

StatEO

5-7 May 2026 | ESA-ESRIN | Frascati (Rome), Italy



WorldCereal



Operational Crop Mapping
at Scale:

How ESA WorldCereal
Supports Agricultural
Statistics

Jeroen Degerickx



Consortium:



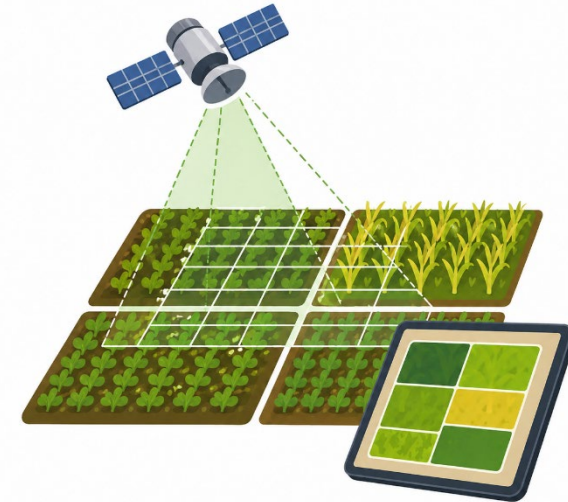
Two imperfect worlds...

Rigorous, Timely, Spatially detailed information on crop type distributions.



✓ **Statistically sound**

- Labor-intensive
- Spatial gaps
- Takes time



✓ **Full spatial coverage**
✓ **Fast**

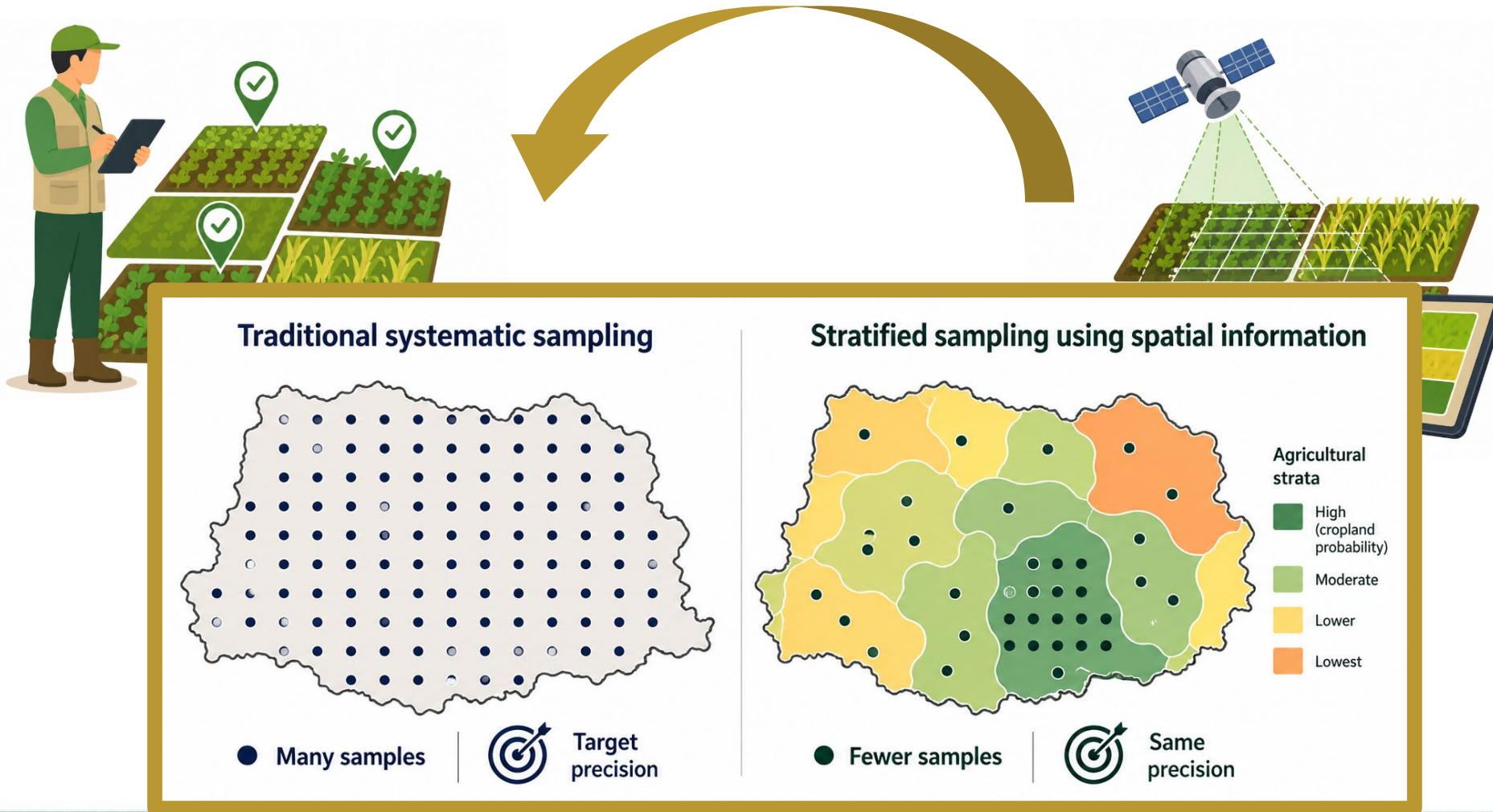
- Not statistically sound
- Specific skills needed
- Needs relevant training data



