Cloudy day (water body)

NDPI index on Satiladu

Normalized Difference Pond Index

$$\mathrm{NDPI} = \frac{\mathrm{SWIR} - \mathrm{Green}}{\mathrm{SWIR} + \mathrm{Green}}$$

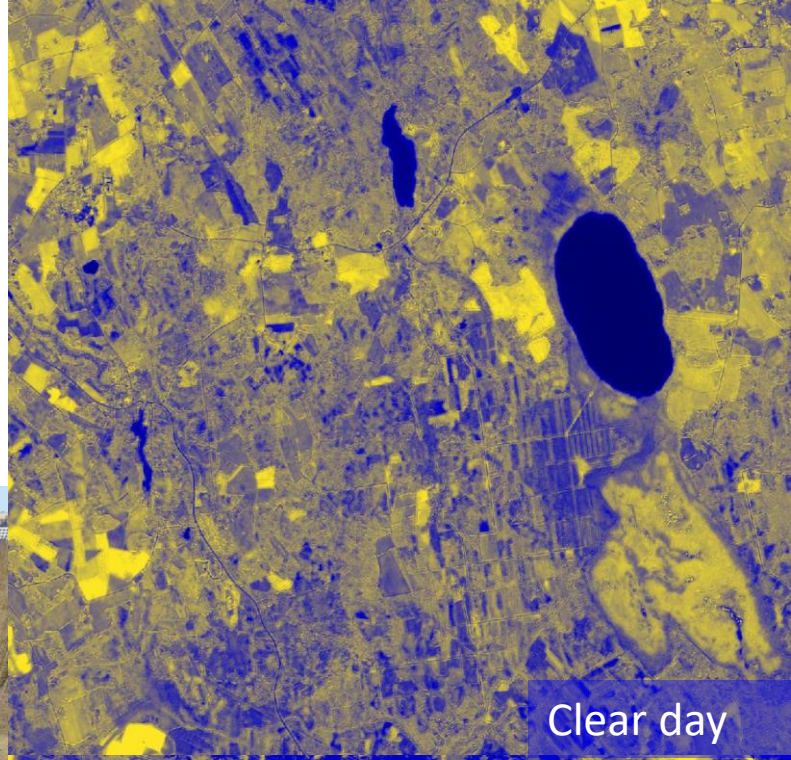
Distinguish between terrestrial and aquatic vegetation



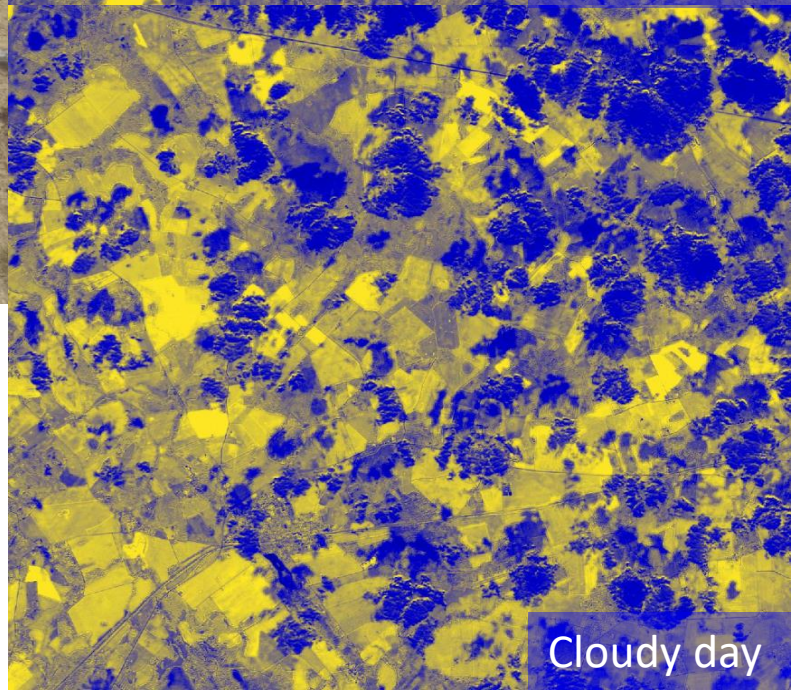
Detection of flood events
Estimate vegetation water stress
Drought monitoring
Fire risk assessment

