# Value in EO Workshop

## Round Table IV: Measuring impacts on innovation & entrepreneurship

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# Focusing on innovation & entrepreneurship

RT IV: Innovation and Entrepreneurship

| | ECONOMIC | ENVIRONMENTAL | REGULATORY | INNOVATION & ENTREPRENEURSHIP | SCIENCE & TECHNOLOGY |
|---|---|---|---|---|---|
| Farming in Denmark | ★★★ | ★★★ | ★★★ | ★★★★★ | ☆ |
| Flood management in Ireland | ★★★ | ★ | ☆ | ★ | ☆ |
| Ice navigation off Greenland | ★★★★ | ★★ | ★ | ☆ | ★★★ |
| Farming in Poland | ★★★ | ★★★ | ★★★ | ★★★★★ | ★ |
| Winter navigation in the Baltic | ★★★★★ | ★ | ★ | ☆ | ☆ |
| Forestry management in Sweden | ★★★ | ★ | ★★★★★ | ★★ | ★★ |
| Infrastructure management in the Netherlands | ★★★★ | ★ | ★ | ★★★ | ★ |
| Growing potatoes in Belgium | ★★★ | ★★★ | ★★ | ★★★ | ★★★ |

# Impacts on innovation & entrepreneurship



- **Innovation (product focus)**
  - Adding new innovative products to existing portfolios
  - Making possible new creative business models
  - Improving, extending or enriching existing products in a new fashion
- **Entrepreneurship (business focus)**
  - *Ex novo* commercialisation: Seeding the creation of start-ups
  - Expansion to new markets or territories
  - Introduction of new – or improvement of existing - business models

# Measurements of innovation and entrepreneurship

RT IV: Innovation and Entrepreneurship

| Category | What it can mean | Specific Examples of Indicators | How we measured it |
|---|---|---|---|
| Innovative products | The availability of Sentinels data allowed the creation of new products | New products created thanks to the availability of Sentinel data<br>Number of patents based on use of Sentinels data | Interview with stakeholders<br>Analysis of patents was not performed |
| New business model | New ways of generating income/value, new interaction/transaction pattern | Estimated impact of EO/Sentinel data on new business model | Counterfactual (cost of providing an equivalent service without Sentinel data (e.g. Poland, Ireland) |
| Diversification of business model | Sales-based to subscription-based business model enabled by geo-information service (e.g. Poland) | Estimated loss reduction based on higher selling price of fertiliser | Stakeholders interview |
| Market expansion/internationalisation | Ability to serve clients globally | International markets reached thanks to the global coverage of Sentinel data (e.g. see Irish case, Maldives…) | Service provider accounts; before/after picture |
| *Ex novo* commercialisation | Free and open EO data allowed the creation of start-ups | % of start-ups that were created thanks to the availability of Sentinel data | Survey |

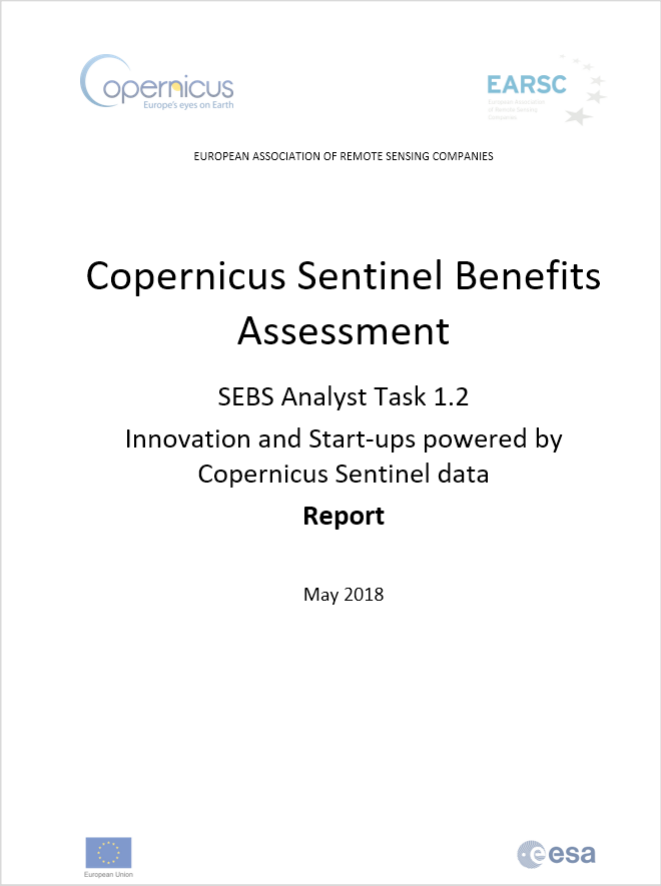
# Measurements of innovation and entrepreneurship



