Remote Sensing and LIDAR data based forest analysis – application and research presentation.

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Forest Research Institute

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Introduction

Introduction

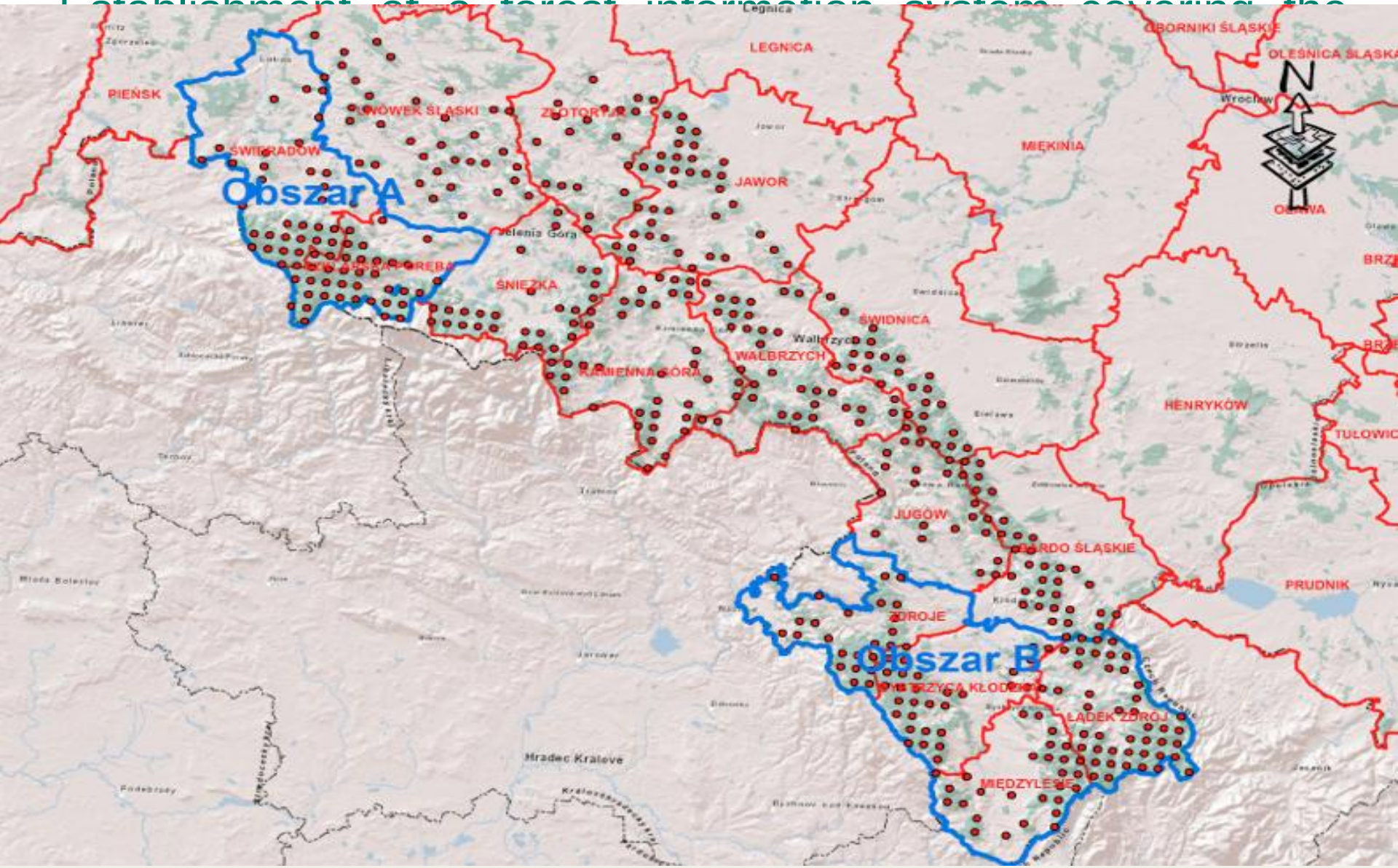
Forest Research Institute

Department of Information Technology and Modelling

Ongoing projects

Projects

Establishment of a forest information system covering the



12 Forest Districts in 2 Regional Directories of State Forests (310 000 ha)

Projects

AIMS:

•Utilization of various biotic, abiotic and anthropogenic factors for forest change cover modeling in mountainous environment,
•Creation and implementation GIS system to supporting decision making process in forest management and protection.

Projects

Airborne Laser Scanning

6 (10) p/m^2 (fullwave form)