- 1 … 0

0 … 1



Clear day

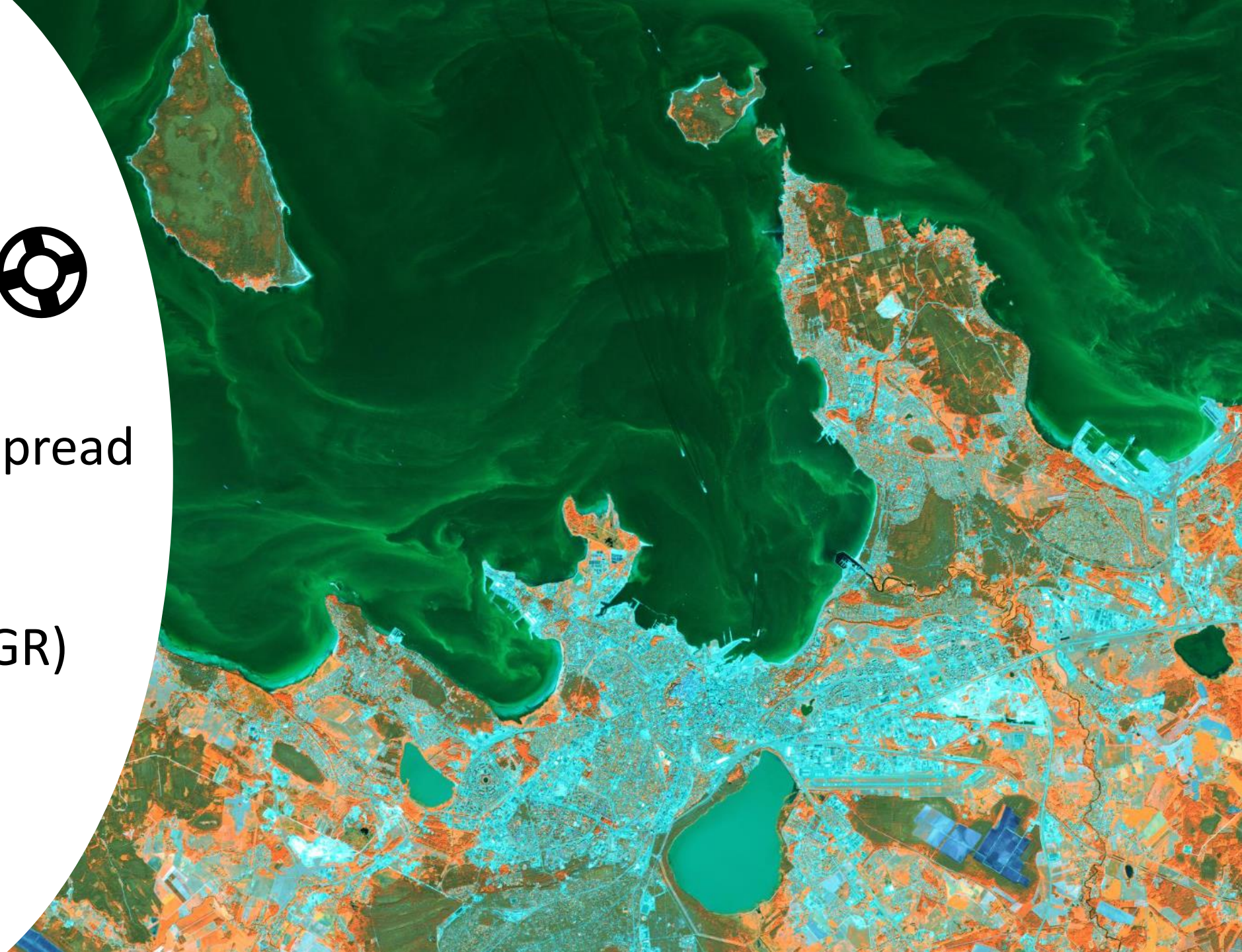


Cloudy day

Case 1: Lifeguard

Problem:
