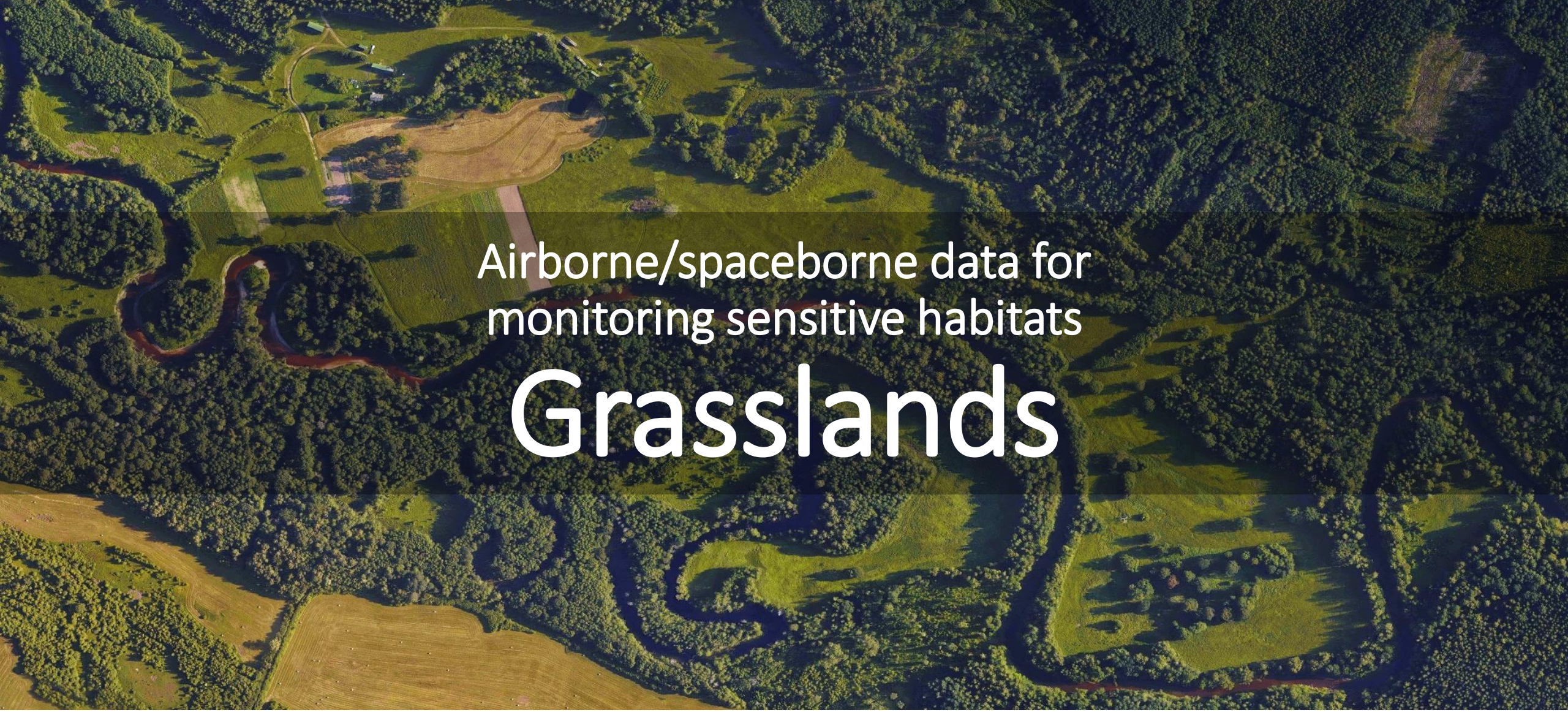


Airborne/spaceborne data for monitoring sensitive habitats

Grasslands

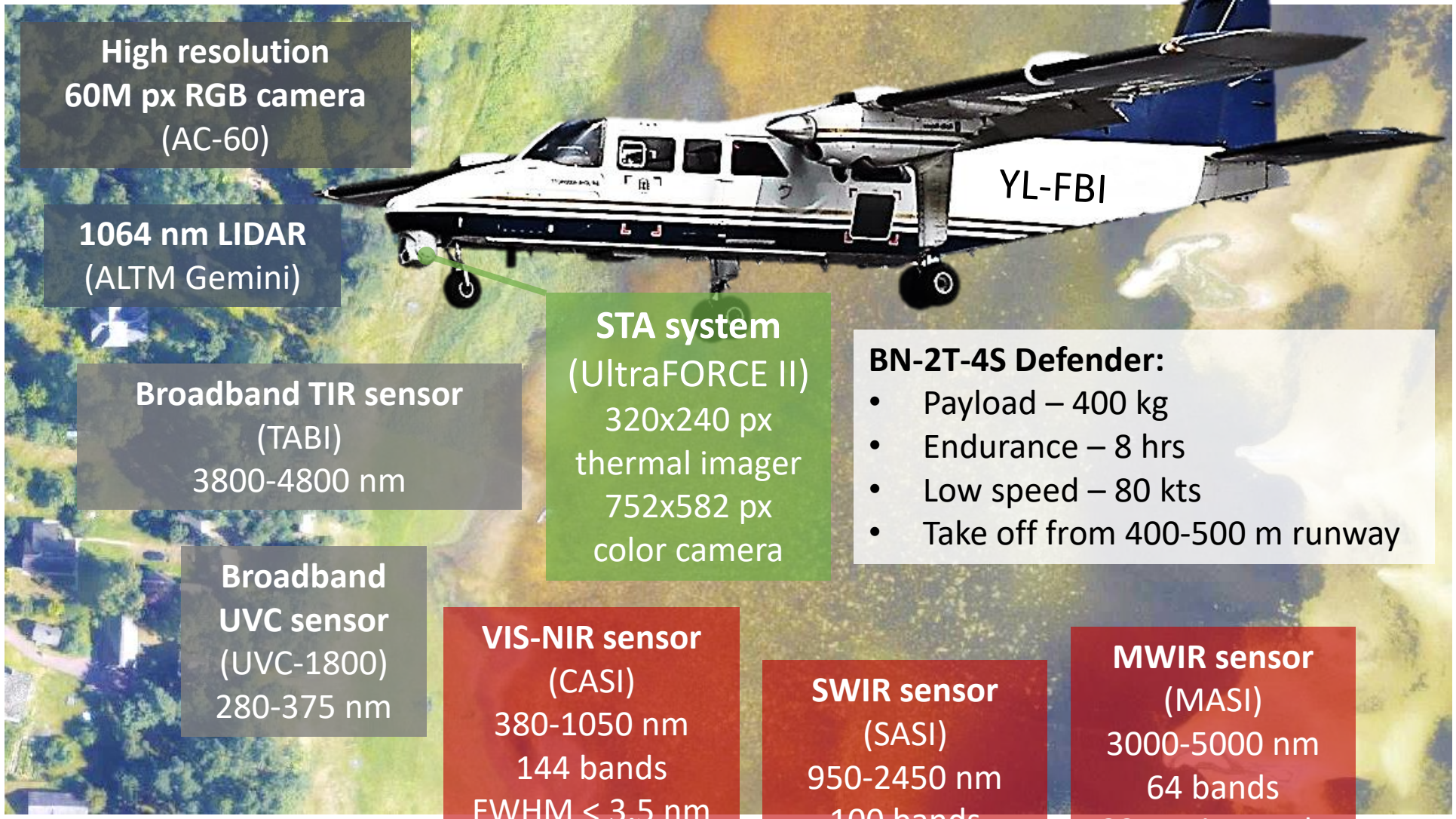
INSTITUTE FOR ENVIRONMENTAL SOLUTIONS

Dainis Jakovels, Jevgenijs Filipovs, Agris Brauns

Institute for Environmental Solutions

Latvia

Airborne Surveillance and Environmental Monitoring System ARSENAL



High resolution
60M px RGB camera
(AC-60)

