CASE STUDY
CORAMAPS GMBH
MAINTAL, DEUTSCHLAND

CORAmaps AI – A New Era of Land and Crop Mapping

Precise crop classification, yield calculation, damage analysis throughout Europe – all automated through AI using radar satellite data. This is the service provided by the startup CORAmaps GmbH, a spin-off from TU Darmstadt, which is commercially active since December 2019.

"What is growing where? How much? And in what quality?" The proprietary CORAmaps algorithms answers all this comfortably, accurately, and quickly. This quality, speed, and accuracy was acknowledged by an EXIST startup grant tendered by the Federal Ministry of Economics and Energy (BMWi). „The award once again shows the great potential behind our idea", says Dr. Markus Huhn, CEO together with Dr. Damian Bargiel.

Existenzgründungen aus der Wissenschaft

The scientist team has developed an AI-based classifier that identifies crop species across large areas – winter and summer wheat, winter barley and winter rye, but also crops such as sugar beet, winter oilseed rape, maize and potatoes, even grassland. Which it does undisrupted, regardless of cloud cover, thanks to the use of radar instead of optical imagery which gets blinded anytime by clouds, cloud shadow, haze, and fog.

„rasdaman is the tool of our choice - after evaluating various other options it became evident that no other is as fast and efficient as rasdaman."

Dr. Damian Bargiel
Managing Director, CORAmaps GmbH

rasdaman
raster data manager

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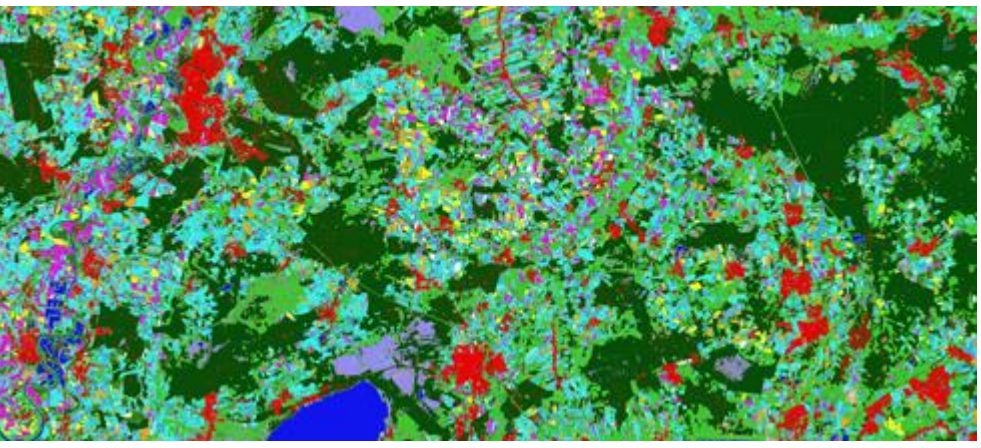
Quality is Key

It is essential for the university spinoff to provide exact results on yield volume and quality. "We have succeeded in extracting very rich, subtle information from the spectrally comparatively low SAR data. We squeeze the data for everything it contains. This all works fully automatically, reliably and extremely quickly through our AI", adds Huhn. "It is key that we work very accurately. Our AI is a high-precision calibrated system that self-evaluates very precisely and carefully", explains Bargiel. All incoming data get added and checked automatically.

Precise yield estimates can be made very early in the year, already in May and June, in the early stages of growth. A key component is the fast pre-processing of the large data volumes, a task realized with the rasdaman datacube technology.

Big Data Analytics

"We have a very solid data foundation", explains Bargiel. CORAmaps uses mainly ESA Sentinel-1 SAR (Synthetic Aperture Radar) satellite data, and multispectral data can be plugged easily. Other free or commercial data can be used out of the box, too. All incoming data go directly into the rasdaman database where it is immediately available for the AI. With each image added AI quality increases.

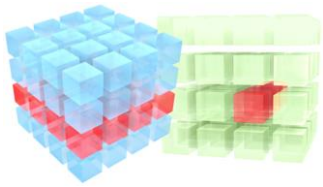


„rasdaman is a strong tool – handy, and very fast. Plus, support is great!"