blue-green algae spread

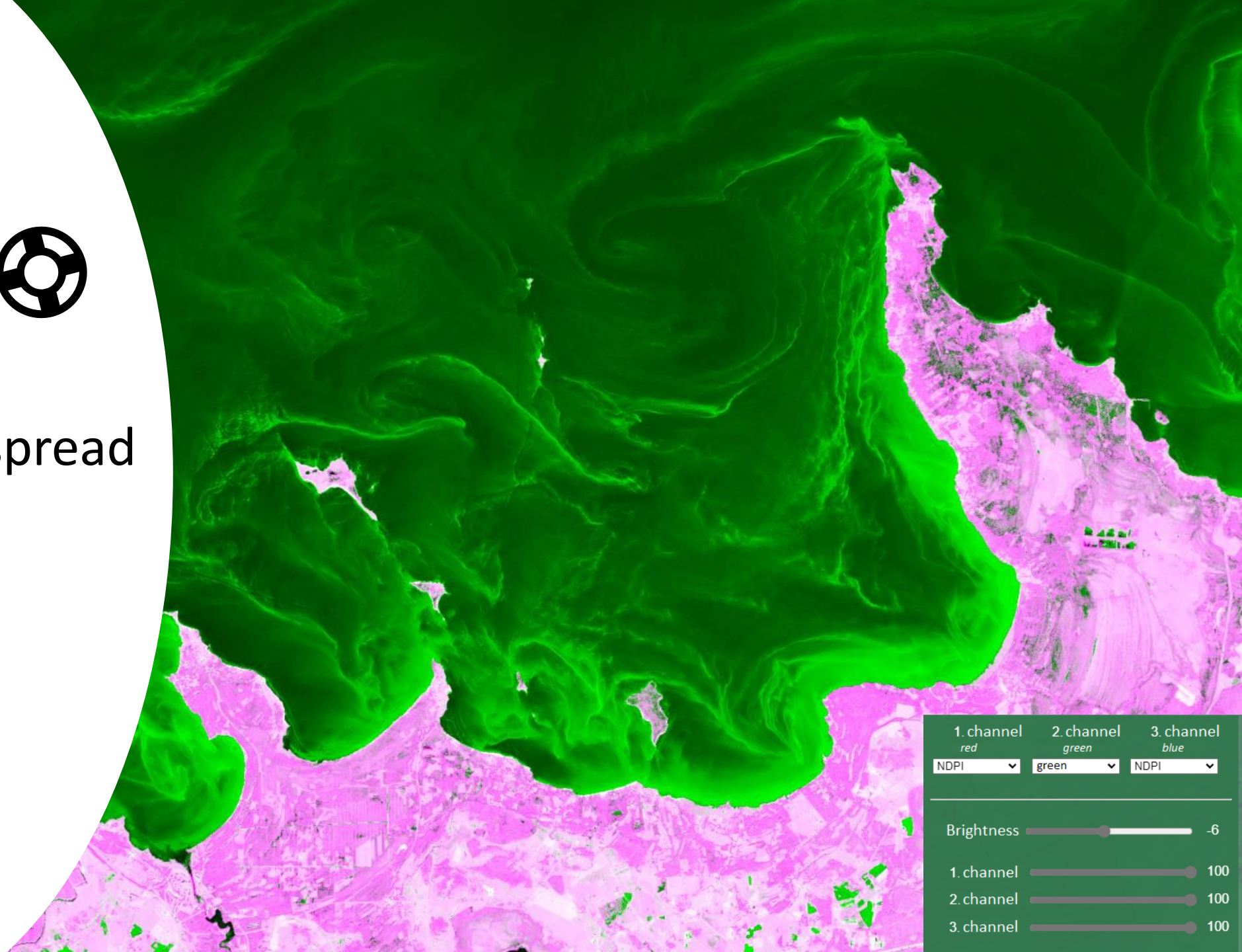
Solution: Satiladu
NIR Green Red (NGR)