1064 nm LIDAR
(ALTM Gemini)

Broadband TIR sensor
(TABI)
3800-4800 nm

Broadband UVC sensor
(UVC-1800)
280-375 nm

STA system
(UltraFORCE II)
320x240 px thermal imager
752x582 px color camera

BN-2T-4S Defender:
- Payload – 400 kg
- Endurance – 8 hrs
- Low speed – 80 kts
- Take off from 400-500 m runway

VIS-NIR sensor
(CASI)
380-1050 nm
144 bands
FWHM < 3.5 nm

SWIR sensor
(SASI)
950-2450 nm
100 bands
15 nm intervals

MWIR sensor
(MASI)
3000-5000 nm
64 bands
32 nm intervals

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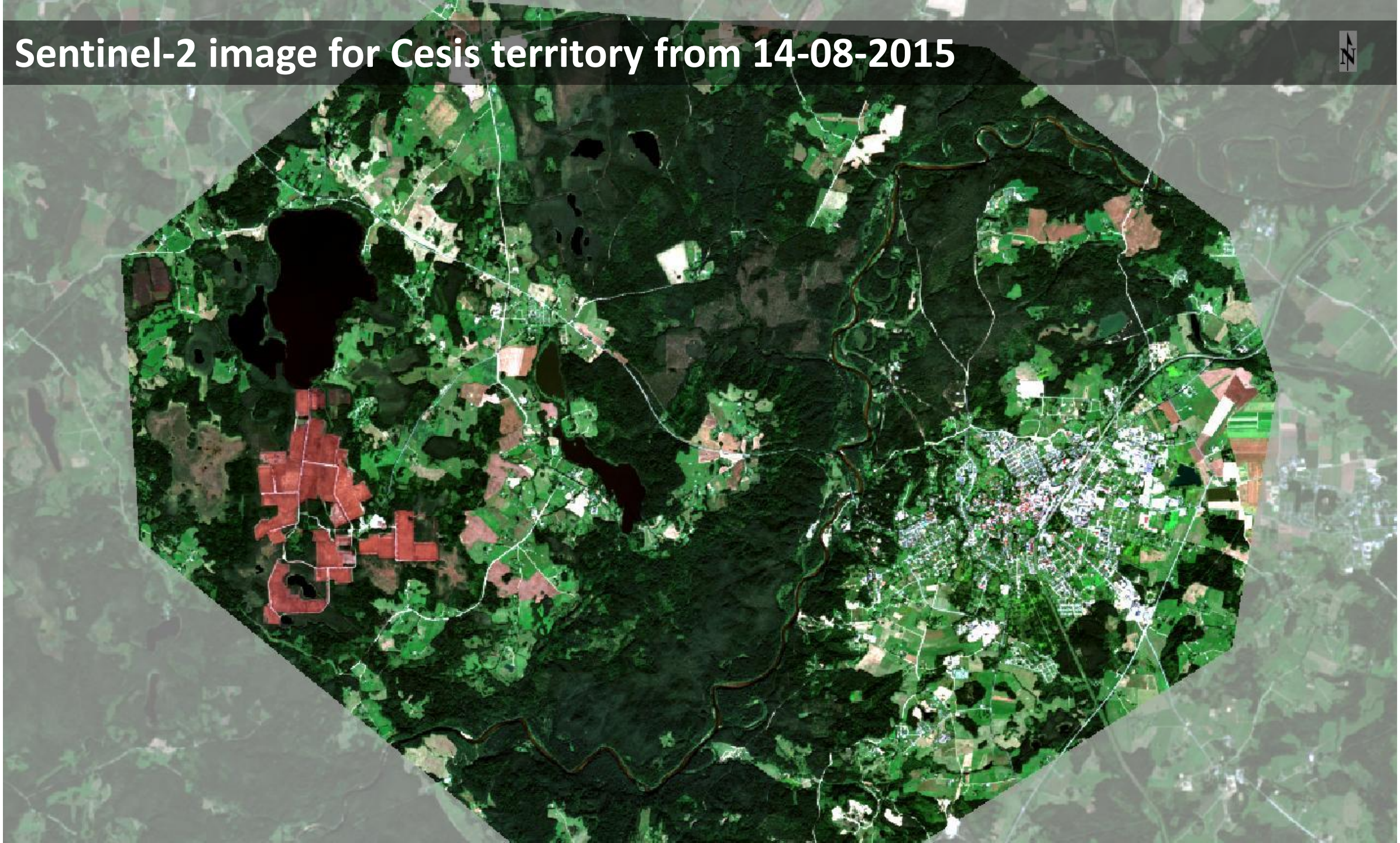
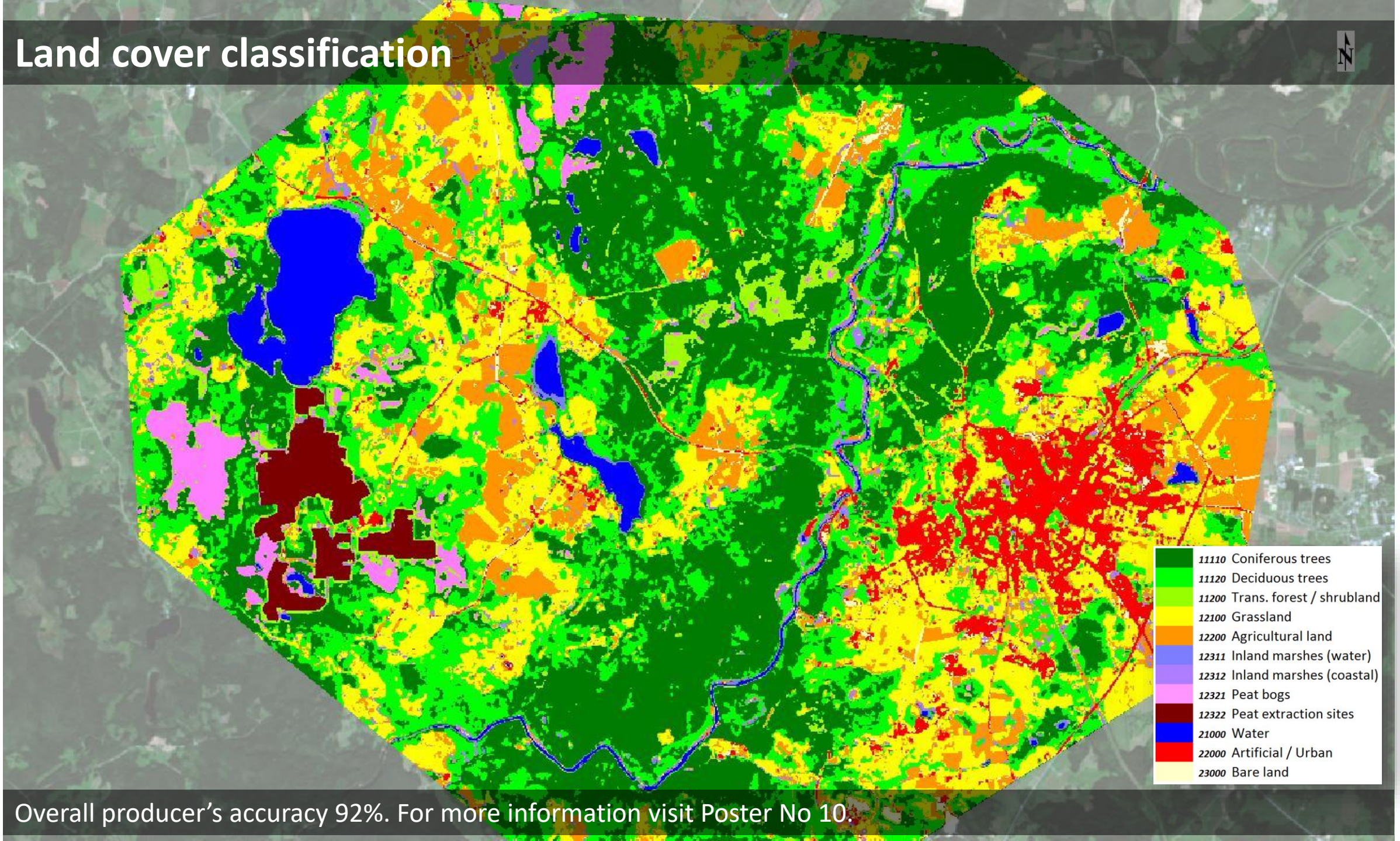
Availability of Sentinel-2 data for Latvia

