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remote sensing

WatchItGrow

Monitoring Crops from Space

Sven Gilliams - VITO

Some numbers

Independent research company
We De-risk Innovation

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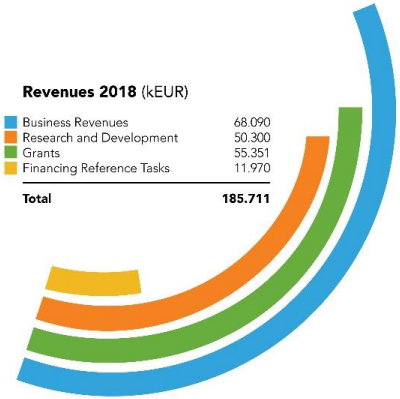

ENERGY
CHEMISTRY
MATERIALS
HEALTH
LAND USE

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LAND - WATER - AIR

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WE offer solutions WORLDWIDE

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SEE THE BIGGER PICTURE

Monitoring (remote sensing)

Platforms

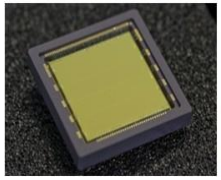

UAV

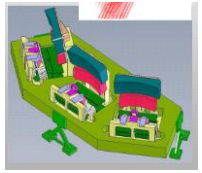

AIRBORN


HALE UAV


SATELLITE

Sensors





Value Added Services & Information Products

Markets


Agriculture


Landuse & Biodiversity


Climate


Water & Coast


Infrastructure


Security

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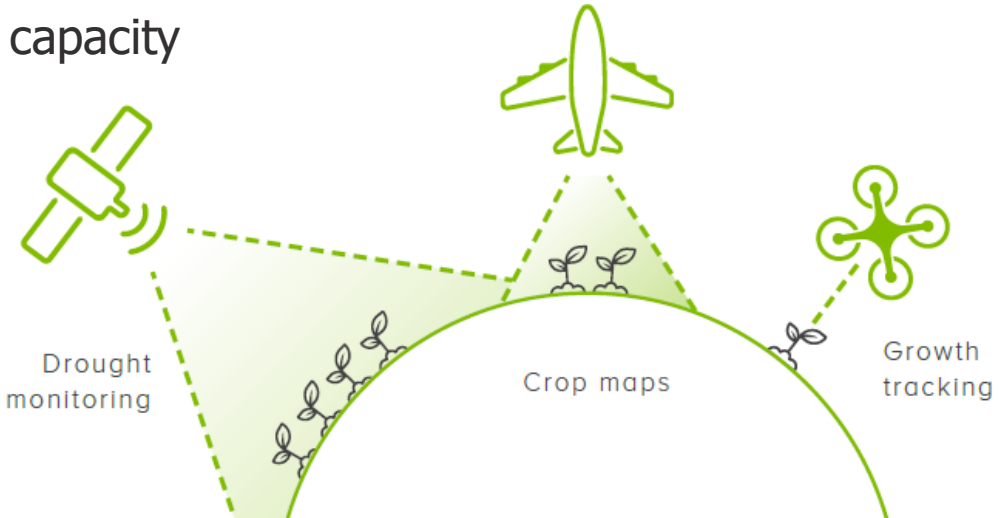
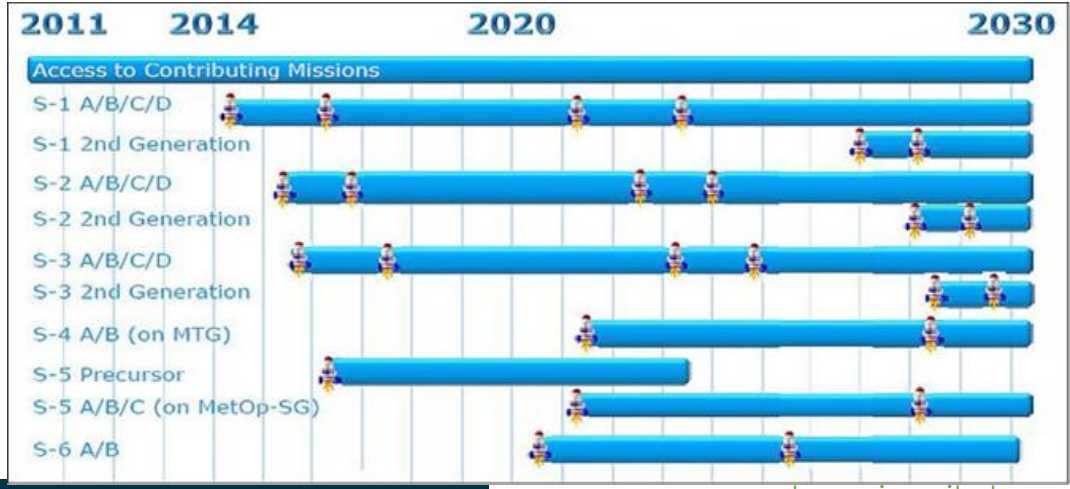
Towards #ZeroHunger
From Global to local Monitoring

- Knowledge! What? Where? When? …
- Sustainable production increase
- Yields Monitoring & Crop Growth
- Frequent observations & continuity
- Assure capacity



Copernicus the game changer!



