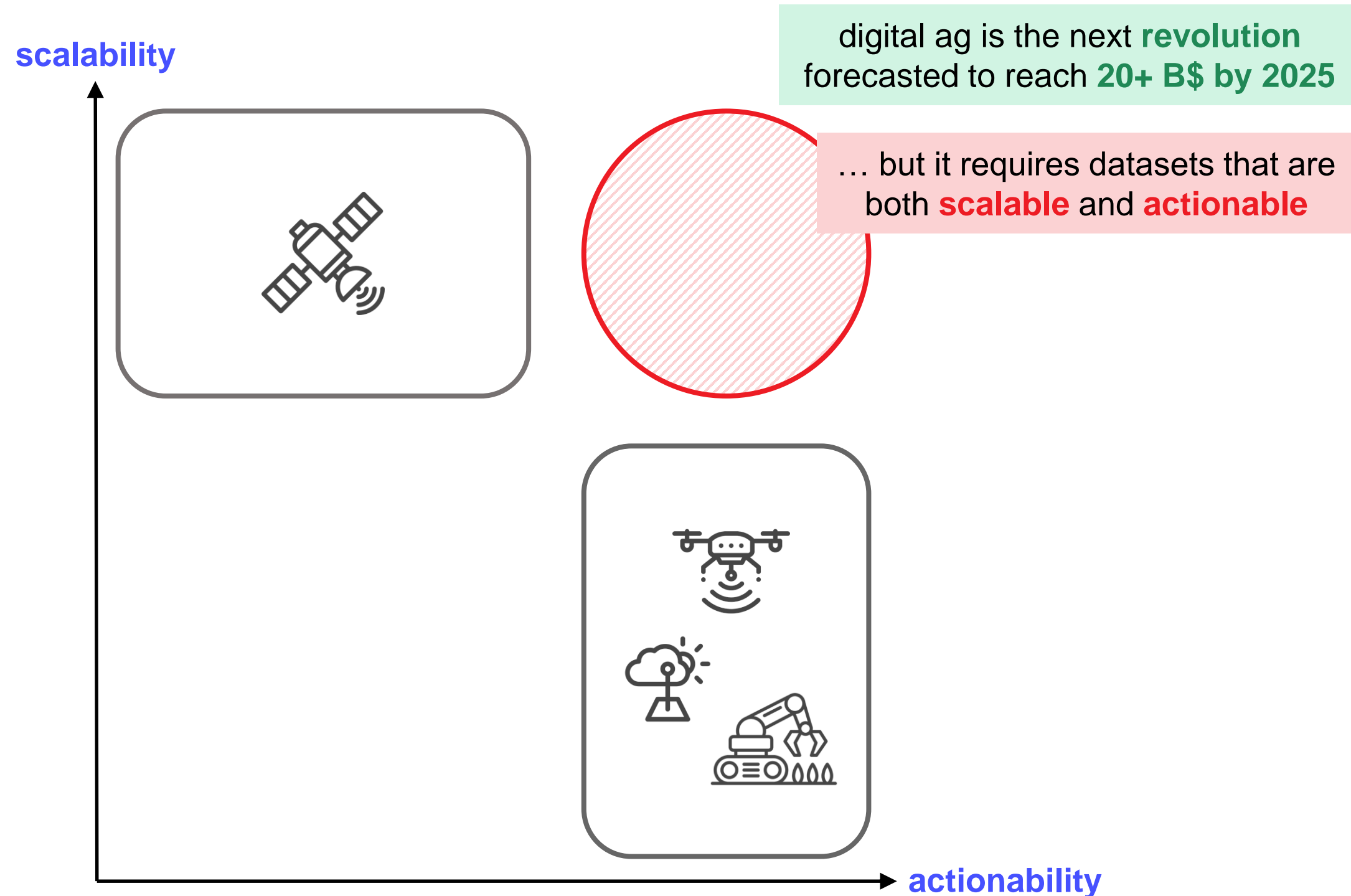




SCANWORLD

**actionable data for agriculture  
made affordable and global**

# The missing piece of the puzzle for digital ag is data that is both scalable and actionable

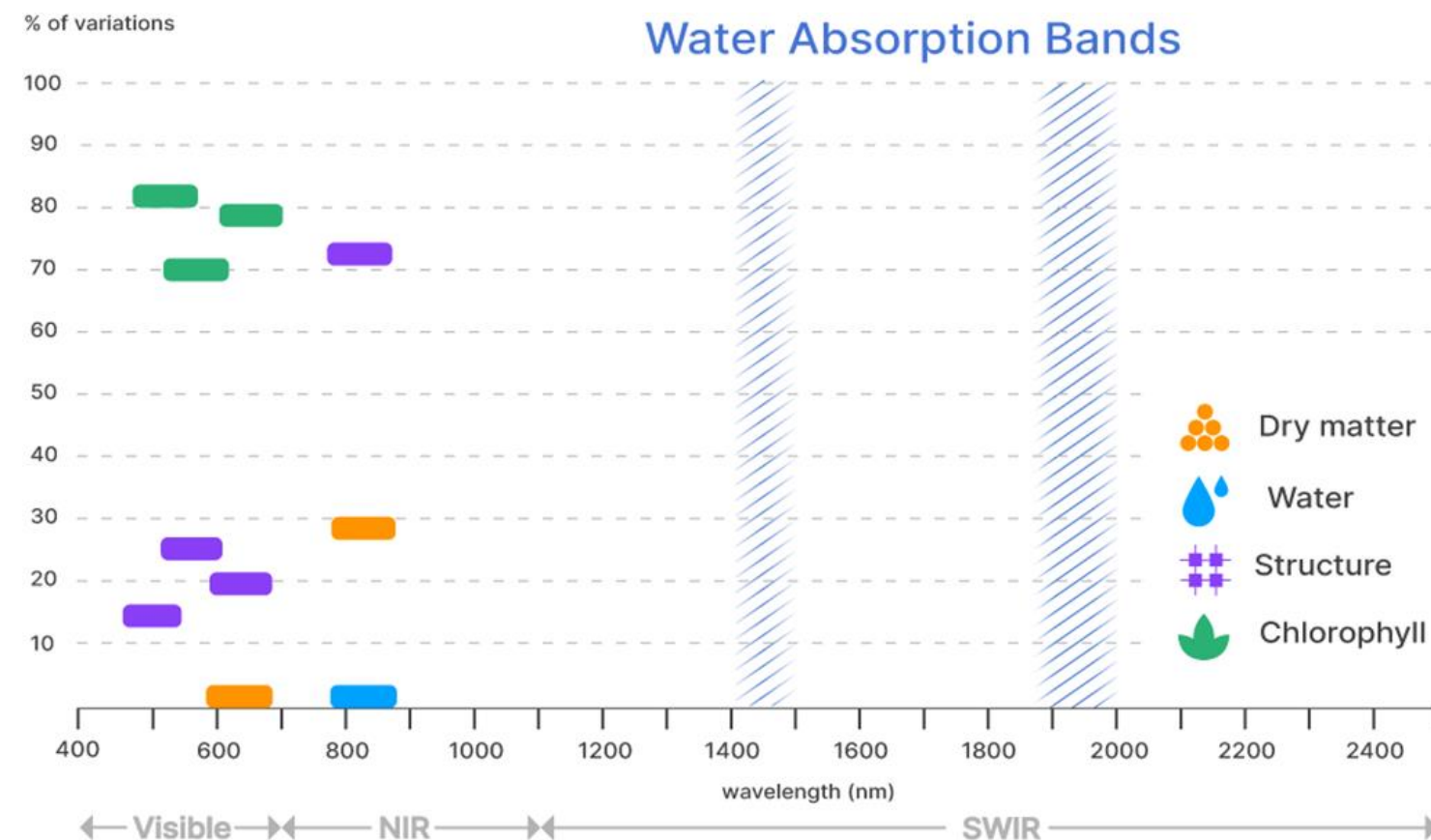


# Hyperspectral imagery opens a new world that goes far beyond the existing satellite data offering



## commercial optical imagery

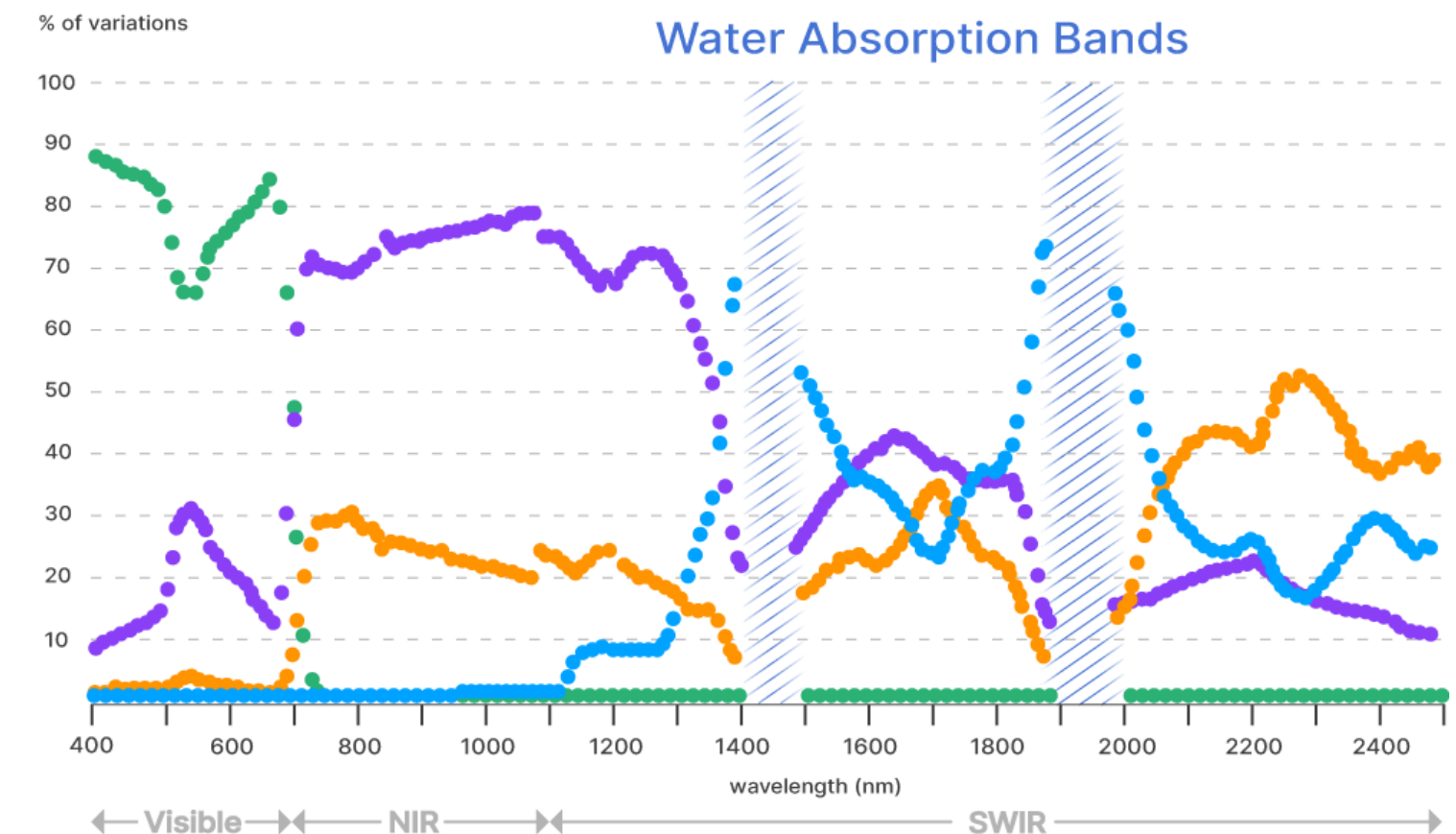
focus on pattern recognition, hence limited to a few sensors



capabilities similar to the human eye  
little added-value for ag

## ScanWorld's imagery

focus on chemistry with 200+ sensors all across the spectrum



enables measurement of proteins, metabolizable  
energy, water, early identification of diseases, etc.



# Some case studies in digital agriculture, where it has the potential to enable a quantum leap



## Fertilizers

Accurate assessment of pasture **Crude Protein** and **Metabolizable Energy** content

Pullanagari et al., "Integrating Airborne Hyperspectral, Topographic, and Soil Data for Estimating Pasture Quality", Remote Sens., 2018, 10

## Water

Generic methodologies to calculate **Water Content** over a great variety of crops

Pasqualotto et al., "Retrieval of Canopy Water Content of Different Crop Types", Int J Appl Earth Obs Geoinformation, 2018, 67:69-78

## Carbon sequestration

Accurate assessment of **Soil Organic Carbon** content

Guo et al., "Exploring the Influence of Spatial Resolution on the Digital Mapping of SOC by Airborne Hyperspectral", Remote Sens., 2019, 11

## Yield quantity & quality

Good prediction of wheat **Grain Yield** and **Grain Protein Content** of over 75% of a given area

Rodrigues et al., "Multi-Temporal and Spectral Analysis of High-Resolution Airborne Imagery for Precision", Remote Sens., 2018, 10