Case 1: Lifeguard

Problem:
blue-green algae spread

Solution: Satiladu
NDPI Green NDPI

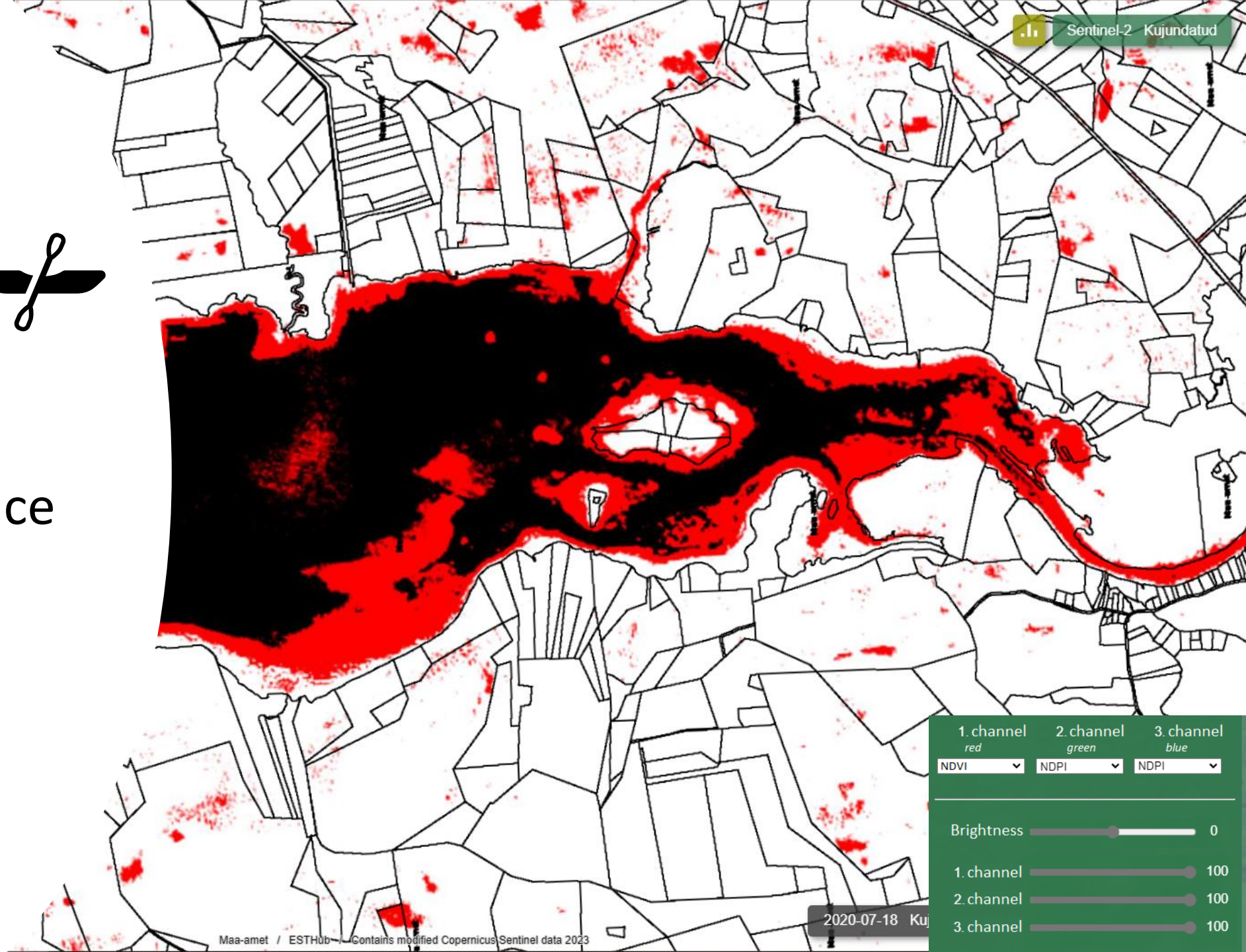


Case 2: Kayaker

Problem:
reeds and shore vegetation influence accessibility to land/water