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land.copernicus.eu/global

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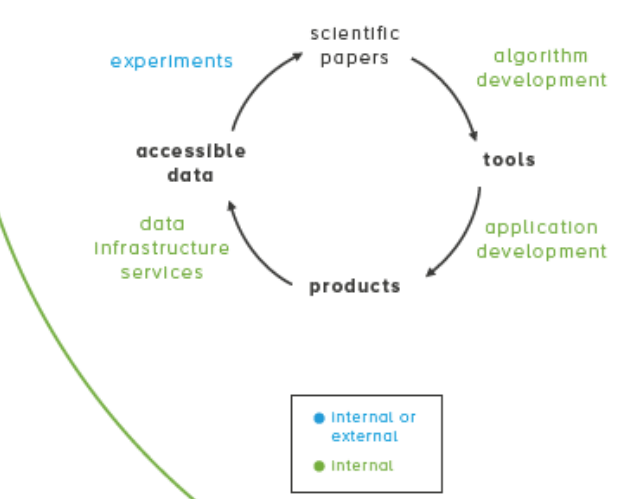
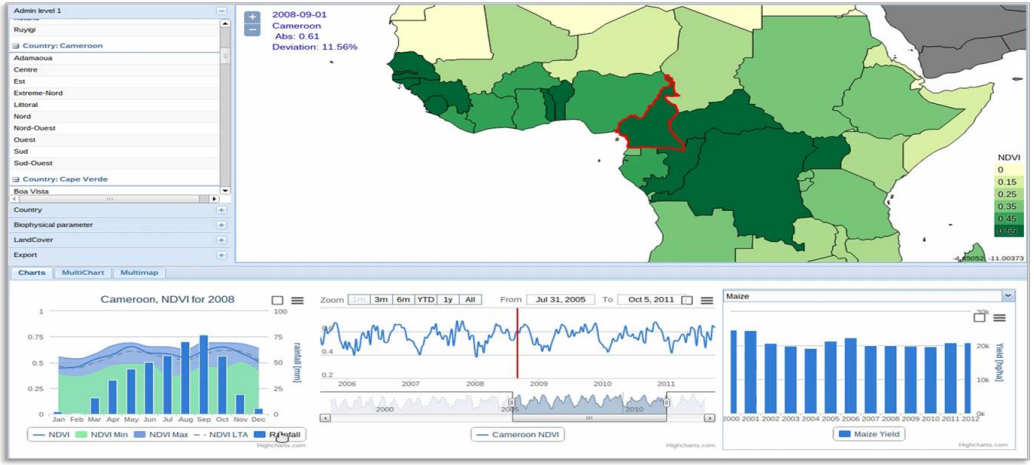
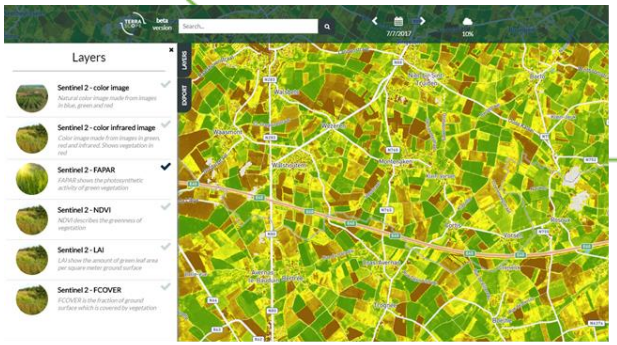
Multi-mission data fusion

- Data fusion
- Image processing
- Cloud detection
- Time Series integration
- Explore & Viewer
- Consistent Time Series of RS data







