SIEUSOIL

SIno-EU Soil Observatory for Intelligent Land use Management

INNOVATIVE GEOSPATIAL AND CARTOGRAPHIC APPROACHES TO IDENTIFICATION, ANALYSIS, AND VISUALISATION OF LAND DEGRADATION

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SIEUSOIL workshop at INSPIRE hackathon
(Prague, Czech Republic, 29/01/2020)

www.SIEUSOIL.eu

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BRIEF PROJECT INTRODUCTION

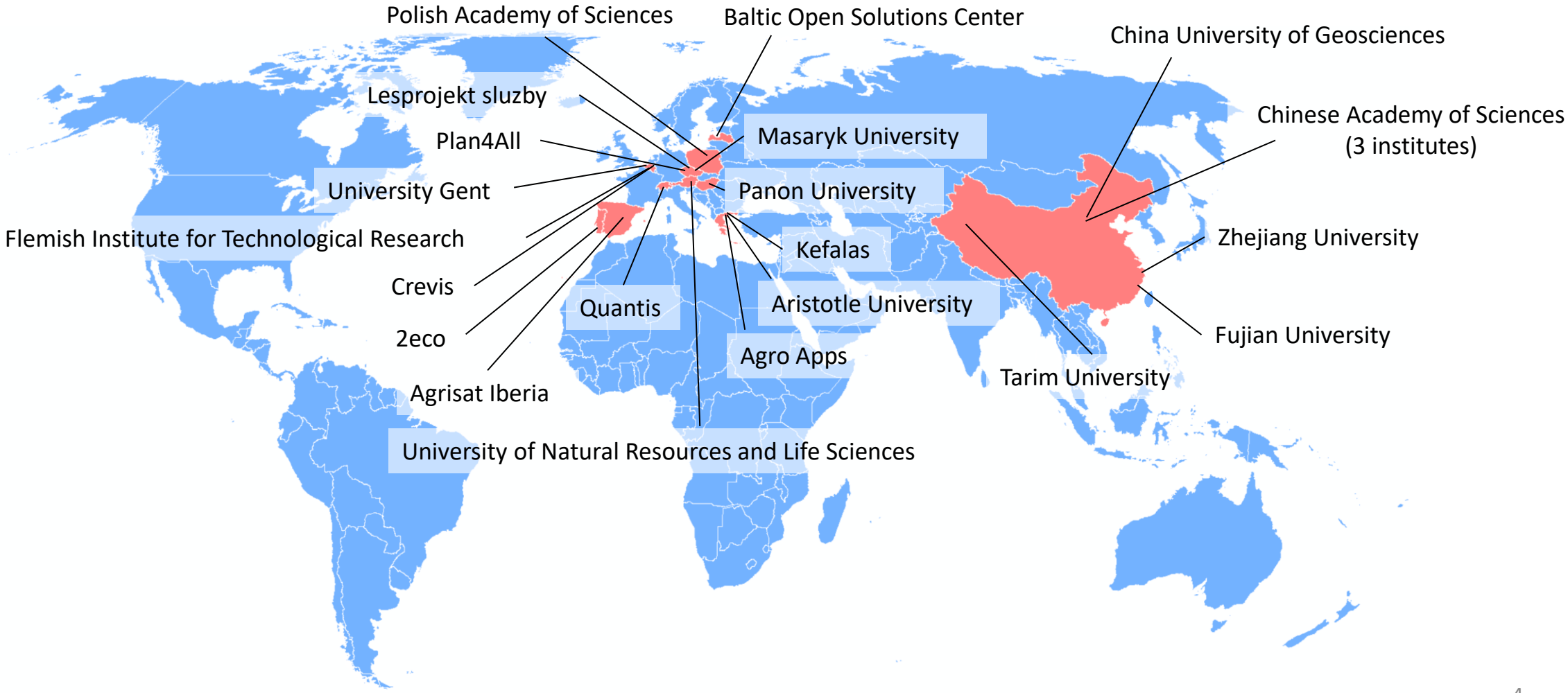
Basic project details

- Flagship EU Research & Development Horizon 2020 projects
  - Addresses identical environmental challenges common in China and Europe
  - Design, implement and test a shared China-EU Web Observatory platform that will provide Open Linked Data to **monitor status and threats of soil** and assist in decision making for sustainable support of **agroecosystem functions**, in view of the projected climate change

- Funded between 2019 and 2022 (36 months)
  - Project started on 1 June 2019
  - European budget 5 mil. €
  - Chinese budget 12.1 mil. CNY (about 1.5 mil. €)

- Leaders
  - Dimitrios MOSHOU, Aristotle University, Greece (SIEUSOIL coordinator)
  - Ganlin ZHANG, Chinese Academy of Sciences, China (Chinese coordinator)
  - Tomáš ŘEZNÍK, Masaryk University, Czech Republic (technical coordinator)

