Satellite Services for Earth-Observation-based statistical information for agriculture

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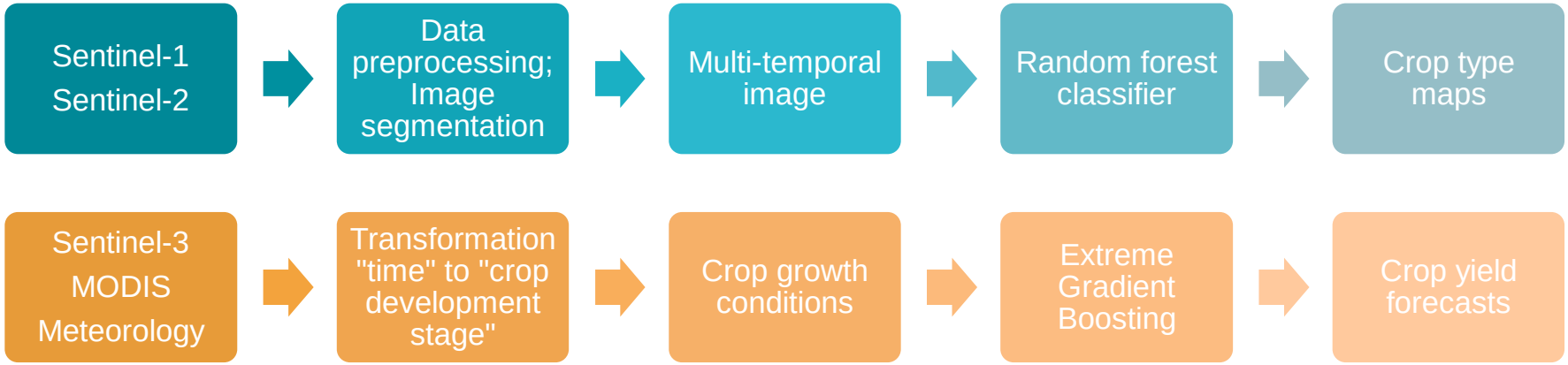
From expert-based to satellite-based assessment

National statistics (in-season forecasts and final estimates)