https://blog.vito.be/remotesensing/terrascope-virtual-machines

OBTAIN ANALYSIS READY DATA

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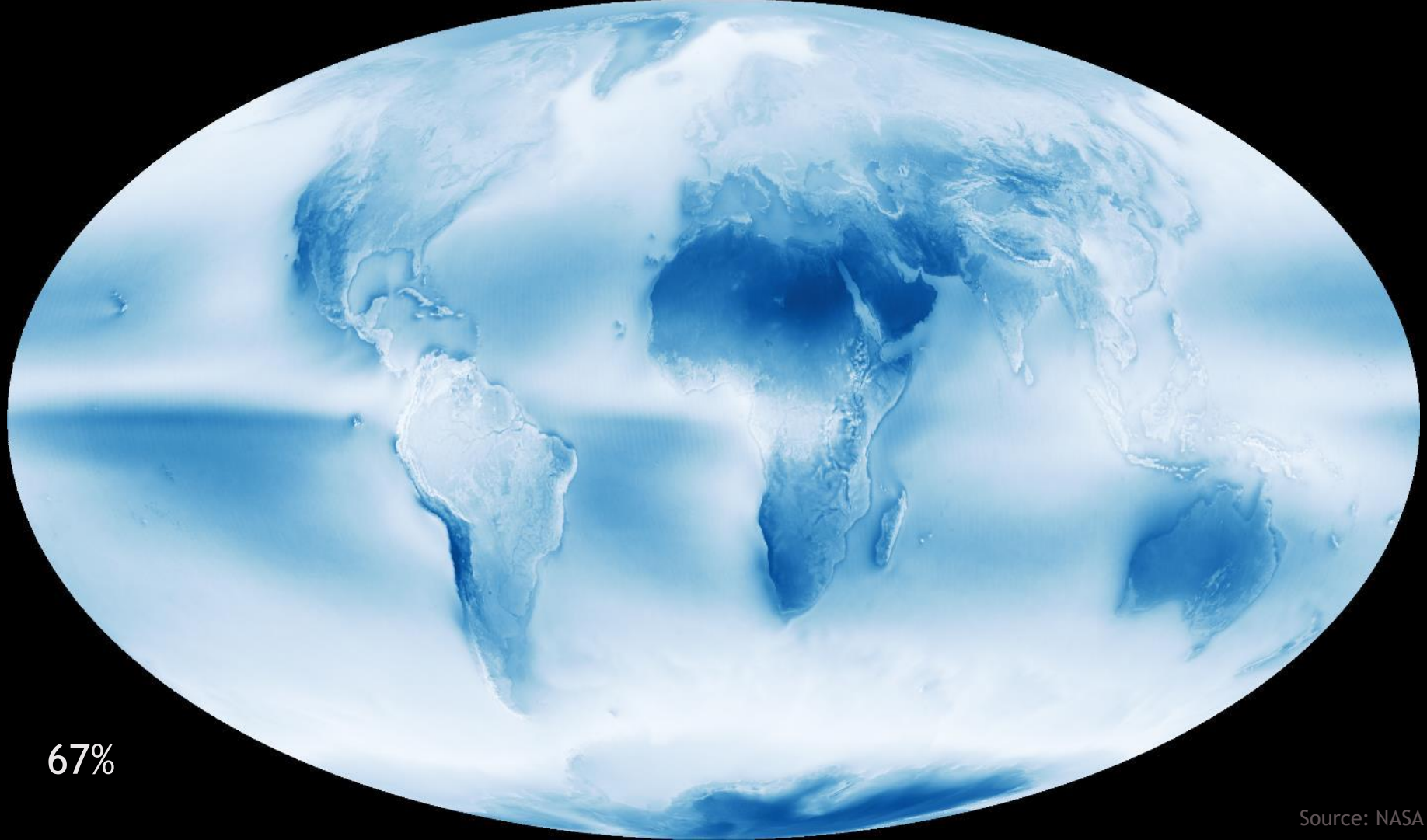
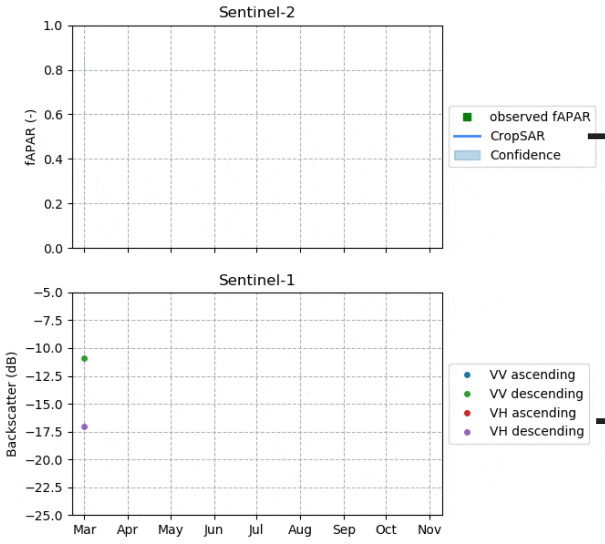


67%

Source: NASA

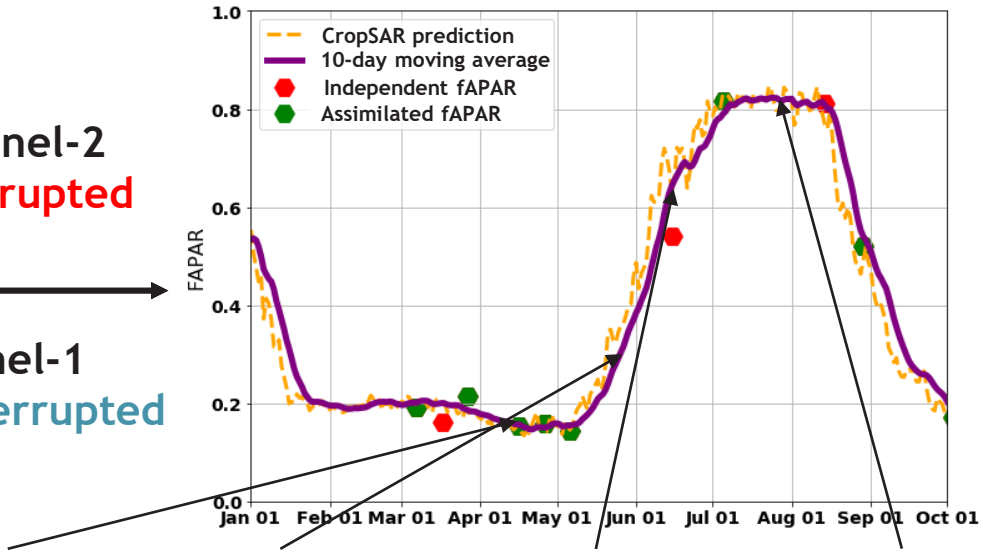
Sensor Fusion for consistent Time Series -> CropSAR