Participating partners



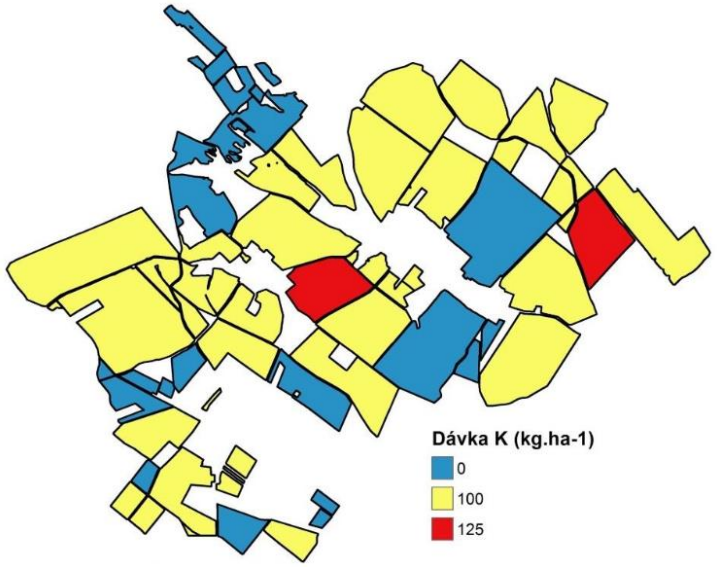
FAO (GLOSIS) and SIEUSOIL Partneship

- Win-win situation when combing Food and Agriculture Organisation of the United Nations (FAO) and SIEUSOIL efforts
  - A data model suitable for soil data around the world
    - Should become also a new version of ISO 28258
    - Backwards compliant mapping to soil data published under the INSPIRE Directive
  - SIEUSOIL can also provide testing for the newly developed data model in the following periods
  - Negotiations on Memorandum of Cooperation between the FAO and SIEUSOIL ongoing

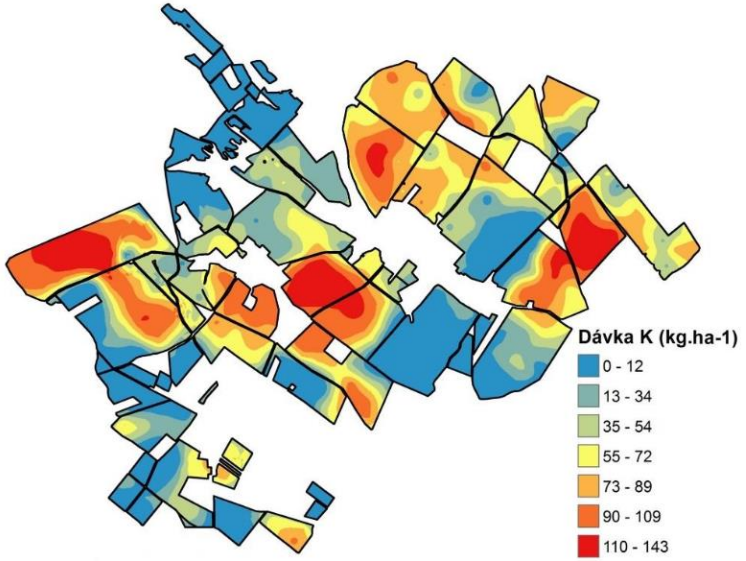
Precision Farming

- Uses variabilities in a field to optimise production inputs
  - fertilizers, pesticides, seeds, fuel, time of employees,…