*Crop production = Acreage for each crop type * yields per ha*



The National Centre for Research and Development

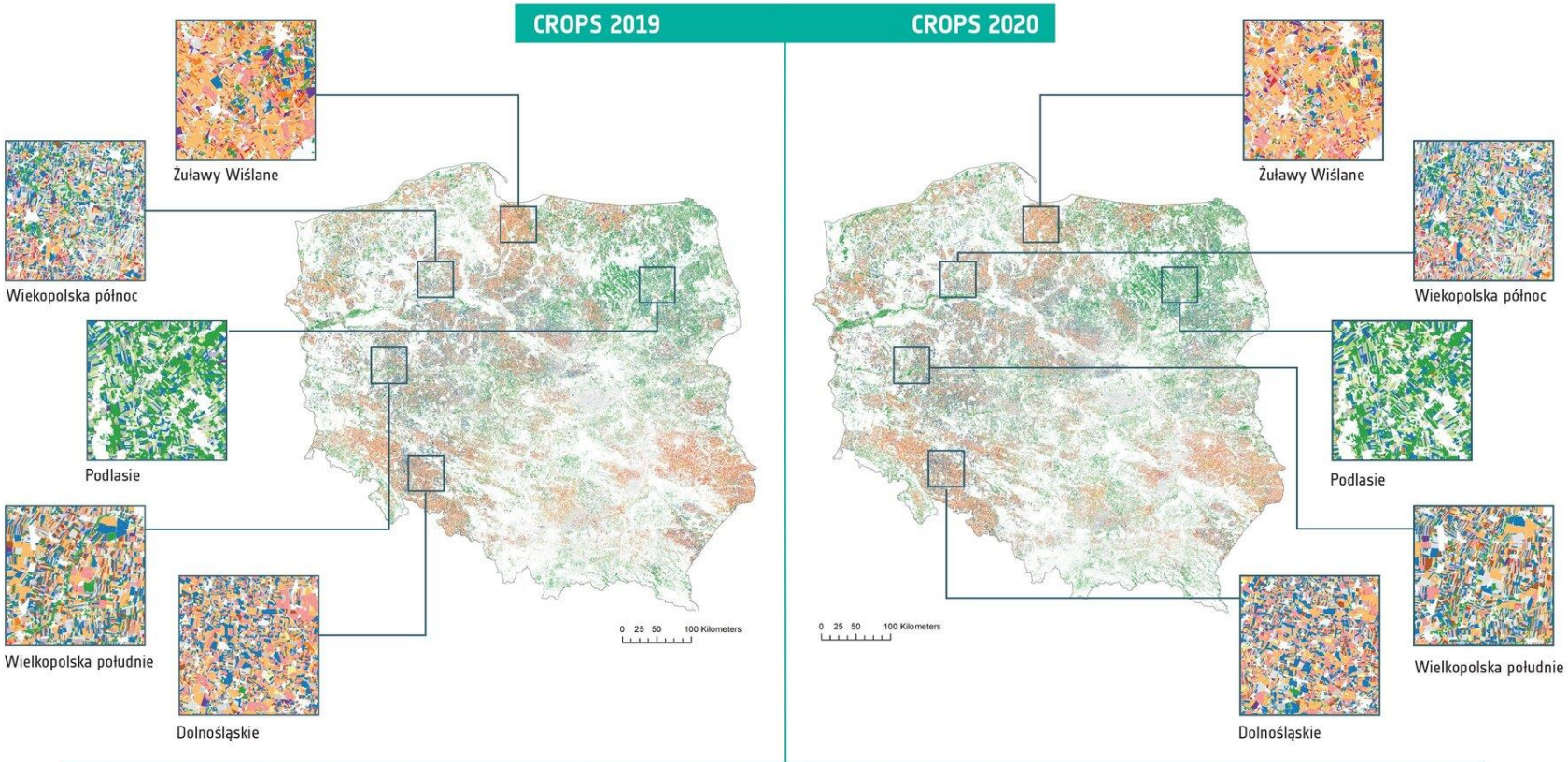
esa

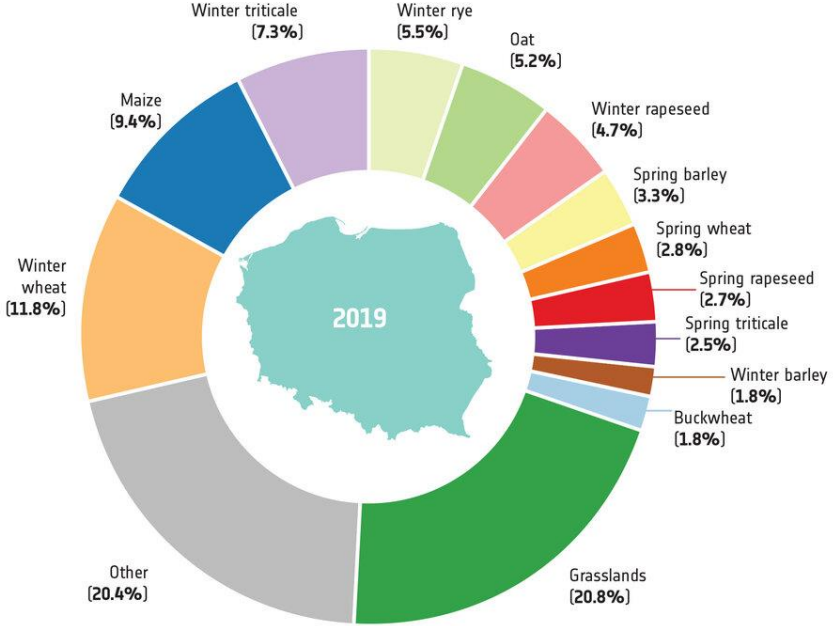
SATMIROL *Satellite identification and monitoring of crops for the purposes of agricultural statistics* (2019-2021)