Date	Orbit No	Cloud situation assessment
		Cesis T35VLD
25-07-2015	36	0% (No clouds)
04-08-2015	36	0% (No clouds)
14-08-2015	36	0% (No clouds)
21-08-2015	136	1% (Cirrus)
24-08-2015	36	1% (Cumulus)
		...
07-04-2016	136	1% (Cumulus)
27-04-2016	136	0% (No clouds)
30-04-2016	36	1% (Cumulus)
07-05-2016	136	17% (Cumulus)
06-07-2016	136	9% (Cumulus)
25-08-2016	136	2% (Cumulus)
14-09-2016	136	0% (No clouds)

Sentinel-2 image for Cesis territory from 14-08-2015

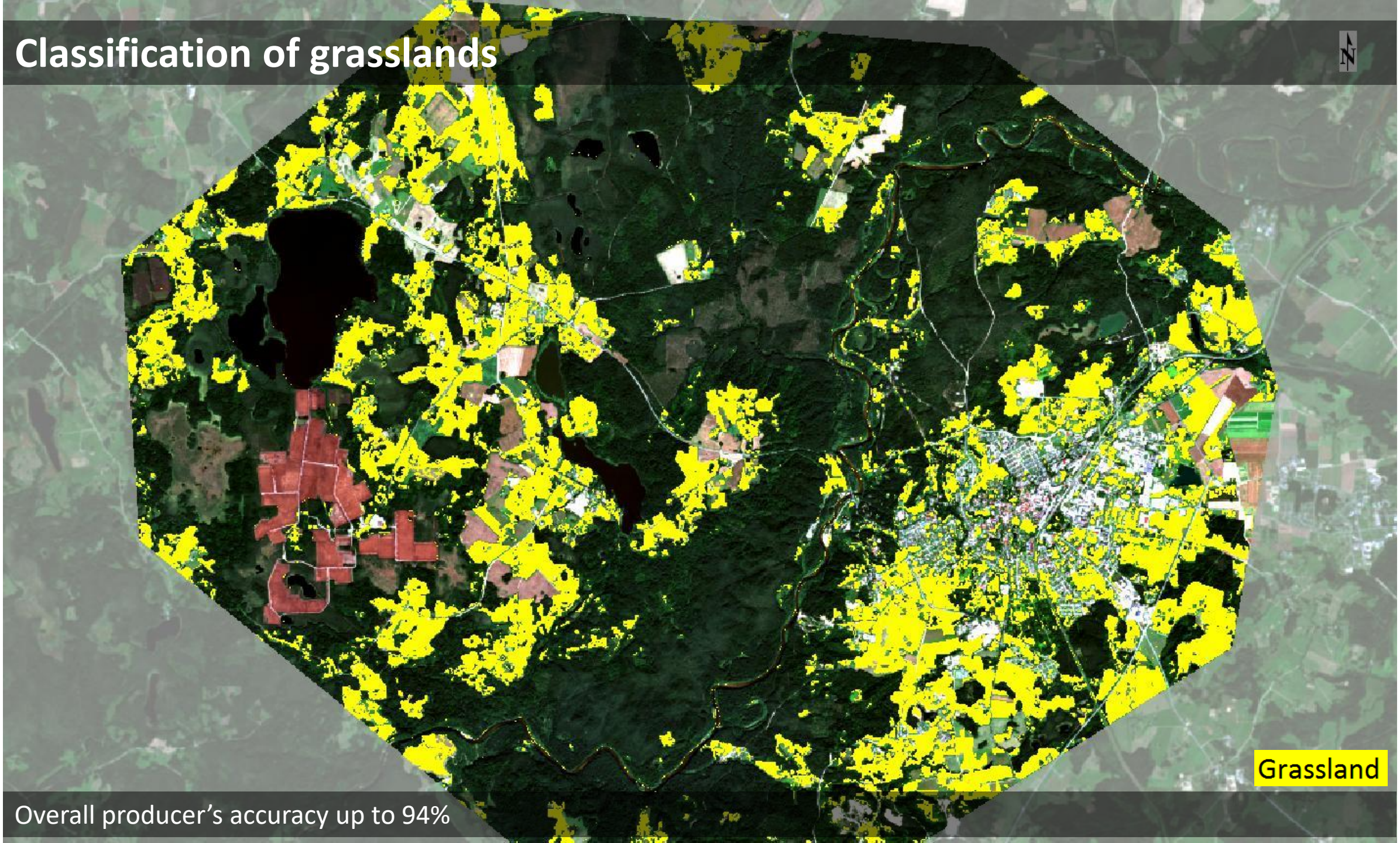


Land cover classification



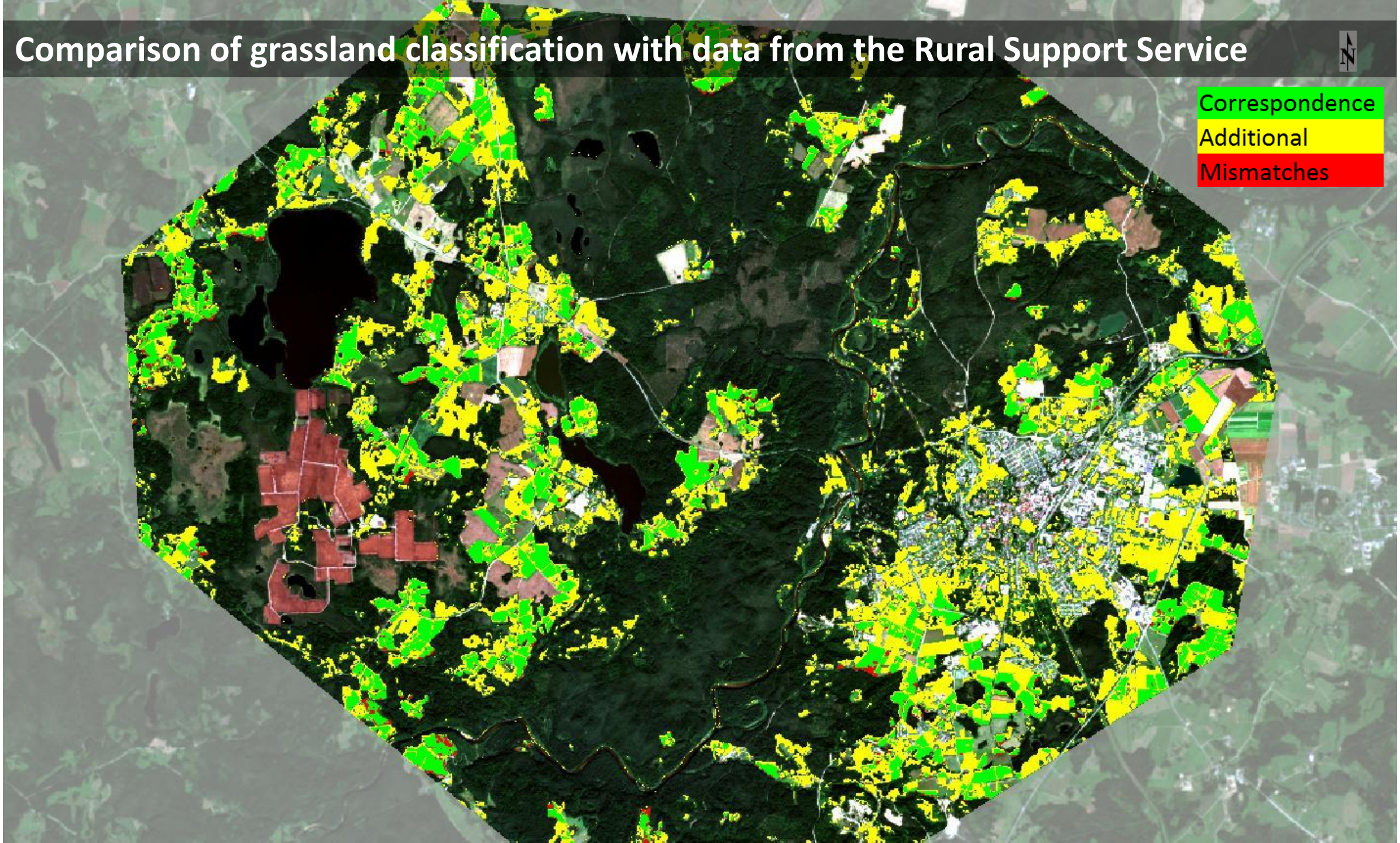
Overall producer’s accuracy 92%. For more information visit Poster No 10.

