→ BALTIC FROM SPACE WORKSHOP

29–31 March 2017 | Helsinki, Finland

Territorial Planning and Management

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Remote Sensing Centre

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Remote Sensing Centre

What we do?

In situ
Data collection

Research topics

Calibration and Validation of Earth Observation data

Agriculture / Drought

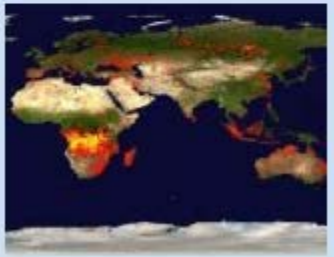
Bioenergy and carbon balance

Wetlands and grasslands

Forests

Land-Cover / Land-Use

Climate changes



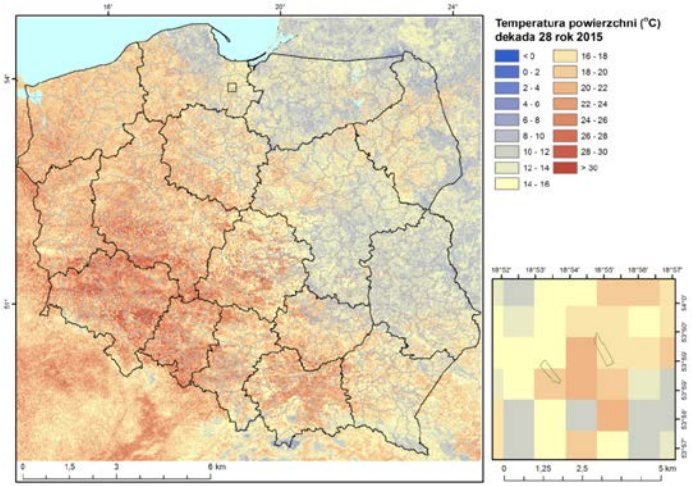
Environmental Hazard

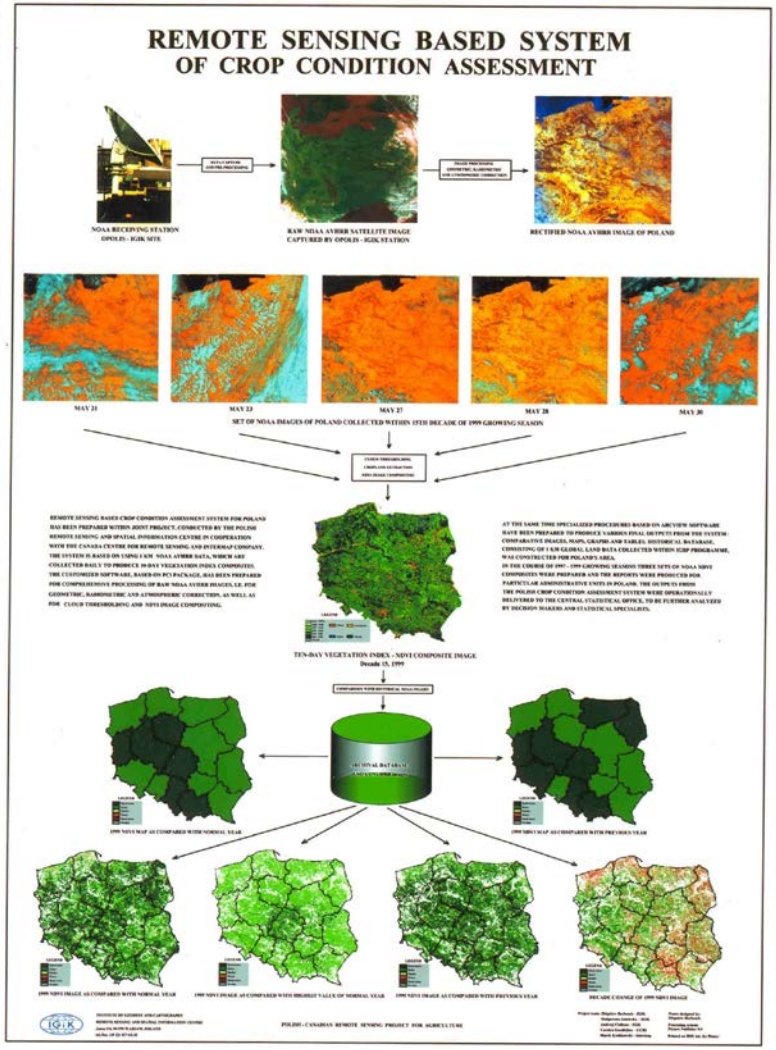
http://www.igik.edu.pl/en/remote-sensing

Agriculture

Thermal Condition Index - TCI

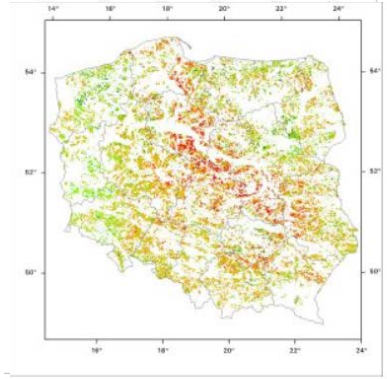
$$TCI = 100 \times \frac{T_{max} - T_{akt}}{T_{max} - T_{min}}$$