Sentinel-2 interrupted

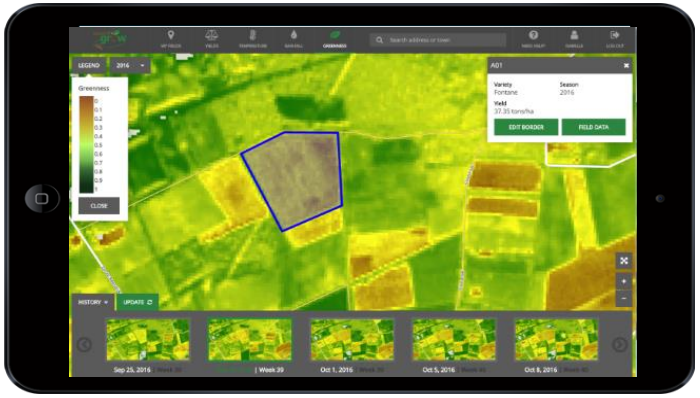
Sentinel-1 uninterrupted

Sentinel-2 uninterrupted



https://blog.vito.be/remotesensing/cropsar2019

WatchITgrow
Satellite based crop management tool



Users :

- ✓ agro-industry
- ✓ Insurance
- ✓ Farmers
- ✓ Farmers associations
- ✓ consultants

Data :

- ✓ Satellite images
- ✓ Biofysical parameters – time series
- ✓ Weather data
- ✓ Soil data
- ✓ IoT data
- ✓ User data
- ✓ **Store your own field data** (e.g. treatments, yield samples,…)

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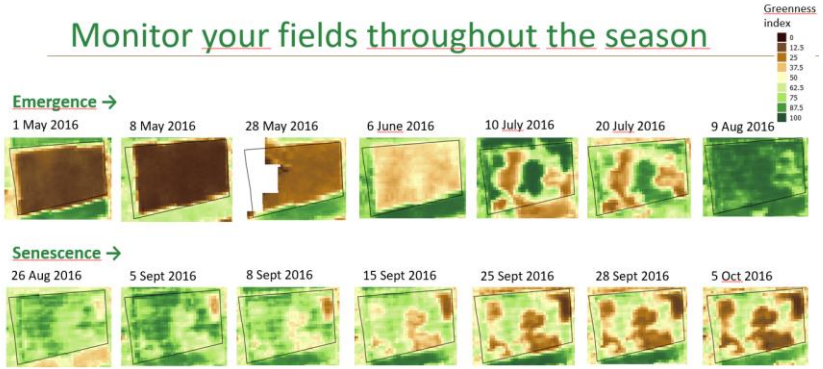
WatchITgrow functionalities

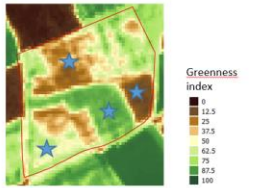
- **Sentinel-2:**
  - 10m pixels
  - Since August 2015
  - Every 3-5 days
  - Free data – Copernicus program
  - Worldwide available

Monitor your fields throughout the season



Check your fields for heterogenity

Sentinel-2 of 20 Aug 2016

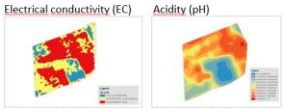


→ useful for field selection (historical data)

→ improved sampling (per zone)

→Precision agriculture use (2019 onwards): variable rate applications

- ✓ fertilization
- ✓ irrigation
- ✓ haulm killing
- ✓ …



Reference data from soil scans (source: CRA-W)

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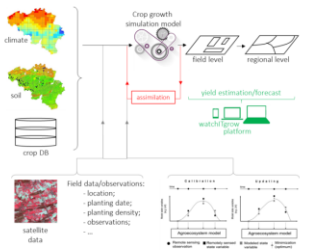
Yield forecast

YIELDS

- Based on combination of yield models
- For 3 varieties: Fontane, Bintje, Nicola
- Per field, municipality, province, region
- From july onwards
- FOR FARMERS ONLY
  - From 2019 onwards