- The core cases provide rich narratives of entrepreneurship in action.
- Examination of the concept at scale requires a different approach

**Study on Copernicus Sentinel-powered Innovation and Start-ups**

**Preliminary report available at:**
http://earsc.org/Sebs/


EUROPEAN ASSOCIATION OF REMOTE SENSING COMPANIES

Copernicus Sentinel Benefits Assessment

SEBS Analyst Task 1.2

Innovation and Start-ups powered by Copernicus Sentinel data

**Report**

May 2018

# What have we done? Study overview



**Study on Copernicus Sentinel-powered Innovation and Start-ups**

- Approach: Exploratory survey focused on Copernicus ecosystem
- Aims: **Characterise** the landscape of Sentinel-based entrepreneurship and innovation, **identify obstacles to commercialisation**
- Key dimensions: business models, entrepreneurial and technological maturity, data exploitation, incentives and challenges

| ~2500 recipients | ~100 respondents | 4 interviews |
|---|---|---|

# What have we learned?

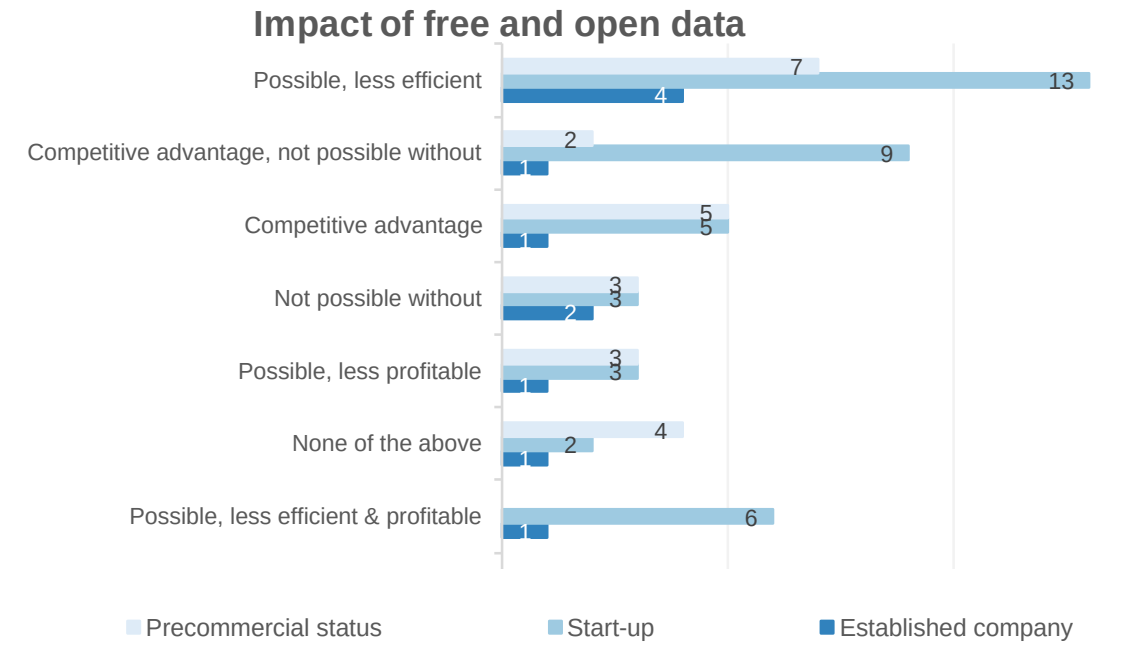


## Impact of Sentinel free and open data

- Most respondents' business models **could continue BUT less efficiently**, without Sentinel data.

**30 start-ups (62%) stated that:**

- Sentinel data provided the basis for their competitive advantage or that
- Their business models would not be possible without Sentinel data.