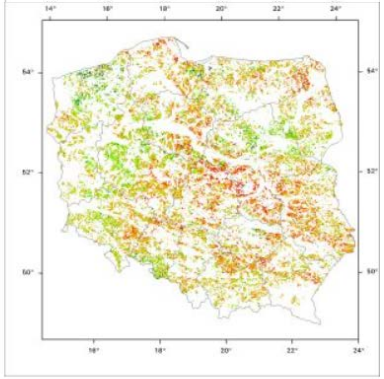


Agriculture

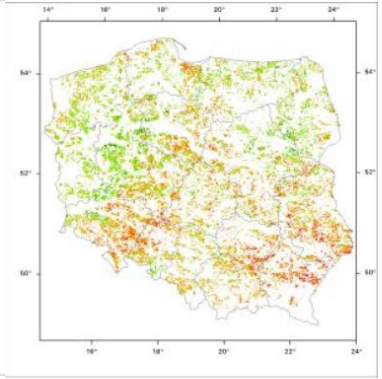
Drought forecasting and monitoring



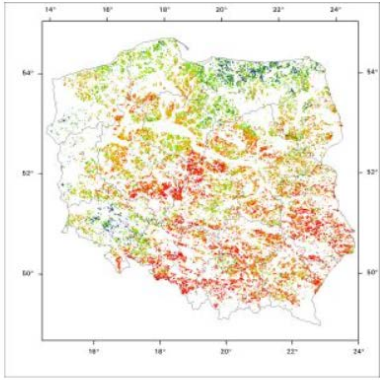
decade 17 (11 - 20 June) 2016



decade 18 (21 - 30 June) 2016



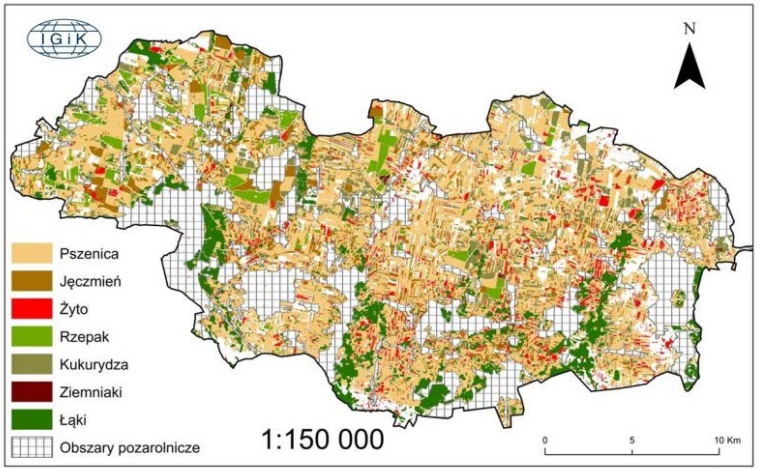
decade 19 (1 - 10 July) 2016



decade 20 (11 - 20 July) 2016

- drought
- drying
- average condition
- good condition

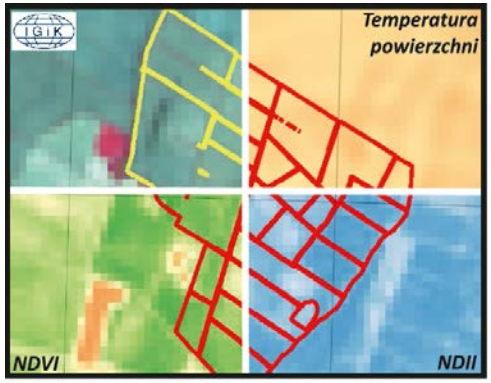
Crop recognition
Yield forecasting



Agriculture service

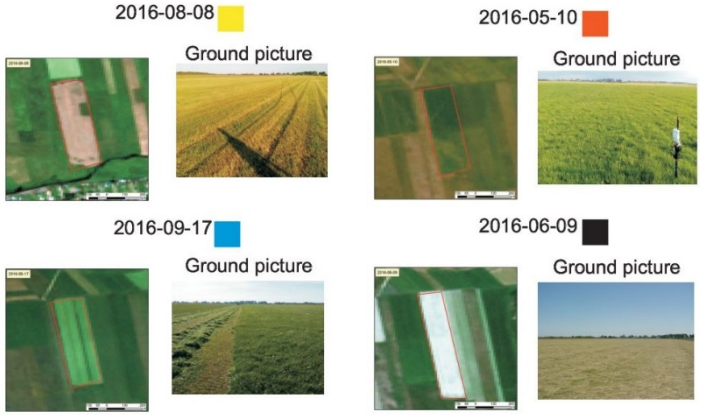
ASAP - **Advanced Sustainable Agricultural Production**
Web-based service for individual farmers and administration - developed under the ESA ARTES 20 IAP Programme

AIM: development of the satellite based System and Service in a form of one-stop-shop platform for Agriculture Sector in Poland and further in Central Europe



NDVI, NDII, RGB composite, etc. (Sentinel 2); LST (Landsat)