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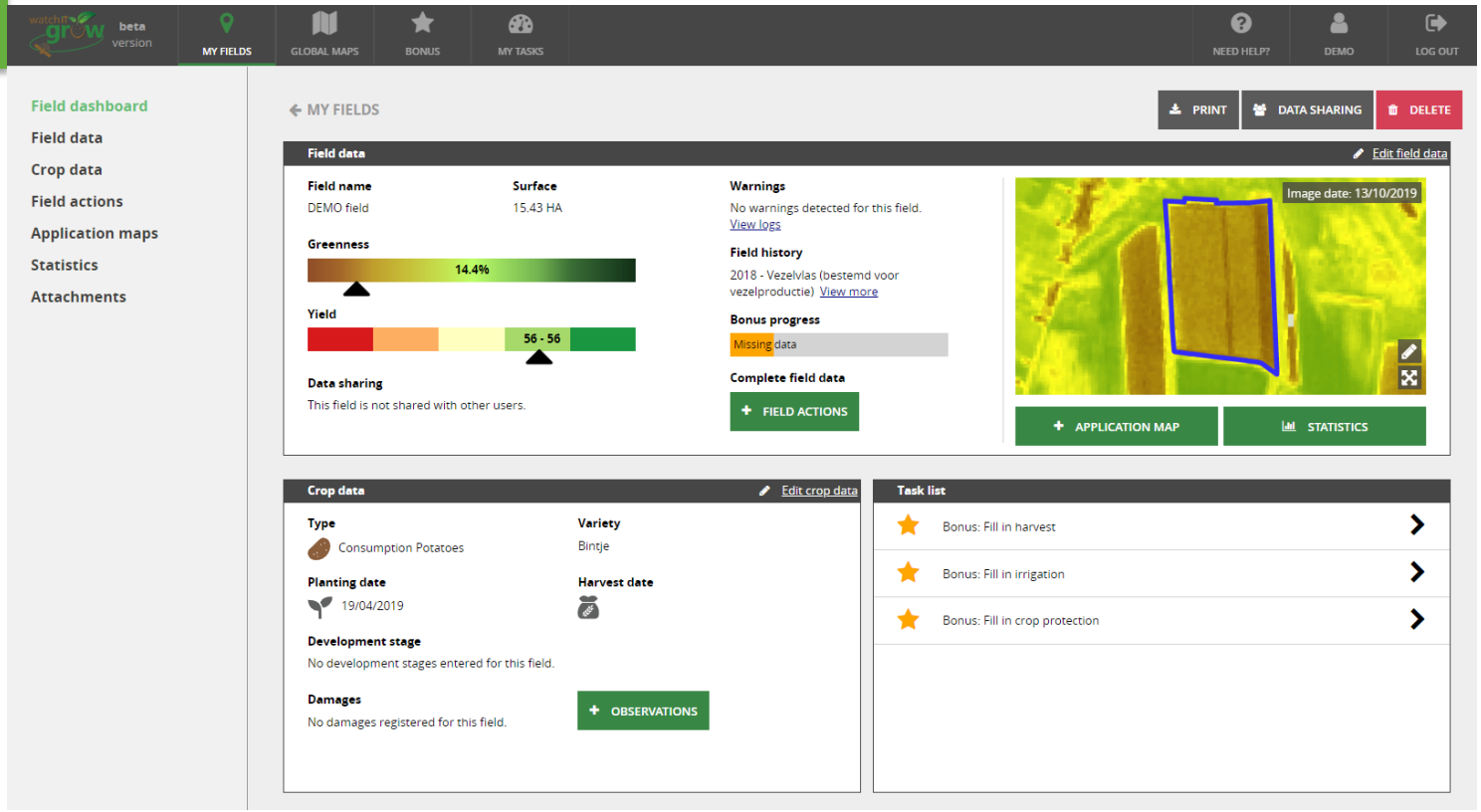
Management tool



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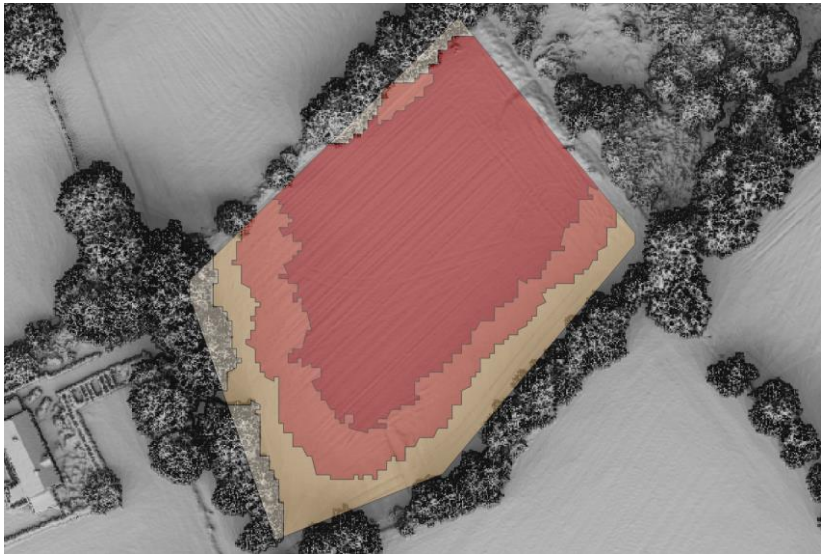
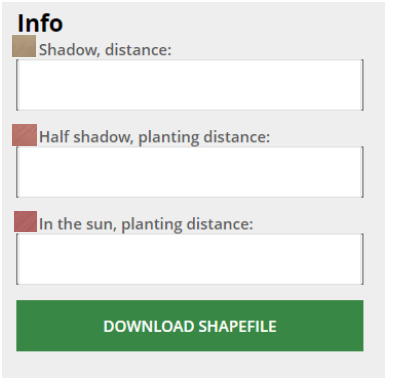
Variabel Rate Planting map