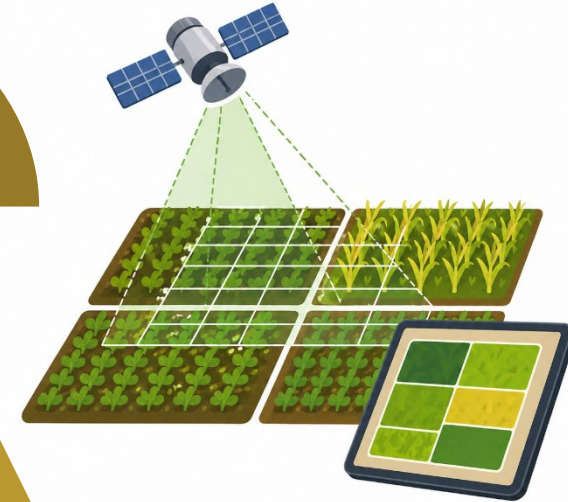
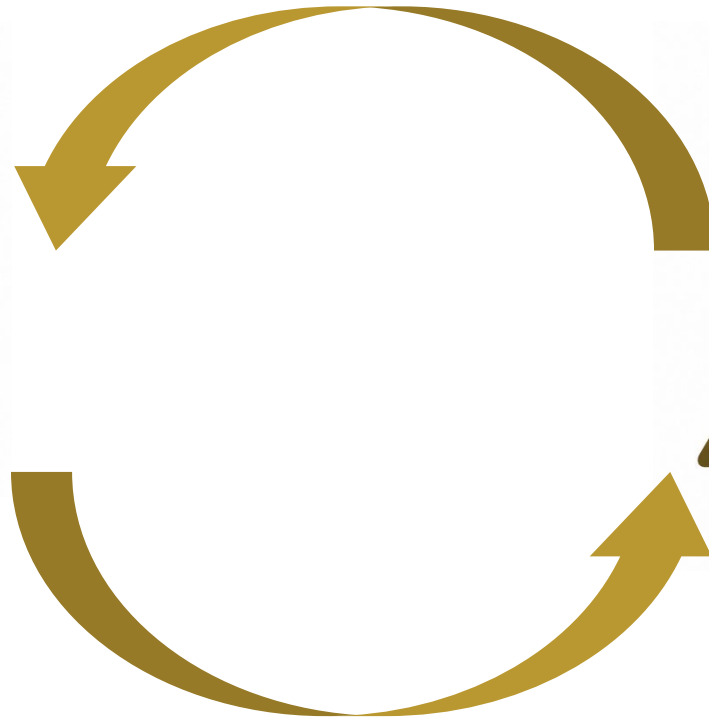
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... being brought together!

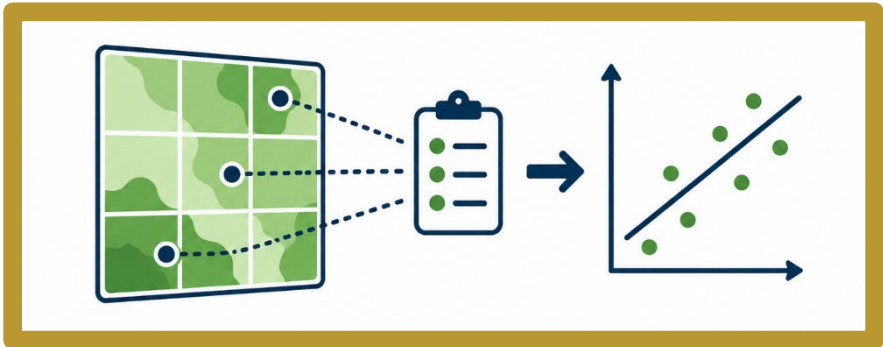
Optimize survey design using prior information!