Problematic areas



Continuous field monitoring - Sentinel-2

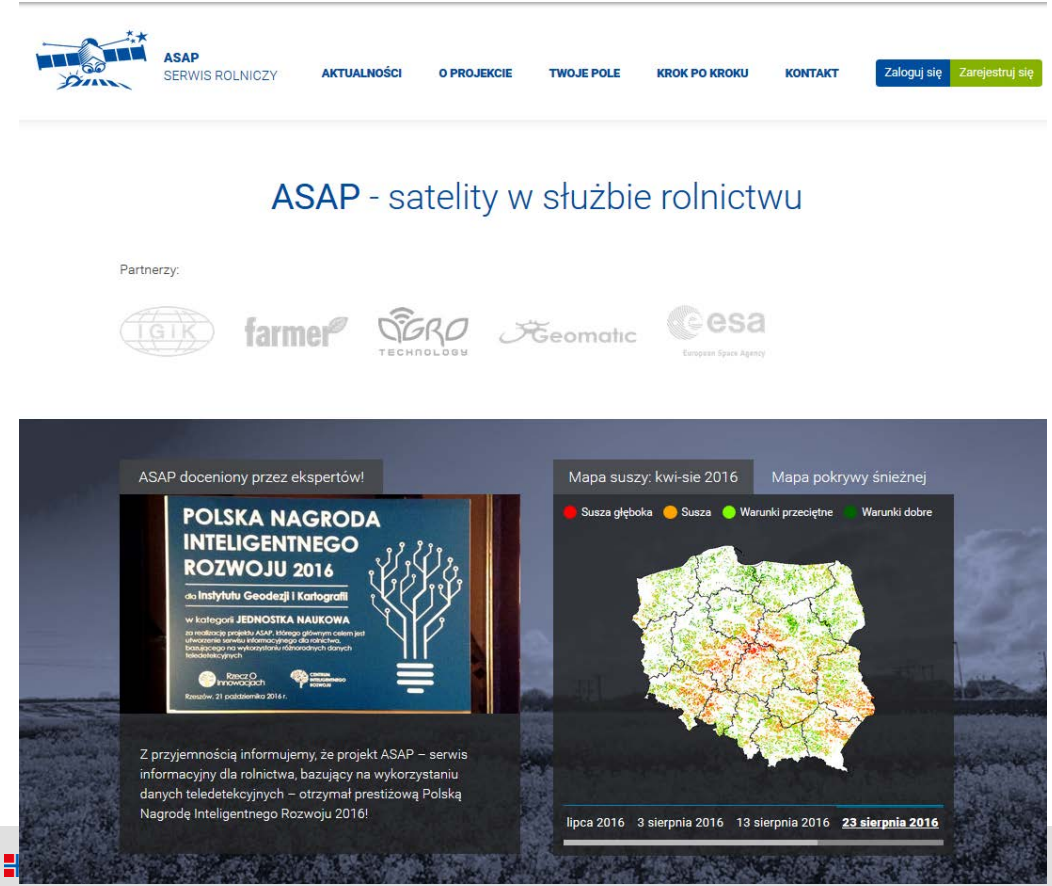
Agriculture service

Products portfolio for all User:

- Image RGB composites
- Maps of droughts (for each decade)
- Maps of snow cover (for each decade)