## Disease

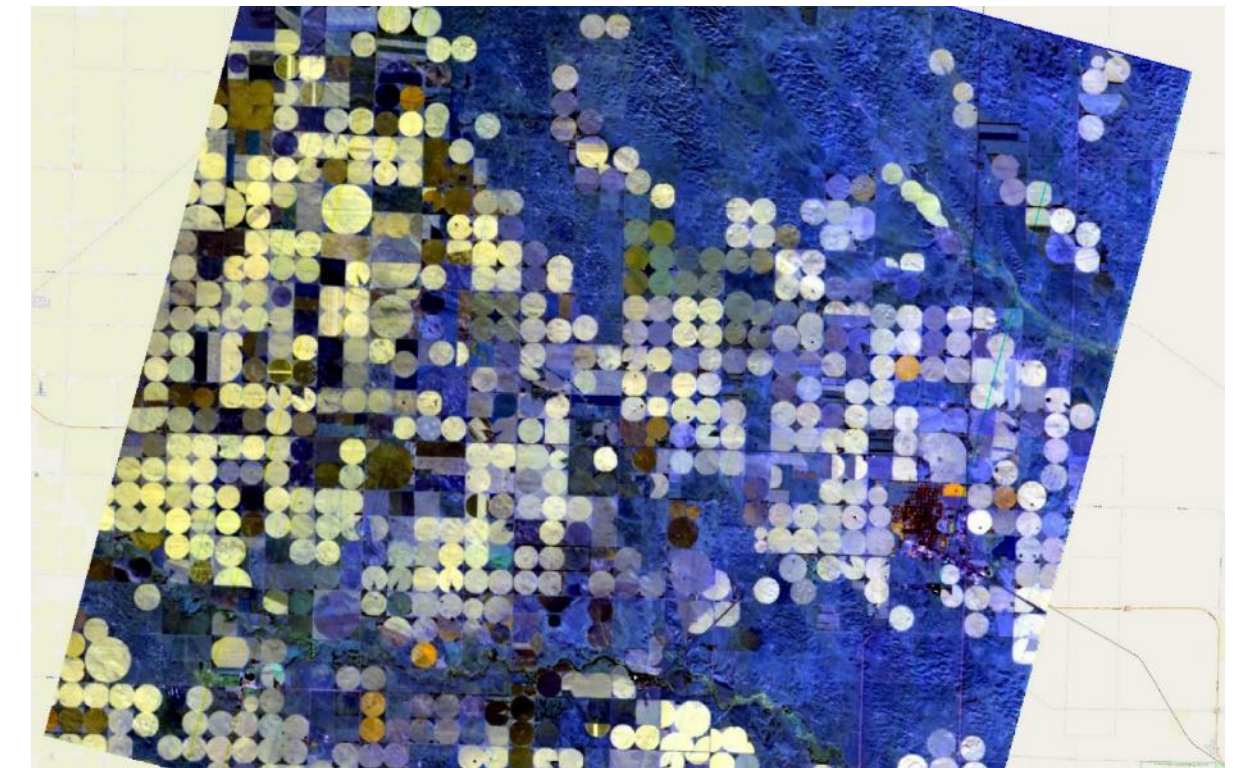
**Yellow rust** detection at least **three days before** the appearance of visible symptoms

Bohnenkamp et al., "In-Field Detection of Yellow Rust in Wheat on the Ground Canopy and UAV Scale", Remote Sens., 2019, 11

## Contaminations

Detection and mapping of **heavy metals**, including Cr, Pb and Cu

Tan et al., "Estimation of the Spatial Distribution of Heavy Metal in Agricultural Soils", Journal of Hazardous Materials, 2020, 382



Processed images of Denver, USA, based on PRISMA satellite imagery

# When it comes to flood risk management, it can help building a more accurate picture of water resources



## DIRECT



land use classification  
for permeability modelling



water body temperature  
for reservoir management

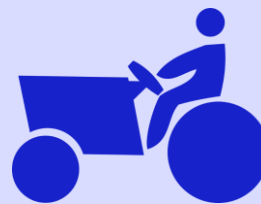


streams depth and velocity  
for river regulation



snow water quantity  
for streamflow prediction

## INDIRECT



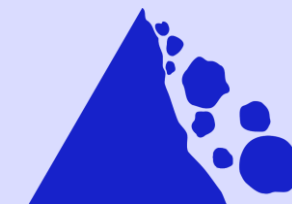
water use estimation  
for water management