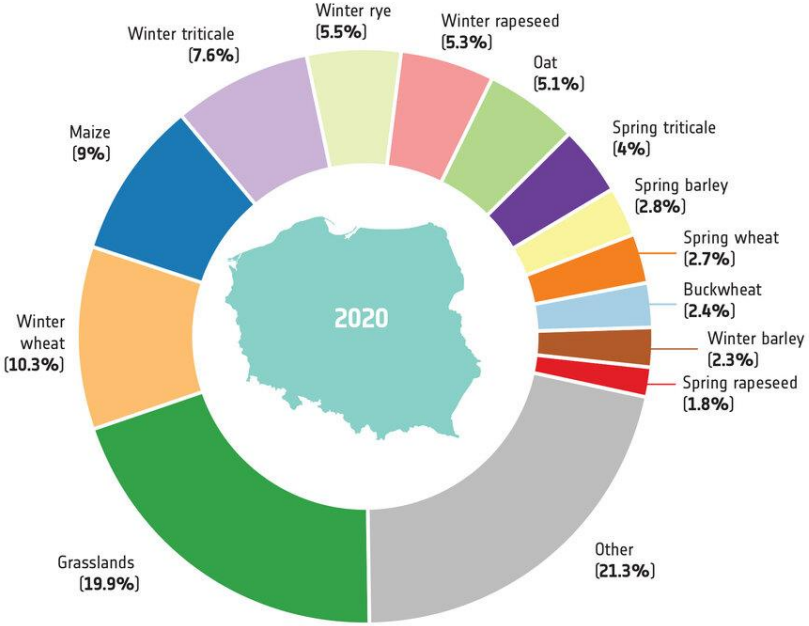
EOStat *Agriculture Poland: Services for Earth Observation-based statistical information for agriculture* (2018-2020)

Performance

- **Crop type maps (F1-score):**
  - overall accuracy: 83%
  - maize: 96%;
  - winter wheat: 87%;
  - spring crops 60-80%.
- **Crop yield forecasts (relative RMSE):**
  - 7% for winter wheat
  - 10% for winter rapeseed
  - 11% for maize

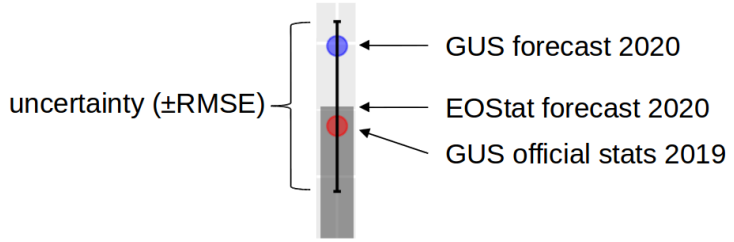

CROPS 2019
CROPS 2020
Żuławy Wiślane
Wiekopolska północ
Podlasie
Wielkopolska południe
Dolnośląskie
0 25 50 100 Kilometers
spring barley
winter barley
spring wheat
winter wheat
spring triticale
winter triticale
spring rapeseed
winter rapeseed
buckwheat
oat
rye
maize
grassland
other