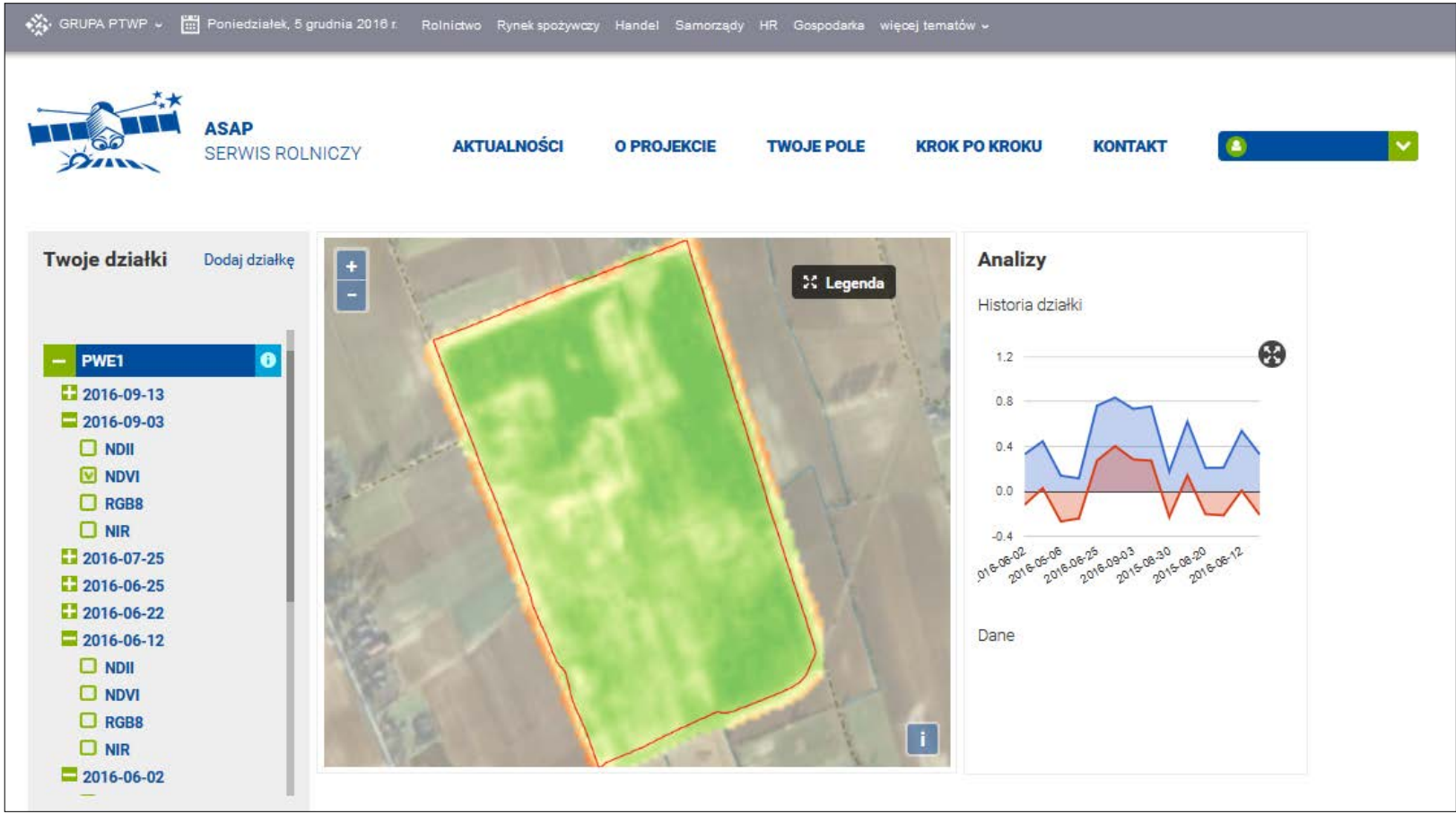
Products portfolio for registered Users:

- Maps of NDVI since 2015 (Landsat 8 + Sentinel 2)
- Maps of NDII since 2015 (Landsat 8 + Sentinel 2)
- Land surface temperature (Landsat)
- Map of yield potential
- Map of problematic areas
- Map of homogenous polygons
- Crop conditions
- Products on demand



Agriculture service

After registration:



Bioenergy service

SERENE Project - **Bioenergy as the key to economic growth of the regions - EO Based Service Supporting Energy Crop Cultivation** – project funded by ESA (1.04.2014 – 31.05.2016)

AIM: Assessment of actual information on the energy biomass availability in the regions through developing methodology for energy crop classification and developing models for energy crops biomass retrieval based on Landsat 8 data

SYeNERGY is satellite based on-line tool for management of energy biomass in Poland based on Sentinel-2 data

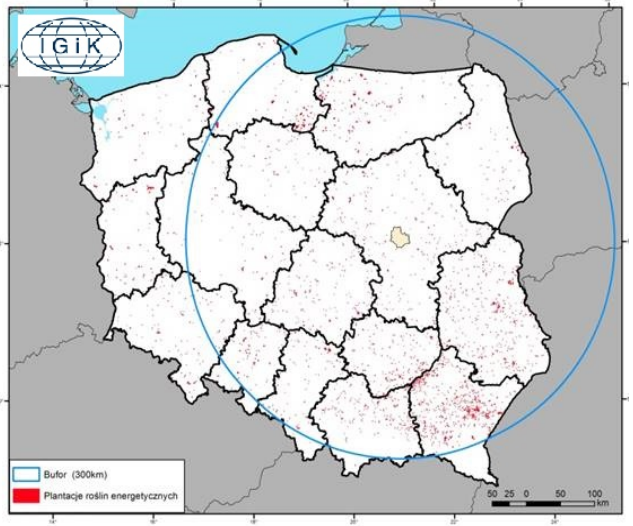
End-Users:

- energy suppliers including individual farmers (planters)
- companies which established the energy crop plantations for their own use
- energy recipients at local, regional and national scale
- energy biomass recipients

Bioenergy service

Three main components of the System and Service:

