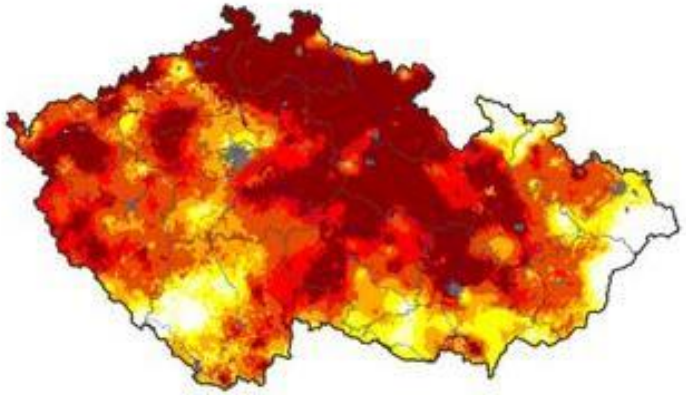
CzechGlobe

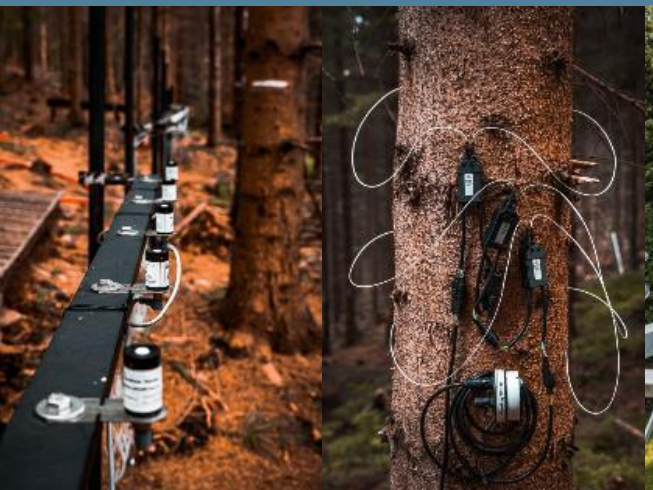
GLOBAL CHANGE
RESEARCH INSTITUTE CAS

Remote sensing department of CzechGlobe

Lucie Homolová & RS team

INTERSUCHO





Remote Sensing at CzechGlobe

Imaging spectroscopy | *Laser scanning* | *Thermal scanning*

Remote Sensing Team & Team of Airborne Activities

(11.5 FTE) (4.5 FTE)