Classification of grasslands

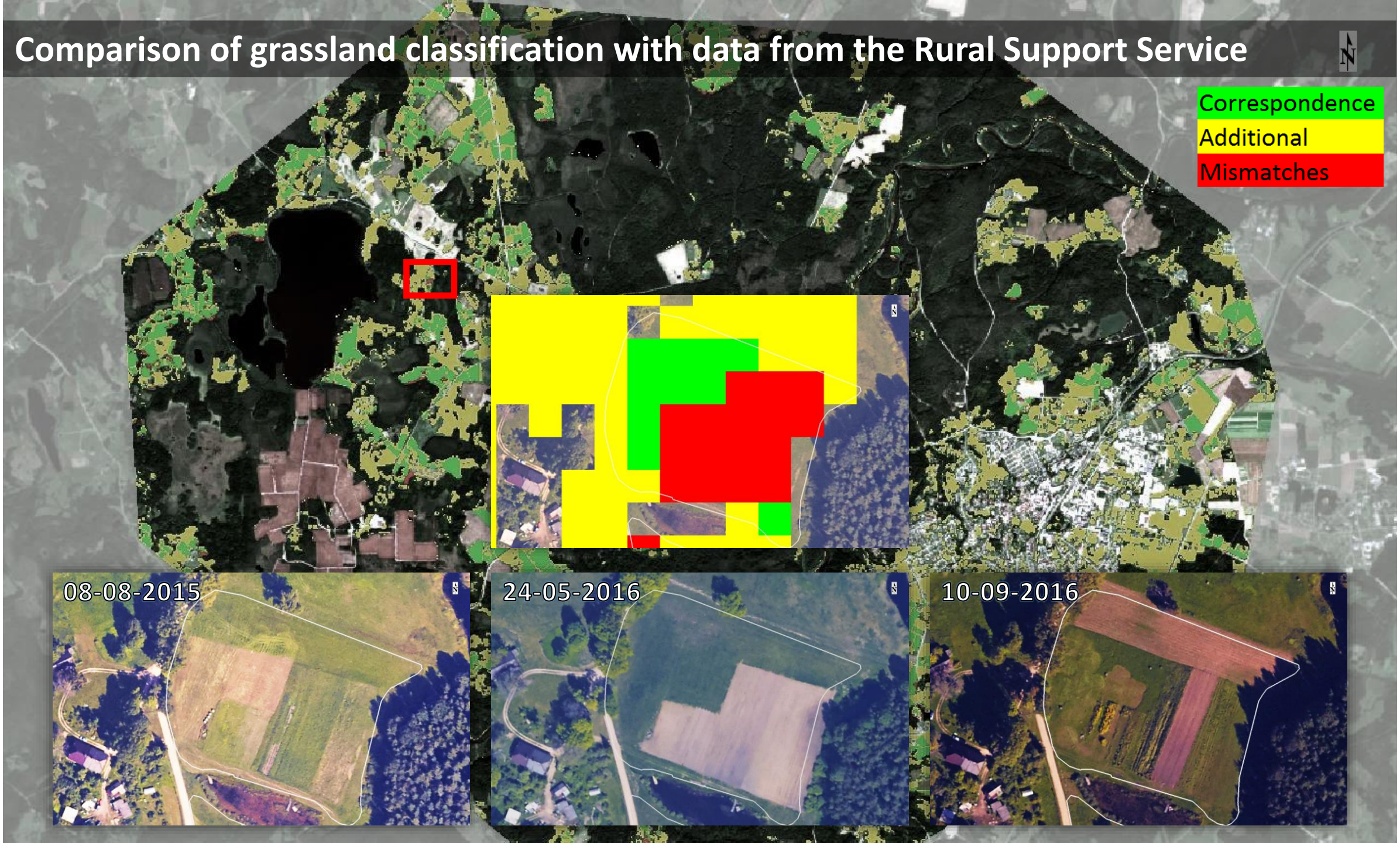


Overall producer’s accuracy up to 94%

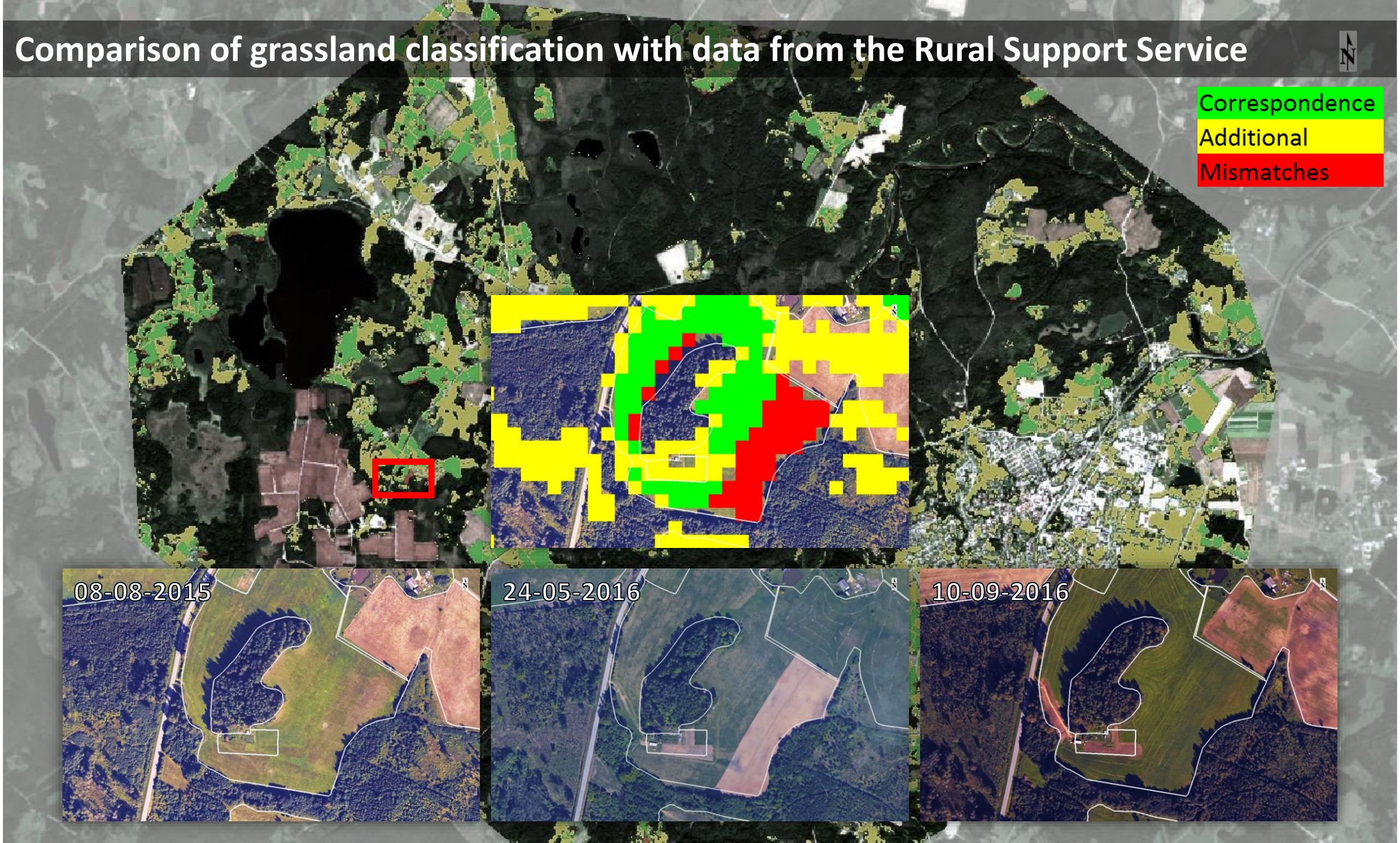
Comparison of grassland classification with data from the Rural Support Service