LOCAL BIOMASS



PLANTATION STATUS

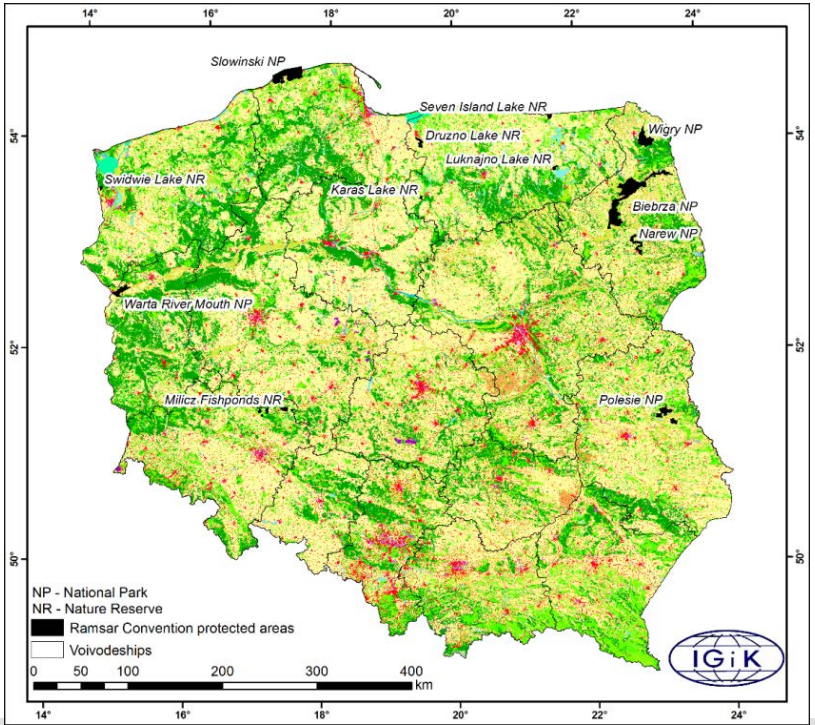
SUSTAINABLE DELIVERY

Location	Poland, Zachodniopomorskie
Energy crop type	WILLOW
Total area of plantation (ha)	64,9
Total area of energy crops (ha)	48,4
Area of damaged crop	16,5
% of damaged crops	25
Average biomass t/ha	26,67
Yield (dry biomass)	13
Distance from the closest protected area Natura 2000 (Habitats directive)	6 km (Brzeznicka Węgorza)
Distance from the closest protected area Natura 2000 (Birds directive)	1,5 km (Ostoja Drawska)
Distance from the closest protected area National Park	32 km (Drawieński Park Narodowy otulina)
Distance from the closest protected area Landscape Park	10 km (Iński Park Krajobrazowy)
Distance from the closest protected area Reservate	13,5 km (Jezioro Czarnówek)
Distance from the Energy Producer premises – straight line	85,8 (Szczecin)

Wetlands service

POLWET Project - System for new space-based products for wetlands under Ramsar Convention – pilot Project for Poland supporting future GlobWetland”
(1.07.2015 – 30.06.2017)

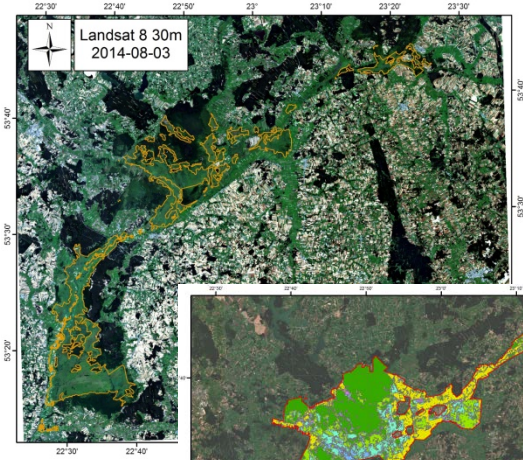
AIM: development of the satellite based System and Service for monitoring and management of the Ramsar areas in Poland