... being brought together!



Feed training data

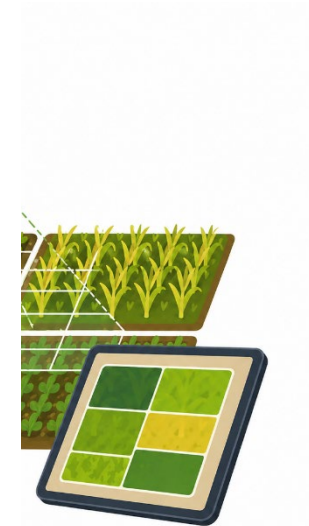
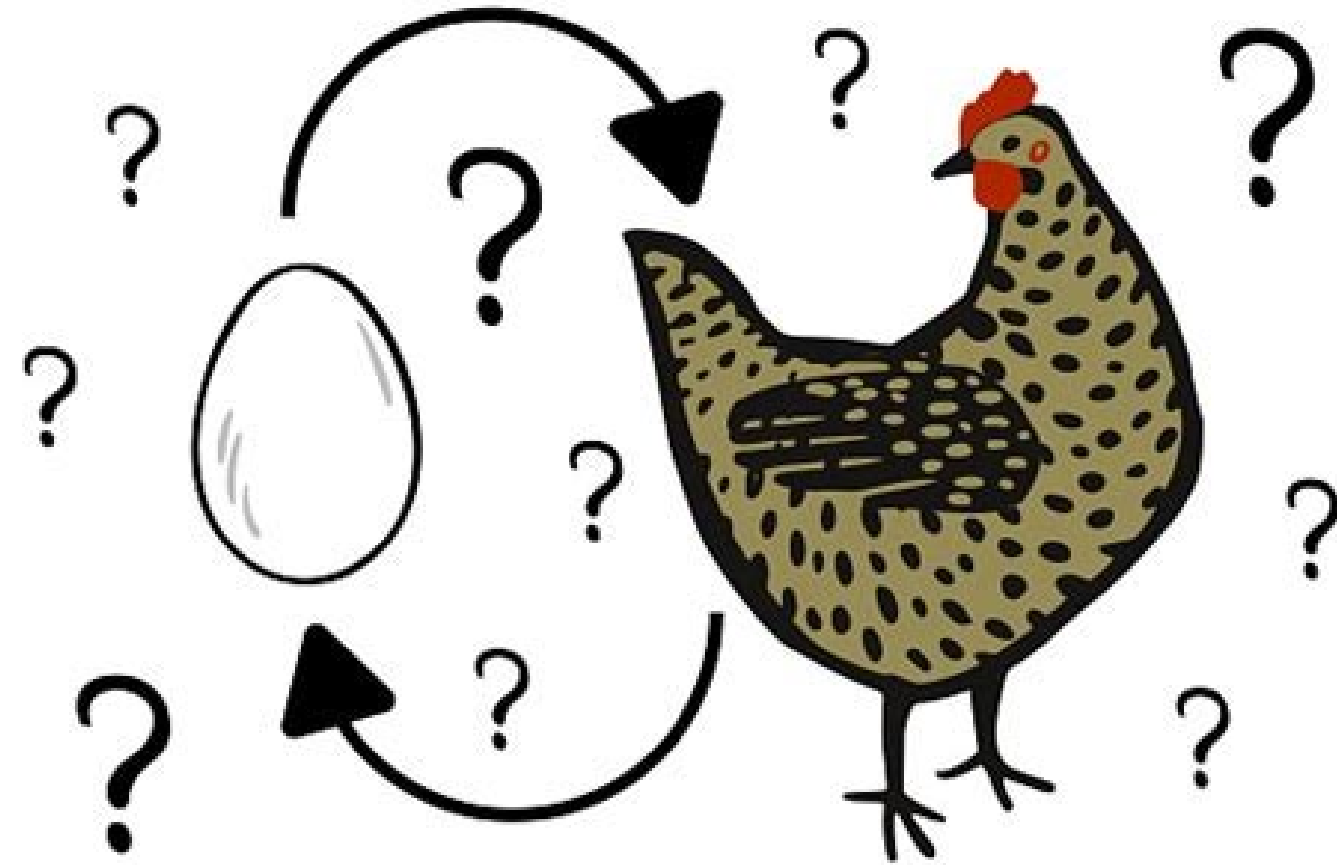
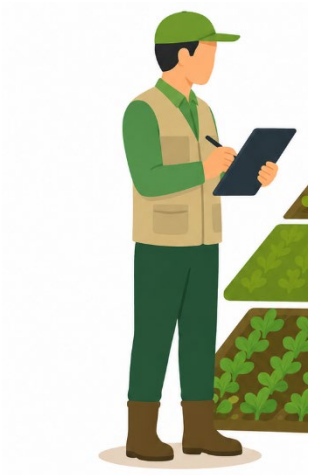