Dr. Markus Huhn
Managing Director, CORAmaps GmbH

„rasdaman performs in perfection, embedded in our image analysis written mainly in Python and R."

Dr. Damian Bargiel
Managing Director CORAmaps GmbH



The rasdaman datacube engine acts as an enabler: „The OGC standards, especially WCPS, increase interoperability and allow for a seamless integration with our processes while providing stellar performance."

„The centerpiece of our processing environment is rasdaman. On large multi-temporal data stacks it enormously increases the data mining potential."

Dr. Damian Bargiel
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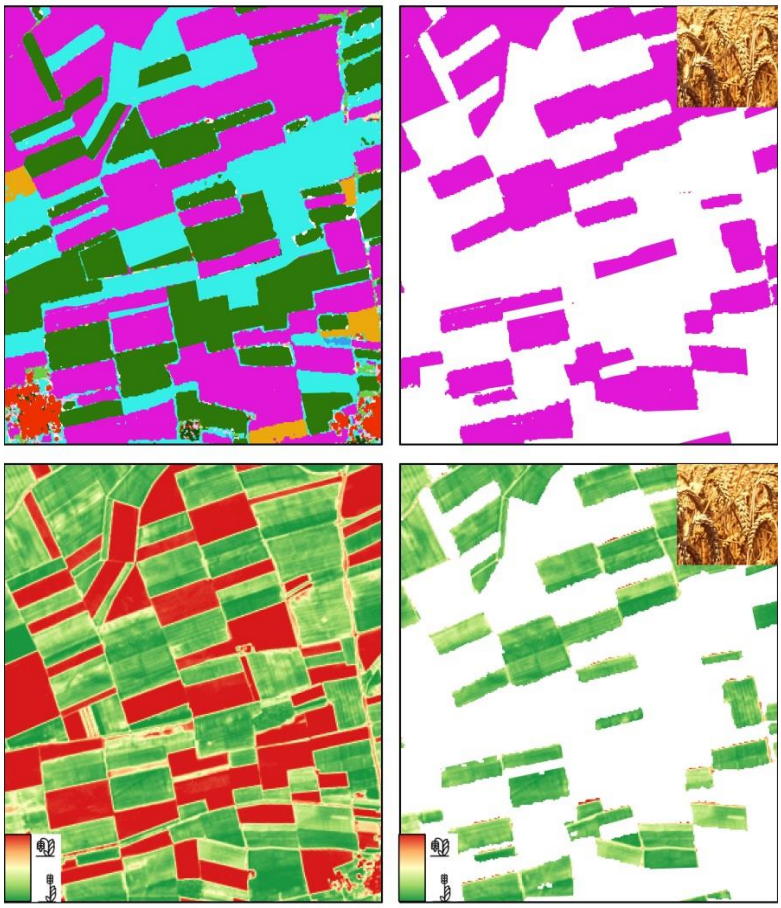
Moving on: Next Innovation

Drought damage maps are another product under development. "We have a method for reducing cloud effects in multispectral data during drought damage detection", explains Bargiel. "We classify crops from the radar data and then add in multispectral data for drought, which are relatively cloud-free in dry years."

"The centerpiece of our processing environment is rasdaman which allows for fast and flexible management and access of the data. For large multi-temporal data stacks this database enormously increases the data mining potential.



„Fast, flexible and efficient, no matter what kind of satellite data."

Dr. Damian Bargiel
Managing Director, CORAmaps GmbH

Targetting the Planet

The 266,600 German farmers have millions of fields, all of which are analysed; actually, the whole of Europe is available. Next are the United States and other commercially important regions.

"It is no problem to transfer to any region. We have trained our algorithm to classify individually, as well as to include the different climatic conditions, varying sowing and harvesting times, etc.", says Huhn.

CORAmap products are particularly valuable when looking at entire regions, countries, and continents. Target customers include agricultural authorities, insurance companies, commodity traders, and more. "We are already at a stage where we fully meet the new, tightened EU regulations" Huhn adds. "Our goal is to determine wheat yield worldwide, long before it has even been harvested".