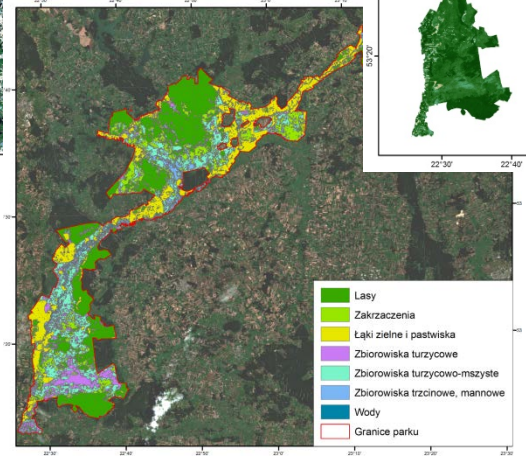


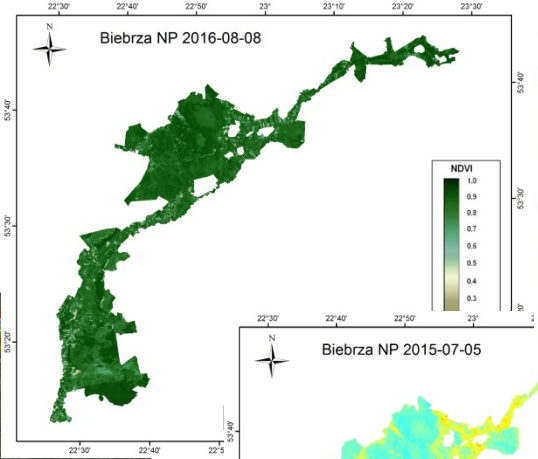
Wetlands service

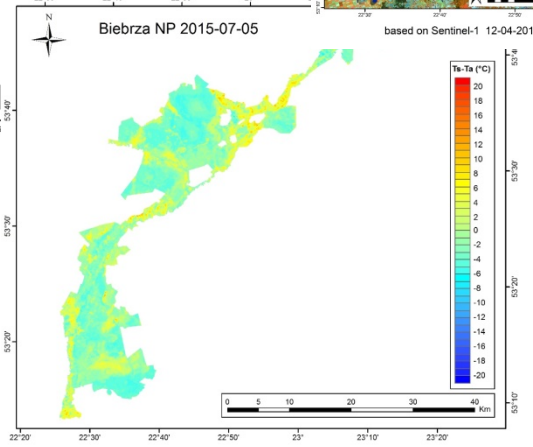
PolWet

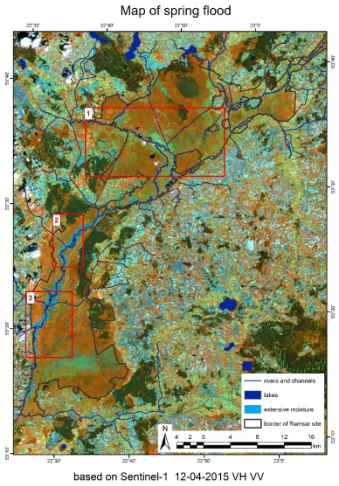
Products portfolio:



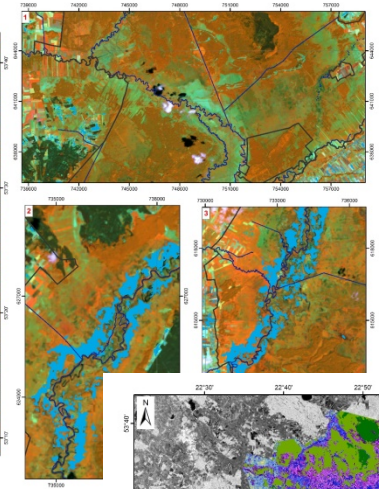


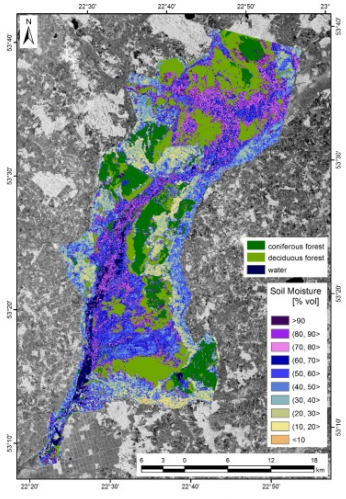






based on Sentinel-1 12-04-2015 VH VV





based on Sentinel-1 10-07-2015 VH

Forestry service

SAT4EST - Earth observation based service supporting local administration in non-state forest management (1.03.2017 – 30.02.2019)