Use statistics to correct map-based area estimates



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... being brought together!



Needs stratification!

Needs training data!

What should be the starting point for NSO's?

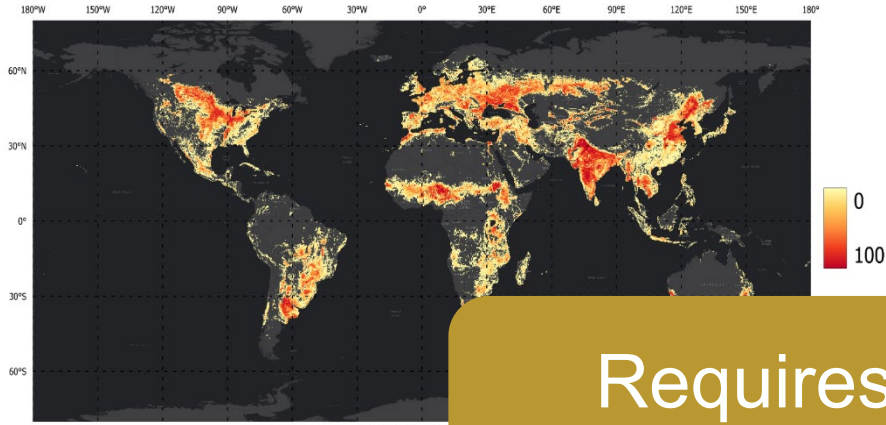


WorldCereal

Introducing WorldCereal

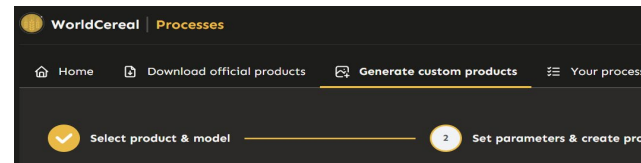


Ready-to-use global cropland and crop type products for 2021 and **2024**

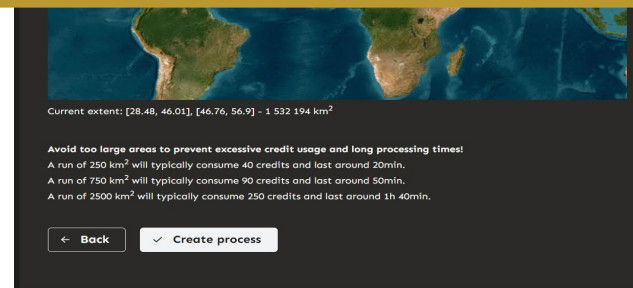


WorldCereal global temporary cropland

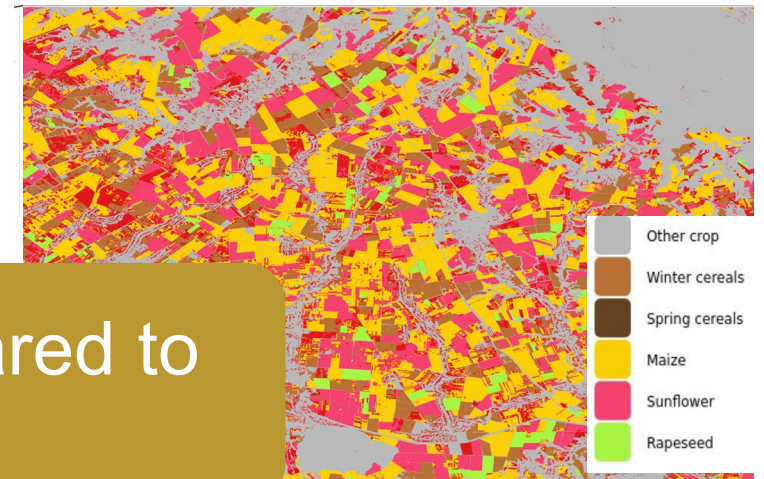
Global crop models applicable anywhere



Requires less training data compared to traditional approaches!