- What?
  - Exportable map indicating (gradations of) shadow zones
- Why?
  - Variable planting
  - Green zones





Variable Rate Irrigation Map

← MAPS

FIELD: Aardappelen 1

Application Maps - Create new map

Step 1	Step 2	Step 3	Step 4
Choose map type	Fill in data	Select distribution	Save & export

Dosages for different zones:

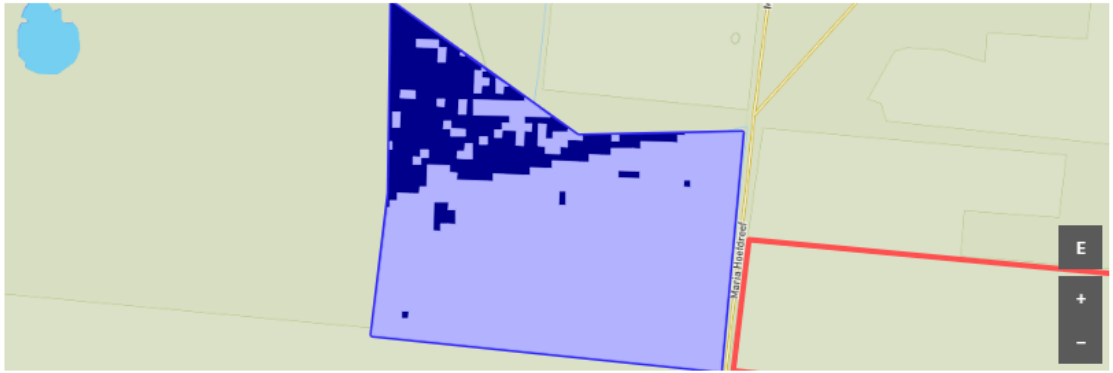
Normal dose: 158 mm — CALCULATE

worse crop condition	189.6	mm
average	158	mm
better crop condition	126.4	mm
Total irrigation dose	27092.802	m³

Application map date:

17/6/2019

☑ Streets ☐ Soil ☐ Elevation ☐ Satellite ☐ Greenness ☑ Irrigation map



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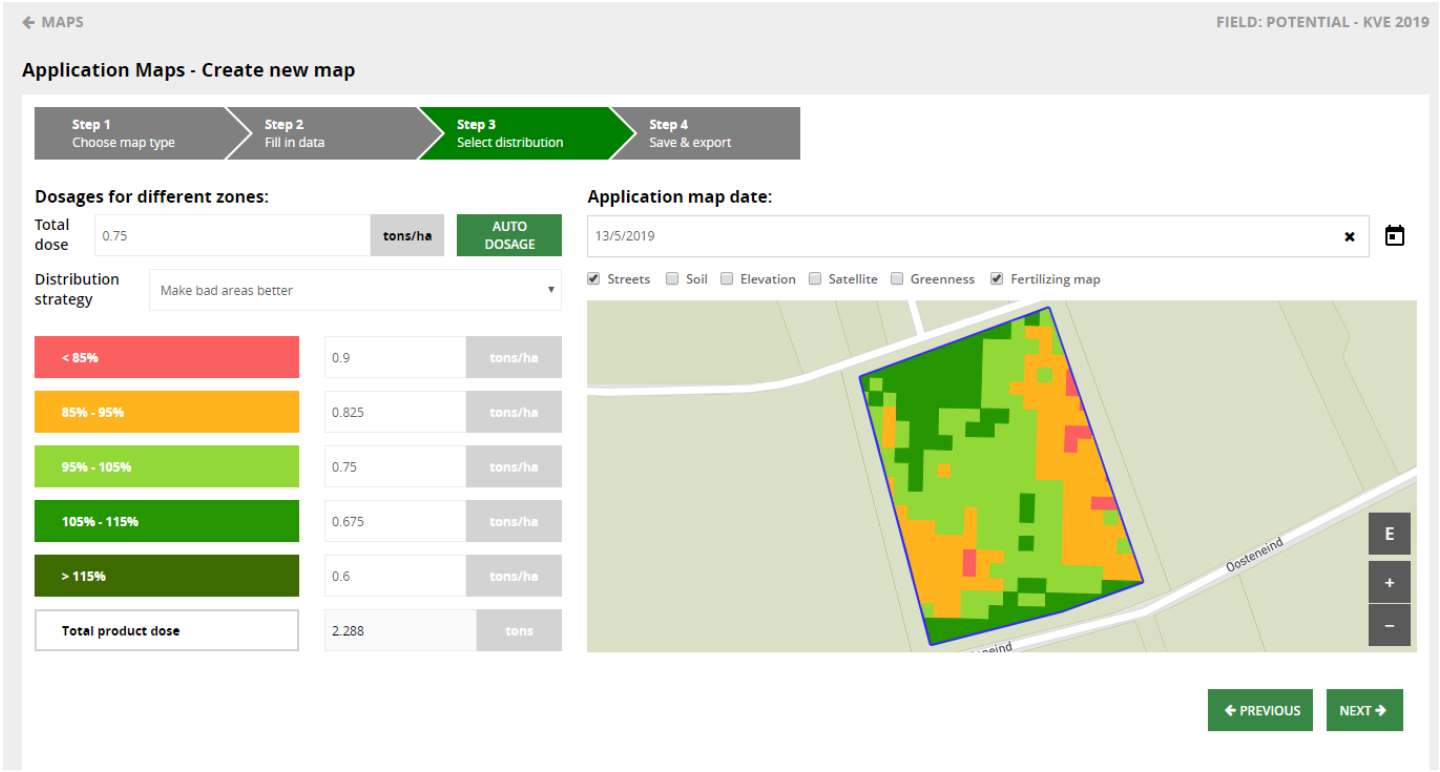
Variable Rate Fertilisation Map