Solution: Satiladu NDVI NDPI NDPI

cadastre units vector

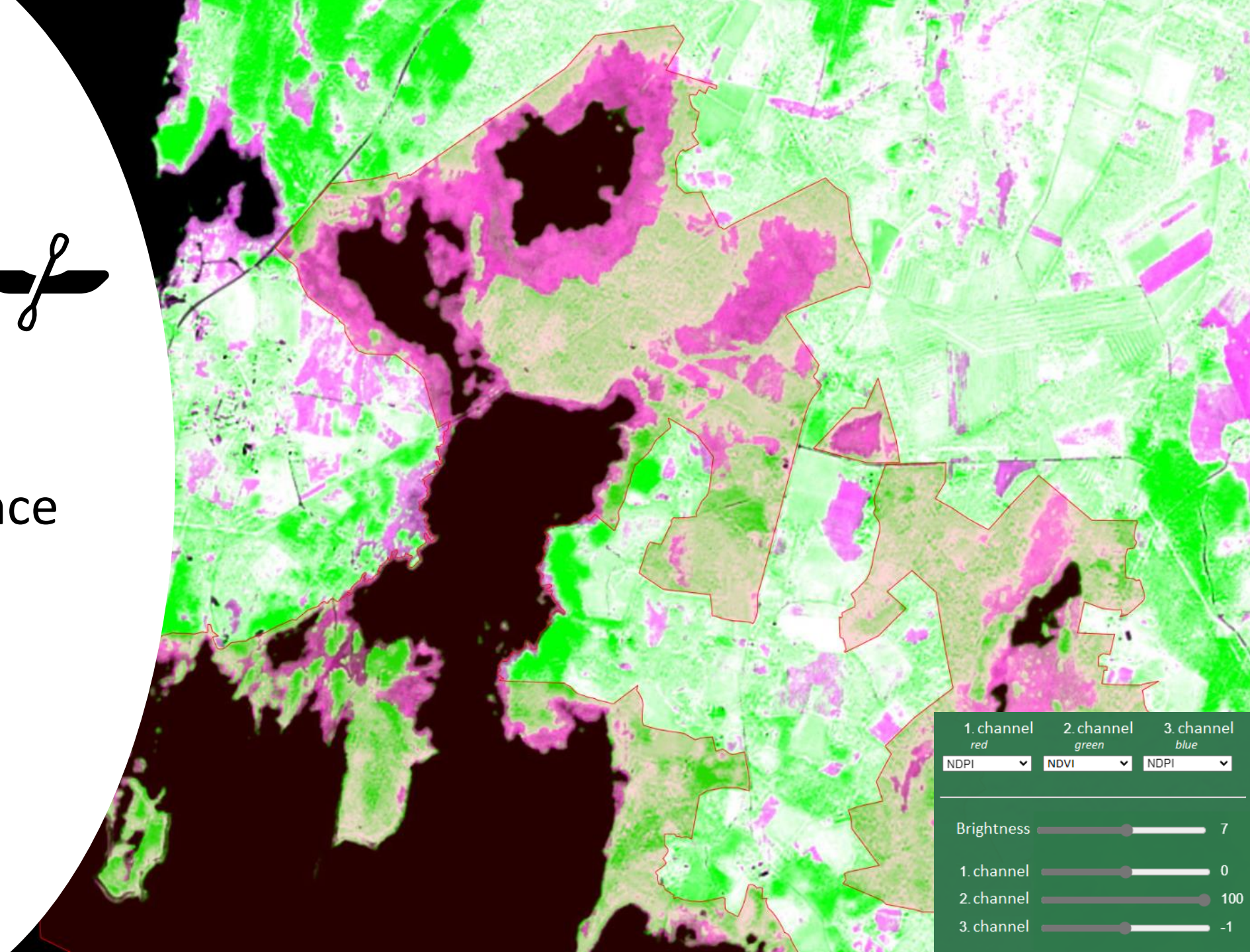


Case 2: Kayaker

Problem:
reeds and shore vegetation influence accessibility to land/water