Airborne Images

Orthophotomaps RGB i CIR with 20 cm pixel

Spaceborn Images

RE - 3 images per year in 2012-2016, for 2012 finished

Genetic studies

Chemical analysis of vegetal and soil material

Dendrohronological analysis

Phytopathological analysis

Projects

Laserowi odkrywcy - **Laser explorers**

http://www.laserowiodkrywcy.pl/

LASEROWI ODKRYWCY

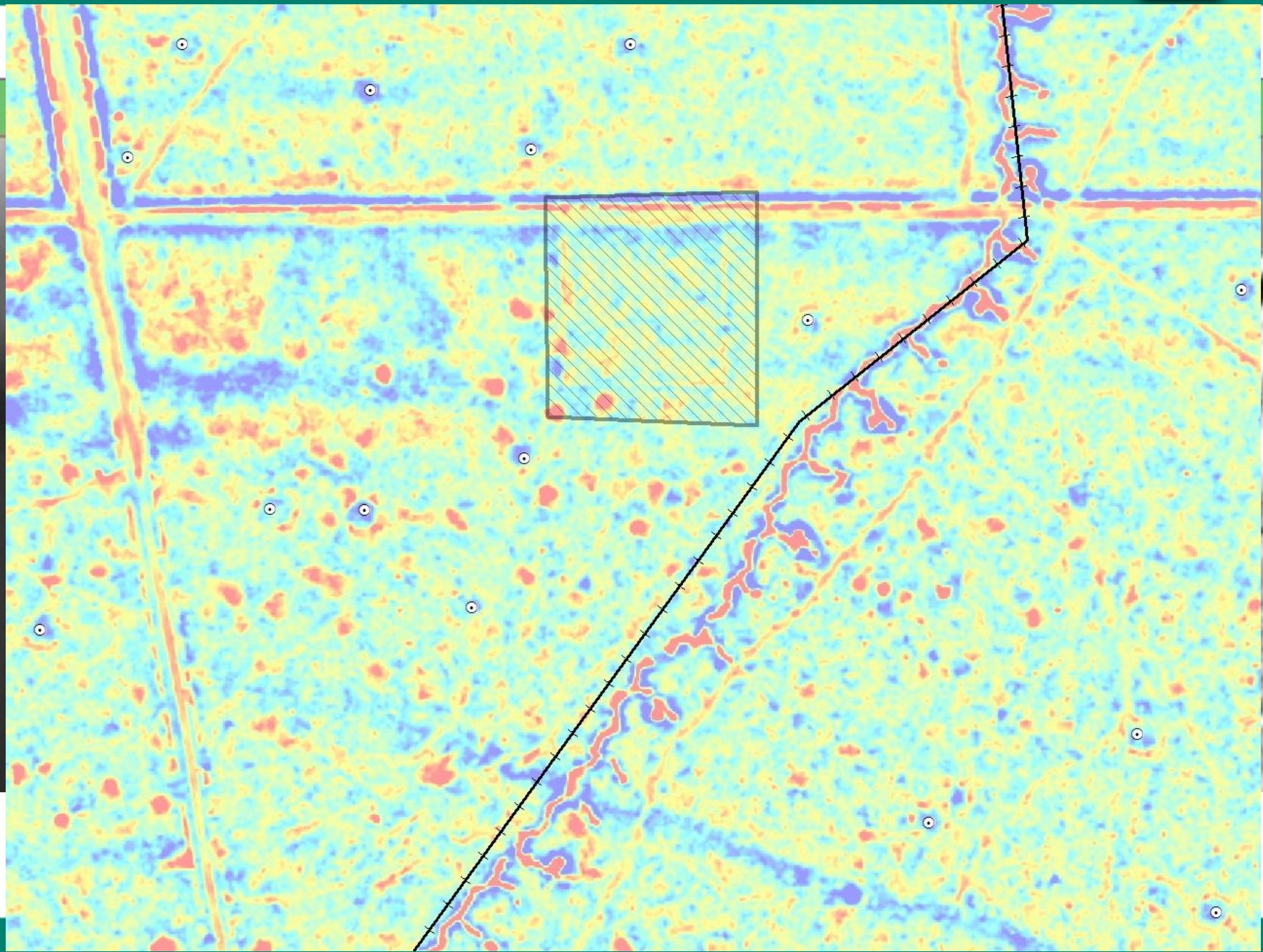
INNOWACYJNA GOSPODARKA
NARODOWA STRATEGIA SPÓJNOŚCI

UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ ROZWOJU REGIONALNEGO

Ministerstwo Nauki i Szkolnictwa Wyższego