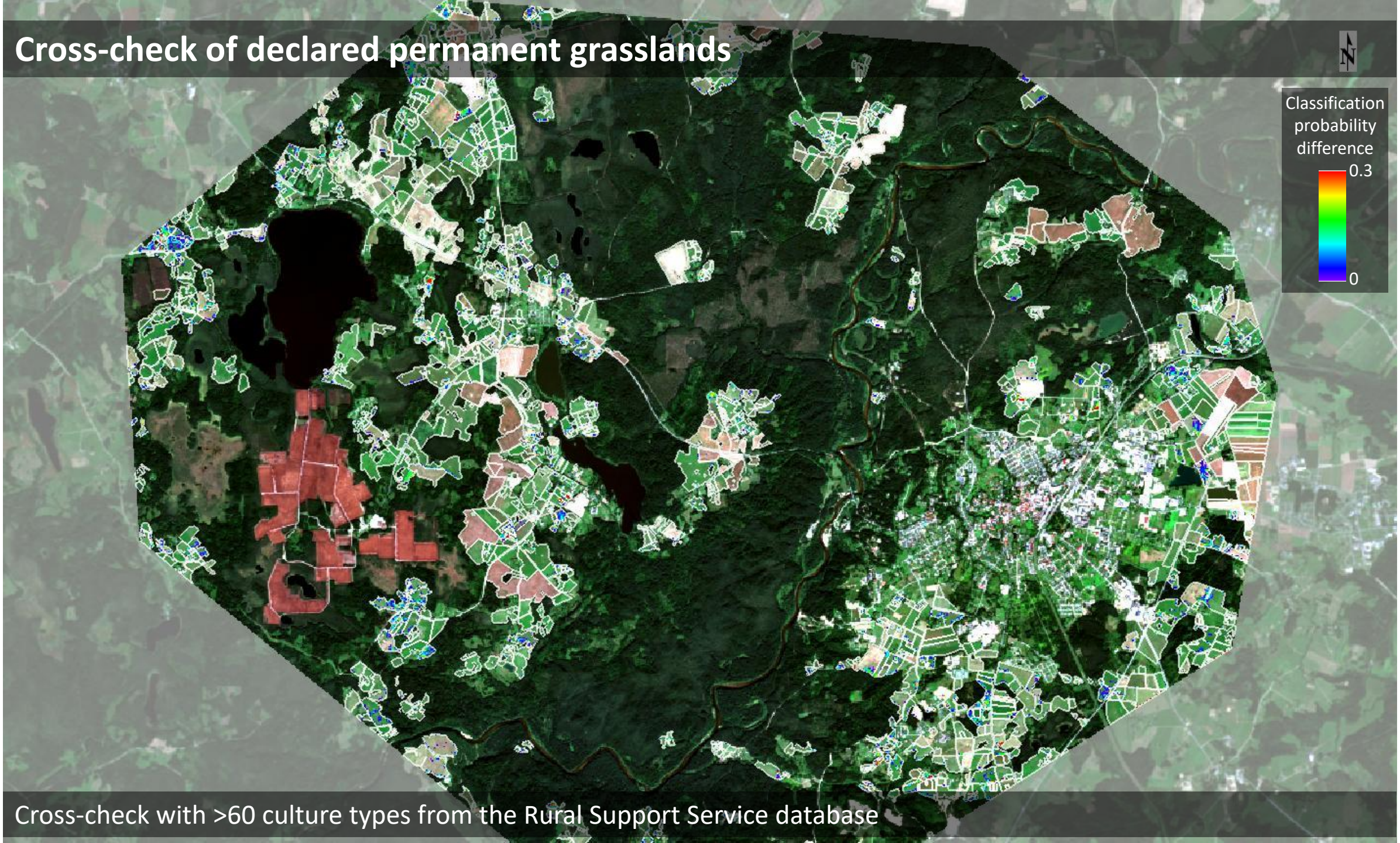
Comparison of grassland classification with data from the Rural Support Service