Solution: Satiladu NDPI NDVI NDPI

protected areas vector

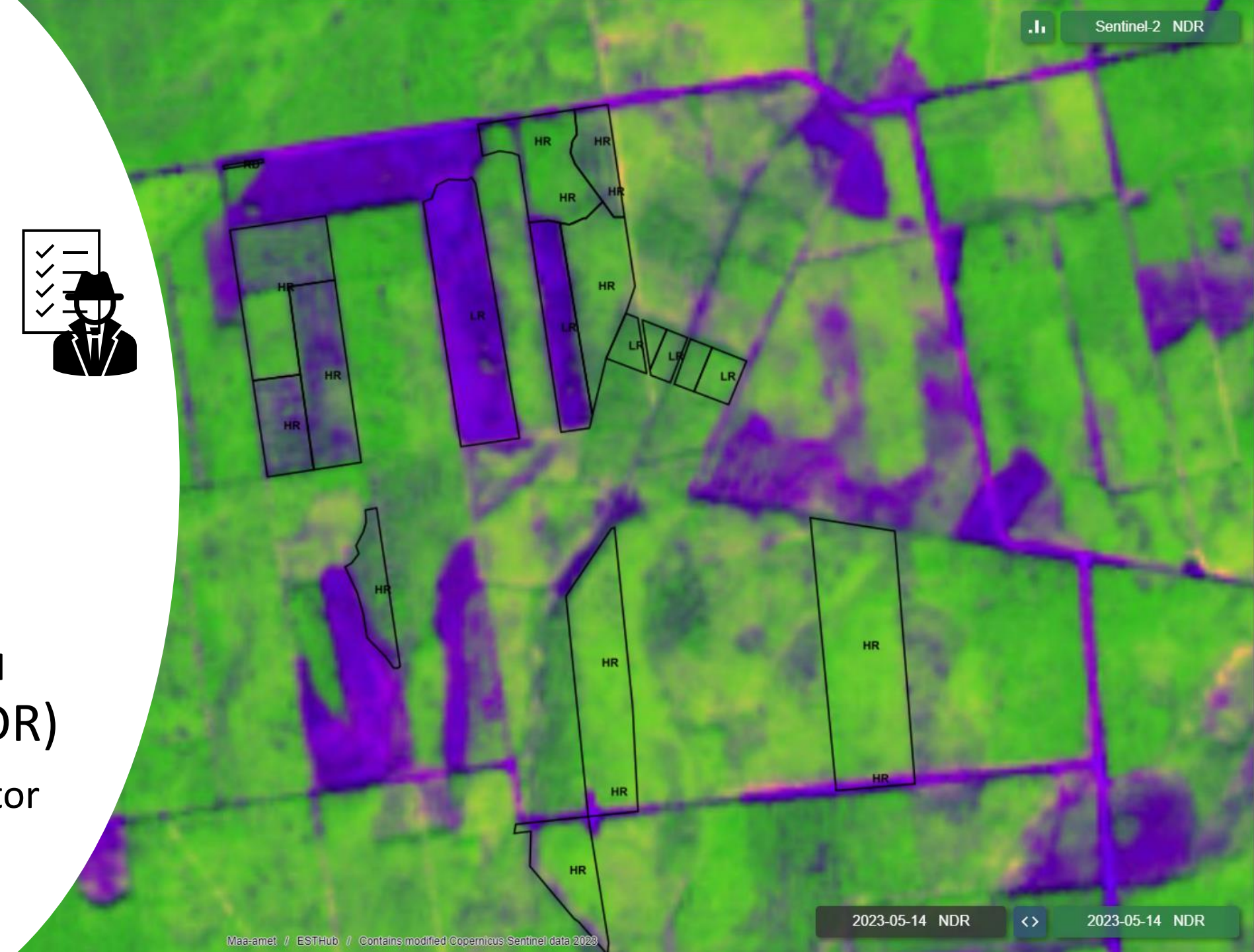


Case 3: Inspector

Problem:
supervision of logging activities

Solution: Satiladu NIR NDVI Red (NDR)