CONVENTIONAL FARMING

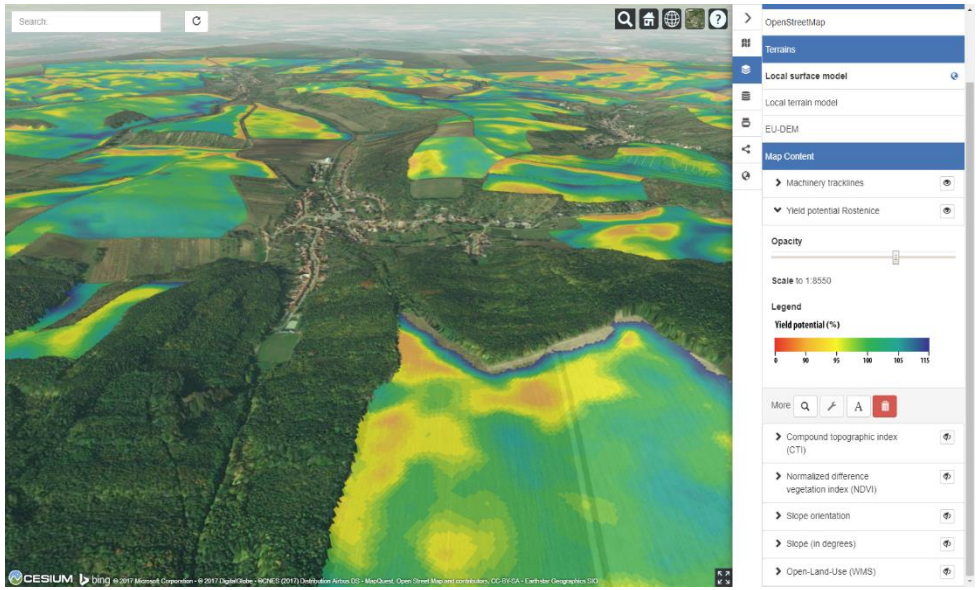


PRECISION FARMING

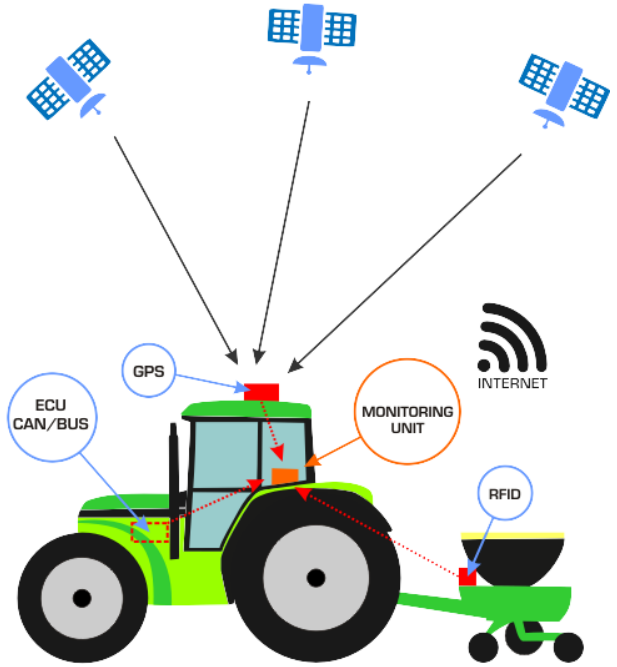


Two main ingredients for our precision agriculture approach

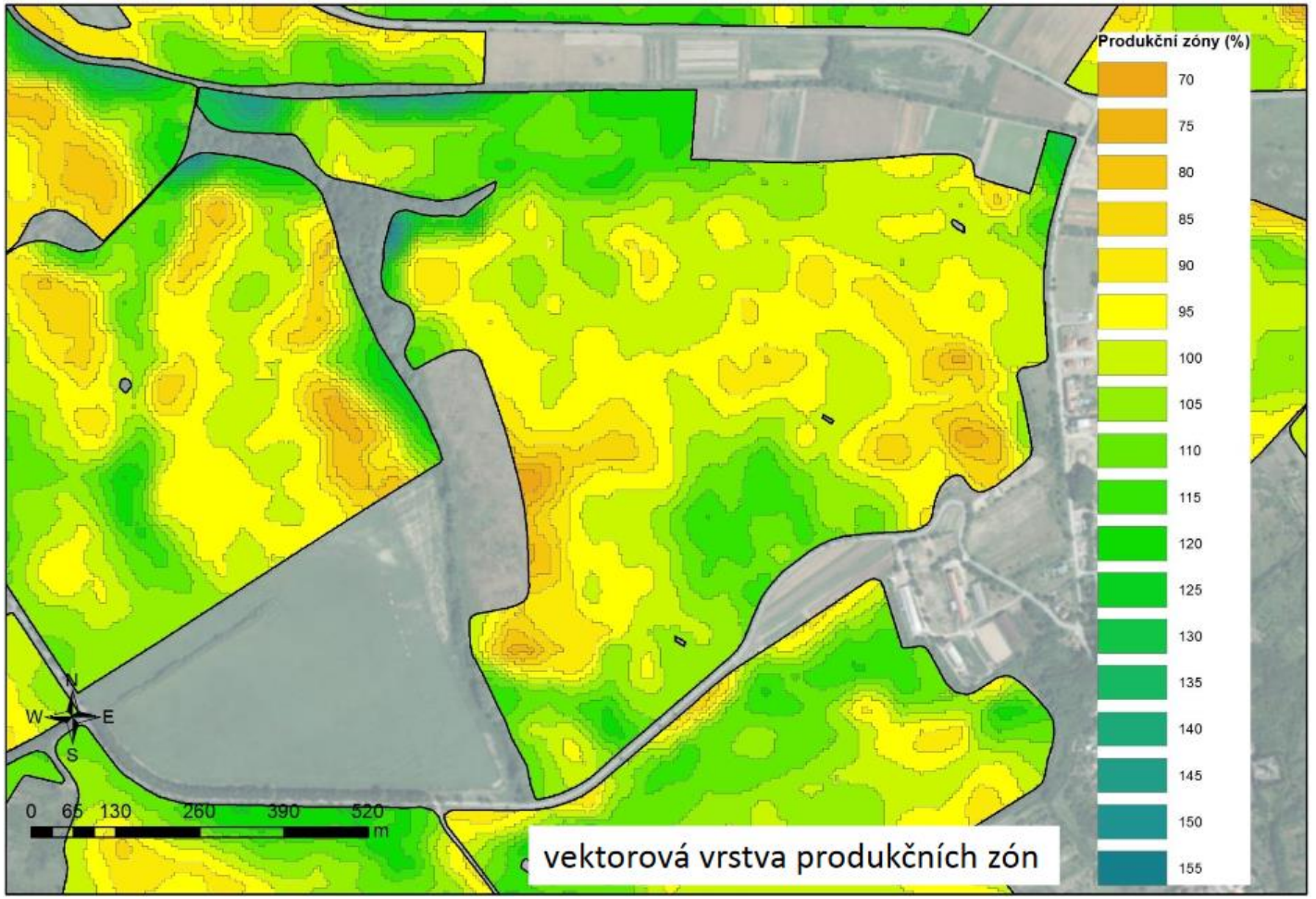
Yield and vulnerability predictions (based on satellite images)