SatAgro

https://app.satagro.pl/#explorer

SatAgro DASHBOARD FIELDS EXPLORER DIARY HELP Peter Newmann EN

A12

compare

Show field sheet

SHOW ON MAP

Image

Vegetation

RGB image

CHOOSE DATE

27-05-2018

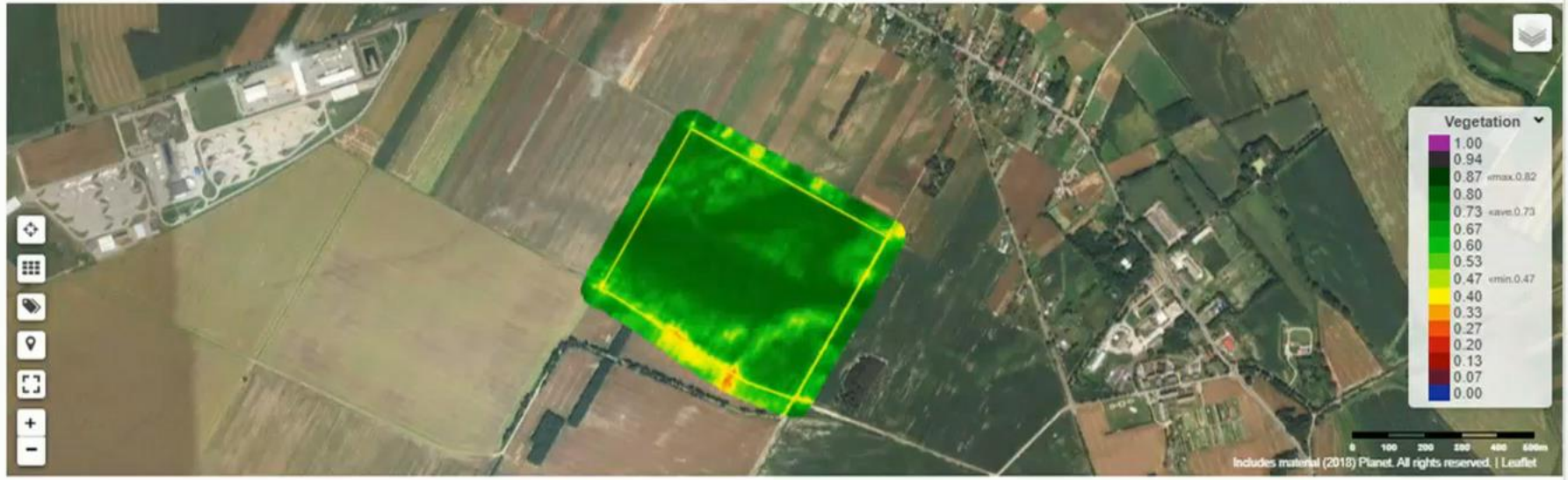
Landsat

Planet

RapidEye

Sentinel2

Create precision treatment




SHOW ON CHART

ADDITIONAL DATA Crop types Snow Alarms Events

Zoom 1m 3m 6m YTD 1y 2y All

Vegetation (EVI)

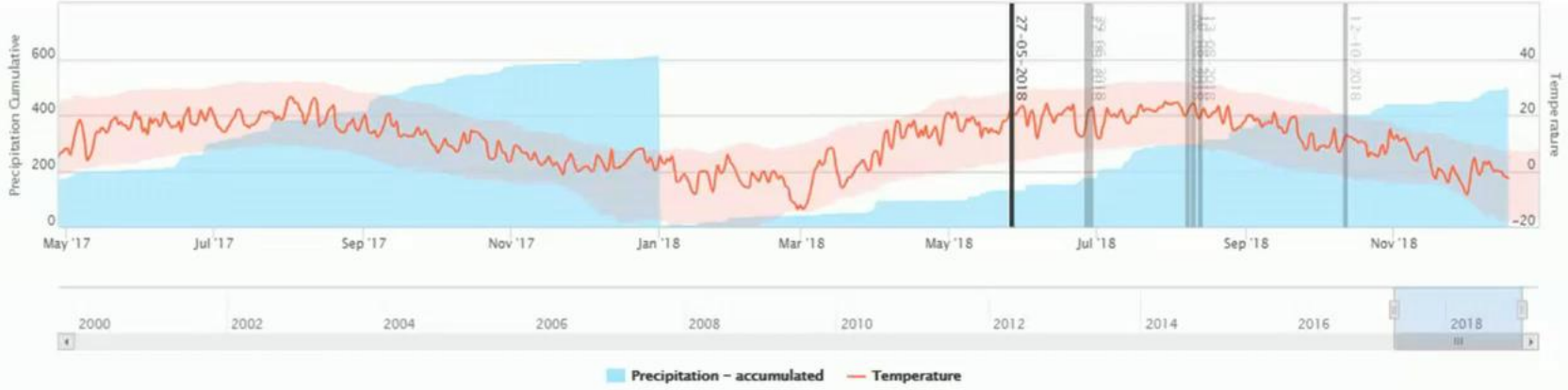
Precipitation cumulative

Temperature

Growing Degree Days (GDD)