Fully customizable crop mapping system



Train and apply models for your region, season and crops of interest!

<https://esa-worldcereal.org/en>



WorldCereal



→ THE EUROPEAN SPACE AGENCY

Harmonized reference data ready to go!



<https://rdm.esa-worldcereal.org/>

Online course →



121	Geo-Quest and WorldCereal: From in-situ data to EO-driven crop maps	Uliveto meeting room C	May 6 th 2:30pm-4:00pm
256	Standardised Reference Data Framework for Global Crop Mapping and Agricultural Statistics	Big Hall	May 6 th 3:50pm - 4:00pm



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Easily integrate your (private!) data



Dataset Upload

Note on data privacy:

After a successful upload, your dataset will remain fully private by default and will not be shared with anyone. You will have the option to share your data with the WorldCereal consortium or make it fully public later.

Upload File

Supported file formats: (geopackage[.gpkg] / zipped shapefiles[.zip] / geoparquet / parquet).



Upload a file
or drag and drop file
file up to 100Mb

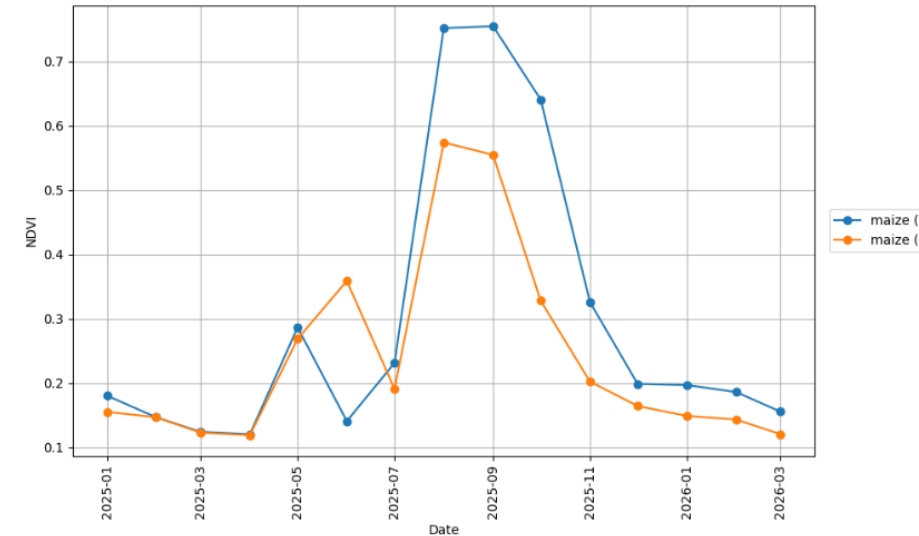
Note: The uploaded file should contain only one layer of vector data. Multiple layers will be rejected.

Identifier

Min 3, max 20 alphanumeric identifier. Refer [dataset naming convention](#) for more information.

Back

Submit



[worldcereal_private_extractions.ipynb](#)