water quality  
for post-flood assessment



soil temperature and albedo  
for weather forecasting



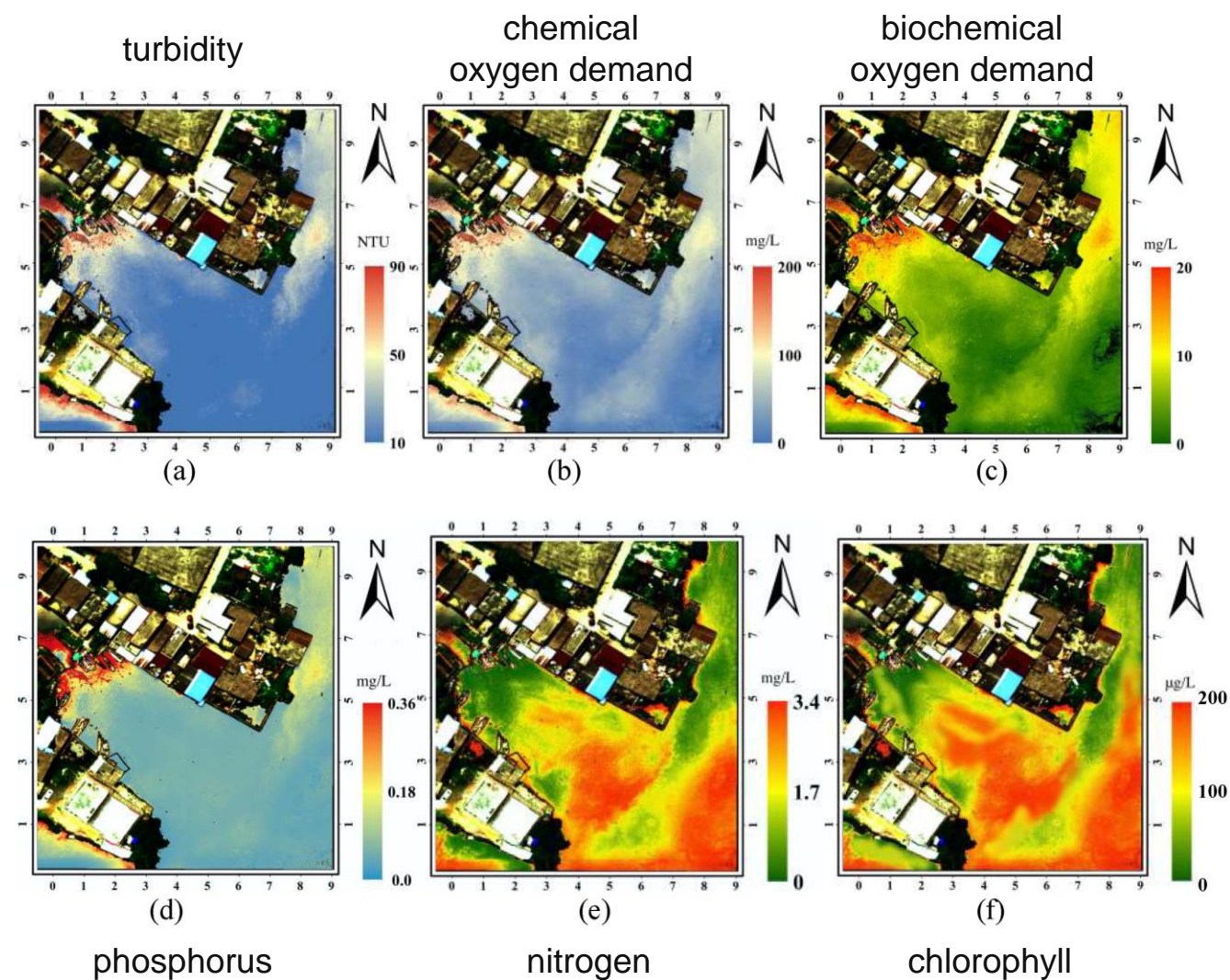
landslide mapping  
for risk management



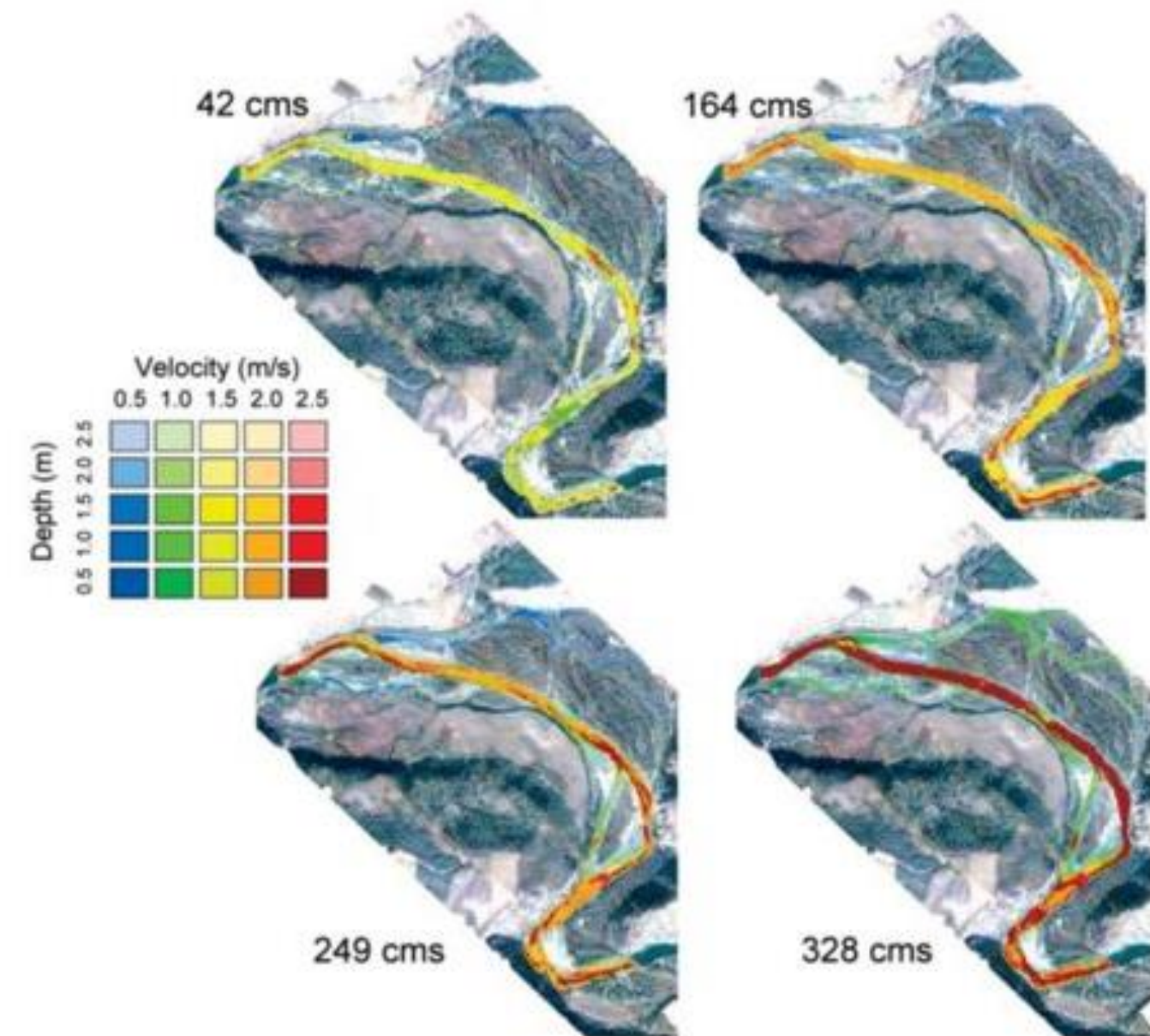
# Practical demonstrations are already performed with low-performance satellite imagery and drones