Crop based GDD

Precipitation



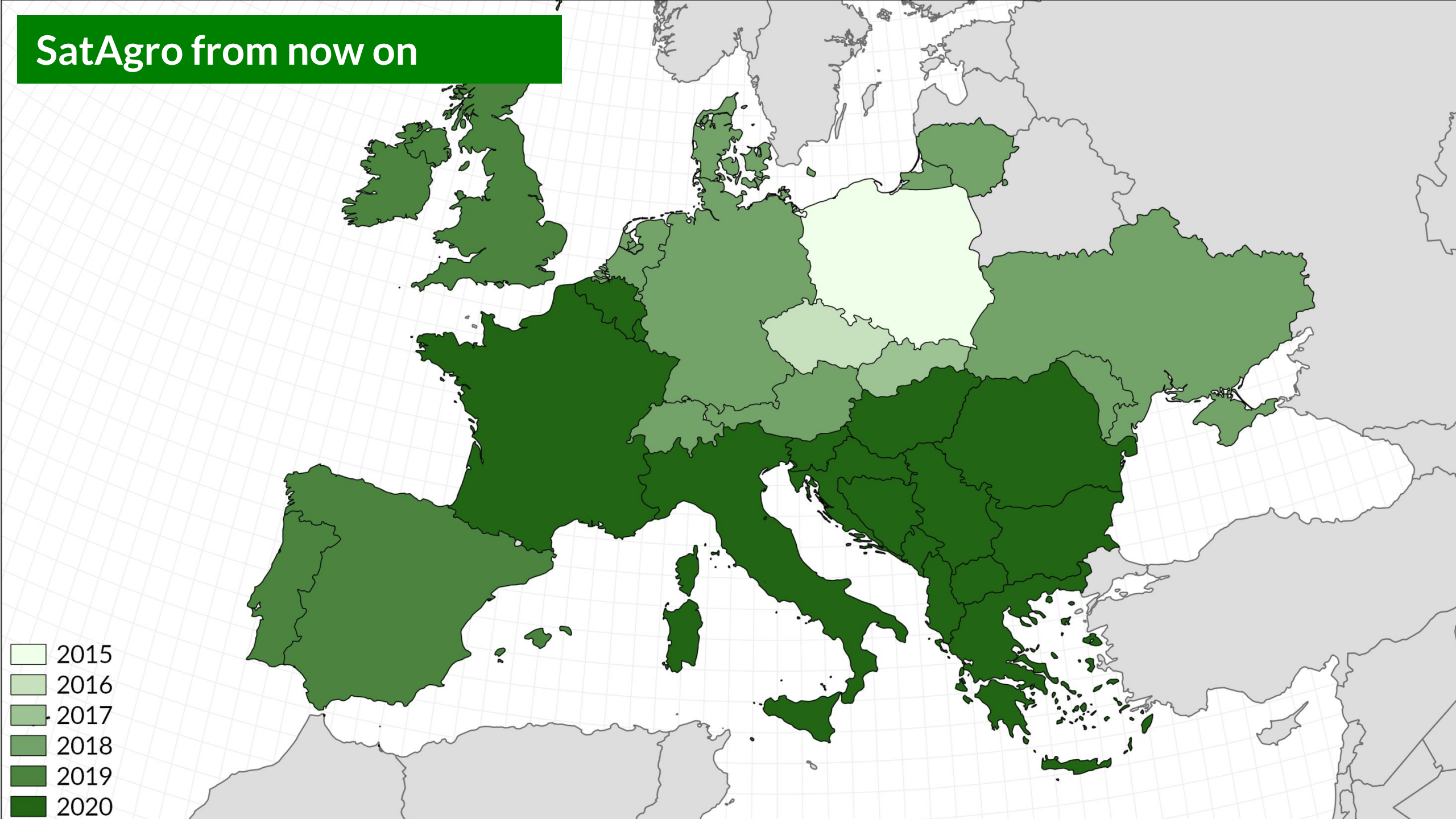
## 2008
**Landsat archive made public**
**Przemek pursues his D. Phil.**