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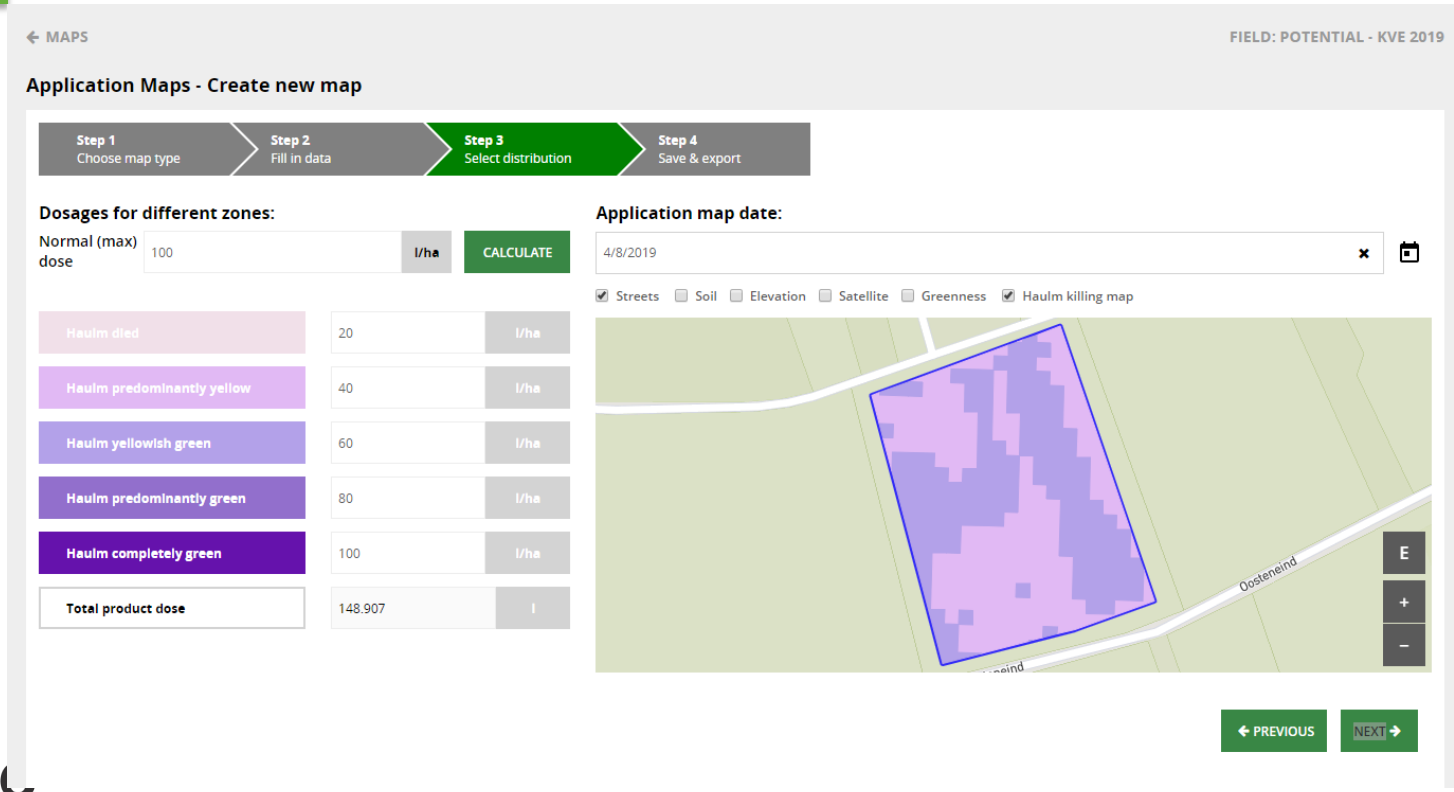
Variable Rate
Haulm Killling Map