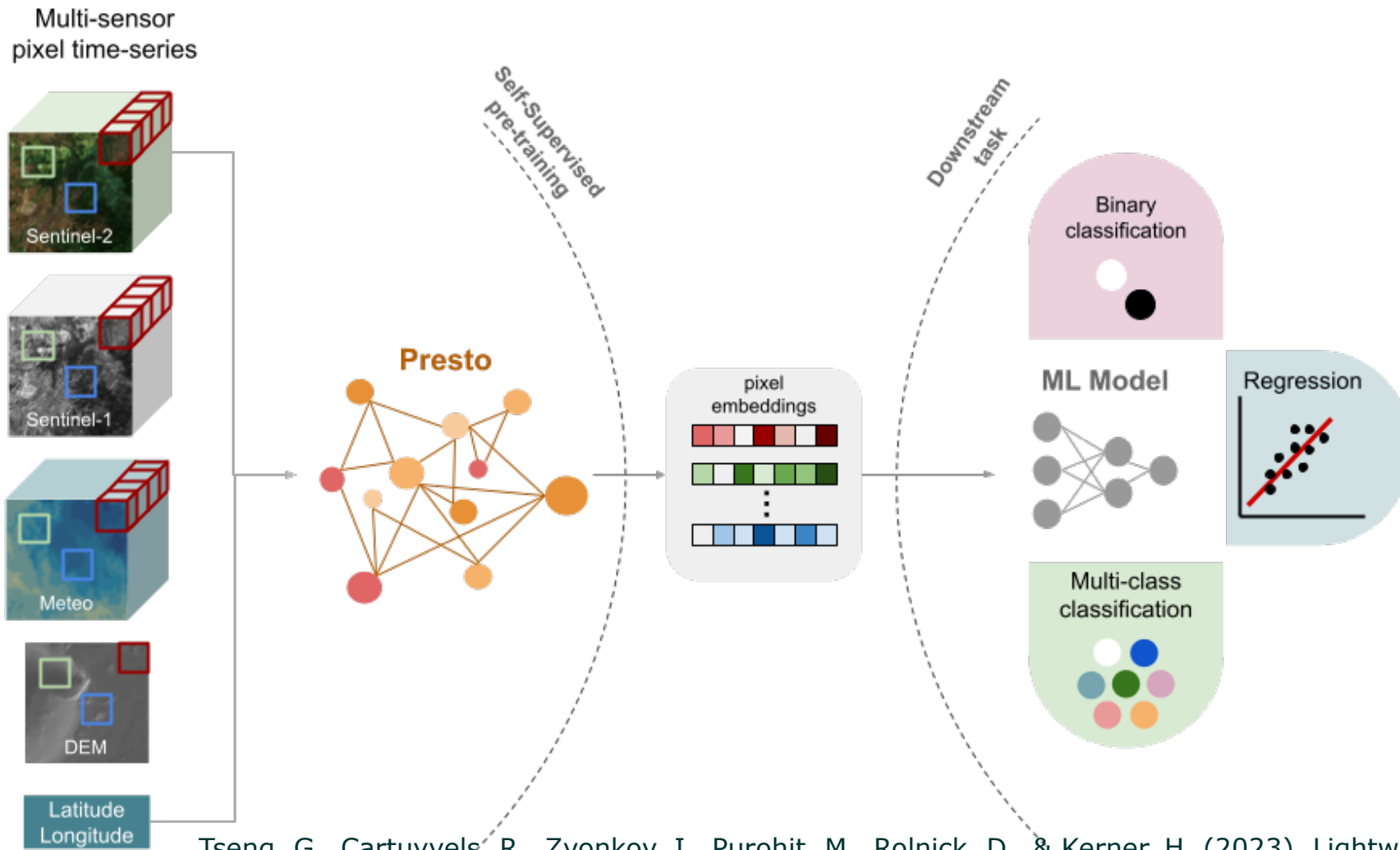




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<https://rdm.esa-worldcereal.org/>