ŚCIEŻKI KOPERNIKA

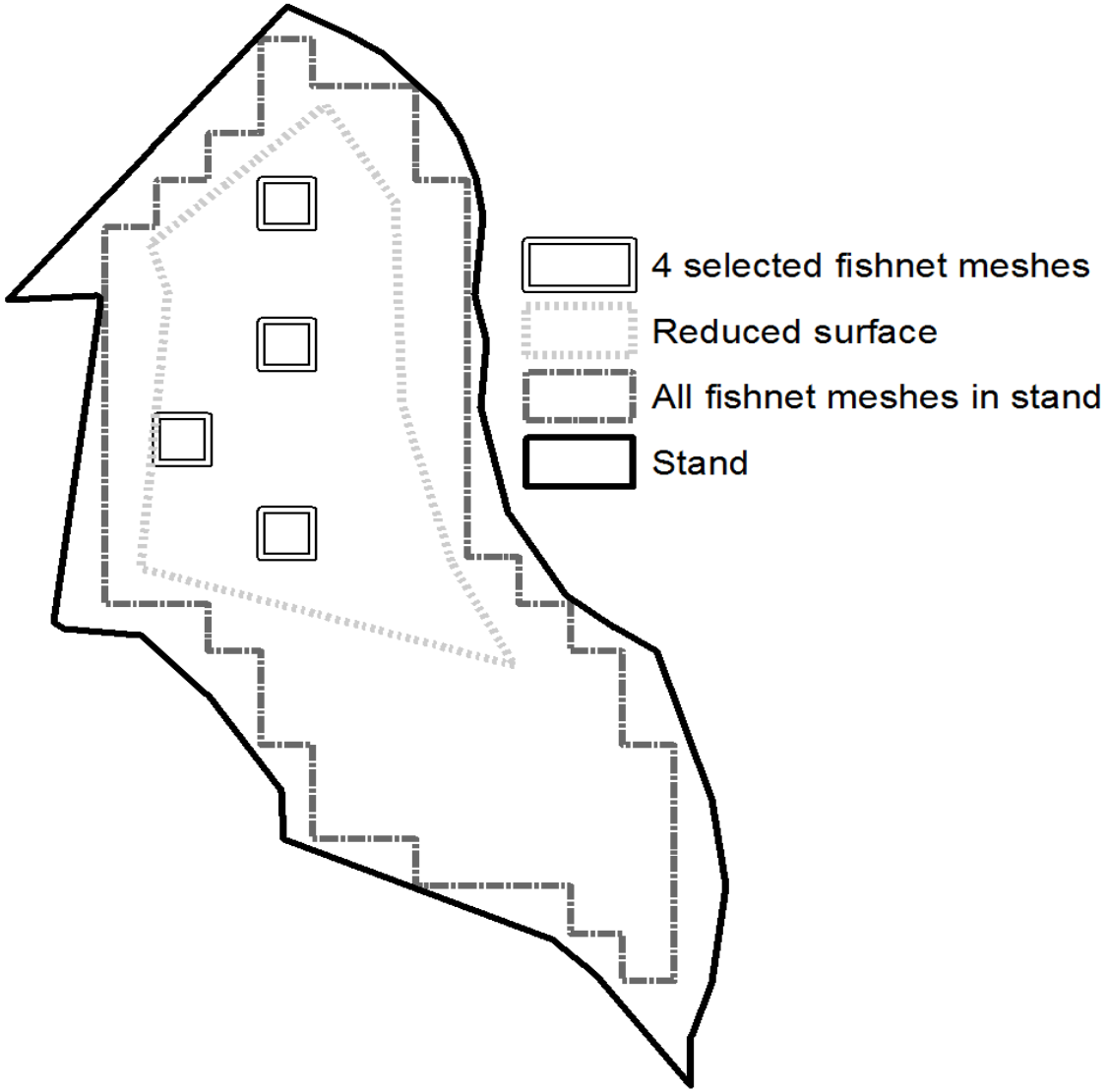
Projects



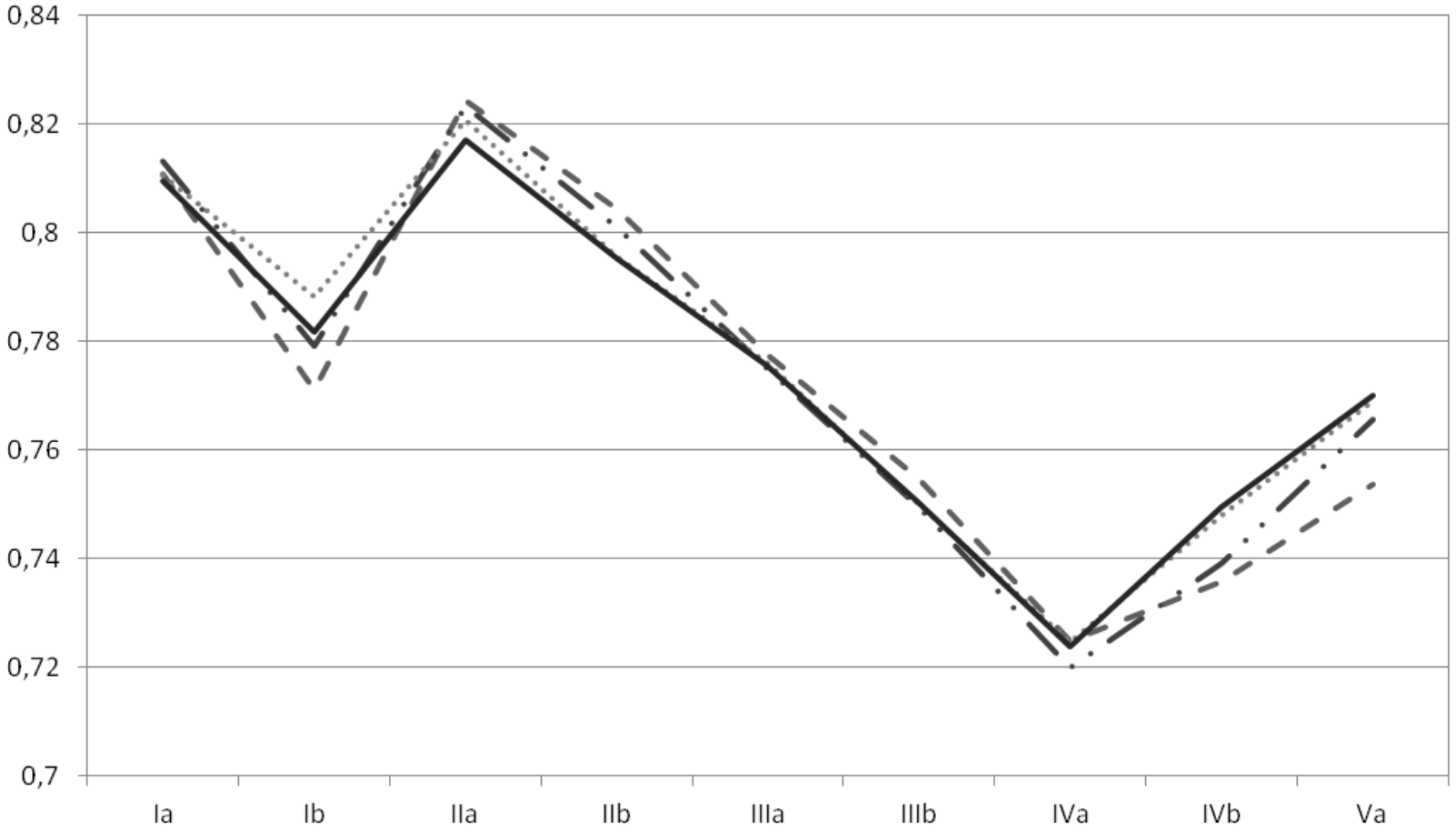
Ongoing research

Vegetations indic
with A. Modze

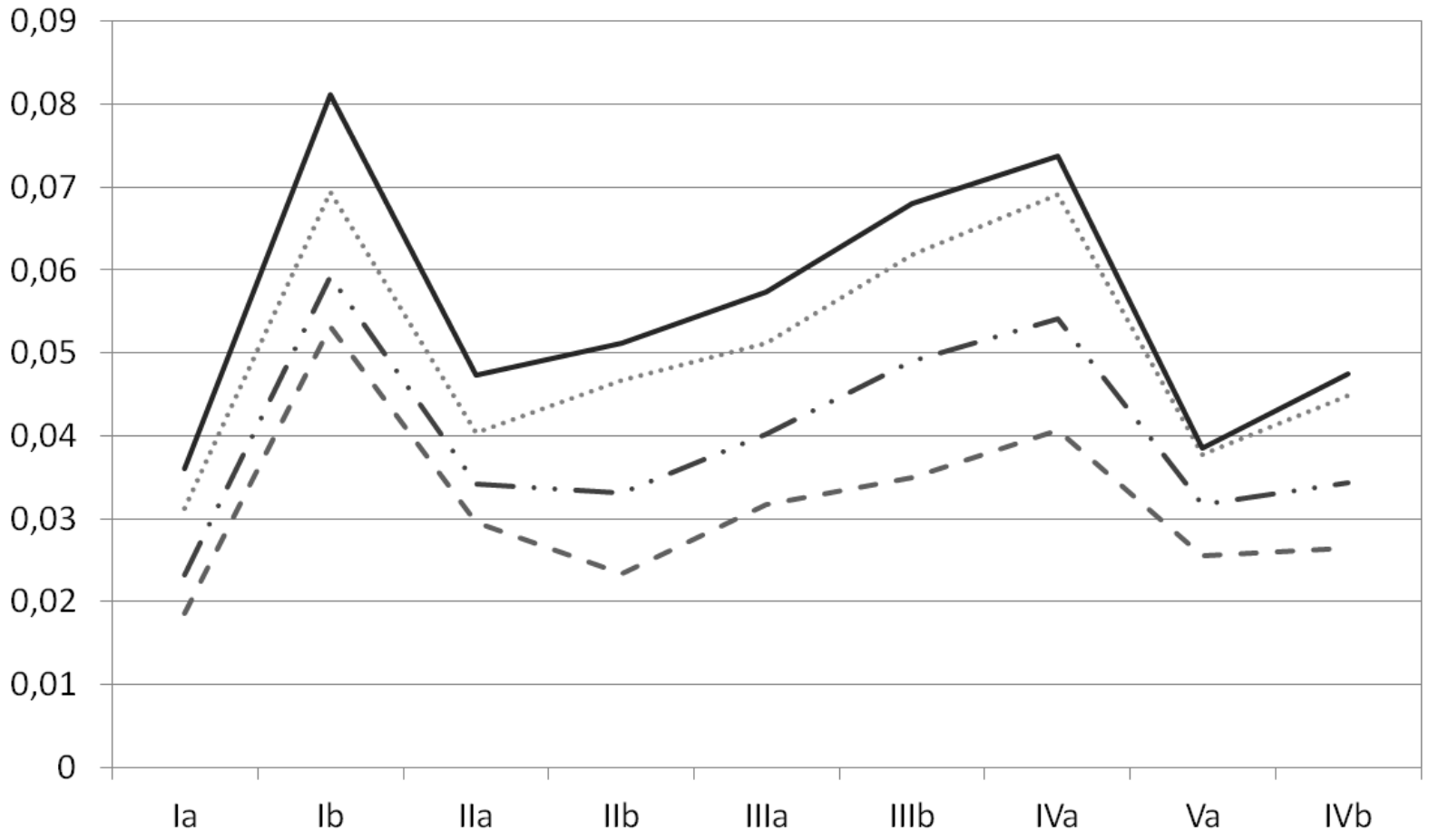
- NDVI, GNDVI
EVIRE, SR ar
- Stand charact
volume, dbh, s
- 4 different san
- 1327 stands.