Flying laboratory of imaging systems

VNIR-SWIR imaging spectroscopy

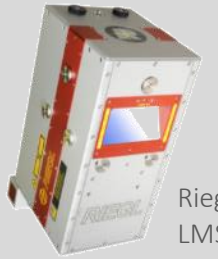
CASI-1500

SASI-600

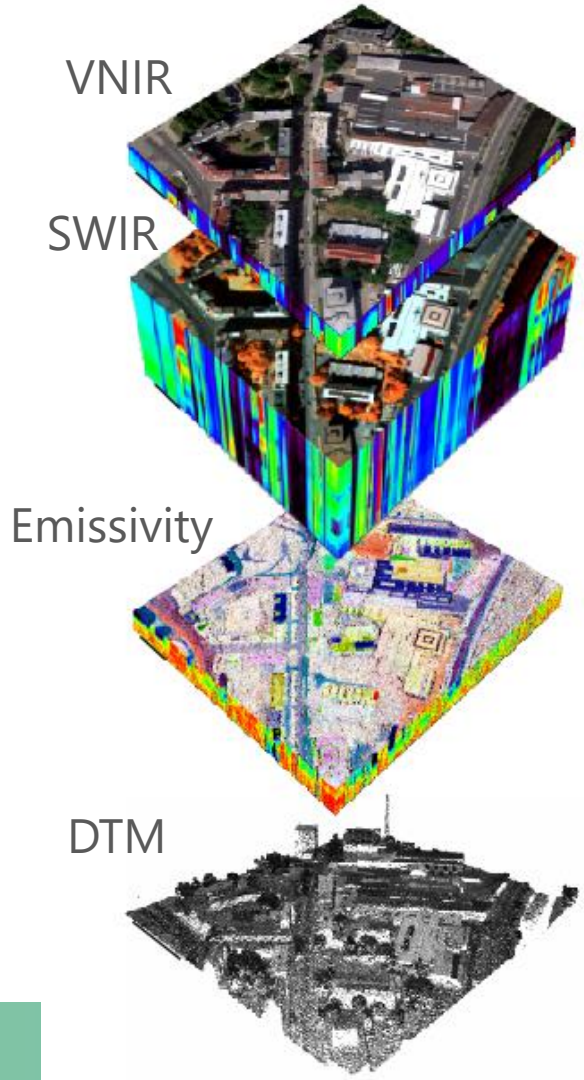
Thermal imaging spectroscopy

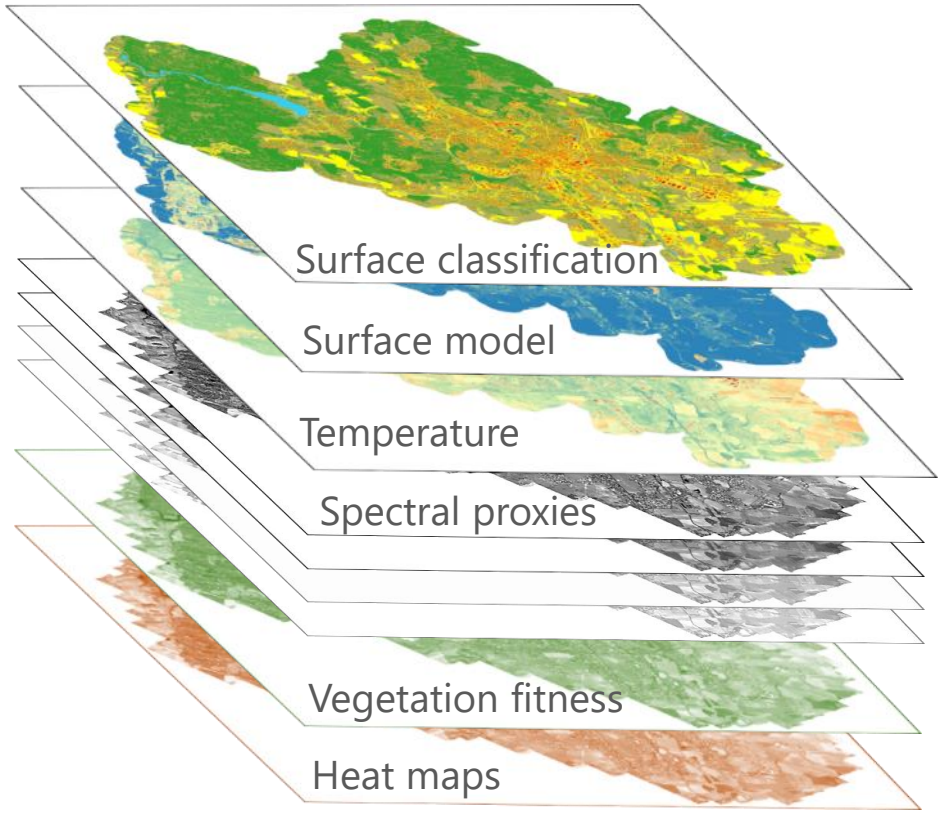
TASI-600

Laser scanning

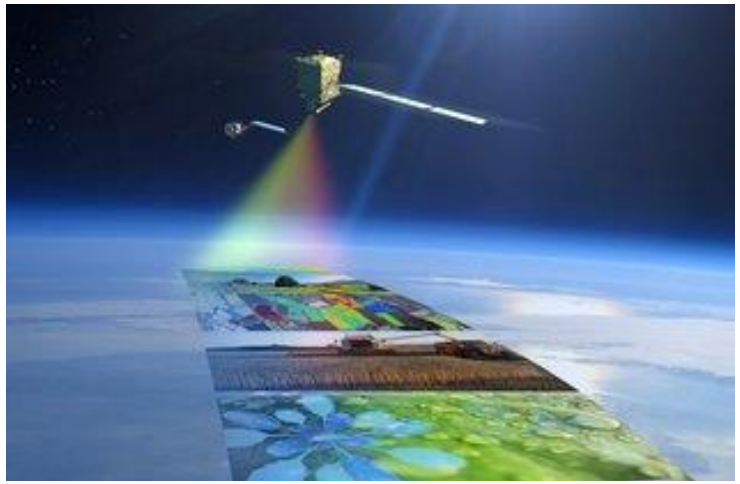


Riegl
LMS – Q780

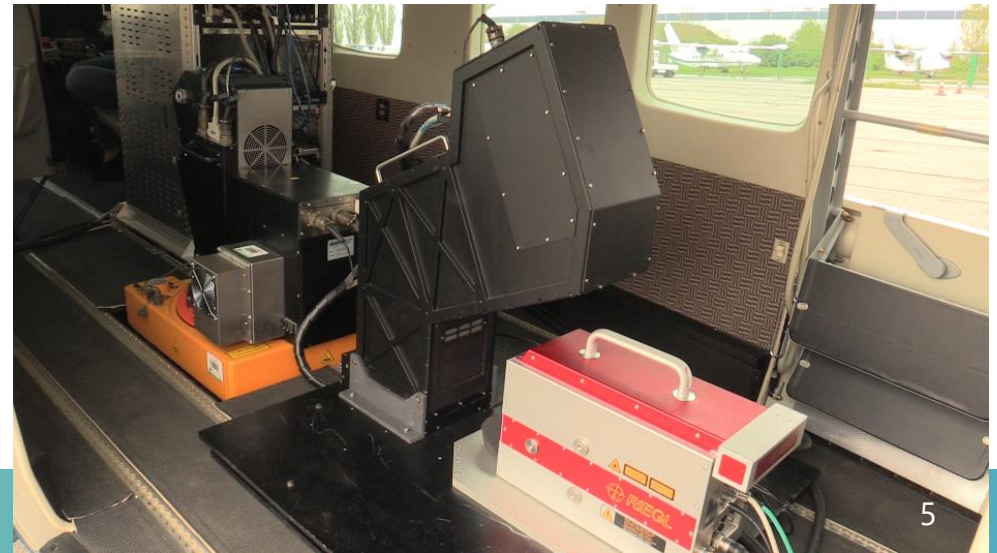




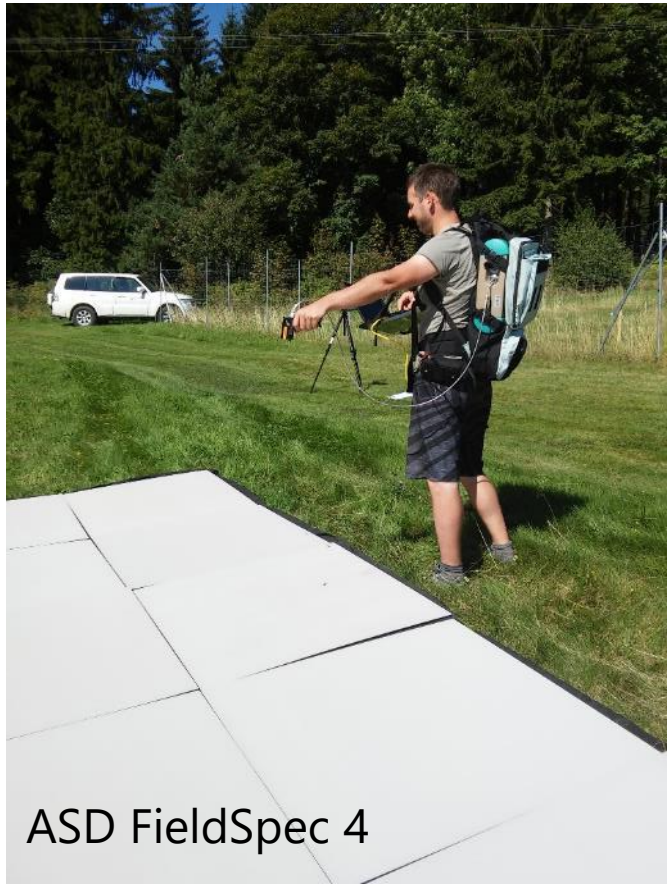
FLIS international operations



Support of ESA FLEX and Italian PRISMA mission



Proximal sensing tools



ASD FieldSpec 4

Terrestrial lidar Riegl

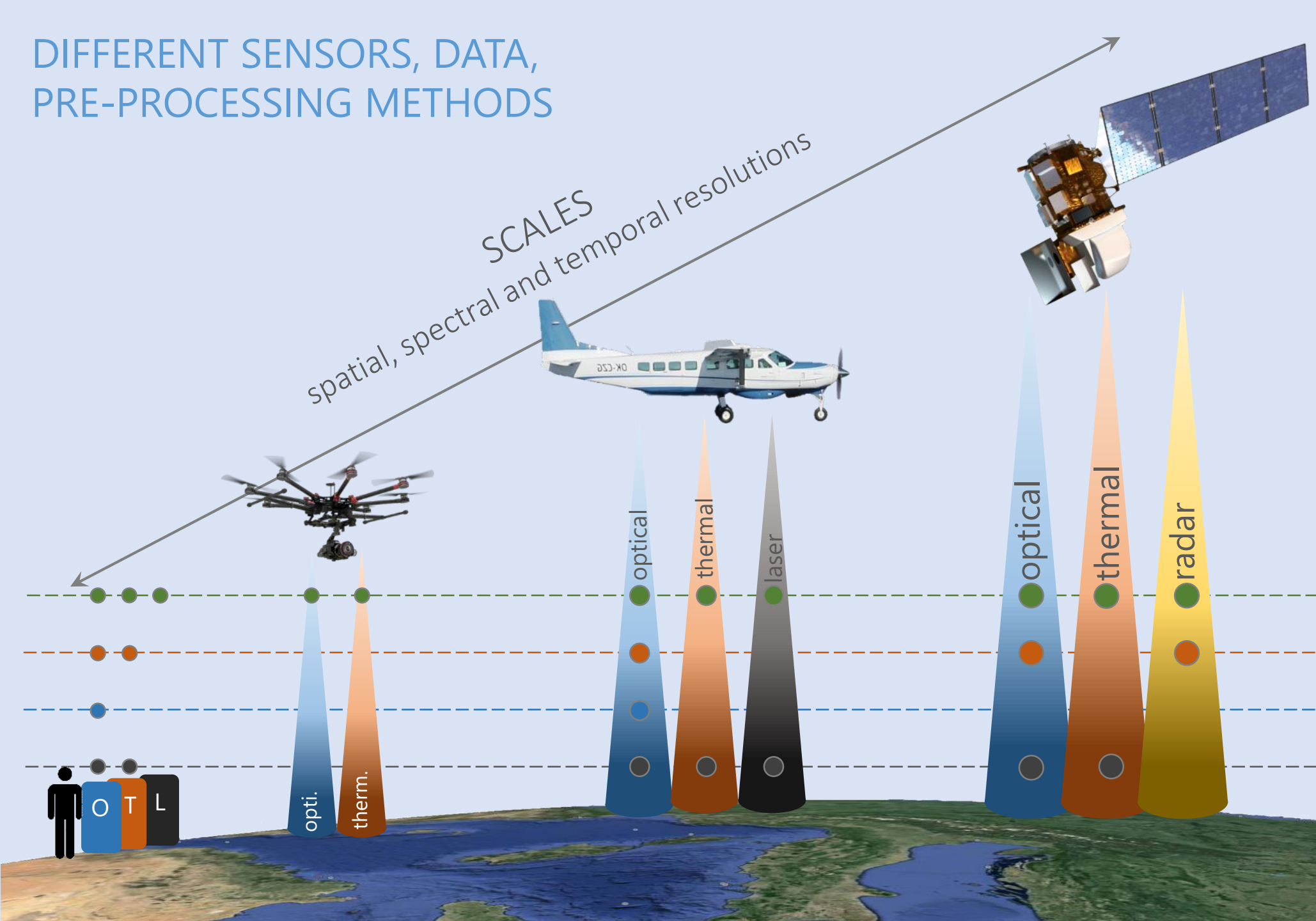
Uličník

Matrice 600 Pro &
Headwal NANO-hyperspec

Overview of our research activities

DIFFERENT SENSORS, DATA, PRE-PROCESSING METHODS

SCALES
spatial, spectral and temporal resolutions



APLICATIONS

METHODS
(stats, AI, RTM)

Vegetation
(crops x forests)