Presto: a geospatial foundation model

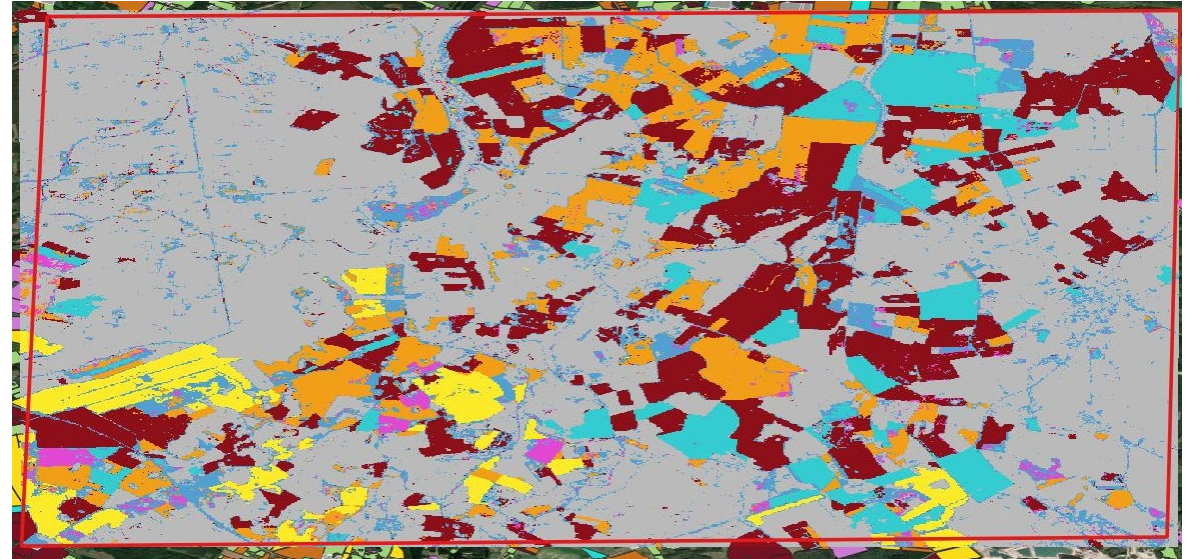


- **Developed by NASA Harvest** 
- Learning from **millions of unlabeled data points**
- Representing multi-modal input time series as **one embeddings vector** with size **128**
- Downstream crop mapping training with **high generalizability**
- Updated for WorldCereal
- **Less labels needed** 

Tseng, G., Cartuyvels, R., Zvonkov, I., Purohit, M., Rolnick, D., & Kerner, H. (2023). Lightweight, pre-trained transformers for remote sensing timeseries. arXiv preprint arXiv:2304.14065.



[Link to notebook](#)



Deploying Geospatial Foundation Models in the Real World: Lessons from WorldCereal

Christina Butsko^{*1} Kristof Van Tricht^{*1} Gabriel Tseng^{*23} Giorgia Milli¹ David Rolnick²³
Ruben Cartuyvels⁴⁵ Inbal Becker Reshef⁶ Zoltan Szantoi⁵ Hannah Kerner⁷

France -> Latvia

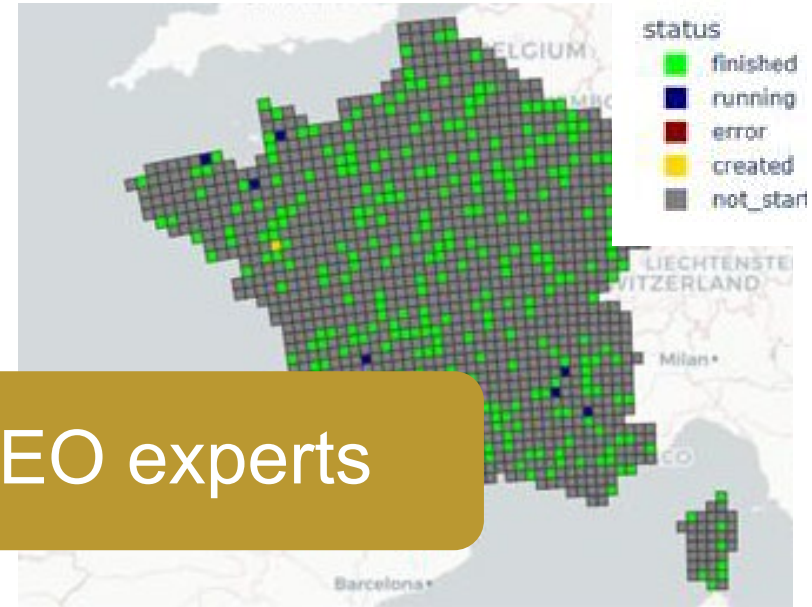
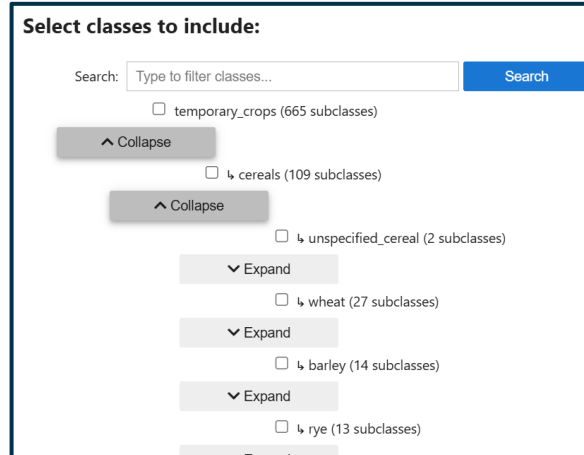
+ temporal!

- Maize
- Winter cereal
- Soybean
- Spring cereal
- Vegetables and tubers
- Other crops
- No cropland



WorldCereal

Customizable, scalable and user-friendly!