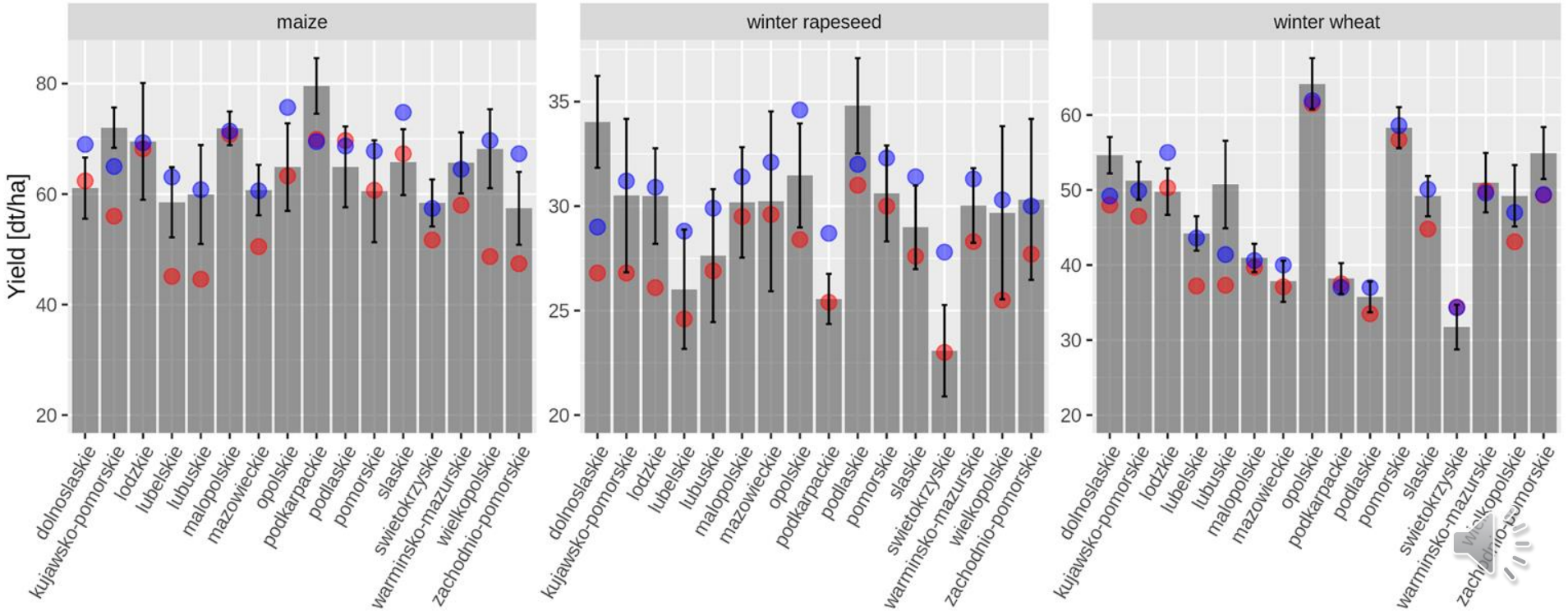

Winter triticale (7.3%)
Winter rye (5.5%)
Oat (5.2%)
Winter rapeseed (4.7%)
Spring barley (3.3%)
Spring wheat (2.8%)
Spring rapeseed (2.7%)
Spring triticale (2.5%)
Winter barley (1.8%)
Buckwheat (1.8%)
Grasslands (20.8%)
Other (20.4%)
Winter wheat (11.8%)
Maize (9.4%)
2019


Winter triticale (7.6%)
Winter rye (5.5%)
Winter rapeseed (5.3%)
Oat (5.1%)
Spring triticale (4%)
Spring barley (2.8%)
Spring wheat (2.7%)
Buckwheat (2.4%)
Winter barley (2.3%)
Spring rapeseed (1.8%)
Other (21.3%)
Grasslands (19.9%)
Winter wheat (10.3%)
Maize (9%)
2020

Crop types

Yield forecasts 2020
(NUTS-2 & LAU-2 levels)





Official Agriculture Statistics with Sentinel Data

esa

Users

WHAT DOES IT TAKE?

Technical Implementation Team

ARiMR — The Agency for Restructuring and Modernisation of Agriculture (ARMA)

GUS — The Central Statistical Office (CSO)

CBK PAN — Space Research Center

IGiK — Institute of Geodesy and Cartography

DATA AT GLANCE

14,7 million ha
of land under agriculture production

1.5 million
of agriculture holdings

10 million
of individual parcels

12 days
of processing on CreaoDIAS computing infrastructure for 2019 and 2020 season

18 Terrabytes
of Sentinel 1 and 2 data used

23
types of crops classified (for ARMA)

13
types of crops classified (for CSO)