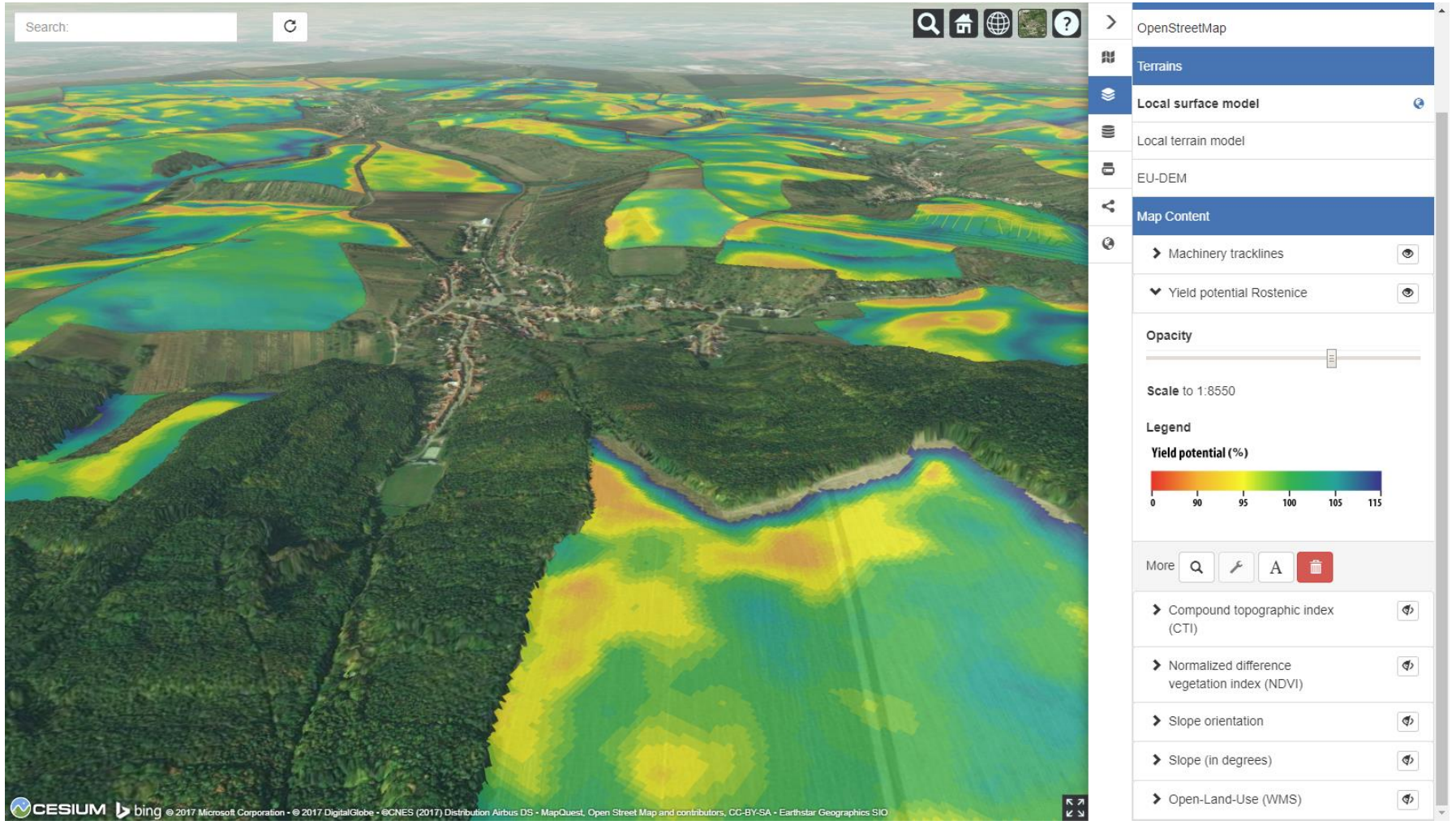
Farm machinery measurements



Predictions: yield and vulnerable areas

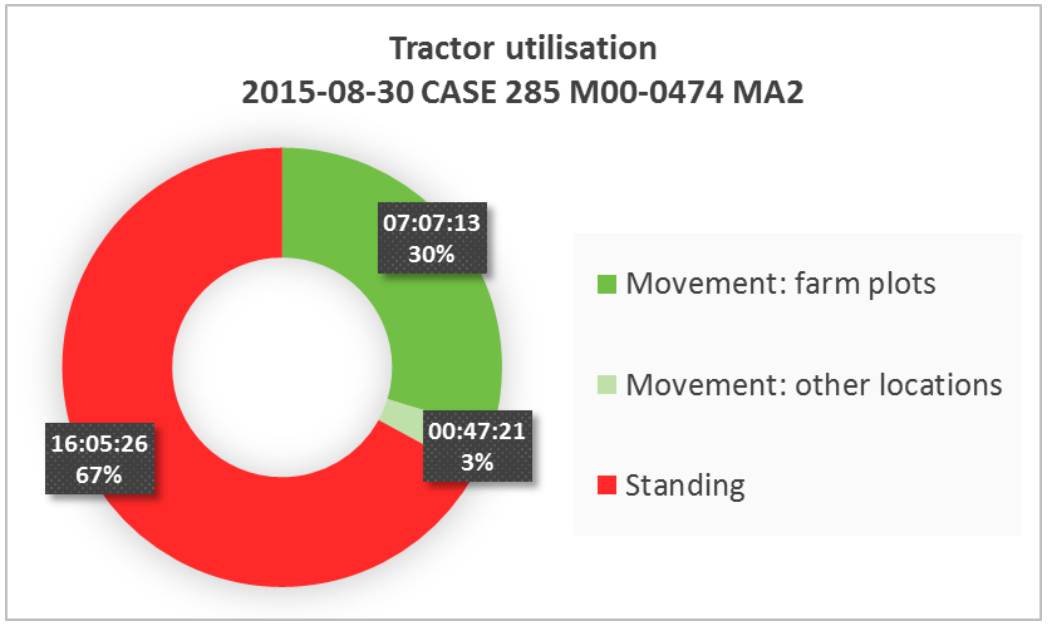


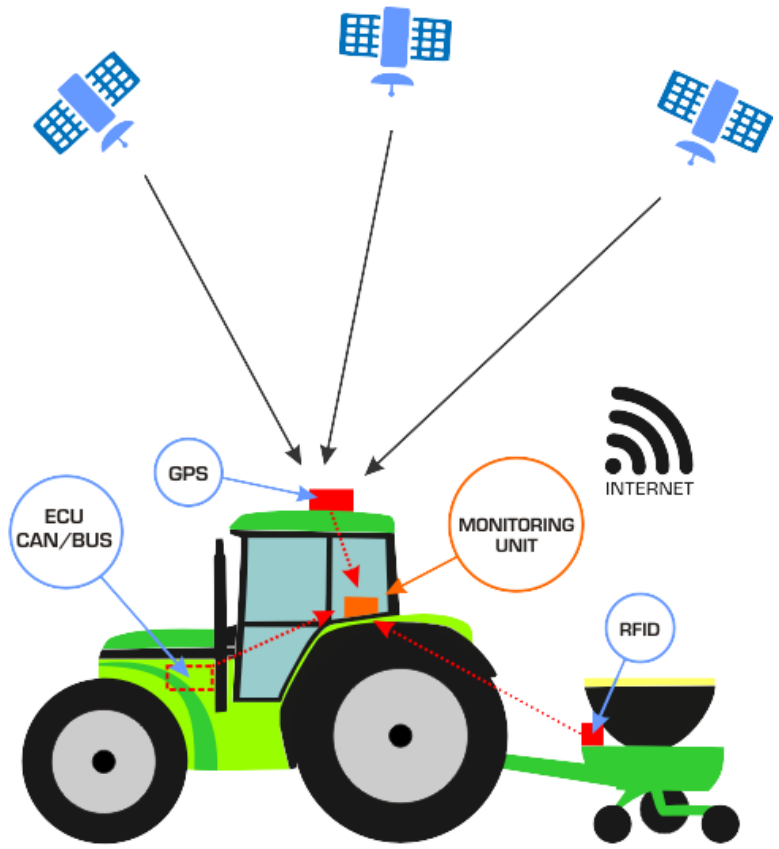
Predictions: yield and vulnerable areas in 3D