Soil

Water

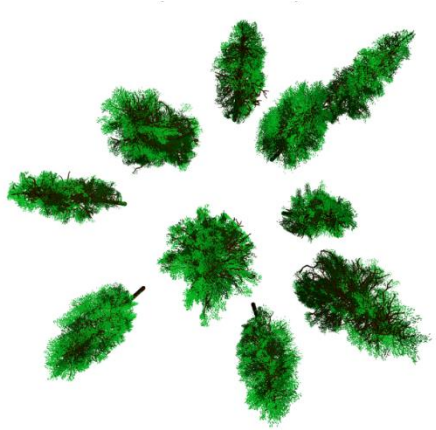
Urban systems

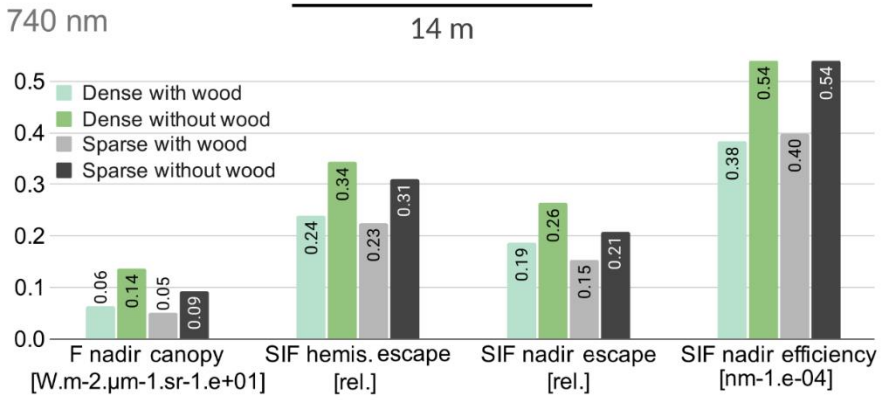
...

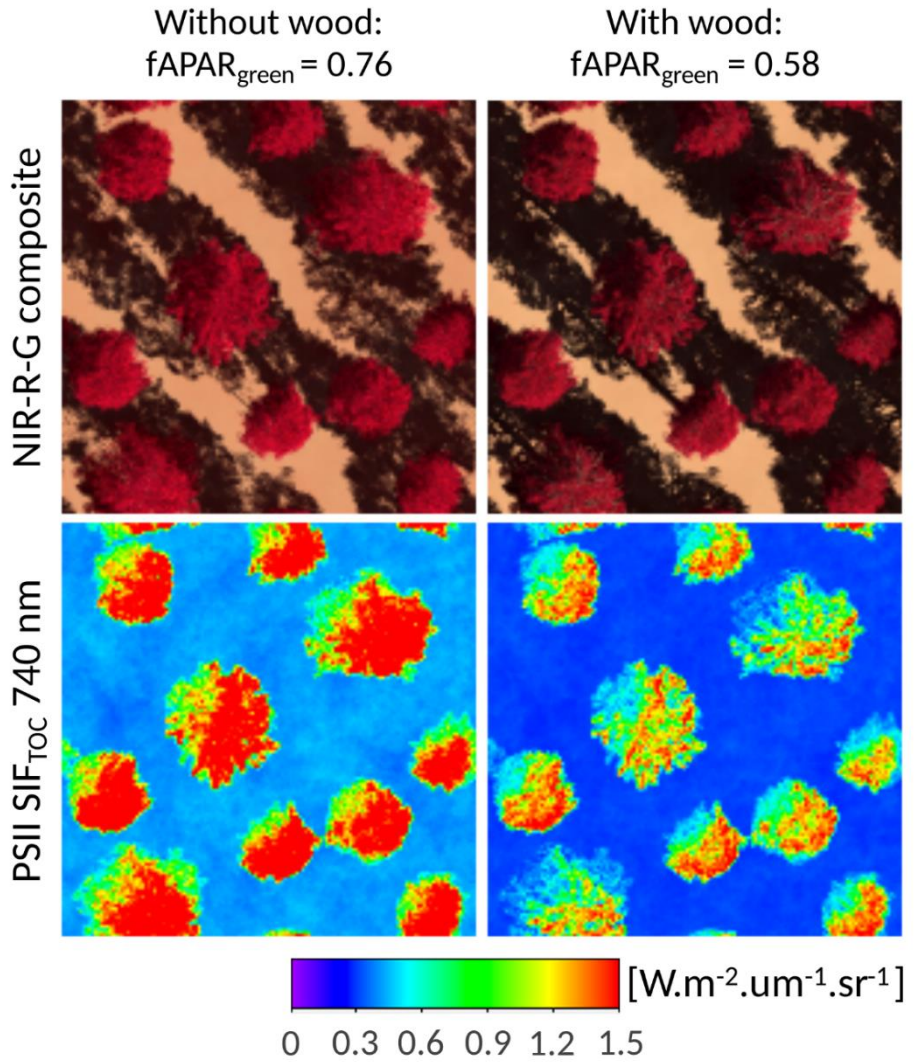
3D modelling of forest sun-induced fluorescence

Terrestrial laser scanning for 3D tree species models

Radiative transfer modelling (DART)



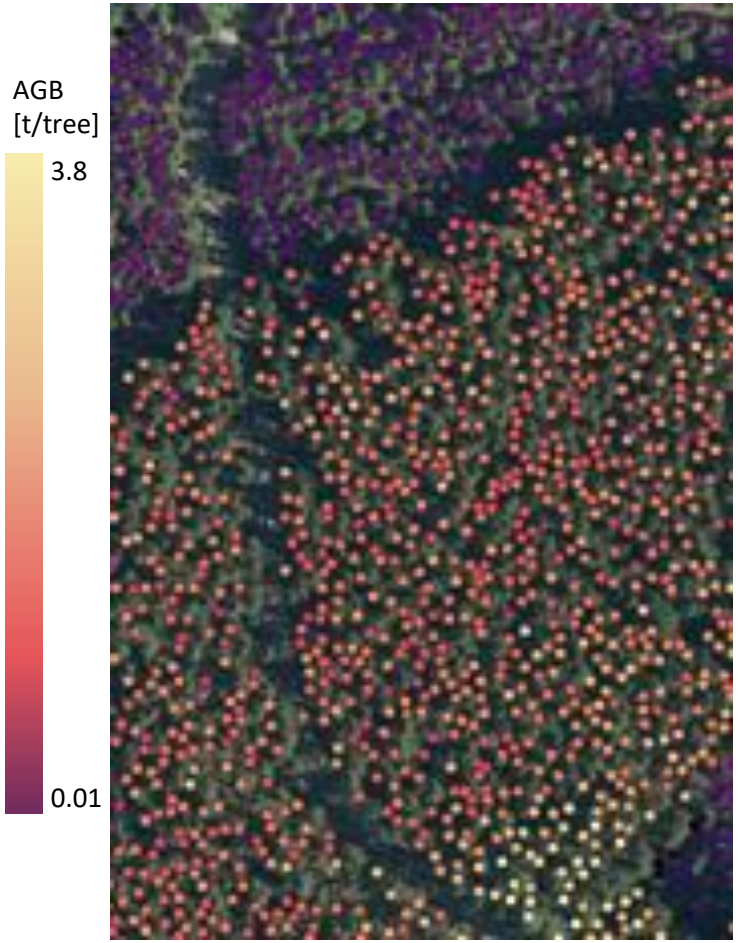




Janoutová et al. (2019 & in prep.), Malenovský et al. (2020, 2021)