Comparison of grassland classification with data from the Rural Support Service

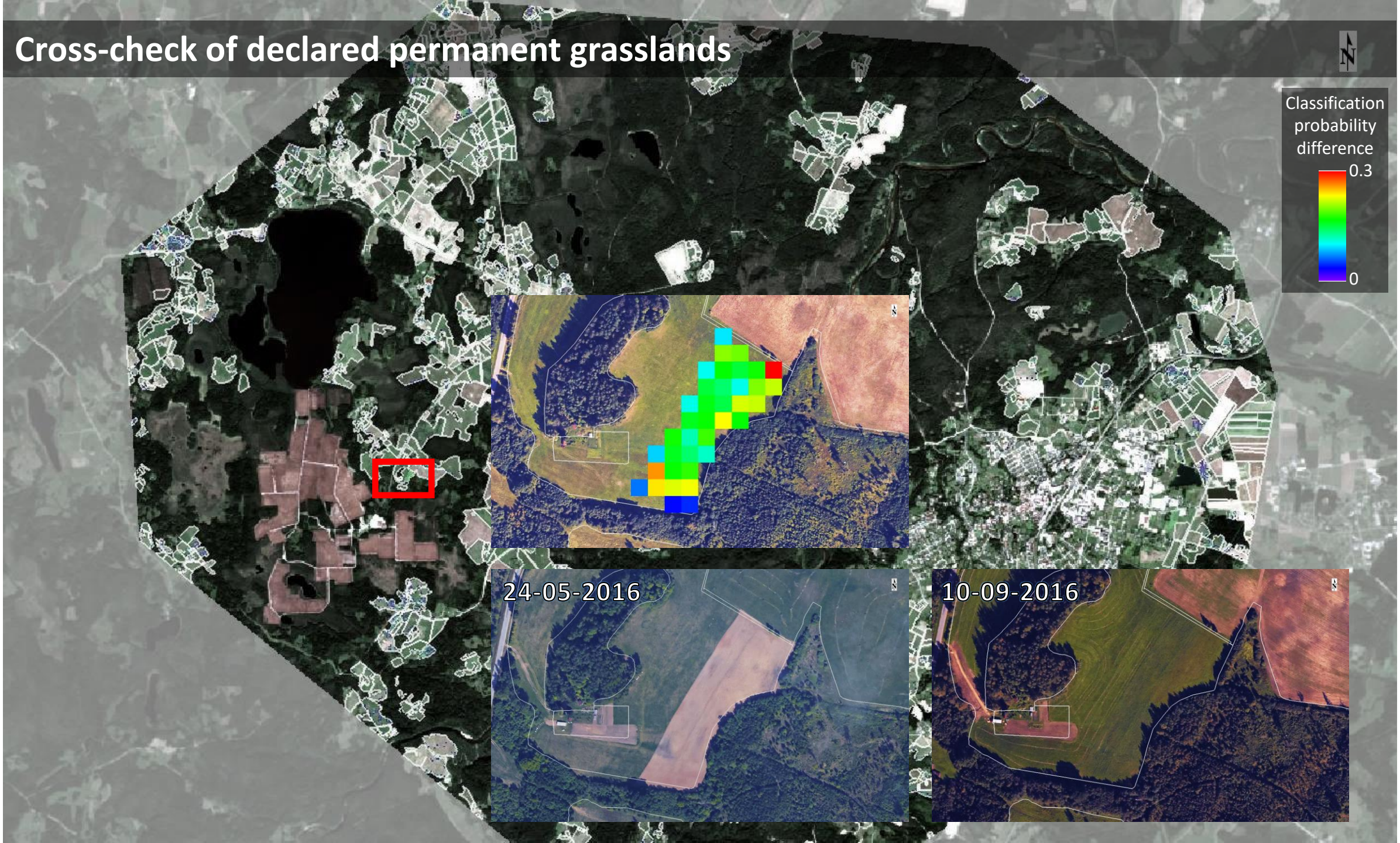


Cross-check of declared permanent grasslands



Cross-check with >60 culture types from the Rural Support Service database

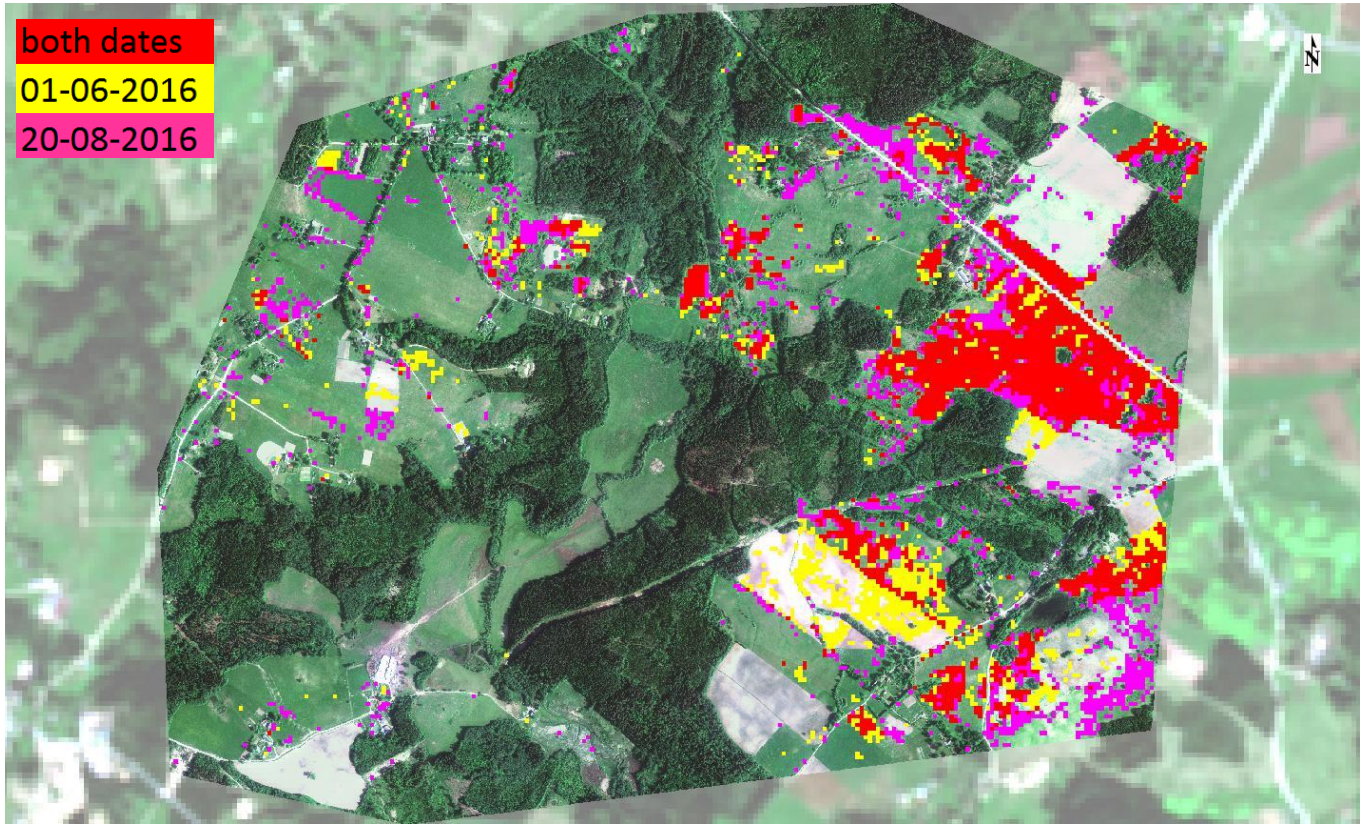
Cross-check of declared permanent grasslands



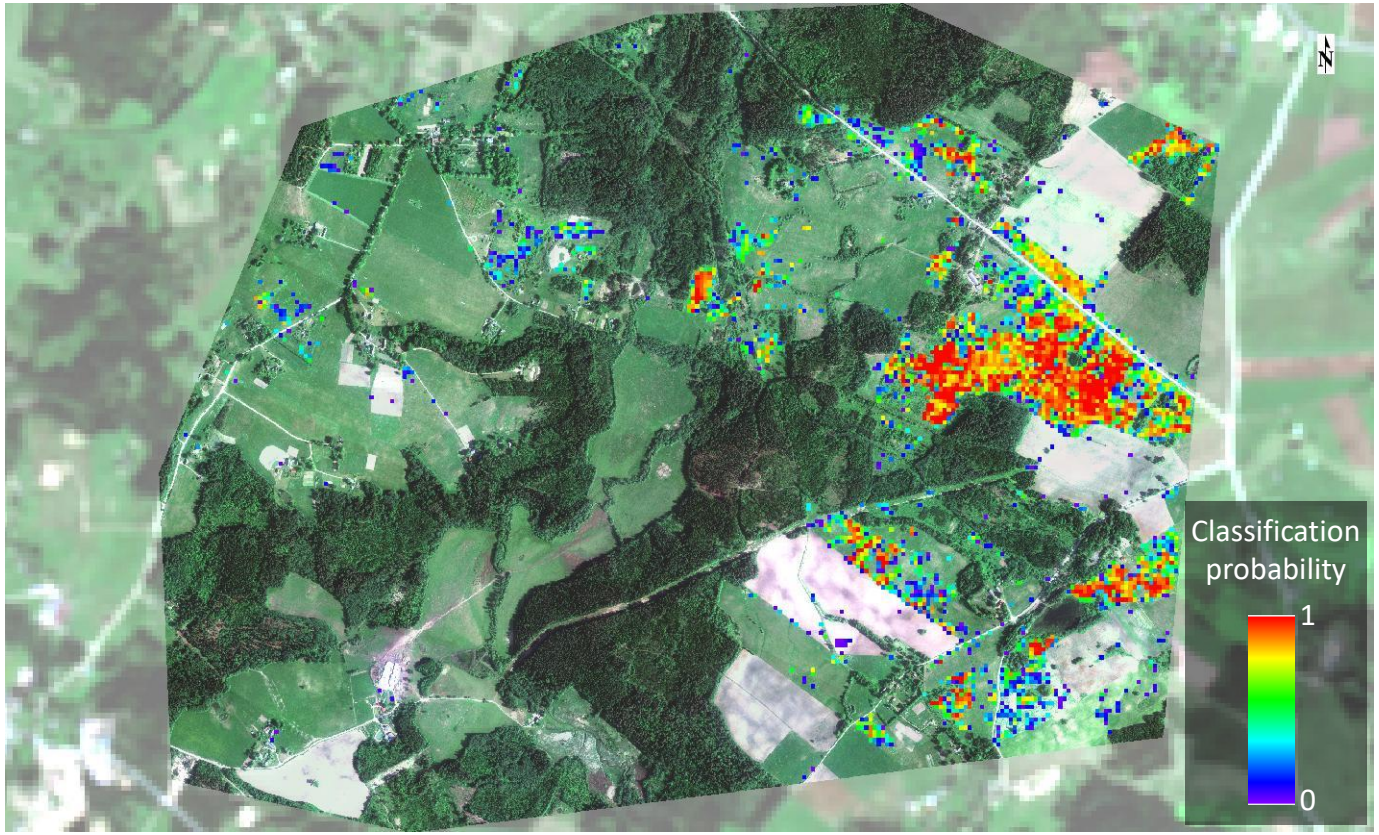
Cross-check of declared permanent grasslands