forest notifications vector



Case 4: Farmer

Problem:
assess frost damage and get an overview of the consistency of the crop

Solution: Satiladu NDVI

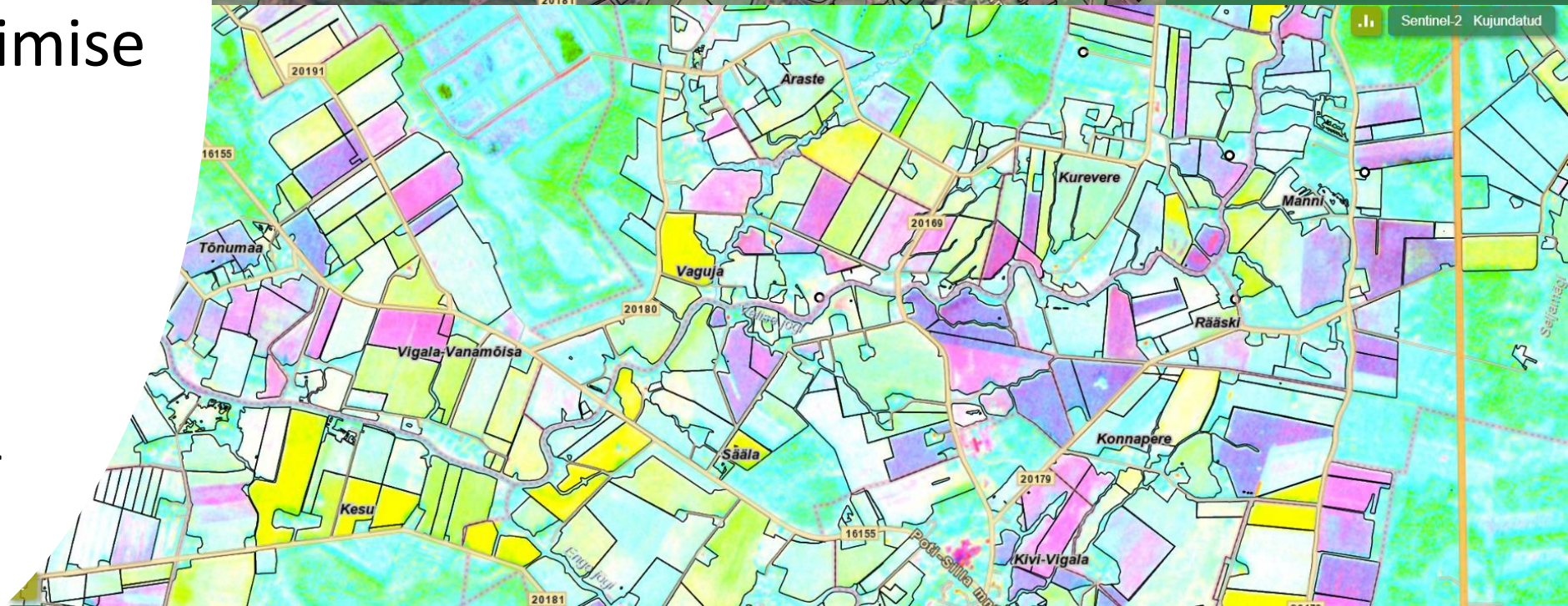
agricultural fields vector

Case 5: Ecologist

Problem:
early planning of hive positioning to optimise the forage area

Solution: Satiladu
Blue NDVI NDPI

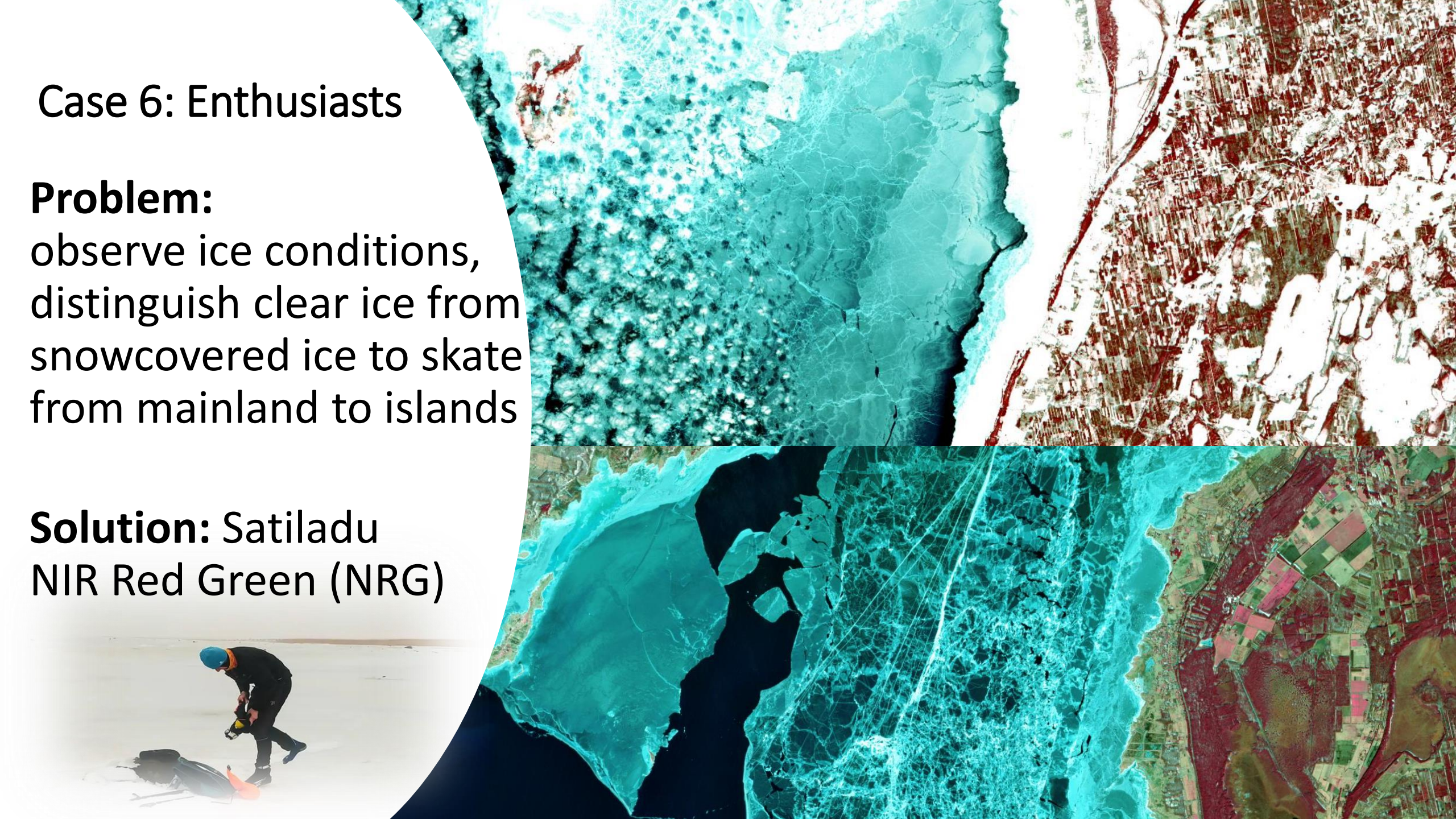
agricultural fields vector



Case 6: Enthusiasts

Problem:
observe ice conditions, distinguish clear ice from snowcovered ice to skate from mainland to islands