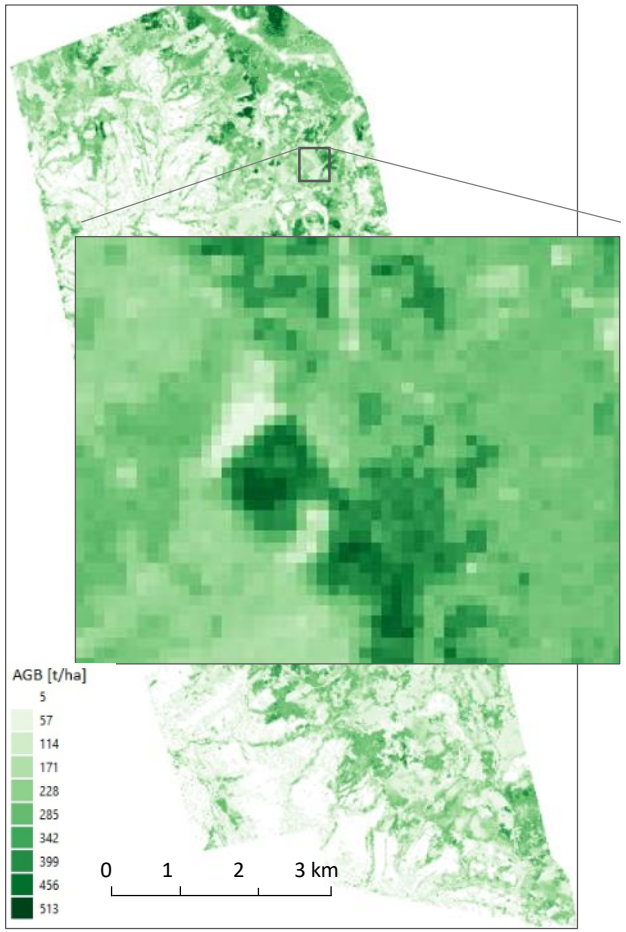
Forest aboveground biomass

Tree level



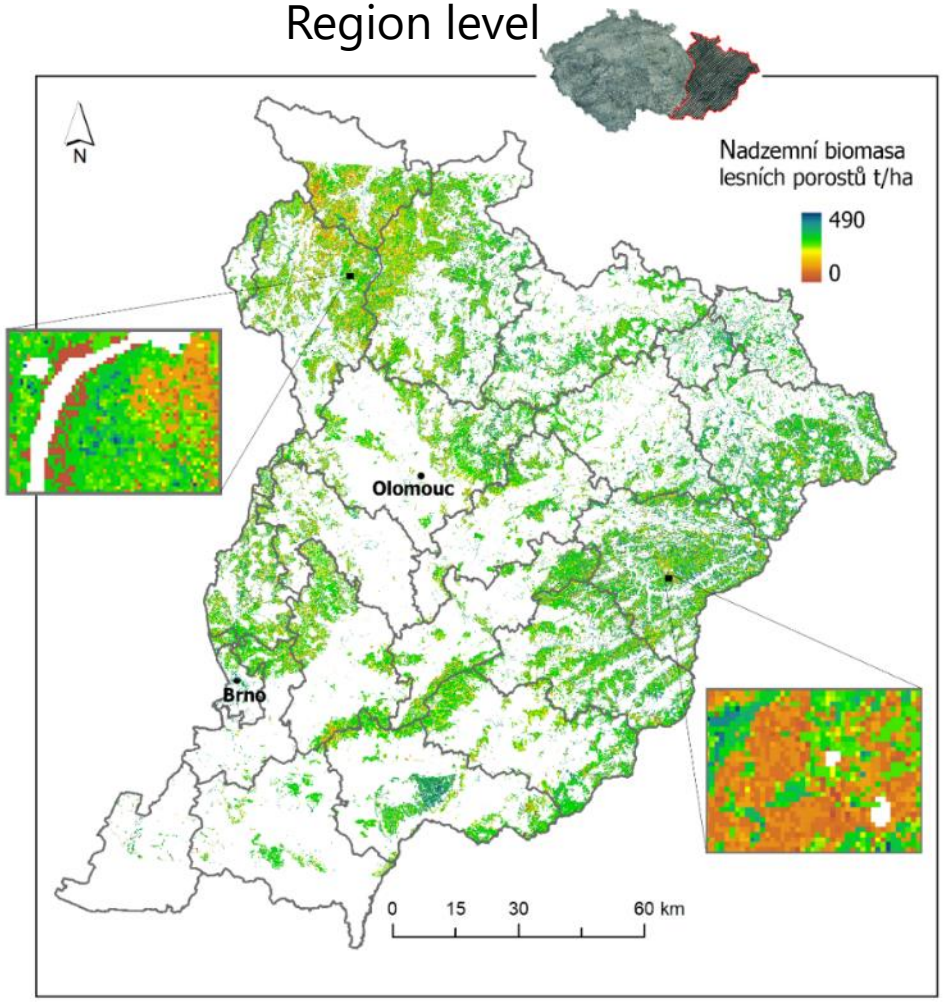
AGB from airborne laser scanning and hyperspectral data using tree allometry.

Forest stand level



AGB modelling using airborne LiDAR and area-based approach.
Spatial resolution is 5-10 m.

Region level

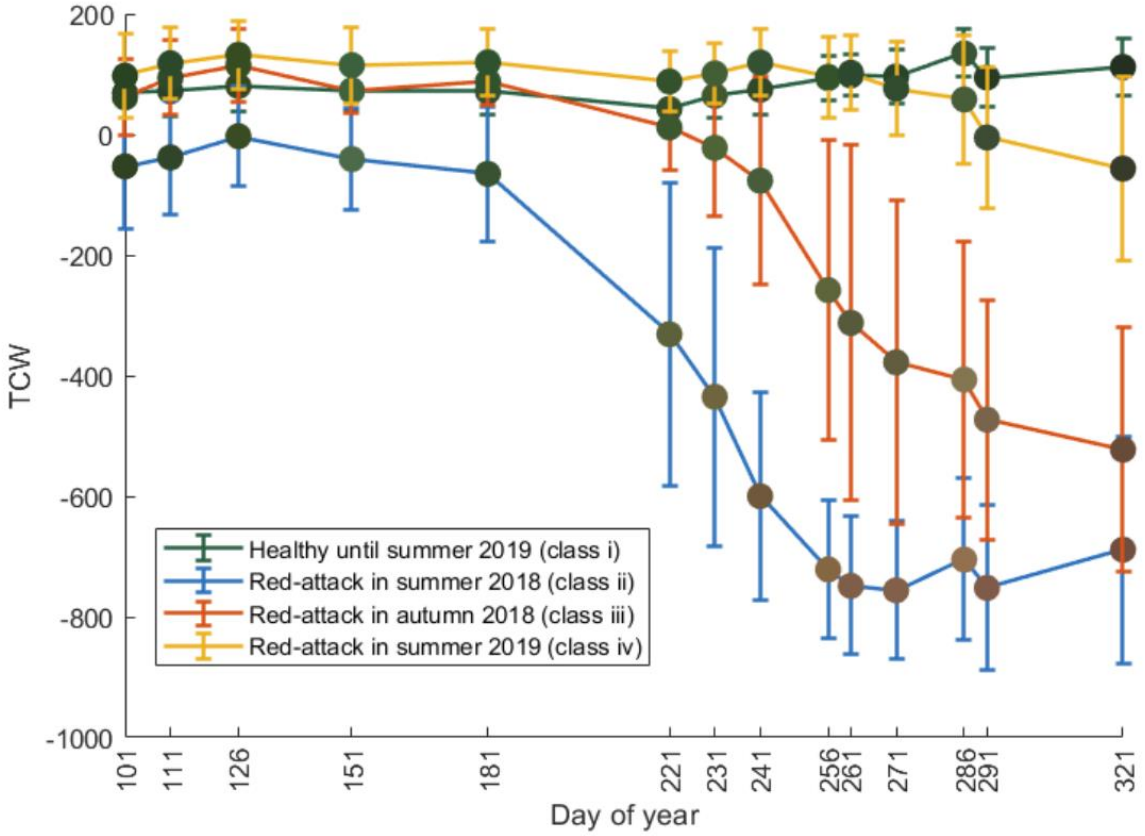


AGB modelling using satellite (optical & radar) data and machine-learning approaches.
Spatial resolution is 20 m.