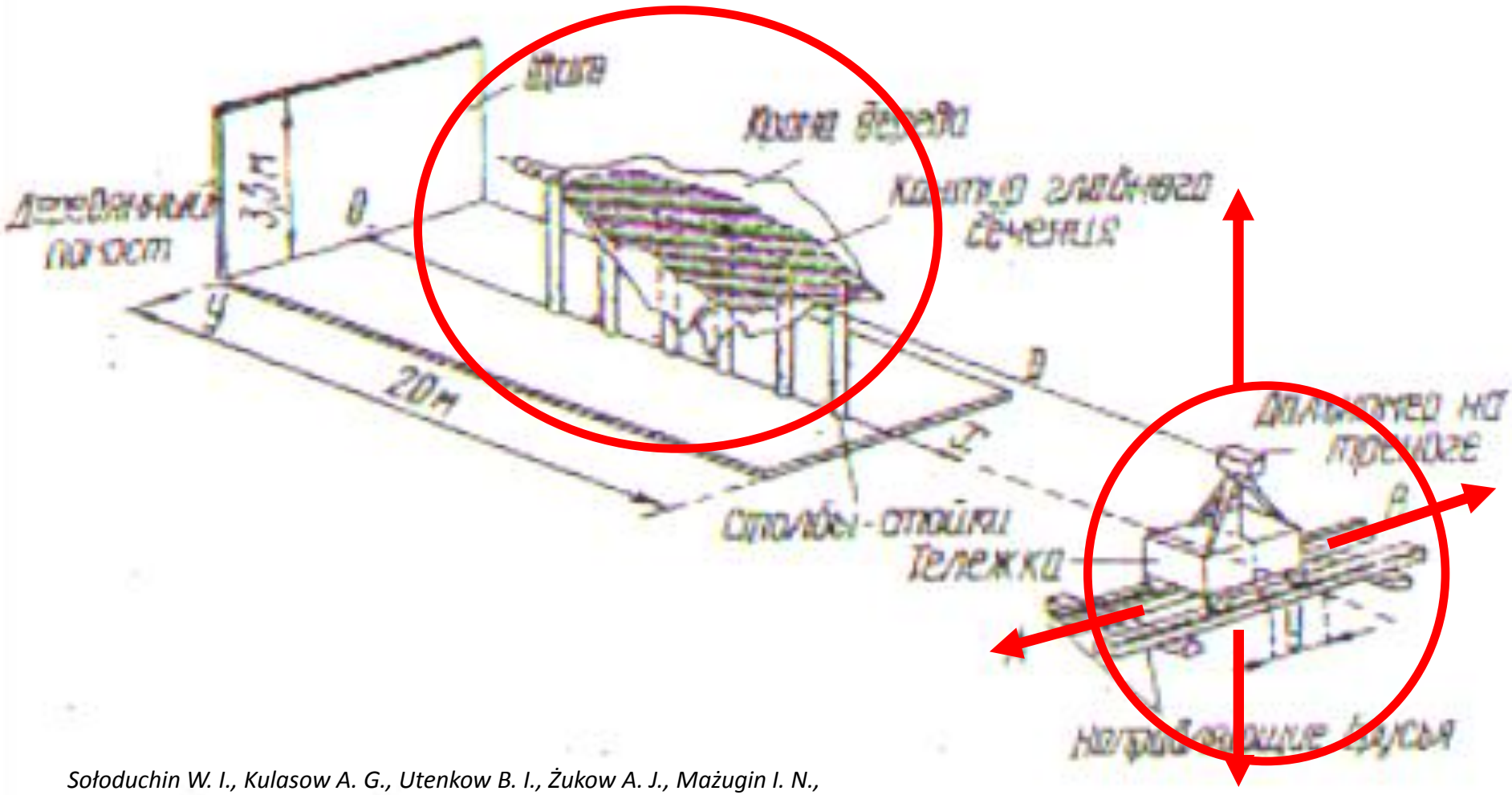


NDVI - mean



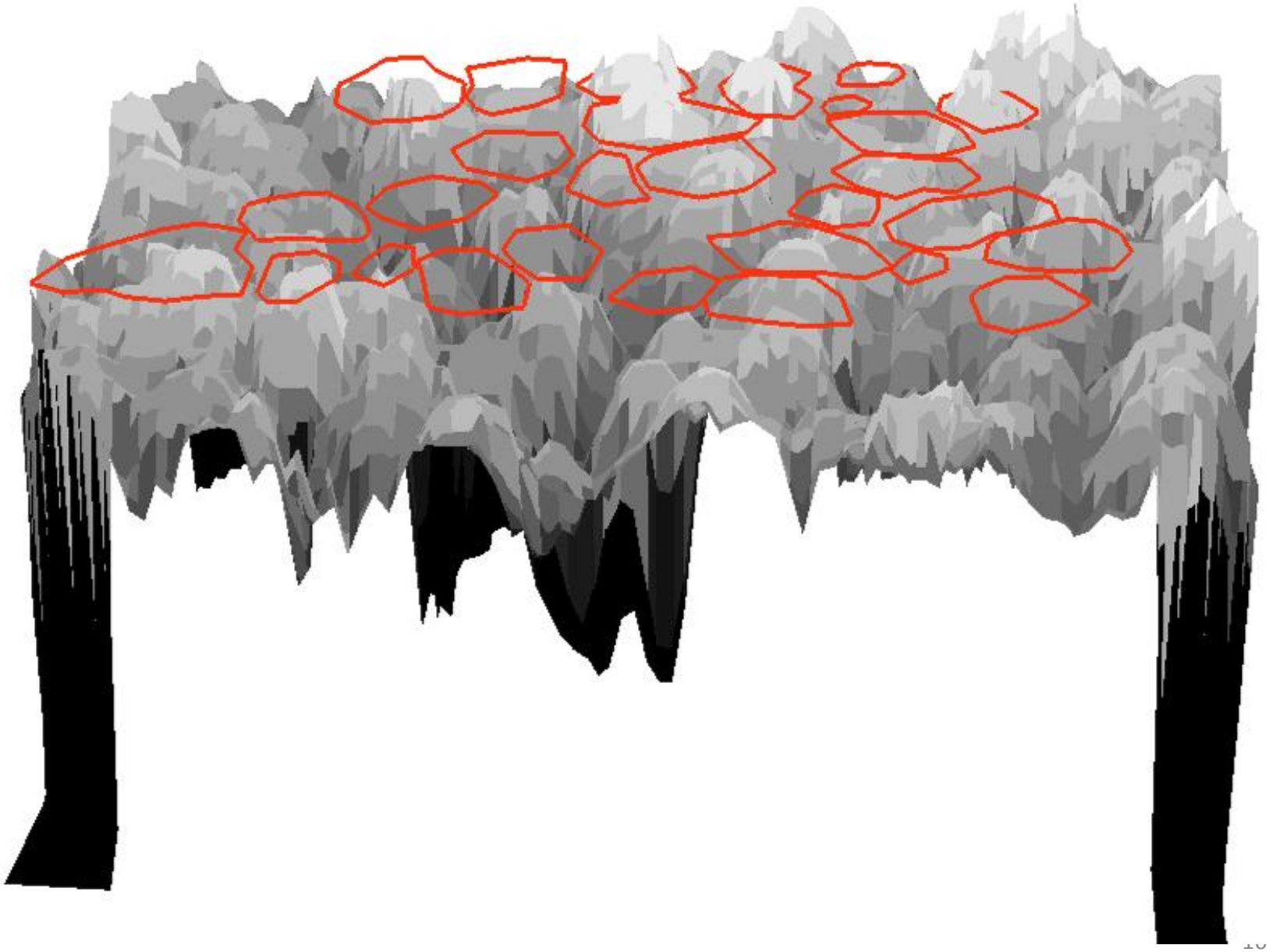
NDV - st. dev.


0,09
0,08
0,07
0,06
0,05
0,04
0,03
0,02
0,01
0
Ia
Ib
IIa
IIb
IIIa
IIIb
IVa
Va
IVb