Solution: Satiladu
NIR Red Green (NRG)



Case 7: Grinch

Problem:
detect all coniferous trees to steal Christmas

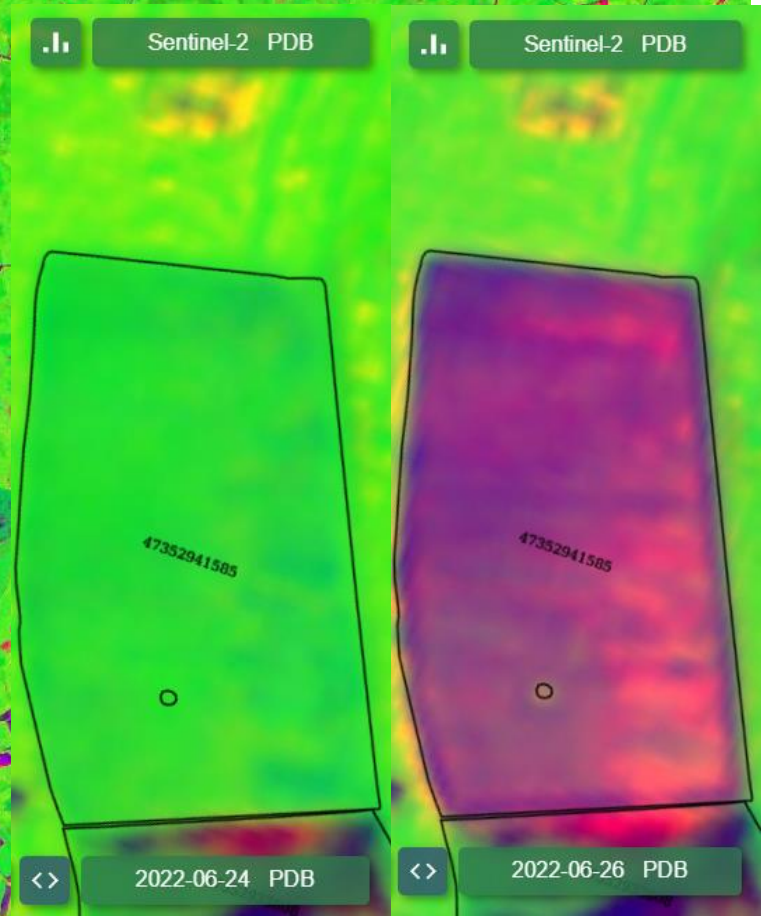
Solution: Satiladu NIR Red Green (NRG)

Case 8: Specialist

Problem:
detection of mowed grassland

Solution: Satiladu NDPI NDVI Blue (PDB)

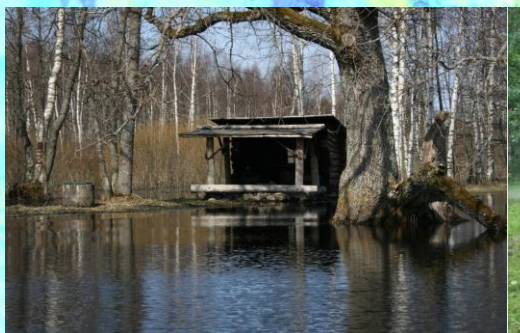
agricultural fields vector

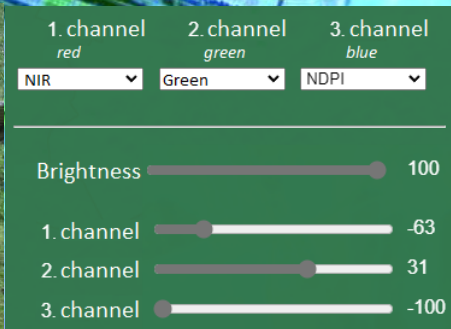


Case 9: Citizen

Problem:
spring floods – making an informed decision when to visit RMK camp site near the river

Solution: Satiladu
NIR Green NDPI (NGP)





Case 10: Forest owner

Problem:
detection of dead and stressed trees, possibly inhabited by bark beetles

Solution: Satiladu NIR Red Green (NRG)

state forests vector

Inspired by satellite data

Baltic GIT 2023

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