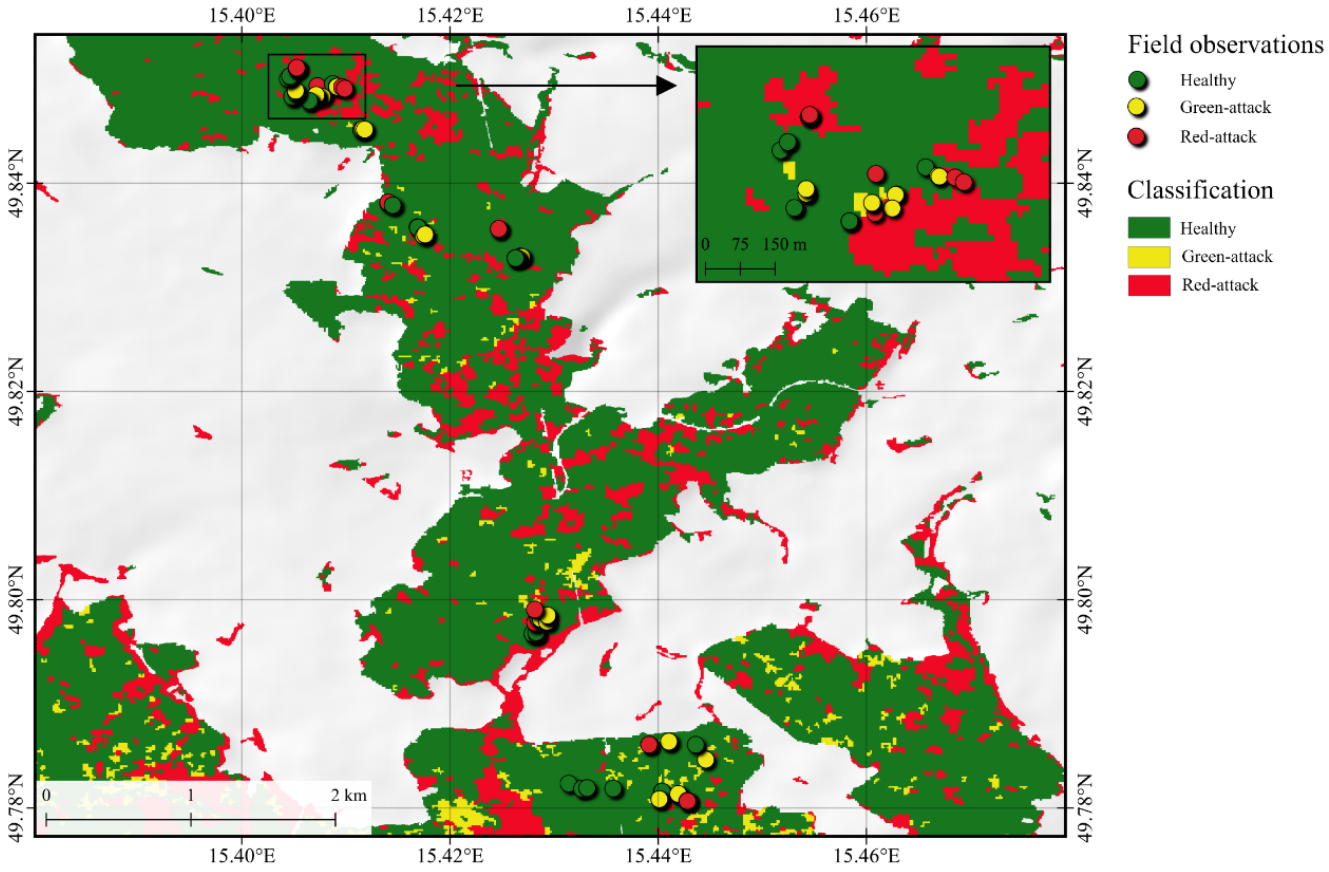
Brovkina et al. (2016 & 2020), Novotný et al. (2021, 2022)

Bark beetle infestation mapping from S-2

Seasonal trajectory of wetness vegetation



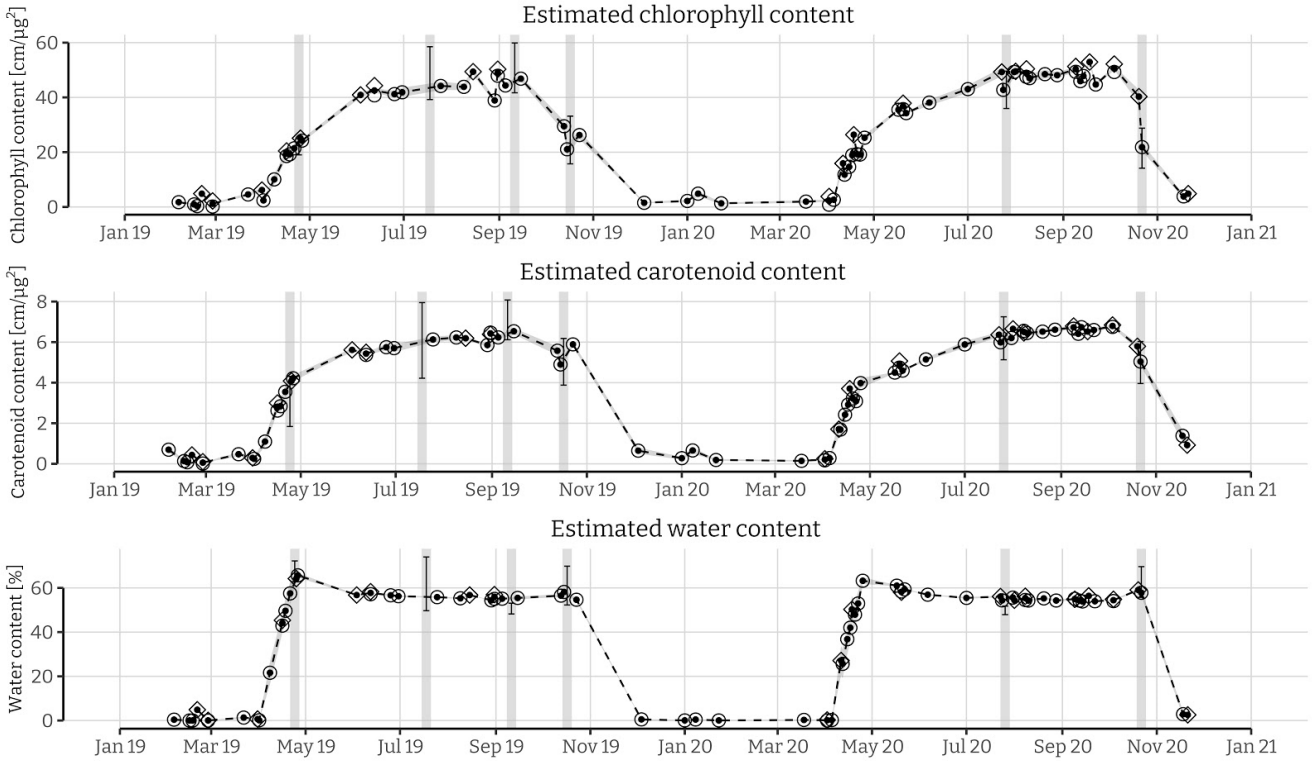
Infestation stages in autumn derived from Sentinel-2



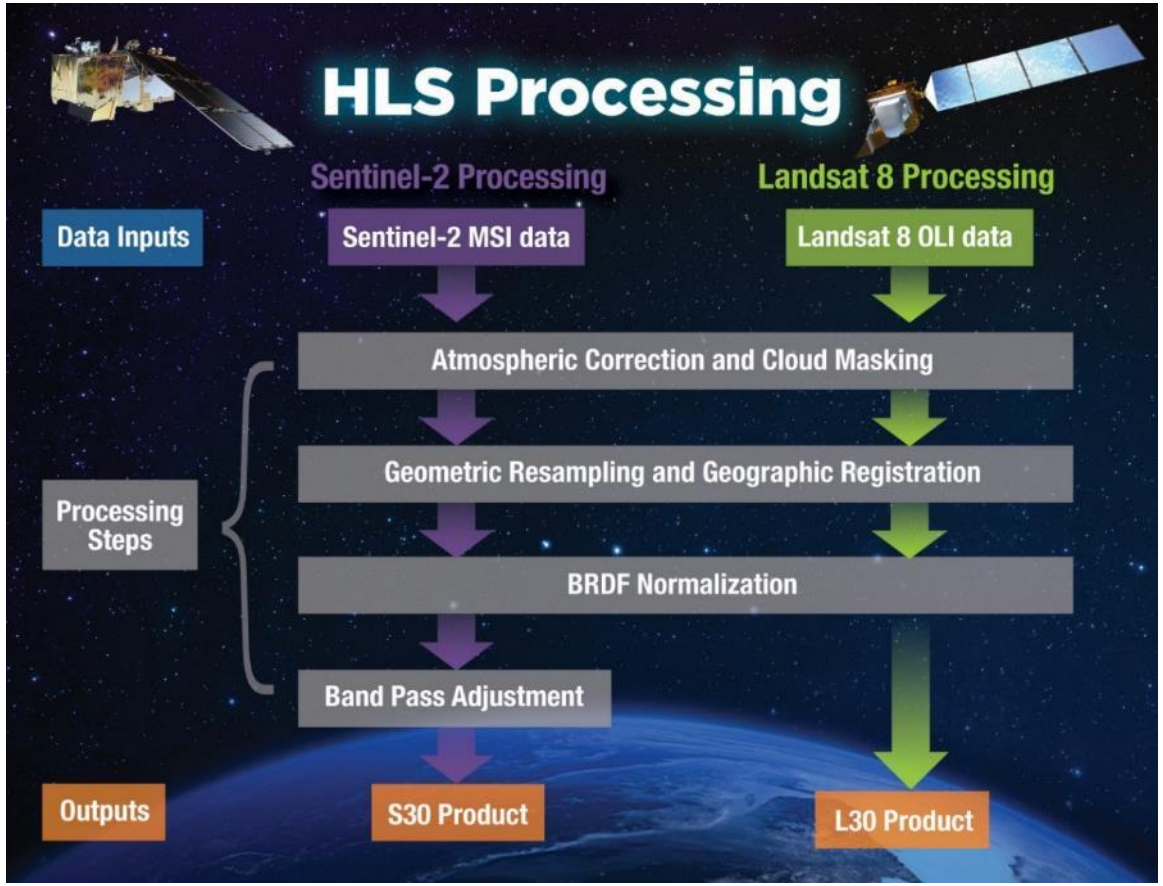
Bárta et al. (2021)