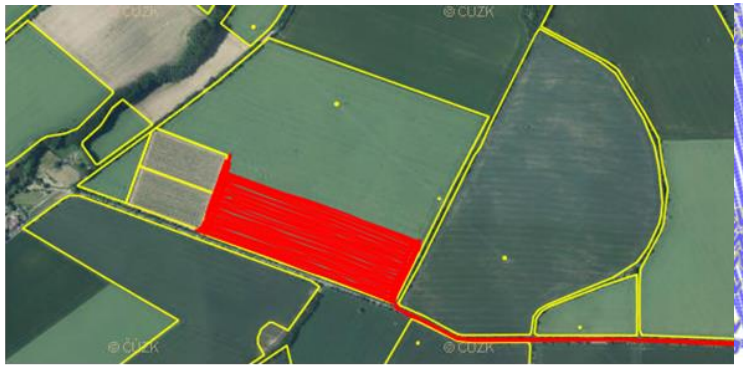
Farm machinery measurements

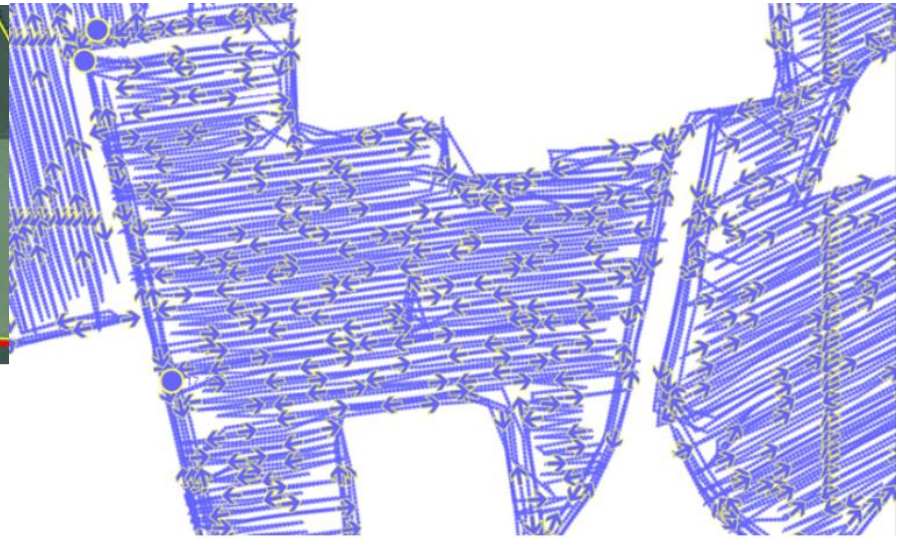
- Each 1´000 ha generates 10 MB of data a day in the Czech Republic
- Continuous monitoring since 2015





Farm machinery measurements



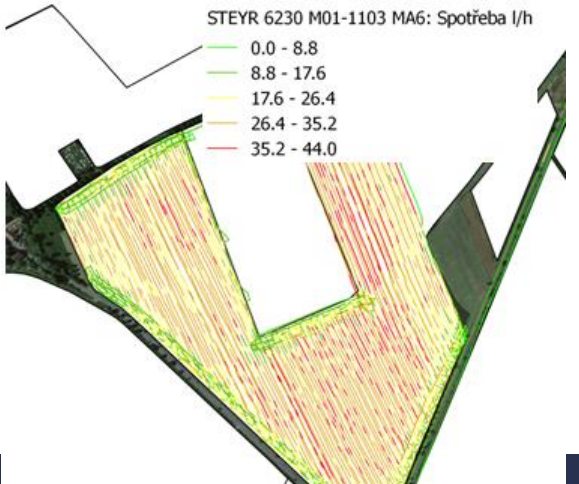


pozemek - měsíční přehled

calendar_year	calendar_month	tractor	equipment	movement_time	consumption_l
2016	7	CASE 340 M01-1049 MA1	Simba X-press	06:53:42	195.5
2016	9	CASE 340 M01-1049 MA1	NA	12:15:53	432.5
2016	9	CASE 340 M01-1049 MA1	podmítač Kockerling	00:58:15	36.1
2016	9	STEYR 6230 M01-1103 MA6	NA	12:51:34	0.0
2016	9	CASE 285 M00-0474 MA2	podmítač Kockerling	08:03:57	0.0