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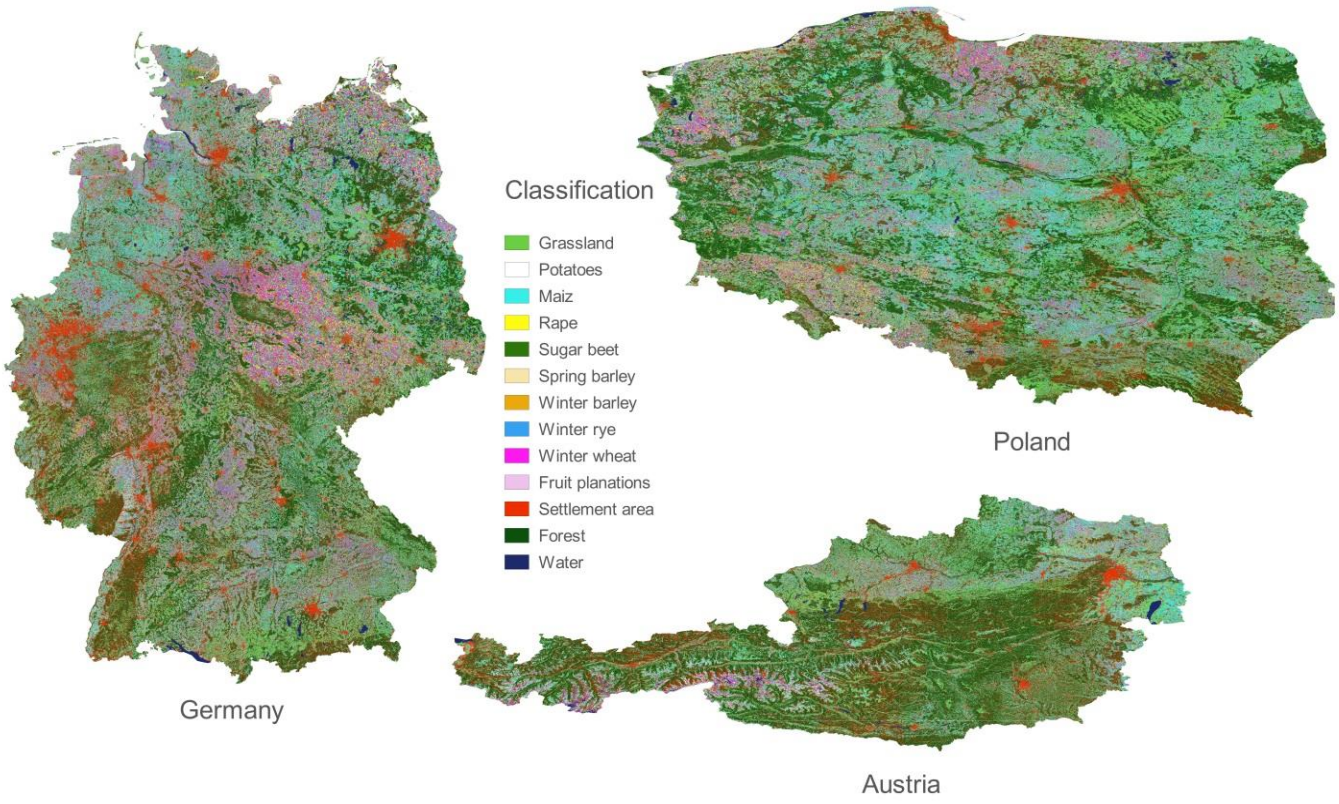

Learn more about CORAmaps

Land- and Crop mapping: www.CORAmaps.com

or contact our CORAmaps Team

About rasdaman

With rasdaman, the paradigm of actionable spatio-temporal datacubes has been invented, documented by patents and scientific publications. The innovative datacube query language enables „any query, any time, on any volume“, making rasdaman blueprint for the datacube standards of ISO, OGC and INSPIRE. Rasdaman stands out through its flexibility, scalability and performance, security, and the consequent support of open datacube standards being official datacube reference implementation. Its technological lead has been acknowledged by a series of high-ranking national and international innovation awards.
The technology is continuously being advanced by rasdaman GmbH and Jacobs University and defines the state of the art in datacubes in science and engineering.

Learn more about rasdaman

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