Seasonal course of forest biochemical traits

Floodplain mixed forest (Lanžhot)



Sentinel (S30) Landsat (L30) Field campaign



Švik, Lukeš et al. (in prep)

Mapping crop properties from Sentinel-2

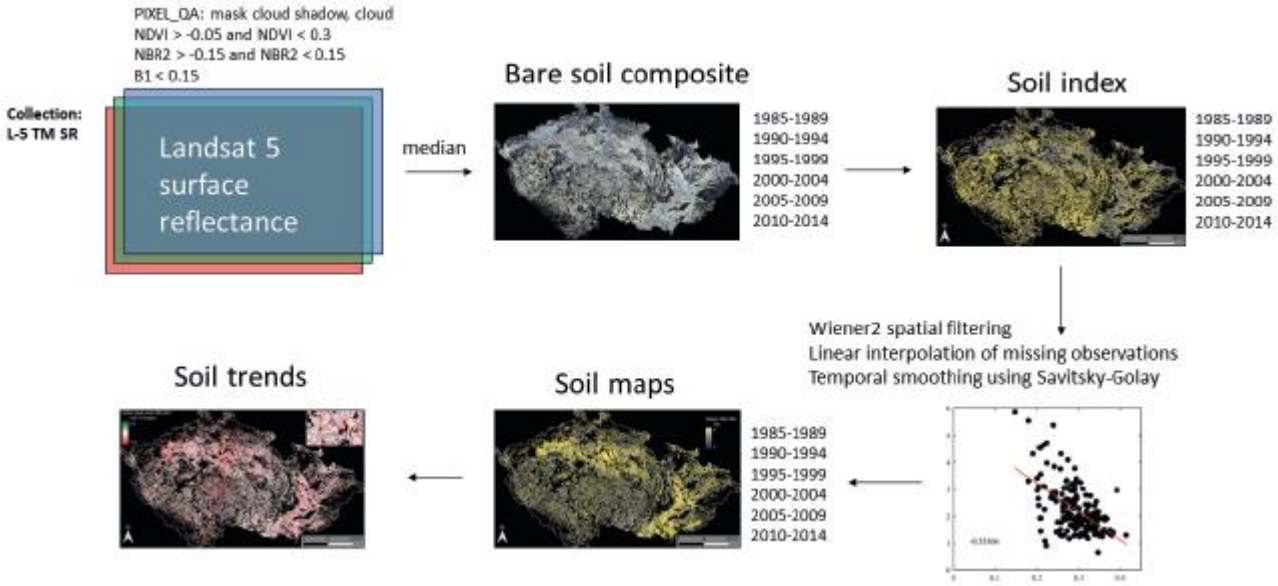
Leaf chlorophyll content

Leaf water content

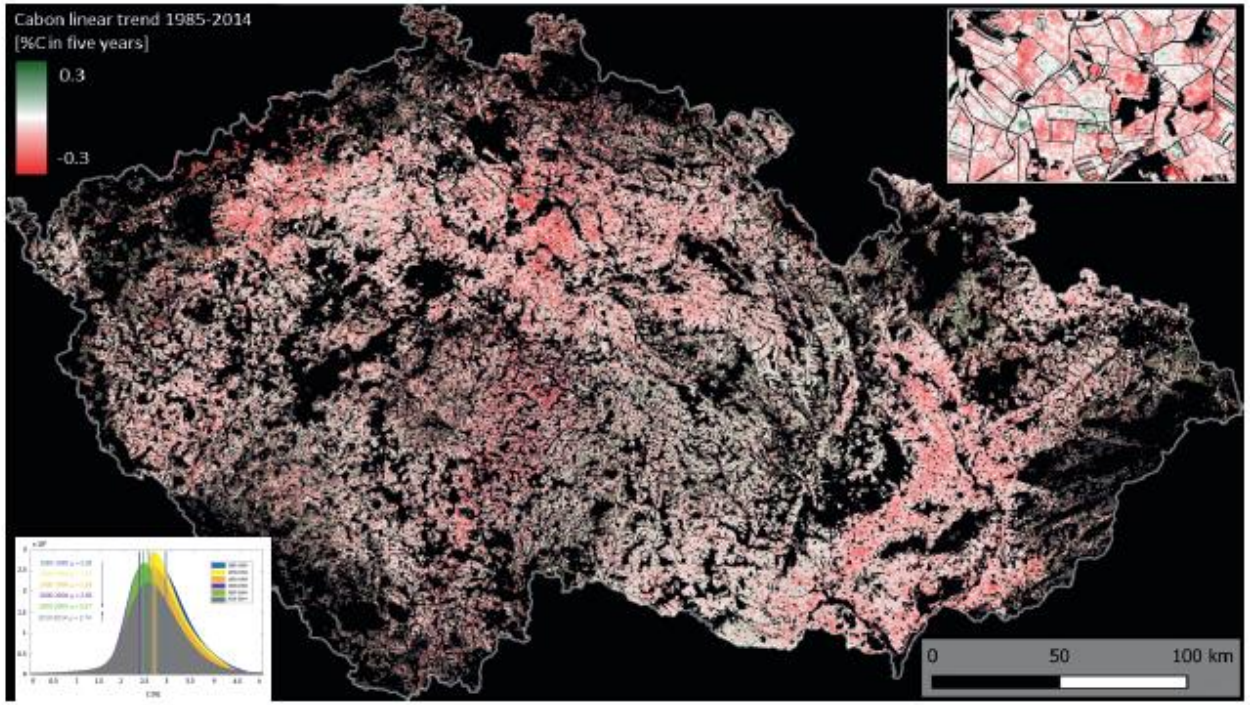
Leaf area index

Tomíček et al. (2022)

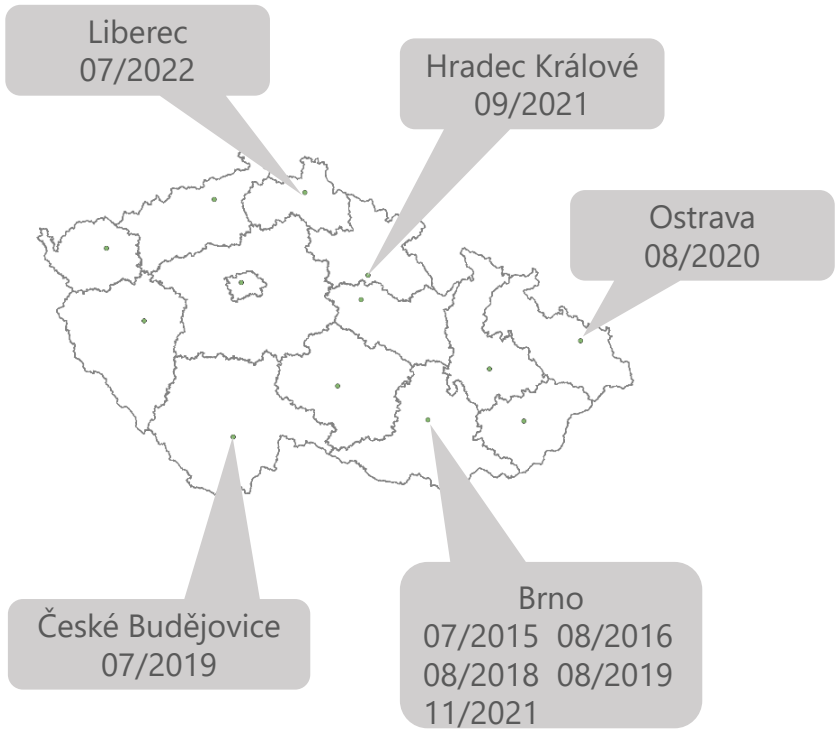
Soil organic content from satellite time series