Mapping of invasive species (Sosnowsky's Hogweed)

Mapping of invasive species (Sosnowsky's Hogweed) using Sentinel-2 type data



Mapping of invasive species (Sosnowsky's Hogweed) using Sentinel-2 type data

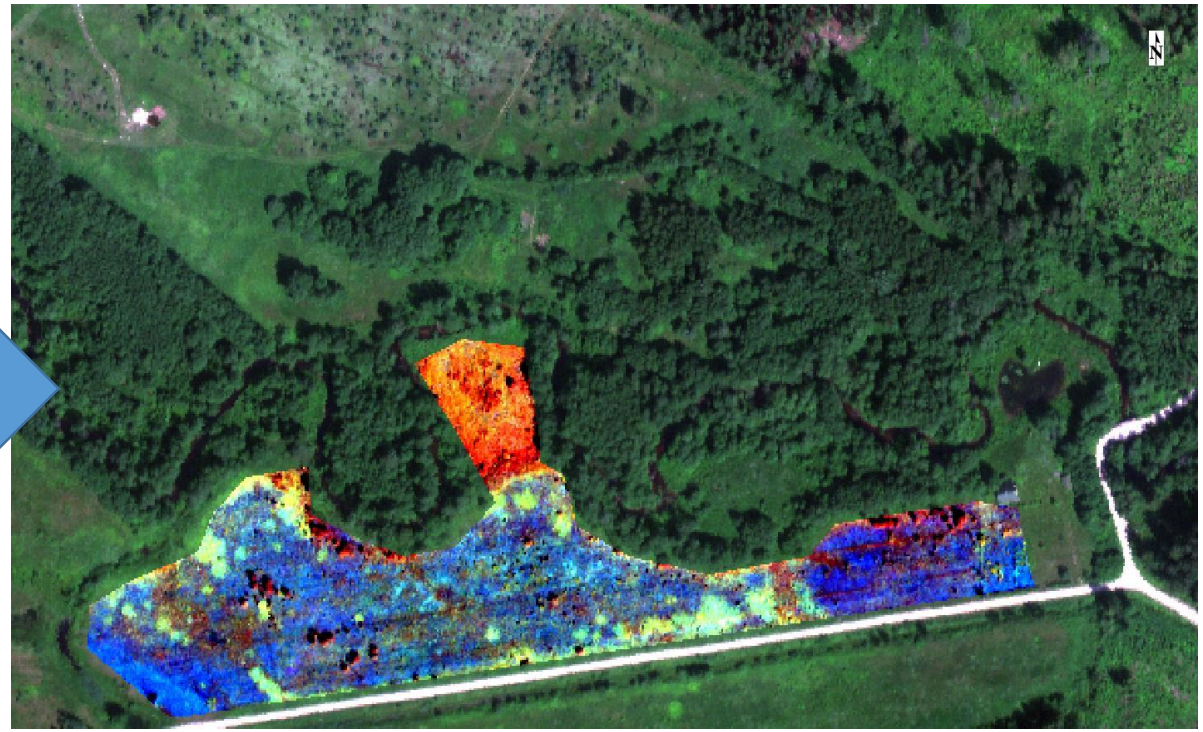


Obtained producer's accuracy >90%

Towards assessment of grassland biodiversity

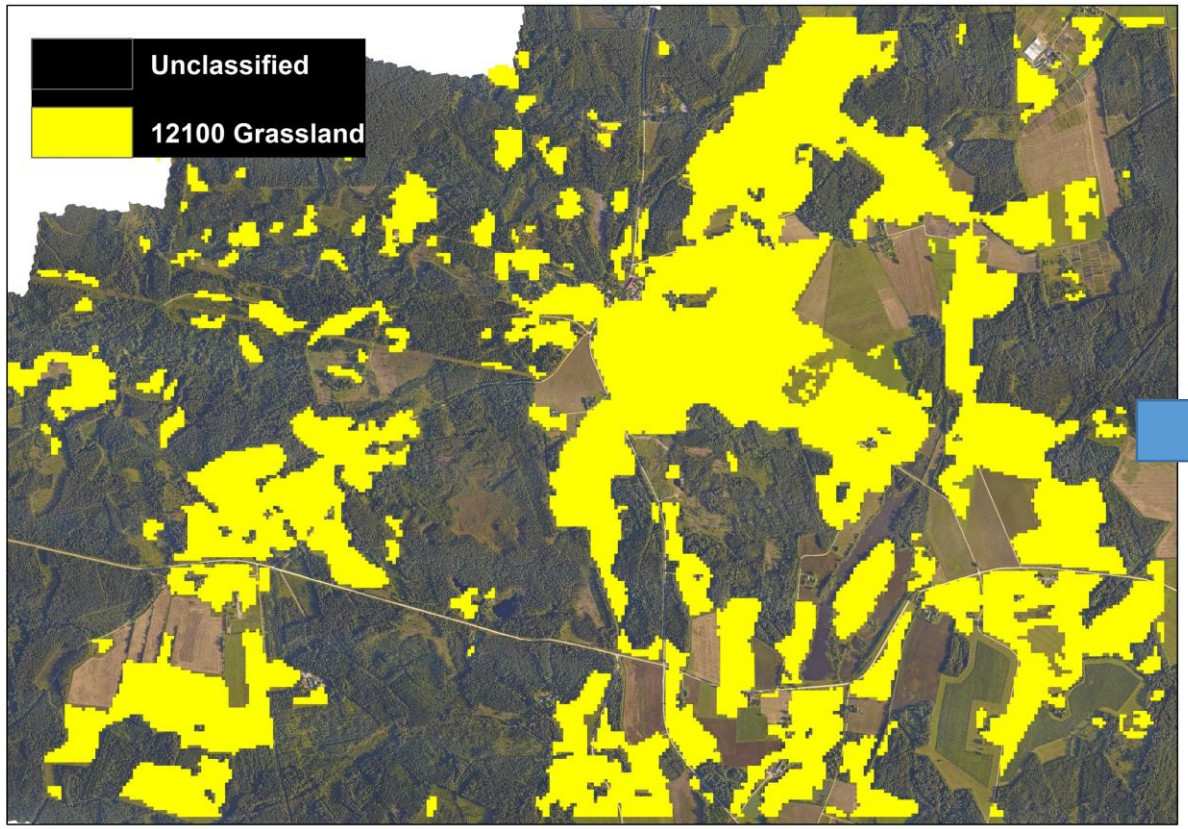
Planning of reference data acquisition

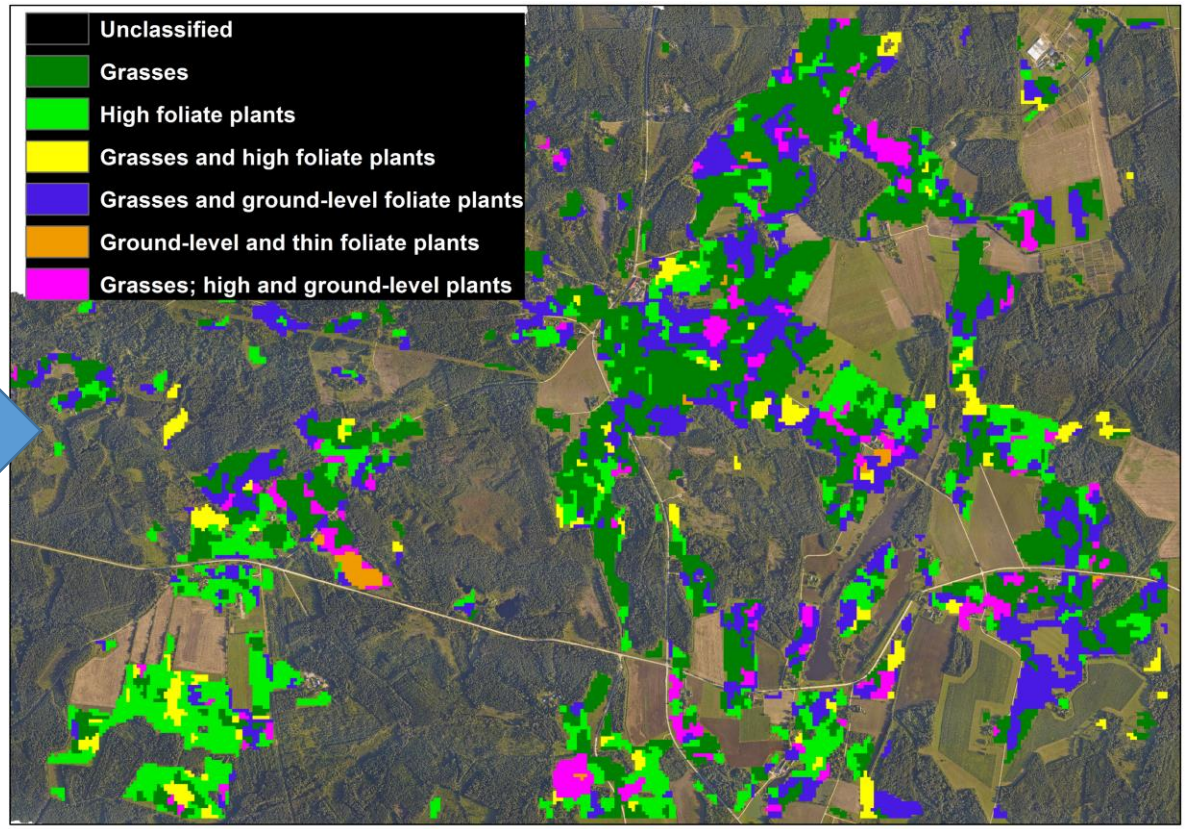
False colour image provided to grassland expert



Towards assessment of grassland biodiversity

Initial steps in more detailed classification of grasslands





Obtained producer's accuracy 85%