## 2013
**Landsat 8**
**Idea for SatAgro takes shape**

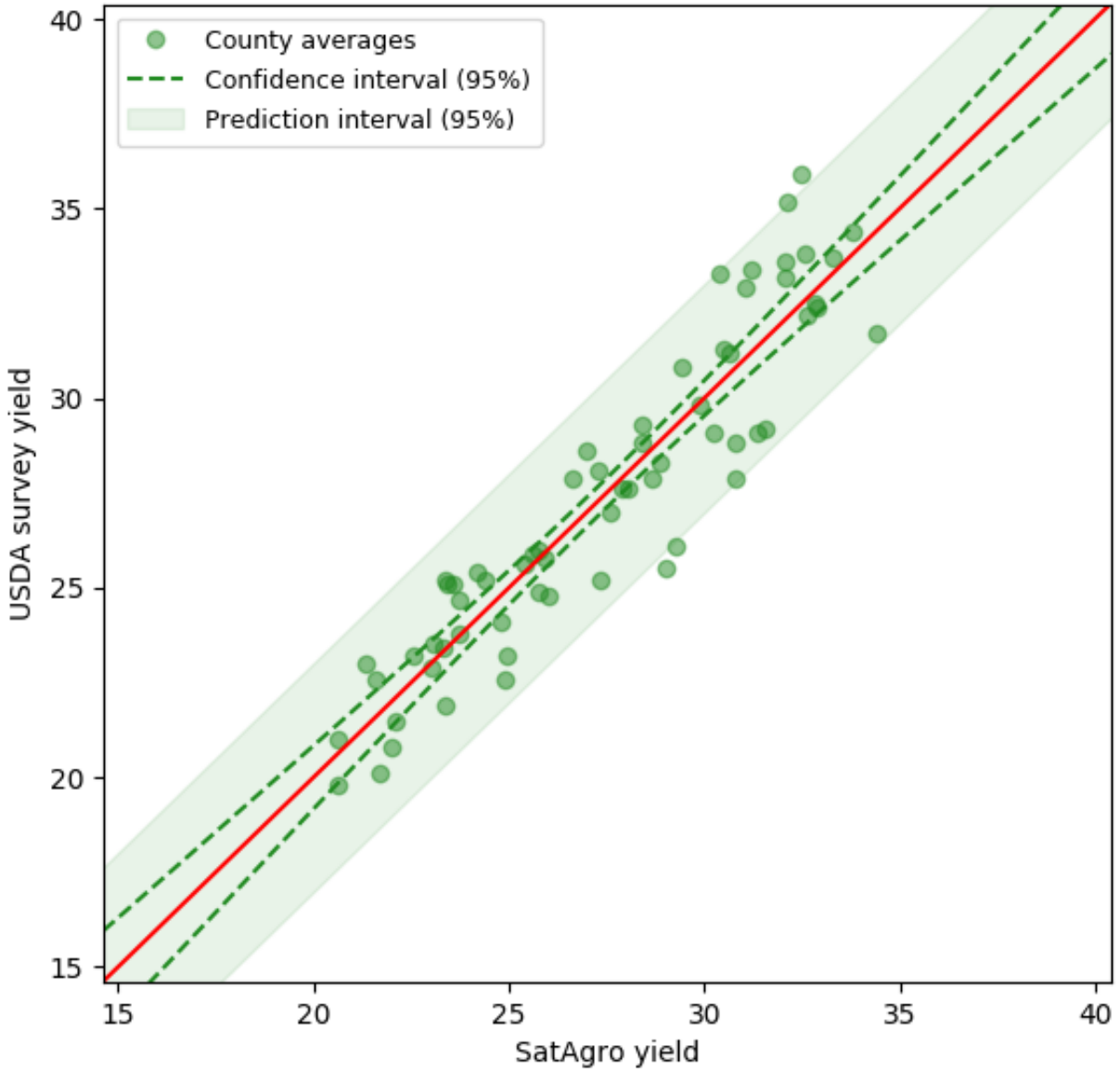
## 2015
**Sentinel-2a**
**SatAgro launches**