## water quality monitoring



## streamflow characterization



Y. Zhang, Mapping Water Quality Parameters in Urban Rivers from Hyperspectral Images Using a New Self-Adapting Selection of Multiple Artificial Neural Networks, Remote Sensing, 2020, 12(2), 336

F. Hauer and M. Lorang, River regulation, decline of ecological resources, and potential for restoration in a semi-arid lands river in the western USA, Aquatic Sciences, 66(4):388-401



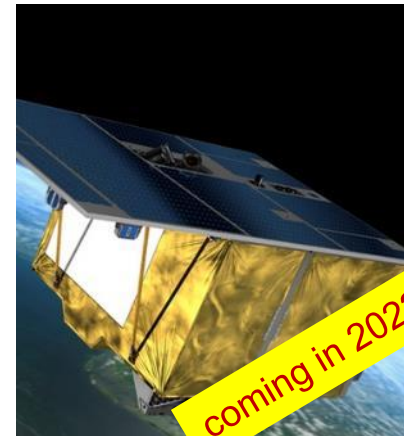
# Space-based hyperspectral data is only at the demo stage, but more robust dataset will soon be available



PRISMA



EnMAP



coming in 2022

ScanWorld



coming in 2024

CHIME



coming in 2029

SBG



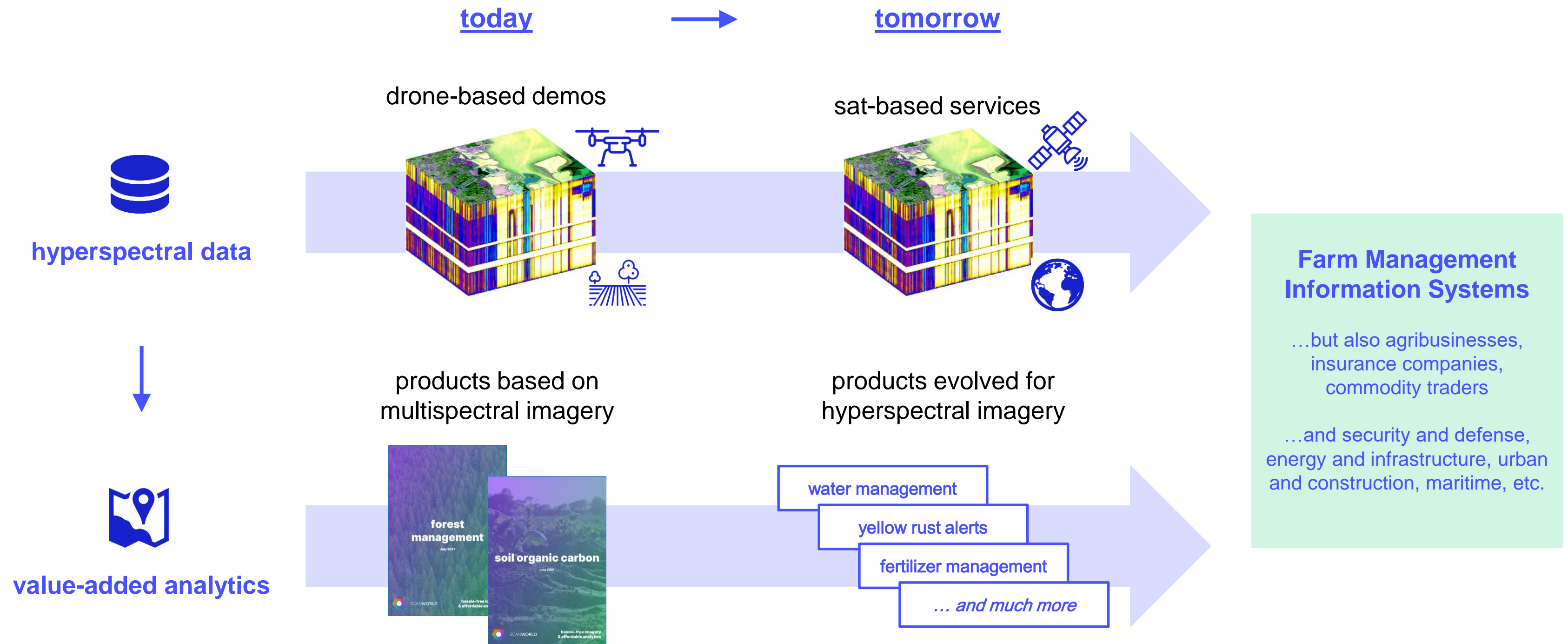
coming in 2029

technology demonstrators

commercial mission

science-grade  
global mappers

# ScanWorld is a SaaS company, selling both hyperspectral data and value-added analytics



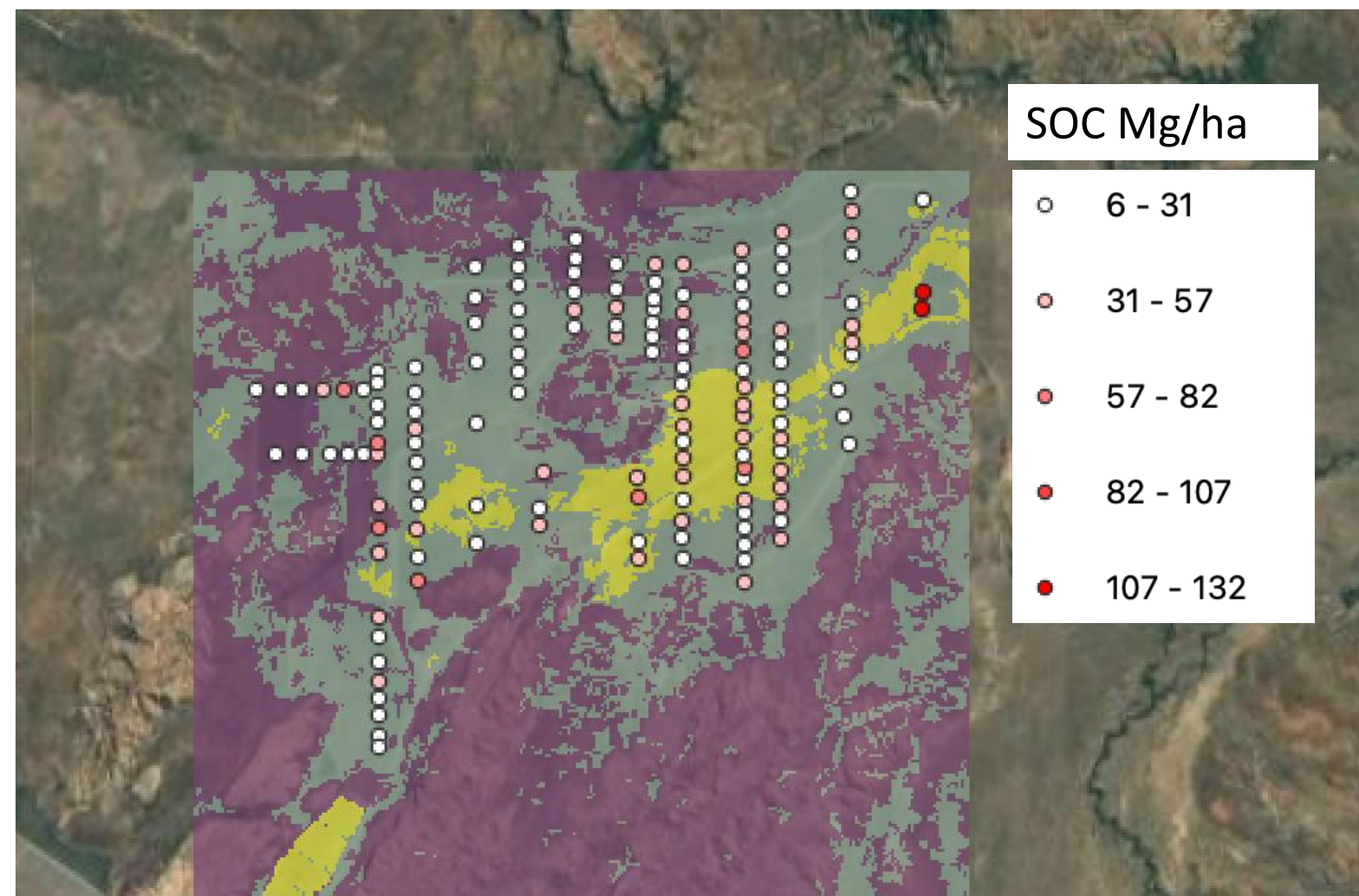


# Our first product on Soil Organic Carbon enables to rationalize in-situ sampling

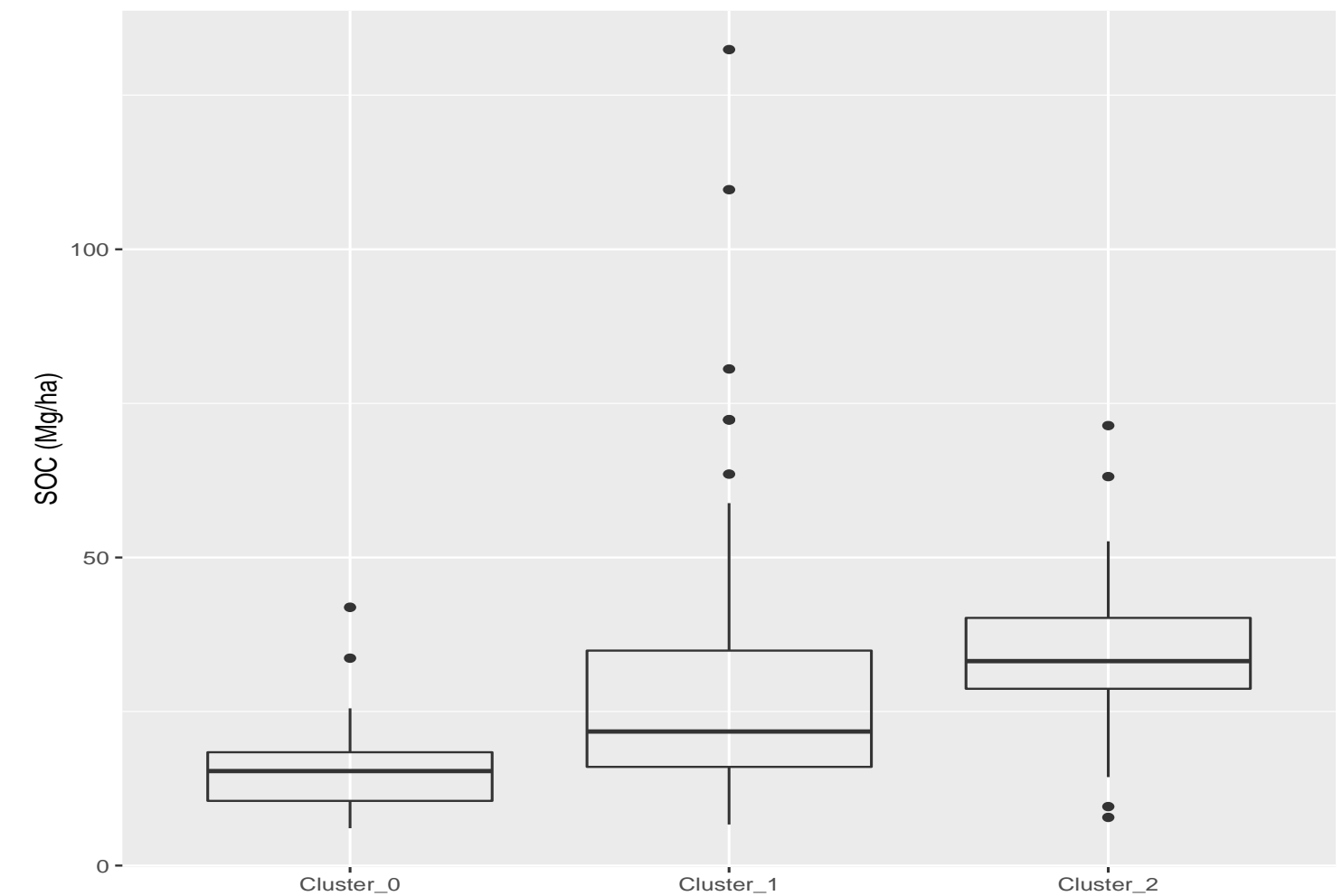


## demonstration in Queensland, Australia

- 150 field samples
- Top-layer of 0-30 cm



Field samples confirm the validity and usefulness of the clusters in providing a first understanding of a new site.





# SCANWORLD



## Contact Us

**Agriculture** is both one of the major contributor to climate change, and one of its first victims. Coincidentally, agriculture is also a key lever to enable a smooth transition to a more sustainable world - but that will require data-driven decisions.

**ScanWorld** delivers hyperspectral imagery, weekly, for any point of the globe. This enables a wide range of applications such as disease alerts, water and fertilisers management, yield quantity and quality assessment, etc.

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