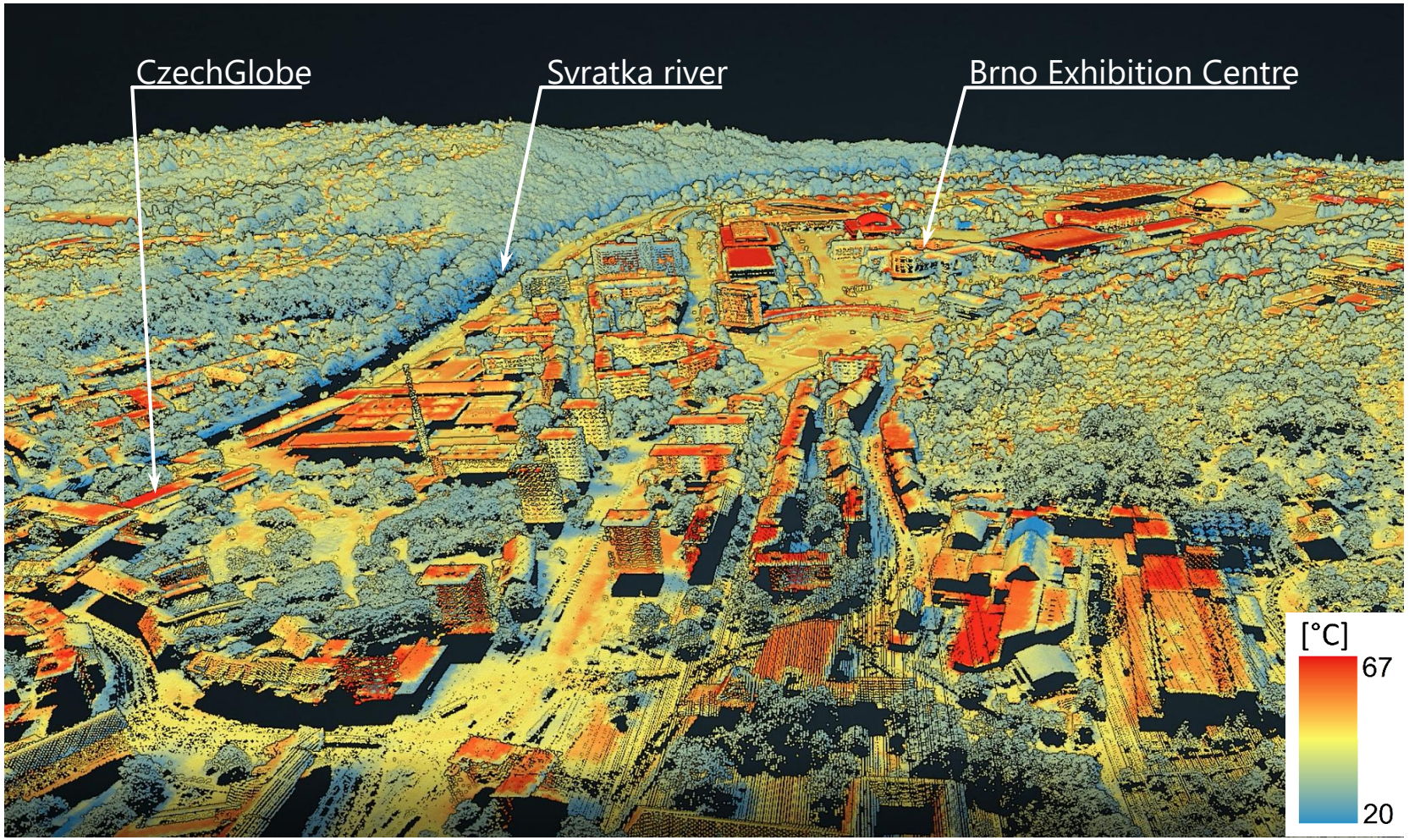


Soil organic content trend 1985 - 2014



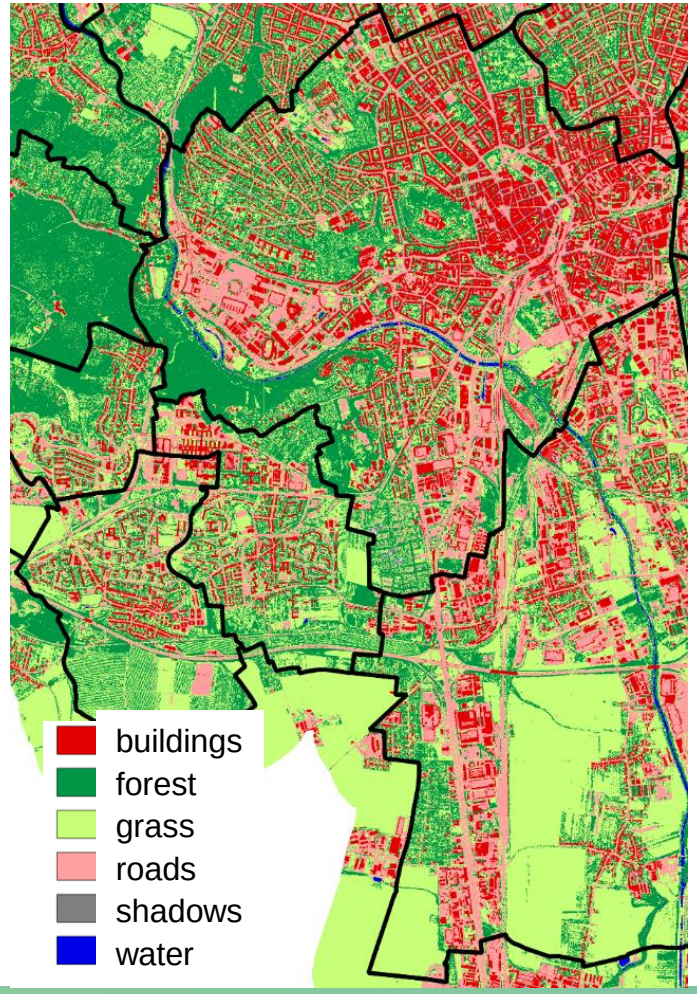
Thermal regime of urban systems



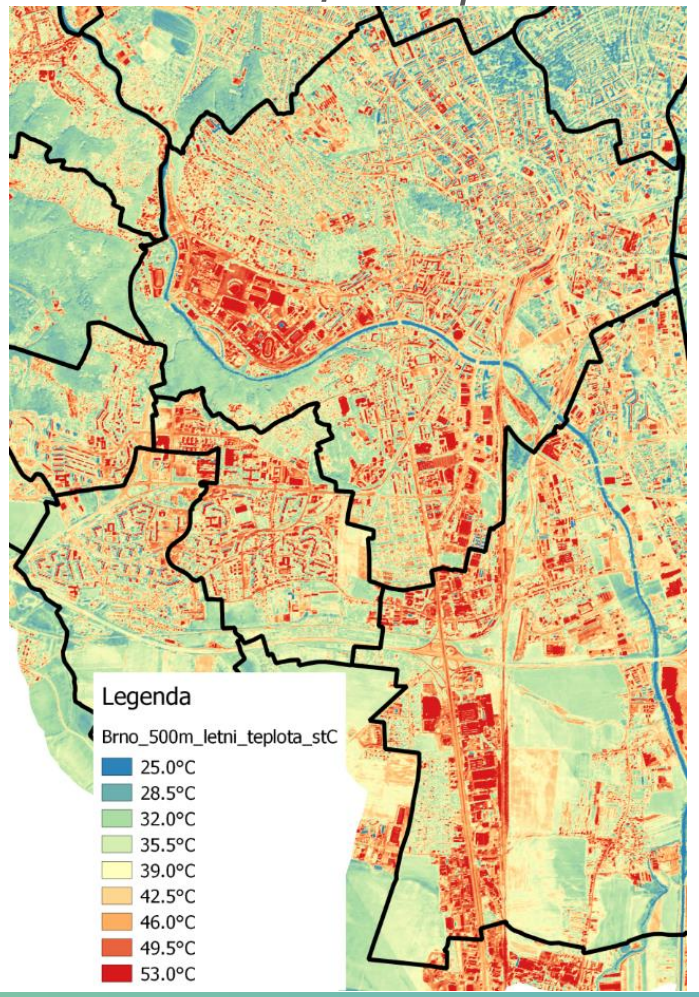


Role of urban structure and greenery

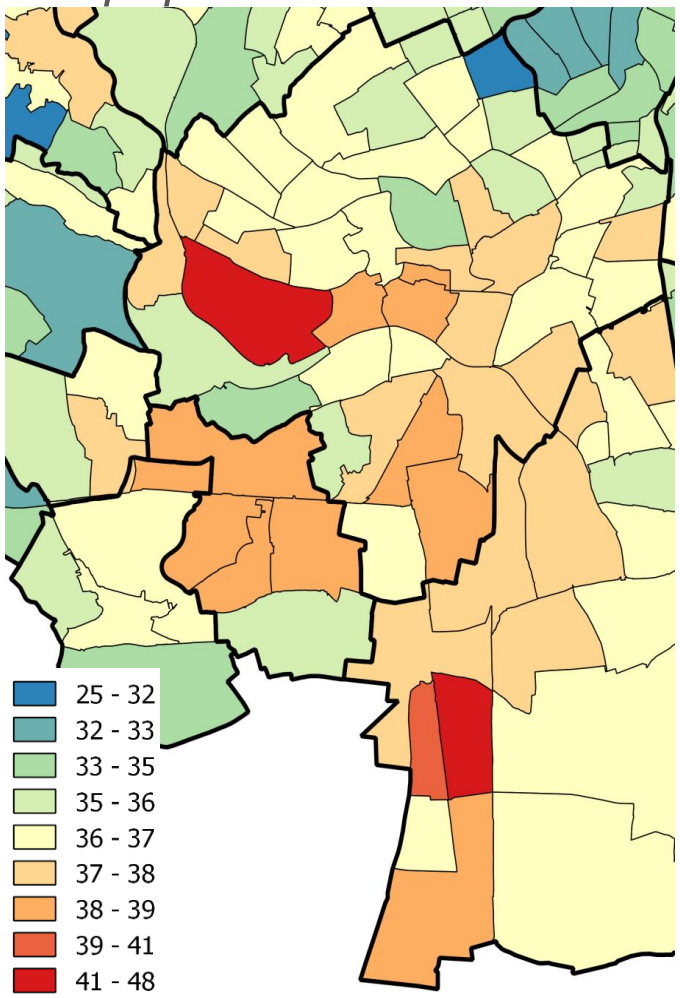
land cover classif.



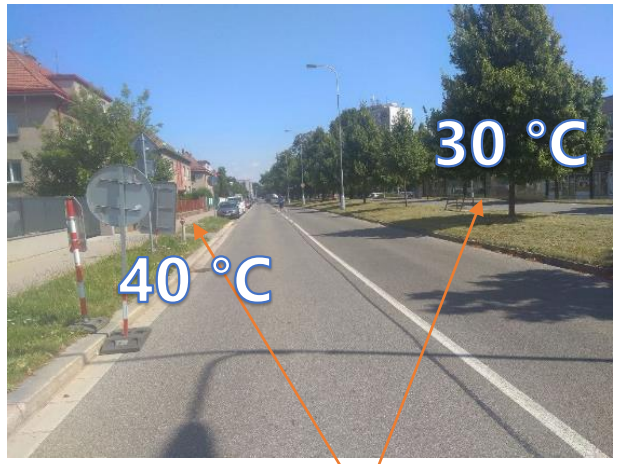
summer surf. temp.

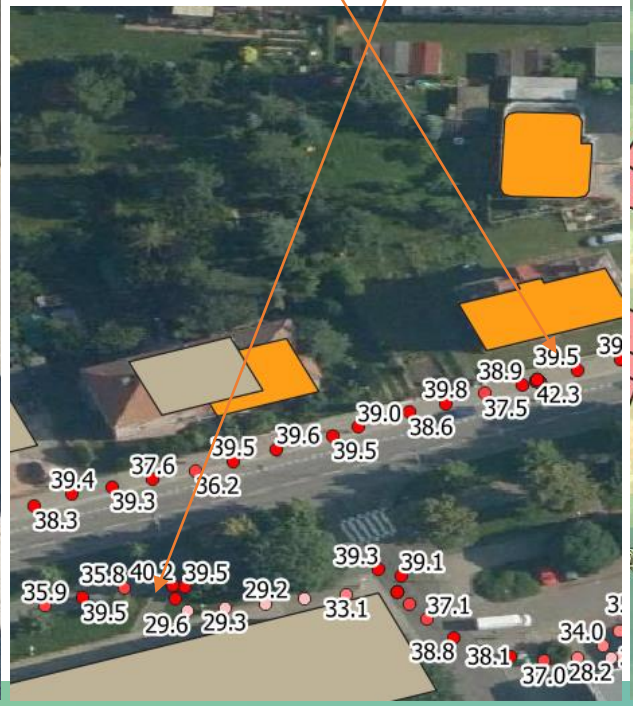