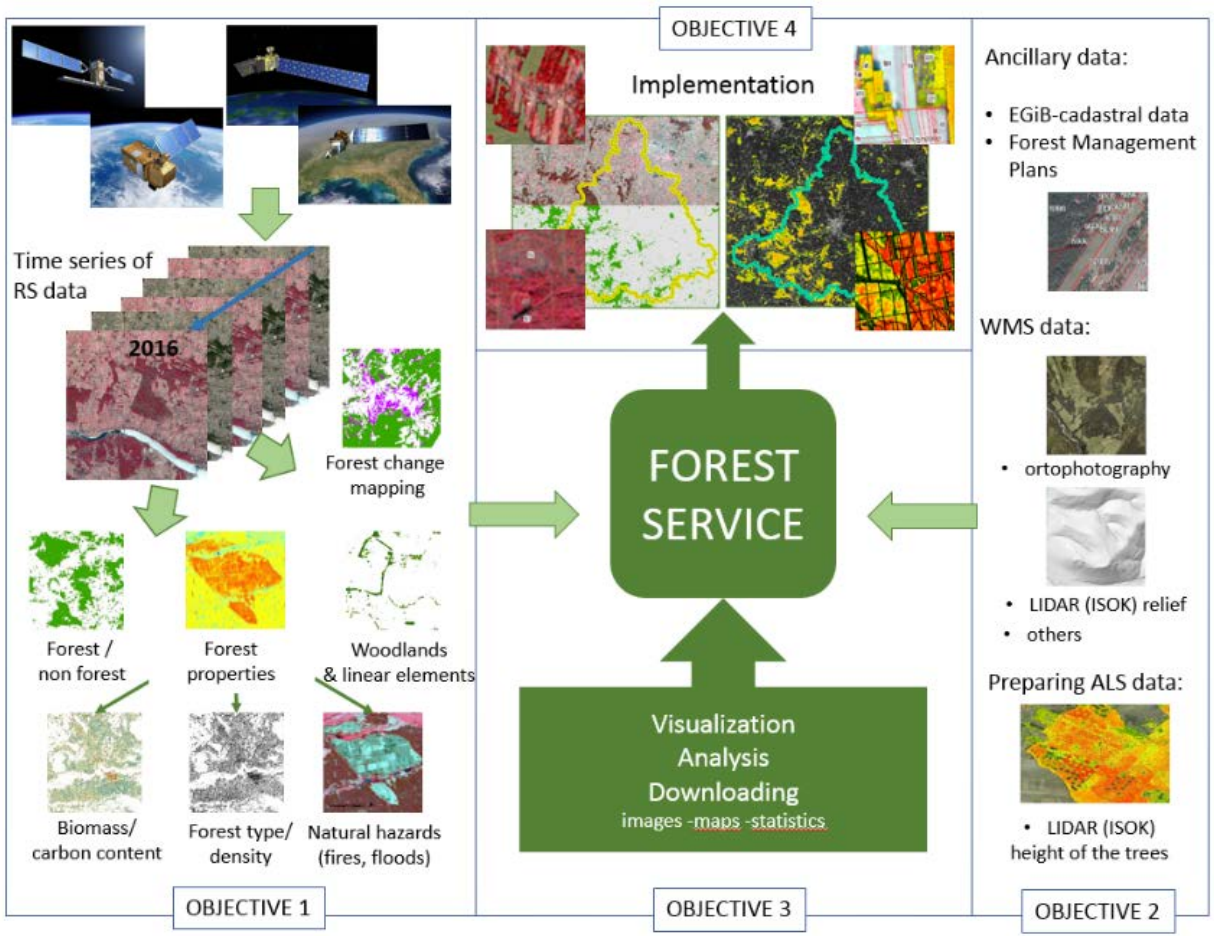
Objectives

- To prepare EO products that will meet the user requirements.
- To demonstrate how EO products can be integrated with ancillary data.
- To design and develop web-based service for forest management.
- To implement the service in the selected districts.
- To promote the use of various Copernicus data.

Forest in Poland - 91,630 km², which is 29.3% of country. State Forest - 77%, the rest belongs to national parks, private owners and cooperative owners.