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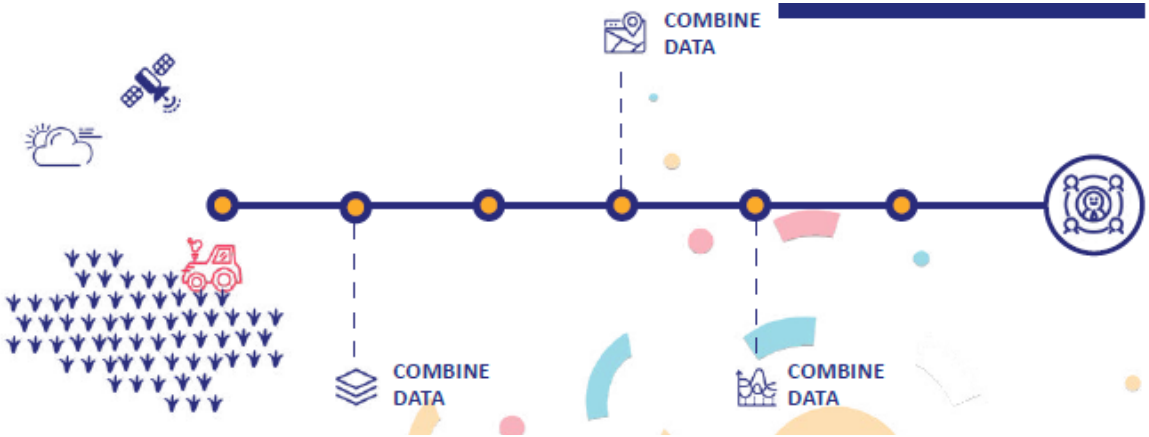
What is next?

- Co design -> user centric approach



Moving away from a **data-centric** approach to a **user-driven era**

SHOWCASES

climate · water · agriculture · ecosystem · disaster · health · renewable energy sources

Pilots

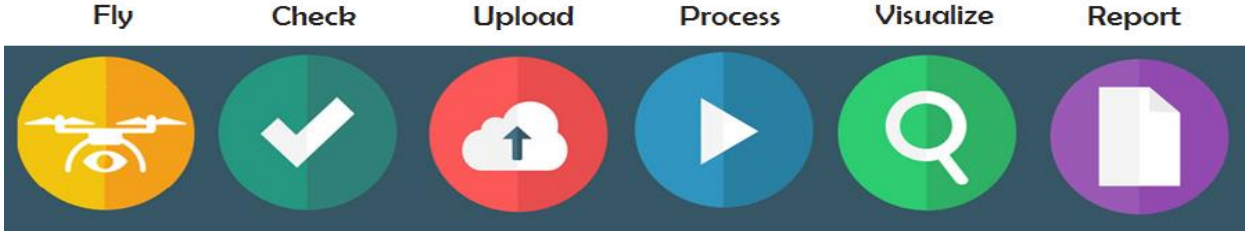
GLOBAL
GEOGLAM support

POLICY
CAP monitoring

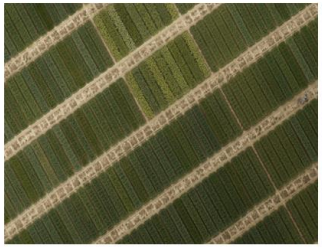
SECURITY
AGRICULTURE insurance

INDUSTRY
SUSTAINABLE increase

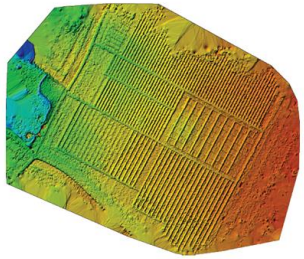
MAPEO – Crop monitoring



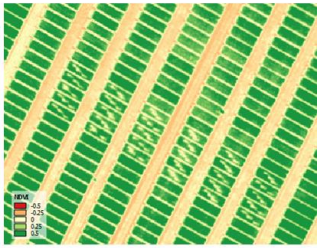
Orthomosaic



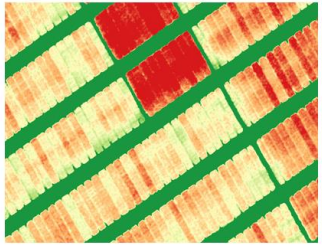
DEM



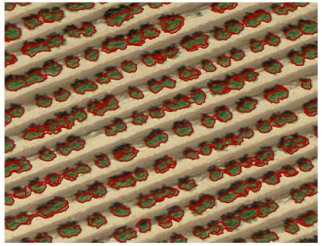
NDVI



Crop height



Crop count



Crop cover

https://remotesensing.vito.be/case/mapeo

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THANK YOU

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Sven Gilliams; VITO Agricultural Applications
sven.gilliams@vito.be

Sentinel-2 image Copernicus Sentinel data (2016)

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