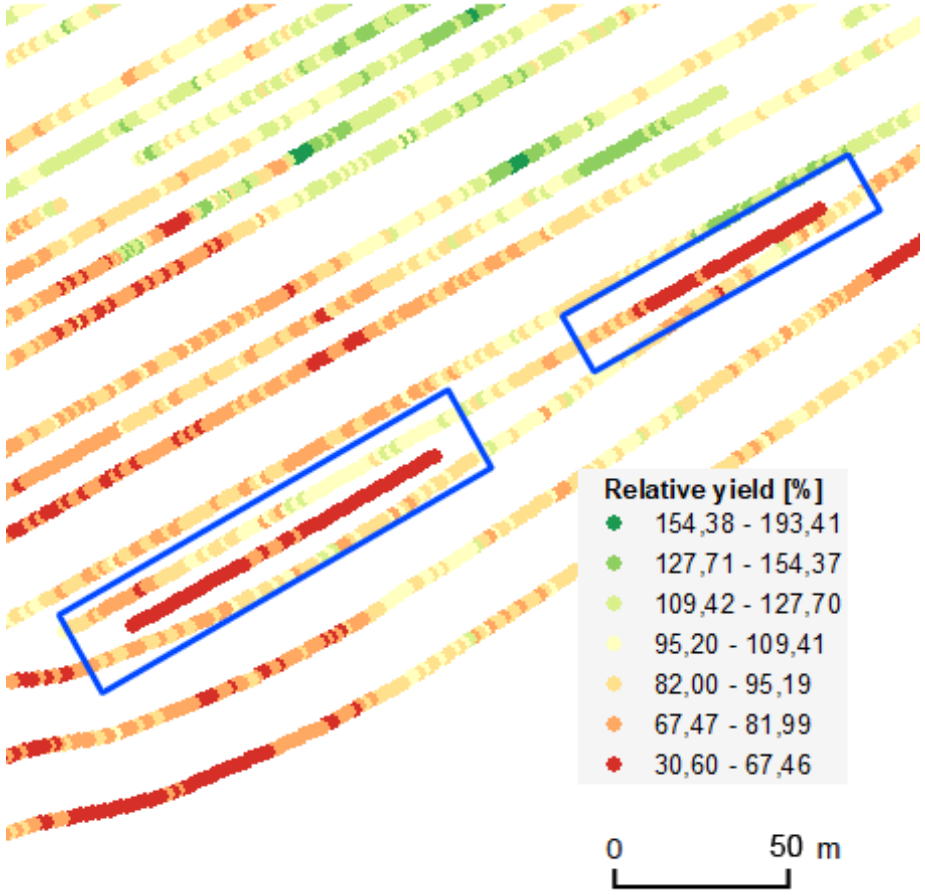
pozemek - denní přehled

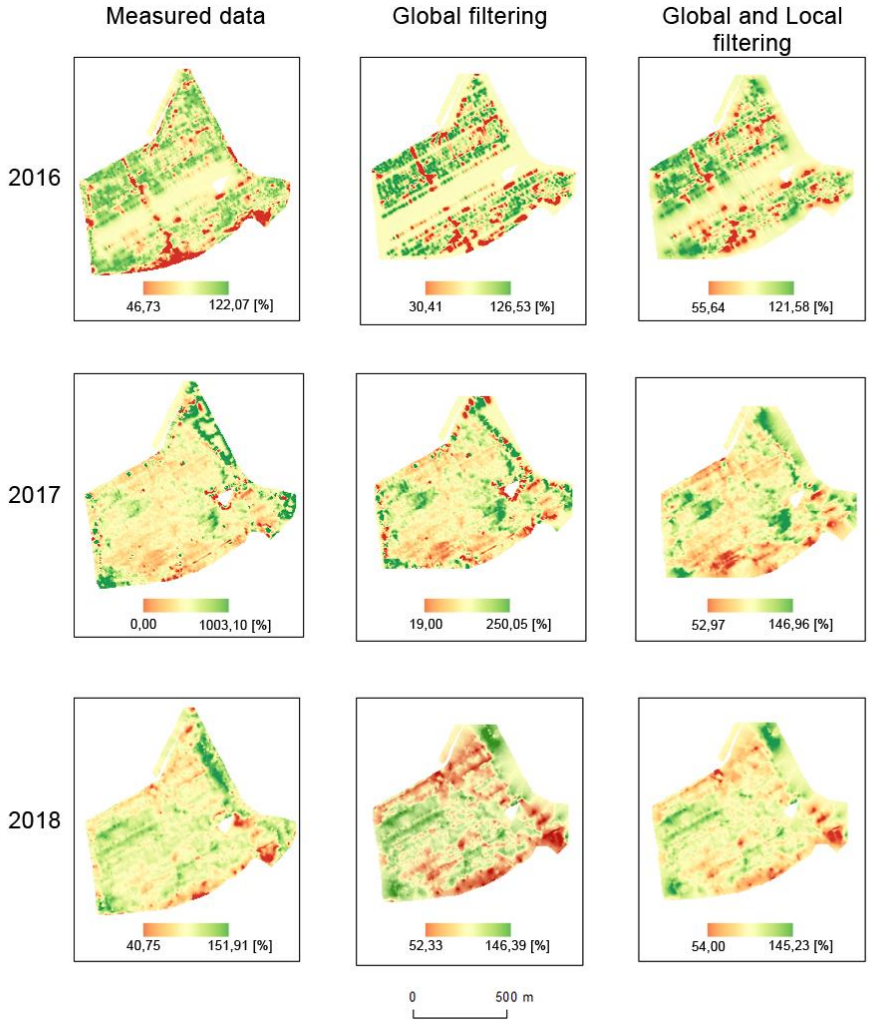
calendar_year	calendar_month	calendar_day	tractor	equipment	movement_time	consumption_l
2016	7	22	CASE 340 M01-1049 MA1	Simba X-press	01:57:38	56.2
2016	7	23	CASE 340 M01-1049 MA1	Simba X-press	04:16:20	122.7
2016	7	24	CASE 340 M01-1049 MA1	Simba X-press	00:39:44	16.5
2016	9	2	CASE 340 M01-1049 MA1	NA	05:00:22	180.1
2016	9	5	CASE 340 M01-1049 MA1	NA	07:15:31	252.3
2016	9	19	CASE 340 M01-1049 MA1	podmítač Kockerling	00:58:15	36.1
2016	9	19	STEYR 6230 M01-1103 MA6	NA	09:19:53	0.0
2016	9	19	CASE 285 M00-0474 MA2	podmítač Kockerling	08:03:57	0.0
2016	9	20	STEYR 6230 M01-1103 MA6	NA	03:31:41	0.0