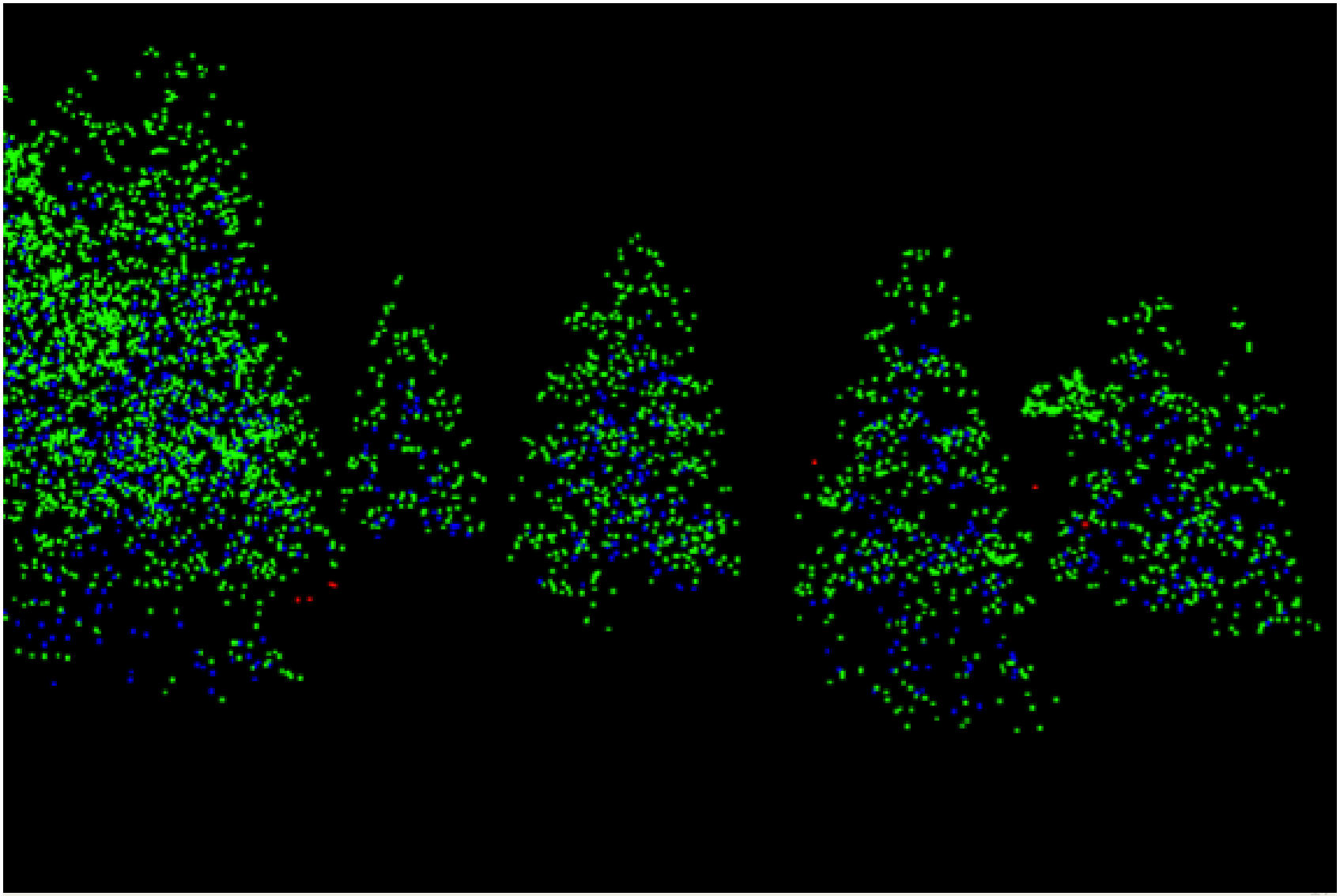


Sołoduchin W. I., Kulasow A. G., Utenkow B. I., Żukow A. J., Mażugin I. N., Emalanow W. P., Kopolow I. A., 1977. Sjonka profila krony dieriewa s pomoszczju laziernego dalnomiera. Lesnoje Choziajstwo 2: 71-73.