Forestry service

SAT4EST



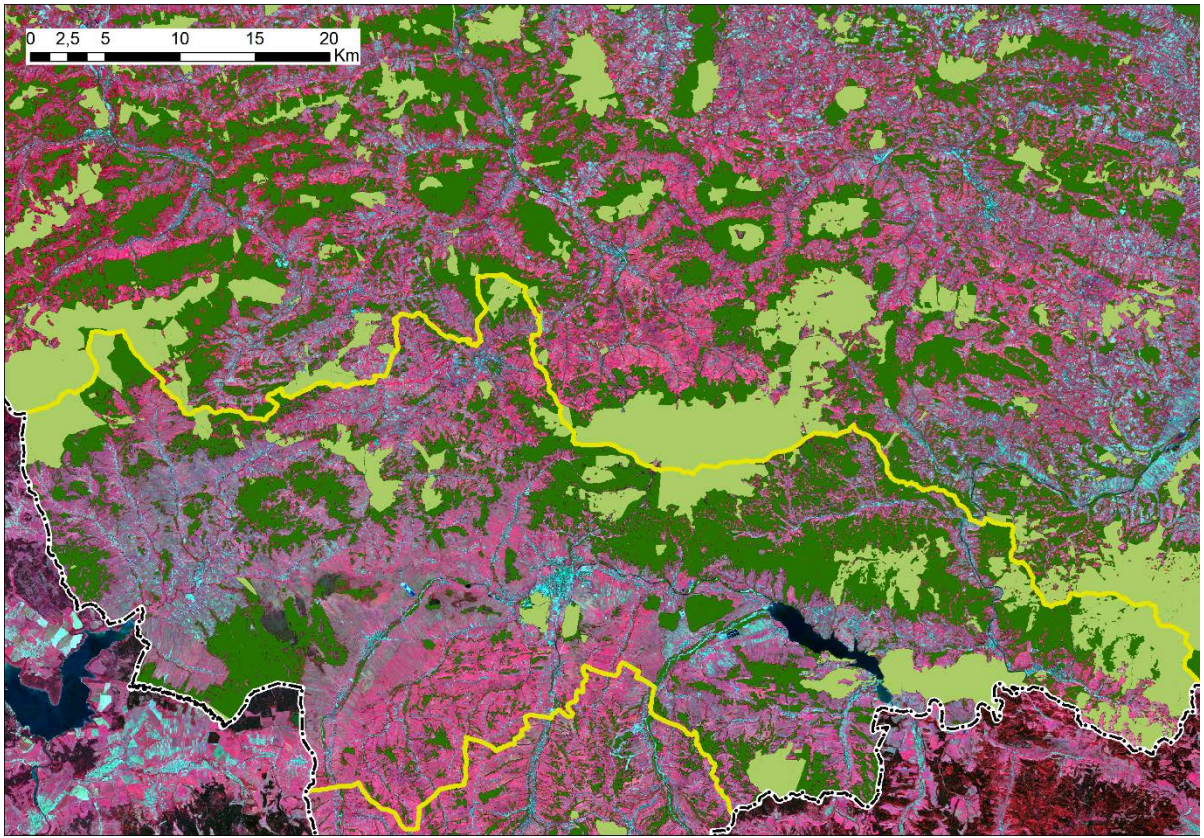
TAXUS IT INNOVATION

IGiK

Forestry service

SAT4EST

Sentinle-2

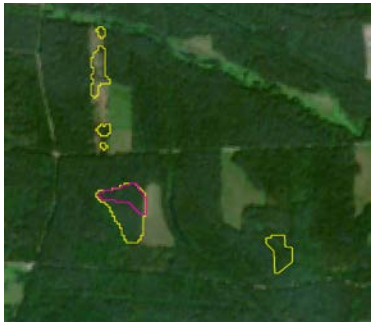


Forestry service

Use of Sentinel data

Forest affected by the strong wind
near Supraśla 17.06.2016

2015-08-07



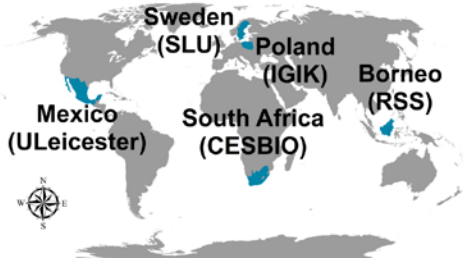
2016-08-31

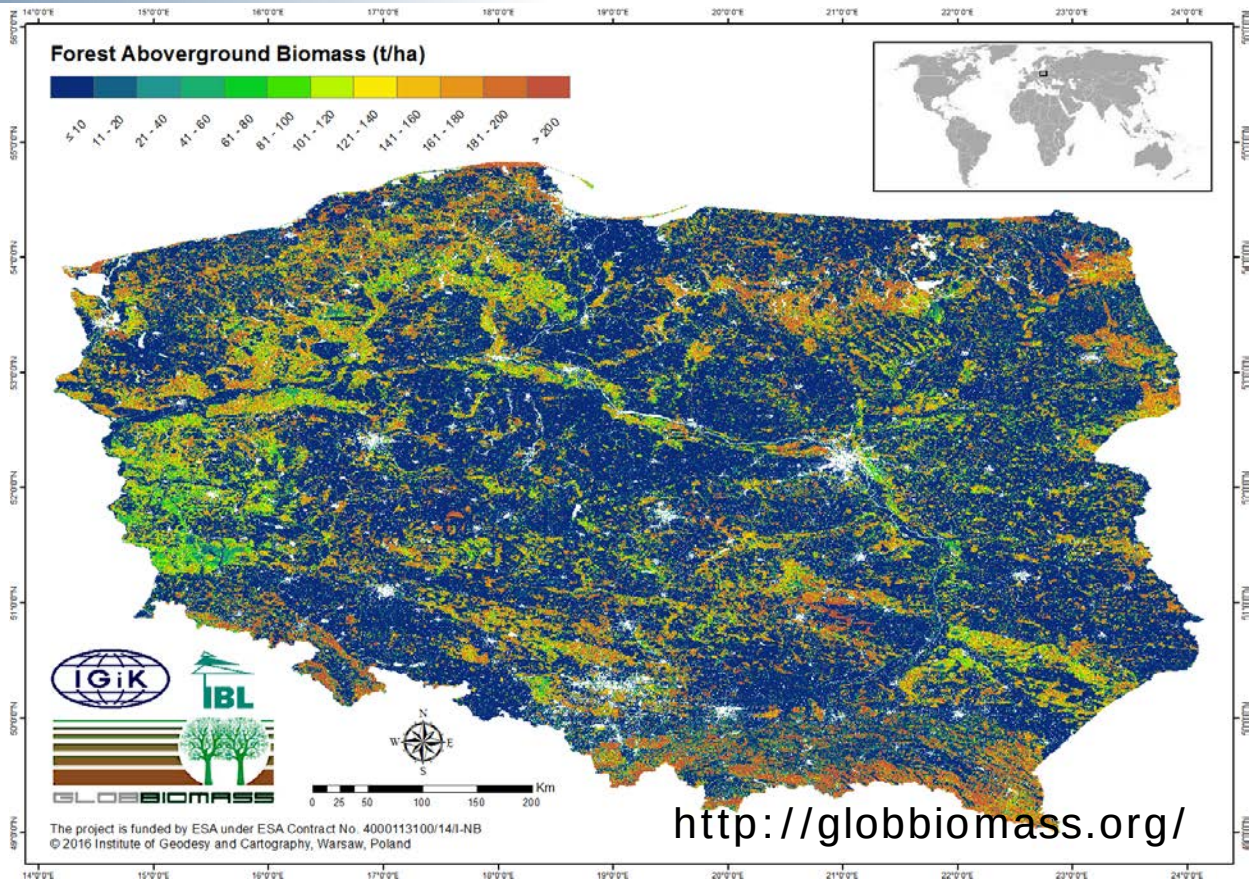
Detecting and monitoring clearcuts

Forestry

ESA DUE GLOBBIOMASS

Leader: Department of Earth Observation - Friedrich-Schiller-University Jena





Conclusion and Perspectives

- Development and verification of the methods, tuning models is still needed.

- Methods should be standardized, robust, documented, validated to be considered and accepted by decision makers.

- Work closely with end users; prepared EO products that meet the user requirements (e.g. accuracy, timing, MMU)

- Connection of EO research, business and administration is challenge – there is no official regulations that would encourage to apply EO methods

- Big challenge is to increase awareness of various decision makers, authorities, politicians at national, regional and local level towards the Earth Observation data and technology. This would result in better EO data uptake.

- Marketing at various level is very important

Thank you for your attention

More information about our activities and projects:

http://www.igik.edu.pl/en/remote-sensing

Contact: agata.hoscilo@igik.edu.pl