Visual analytics

Farm machinery measurements

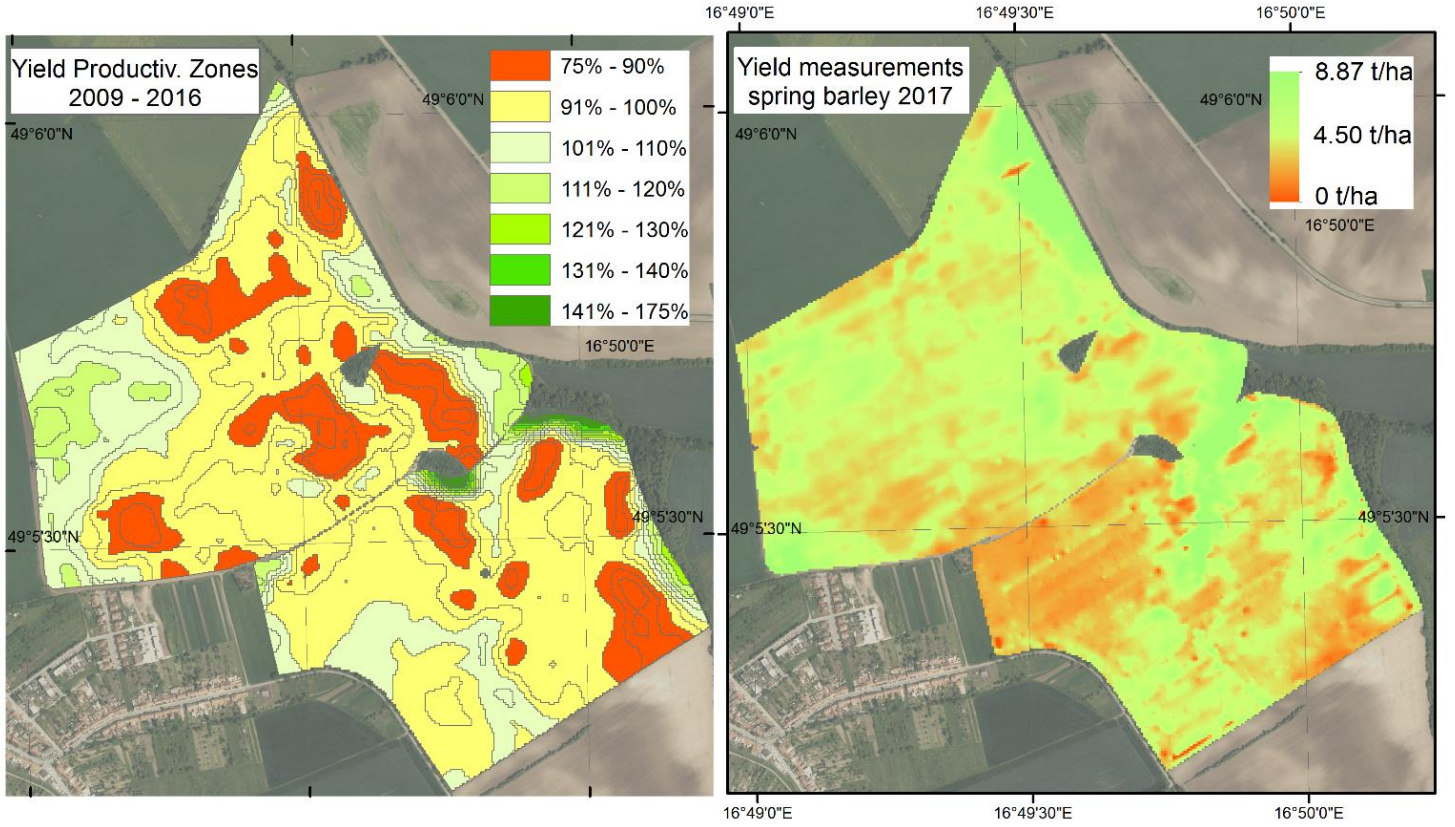




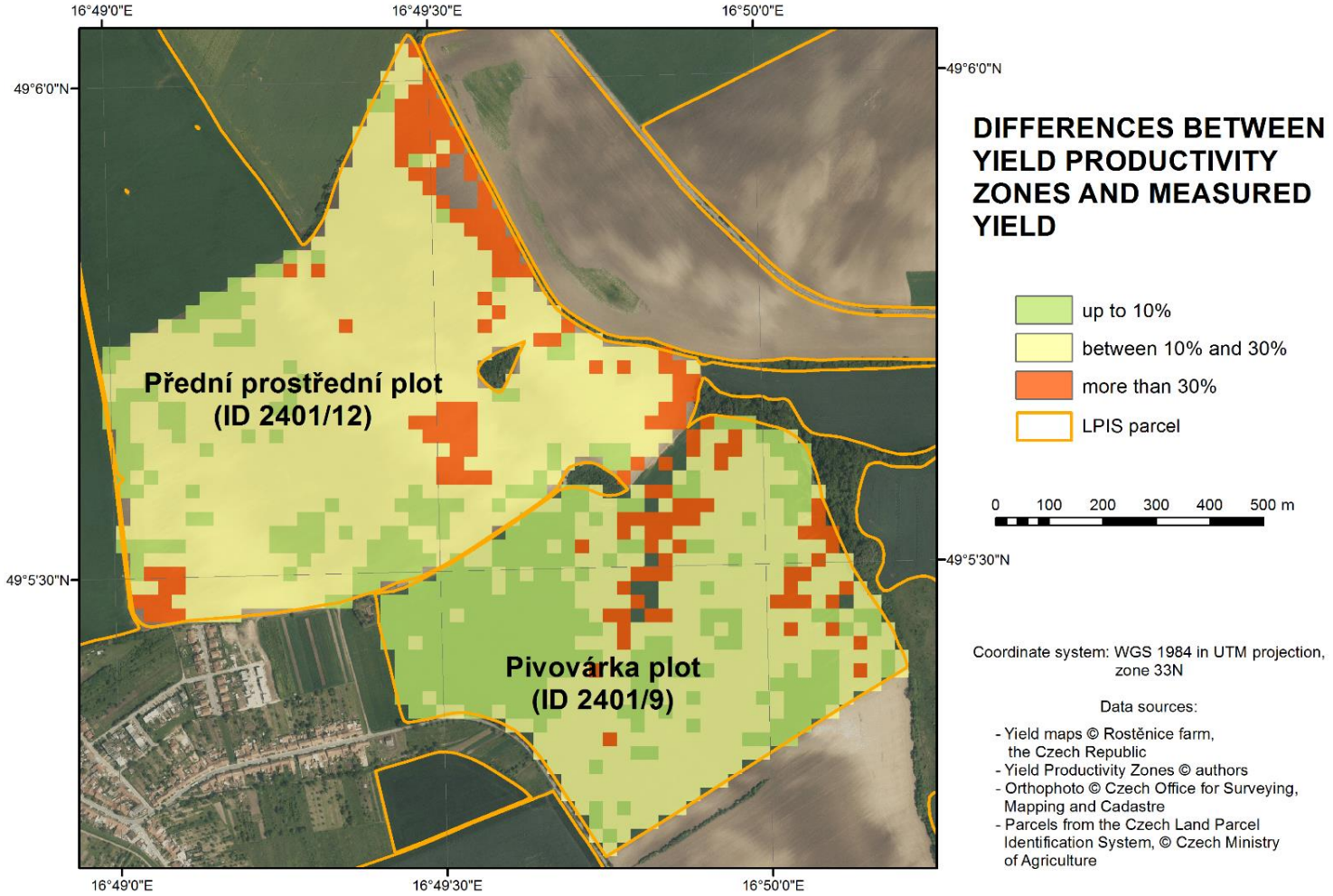
Sucess of our predictions ?

INPUT DATA: YIELD PRODUCTIVITY ZONES AND YIELD MEASUREMENTS

ROSTĚNICE FARM, THE CZECH REPUBLIC



Sucess of our predictions ?



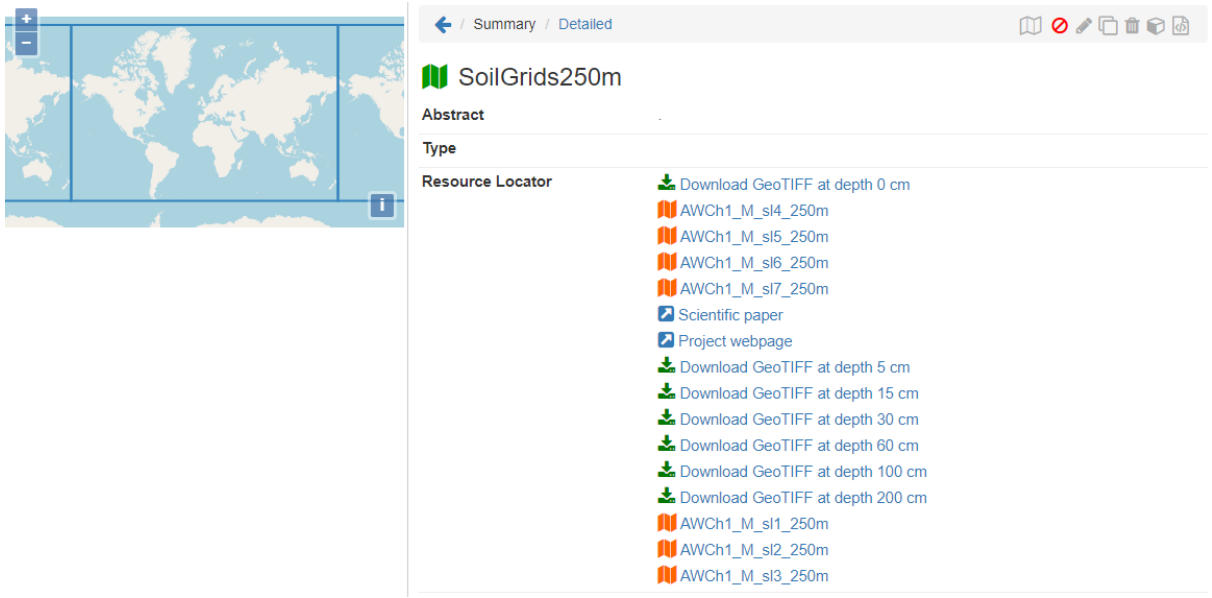
WORKSHOP

Topics for today's SIEUSOIL workshop

- SIEUSOIL high level architecture and its critical review
  - components, their deployment and APIs
- Prime land identification
  - from Open Land Use (OLU) and other information resources
- Controlled Traffic Farming
  - improvement of existing techniques

Topics for today's SIEUSOIL workshop

- Semantic applications
  - which will make sense?



DEVELOPMENT PHASE, WORKING IN TEAMS

Images adopted from: http://jwtaxcpa.com, https://vacuumcomponentsonline.com, modified.

Conclusions

- To be done commonly
  - …

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