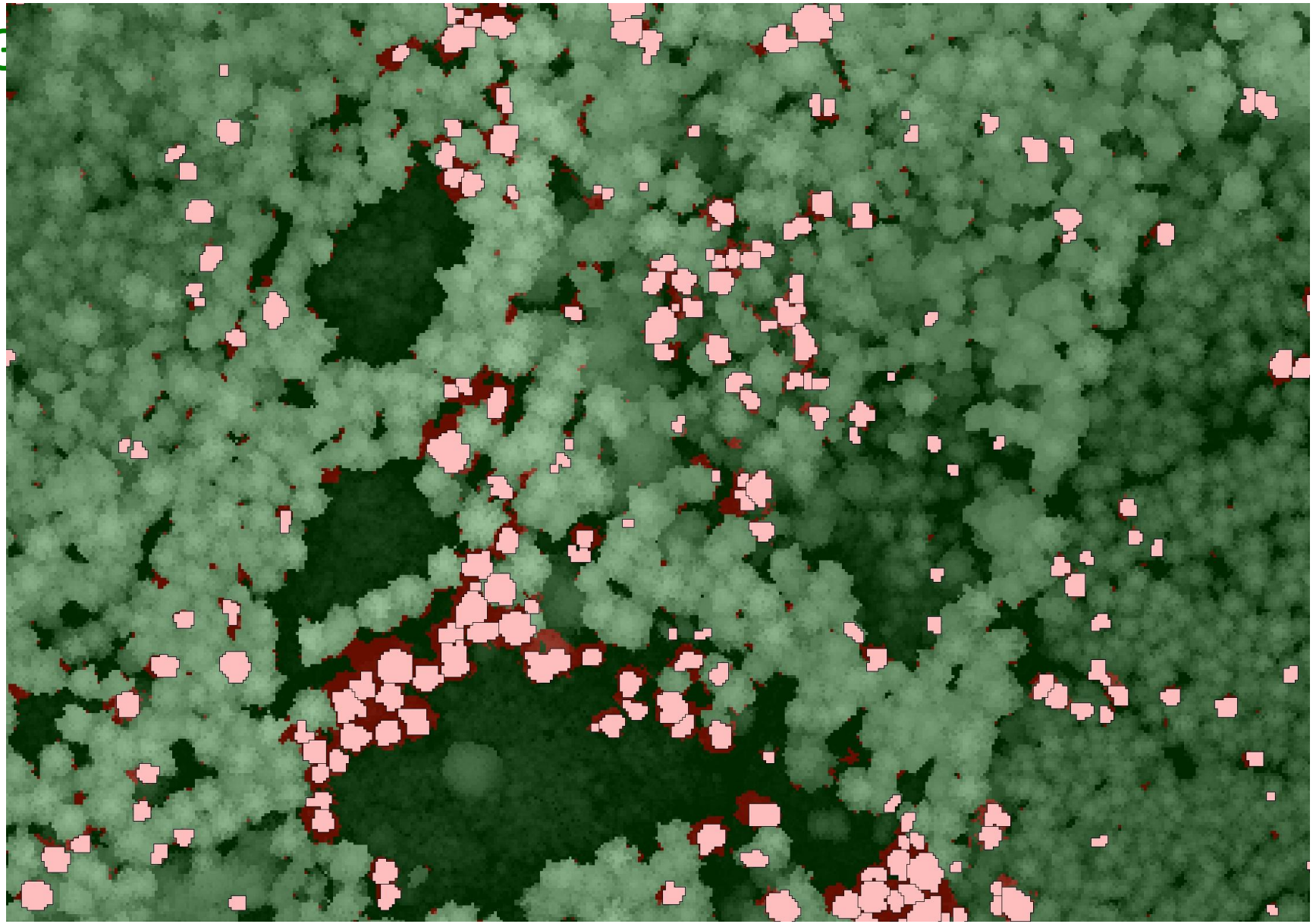
ALS



Single tree change detection

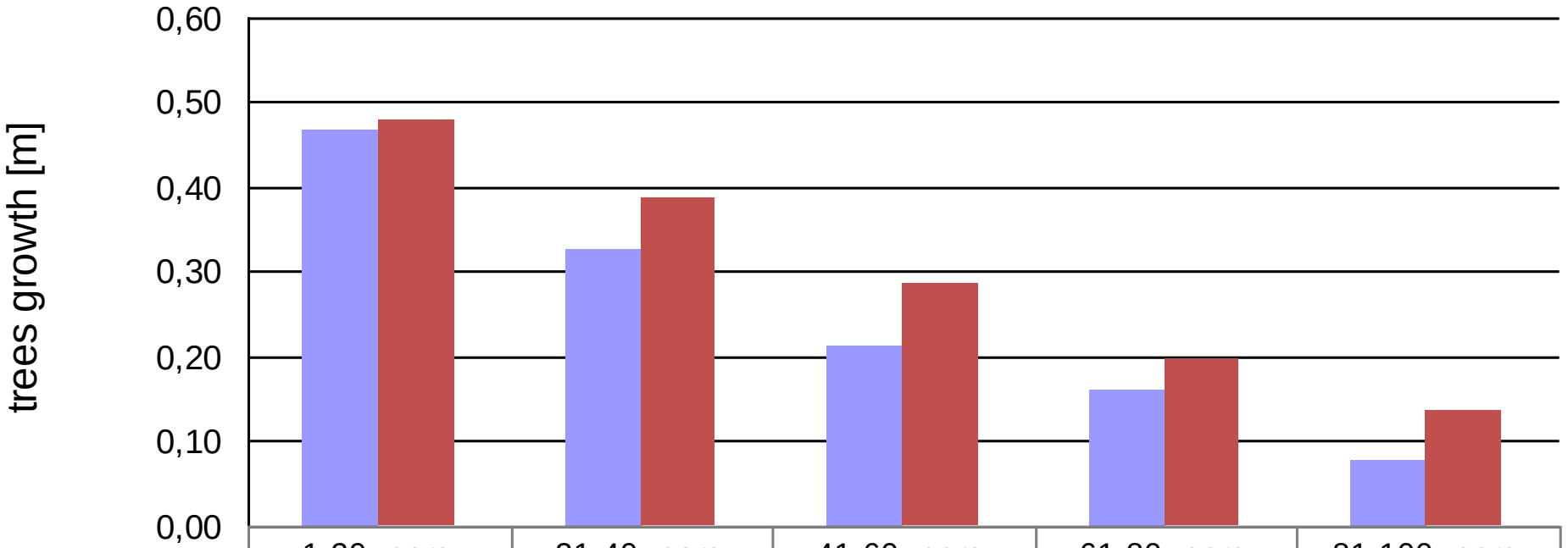


ALS



Yu et al. 2006

Detected tree growth in various age classes



	1-20 years	21-40 years	41-60 years	61-80 years	81-100 years
ALS data	0,47	0,33	0,21	0,16	0,08
Yield tables	0,48	0,39	0,29	0,20	0,14

Stereńczak K., Mielcarek M. 2014 . Assessing one year pine growth at stand level with single tree detection based on ALS data. In Proceedings of the 6th Precision Forestry Symposium: The anchor of your value chain. Edited by Pierre Ackerman, Elizabeth Gleasure and Hannél Ham, 3-5 March 2014, Stellenbosch University, Stellenbosch, South Africa, 16-18.

Life+

Projects

LIFE+ ForBioSensing PL - Comprehensive monitoring of stand dynamics in Białowieża Forest supported with remote sensing techniques