temp. per admin. unit



Perceived effective temperature estimation vs. in-situ measurements

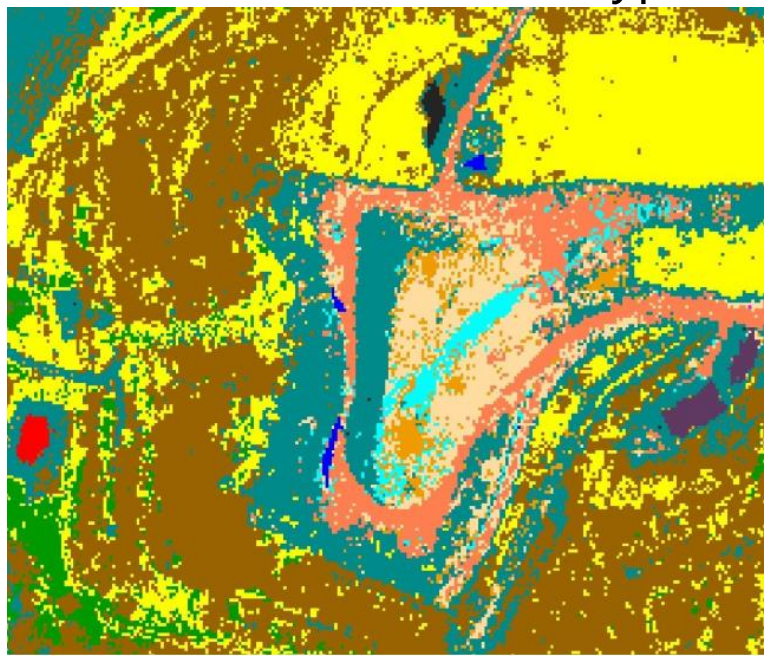




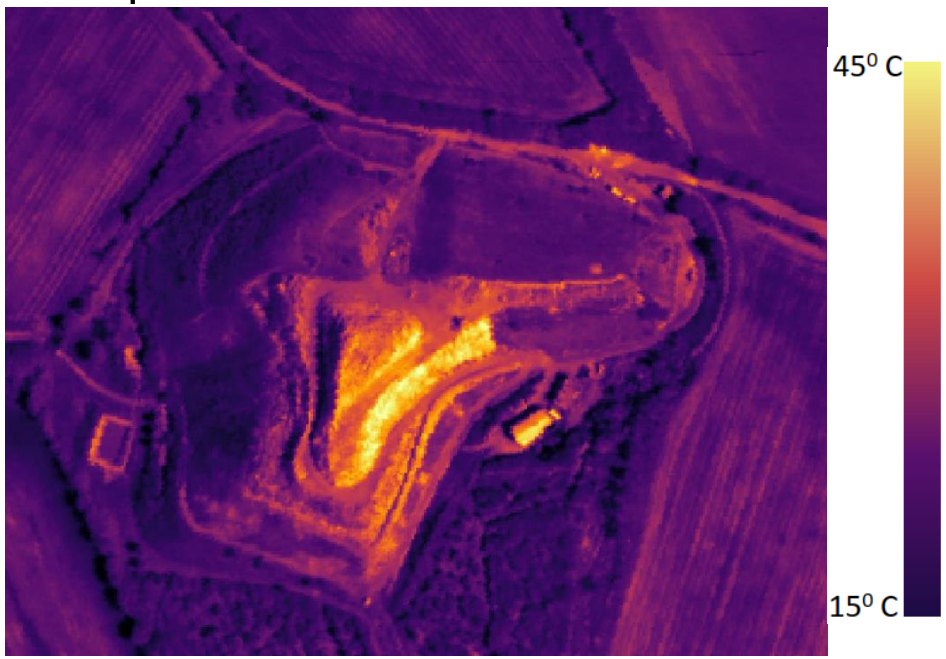
Municipal solid waste landfills

CASI (R-850, G-550, B-450)

Recultivation and waste types



Temperature



… and potential detection of methane emission sources

https://mapserver.czechglobe.cz/