Acknowledgements

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“Integrated planning tool to ensure viability of grasslands (LIFE Viva Grass)” project (No LIFE13 ENV/LT/000189) co-financed by the EU LIFE+ Programme, Ministry of Environment of the Republic of Lithuania, Latvian Environmental Protection Fund, Estonian Environmental Investment Centre and the project partners

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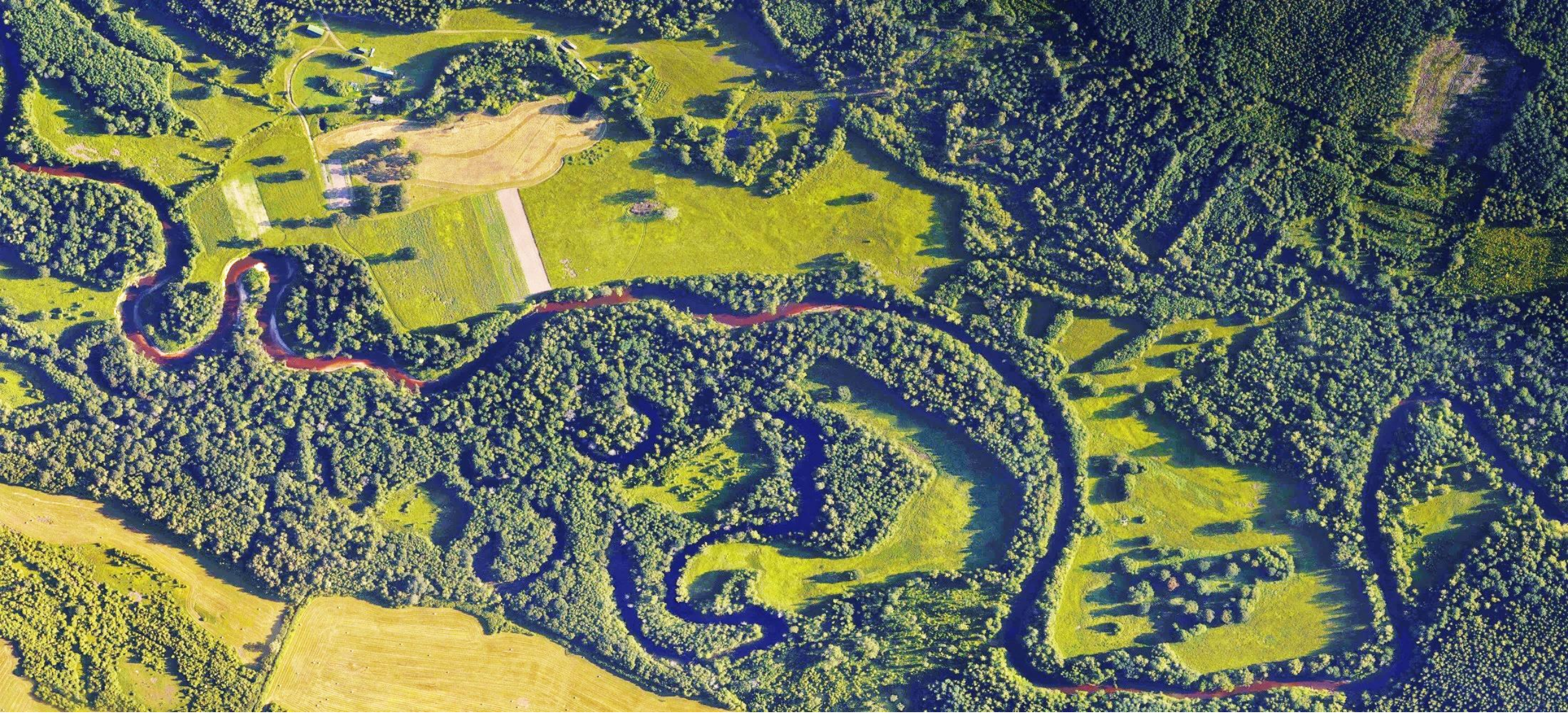
The authors would like to thank the Rural Support Service for cooperation and the exchange of data.



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