LIFE13 ENV/PL/000048

Narodowy Fundusz Ochrony Środowiska i Gospodarki Wodnej

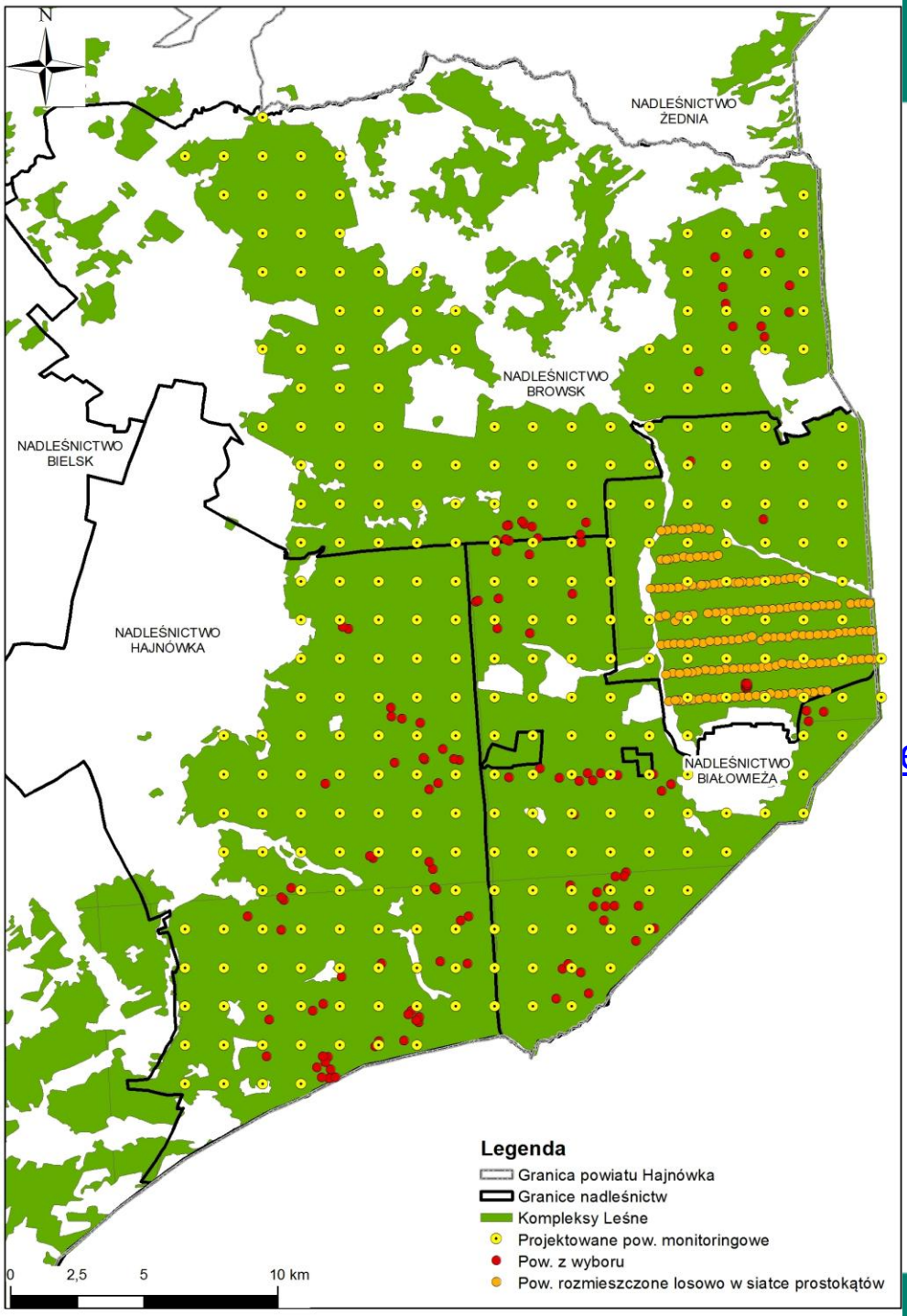
Projects

Coordinator: Fo

Expected start

Expected end d

http://ec.europa.eu/e eaction=search.dspPage&n_proj_id=



Projects

The main objectives of the project are:

- Monitoring of stand dynamics in Białowieża Forest (including analysis of tree species composition, monitoring of forest stand changes caused by spruce and ash dieback and hornbeam expansion, etc)
- Analysis of natural forest regeneration and rejuvenation, including the role of gaps
- Creating/defining of the combination of various remote sensing techniques and datasets that would be optimal for forest monitoring needs
- Characteristics of the Białowieża Forest microclimate
- Promotion of Białowieża Forest with use of multimedia

http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5060

Projects

Airborne Laser Scanning

6 (10) p/m^2 (fullwave form) 3 times (2015 and 2019)

Airborne Images

Orthophotomaps RGB i CIR with 20 cm pixel

Hiperspectral images (5 times)

Spaceborn Images

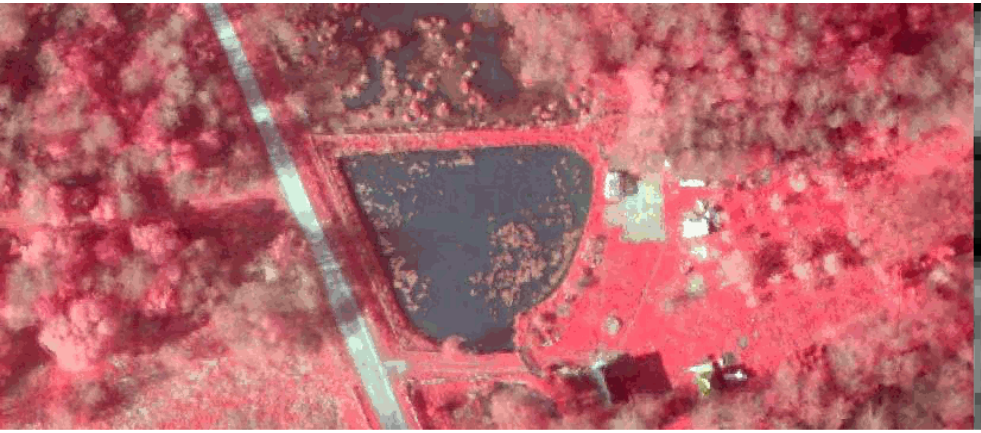
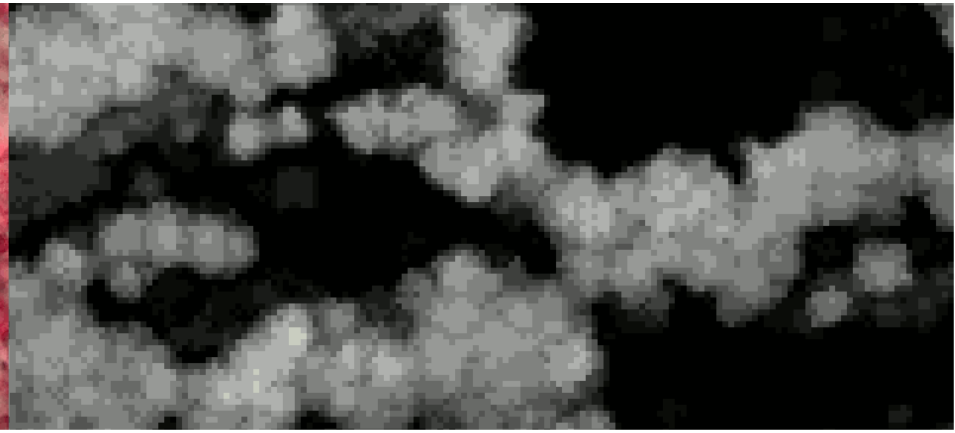
3 images per year in 2015-2019

Plant study and measurements of sample plots (600-700)

Dendrohronological analysis

Meteorological analysis

You are welcome in cooperation

Thank you !

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