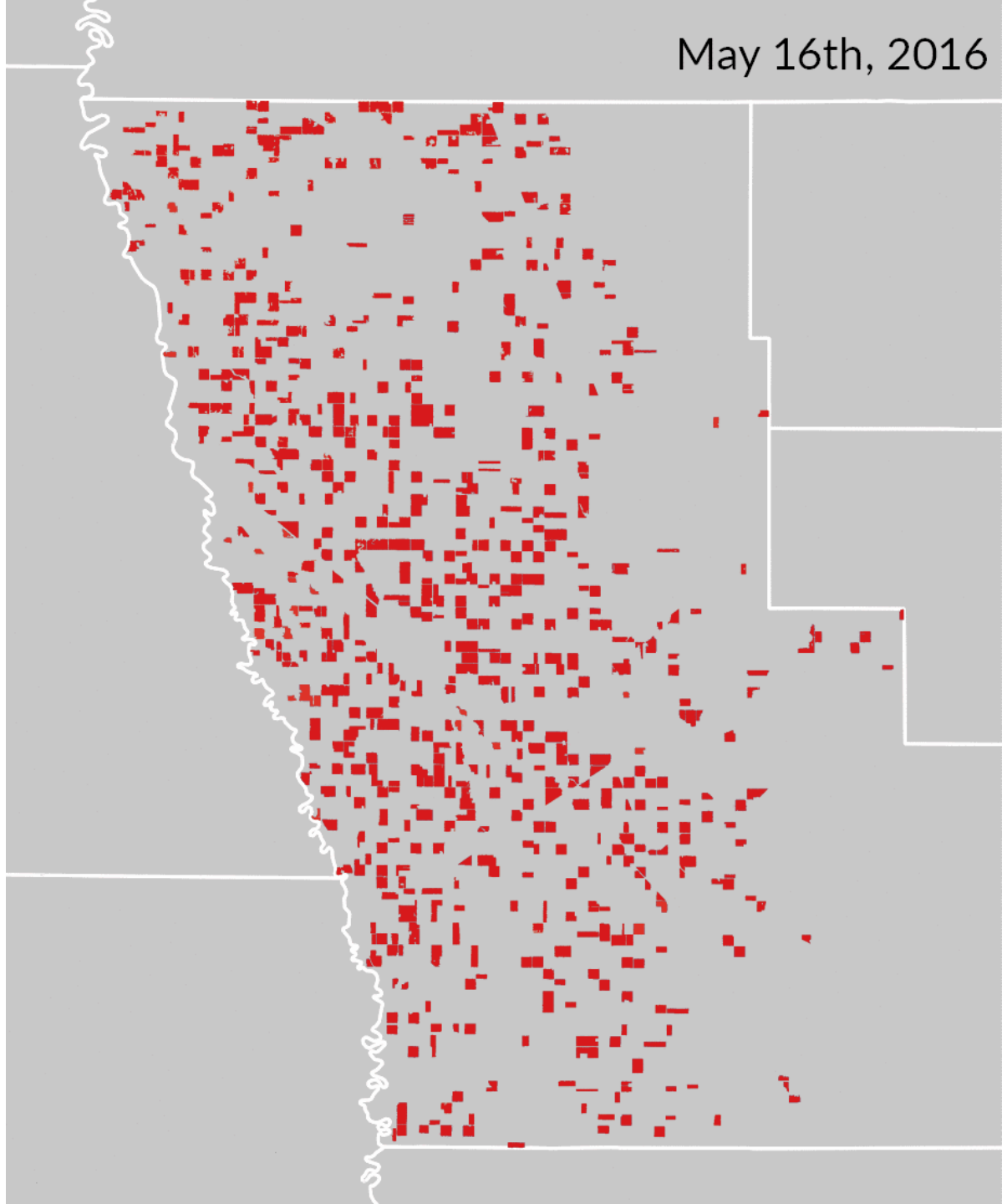

JOHN DEERE
UNIVERSITY OF WARSAW
planet.
THE WORLD BANK
esa
European Investment Bank
grupa azoty
BNP PARIBAS

# SatAgro from now on



# Yield prediction, institutional productivity monitoring



# Limitations and areas for improvement



- Definitions of “innovative” vs simply “new” products and/or business models
- Patents identification and classification is challenging and not exhaustively applicable to data products
- Attributing entrepreneurship to Sentinel data is not necessarily straightforward (esp. outside the known community)

# Proposals for further research



- Extension of survey scope outside “known suspects”
- Explore ways of “systematising” data inputs through collaborative arrangements (e.g. with BICs / Copernicus start-up programme)
- Identification (from core cases) of specific value chain to test extensibility
  - E.g. agricultural services

# Thank you!

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