Lowering the barrier for non-EO experts

Implemented on CDSE and powered by OpenEO

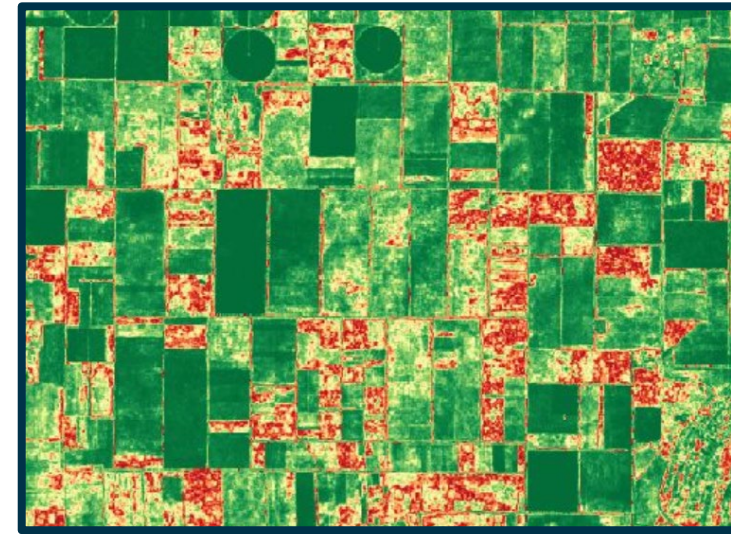


[worldcereal_classification_app.ipynb](#)



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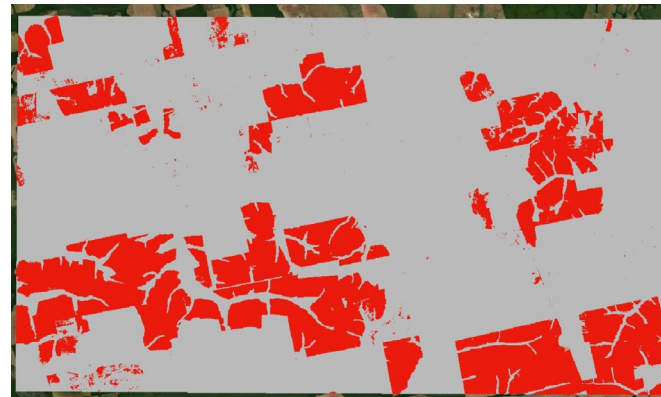


Model confidence

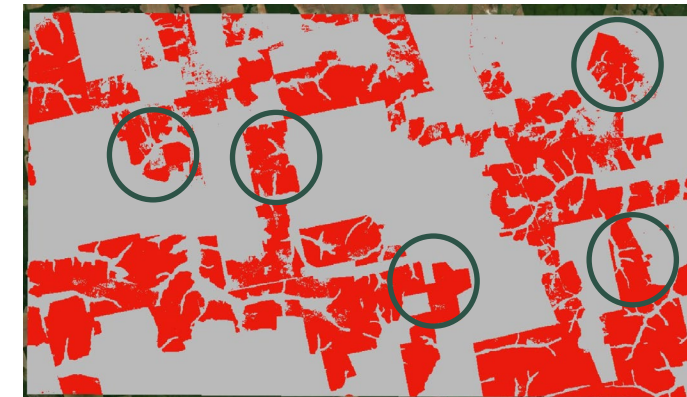
Especially useful to:

- **Capture minor crops**
- Cover inaccessible areas
- Deal with clustered cropping patterns

2020



2024



➤ **Training:**

- Online course on use of the classification system
- Face-to-face (Brazil, India, Kenya)
- Webinars

➤ **Use cases** on how WorldCereal supports food security (Brazil, India, Sudan, Somalia, ...)

➤ Release of new **global products** for 2024

- maize, winter cereals, spring cereals, sunflower, rapeseed, millet, sorghum, wheat, barley, rye and soybean

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➤ Reference data: open ≠ FAIR

➤ Focus on uptake by supporting capacity building and long-term partnerships with statistical agencies

➤ Lowering costs of computational resources for demonstrations



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THANK YOU

<https://esa-worldcereal.org/en>

<https://rdm.esa-worldcereal.org>

<https://vdm.esa-worldcereal.org>

<https://hub.esa-worldcereal.org>

<https://github.com/WorldCereal/worldcereal-classification/>

<https://worldcereal.github.io/worldcereal-documentation/>

<https://forum.esa-worldcereal.org/>

Code & demo



Documentation



User forum



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