



# European Space Imaging



Use cases of Very High Resolution satellite imagery  
in support of crop management

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Arnaud Durand  
[adurand@euspaceimaging.com](mailto:adurand@euspaceimaging.com)



## Company overview

Established 2002

Location: Munich, Germany

Staff: 37 members

European Space Imaging is a leading supplier of global very high-resolution (VHR) satellite imagery and derived services.

We provide tailored VHR imagery solutions to meet the diverse project requirements of our customers.

- Operating a multi-mission capable ground station
- Entire DigitalGlobe satellite constellation + archive
- Tailored solutions: products, services, license
- Expert and personalized customer service
- A network of 60+ resellers across Europe



## Ground Station

Dedicated ground station for direct satellite tasking

- Direct Access Facility (DAF) located near Munich
- Collection planning and data production from all the DigitalGlobe satellites

### BENEFITS:

- Last minute order entry
- Maximization of collection results
- Minimize cloud cover
- Maximize area
- Maximize collection yield (# targets)
- Fast production
- Near real-time delivery



## TECHNOLOGY

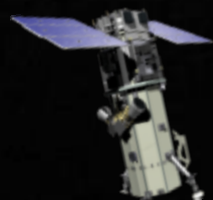
# Satellites

In orbit:



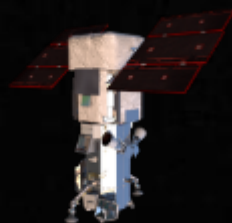
**WorldView-1**

50cm B/W  
stereo



**WorldView-2**

46cm  
8-band color  
stereo



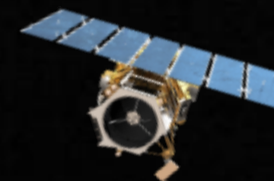
**WorldView-3**

31cm  
8-band color stereo  
8-band SWIR



**WorldView-4**

31cm  
4-band color



**GeoEye-1**

41cm  
4-band color

In archive:



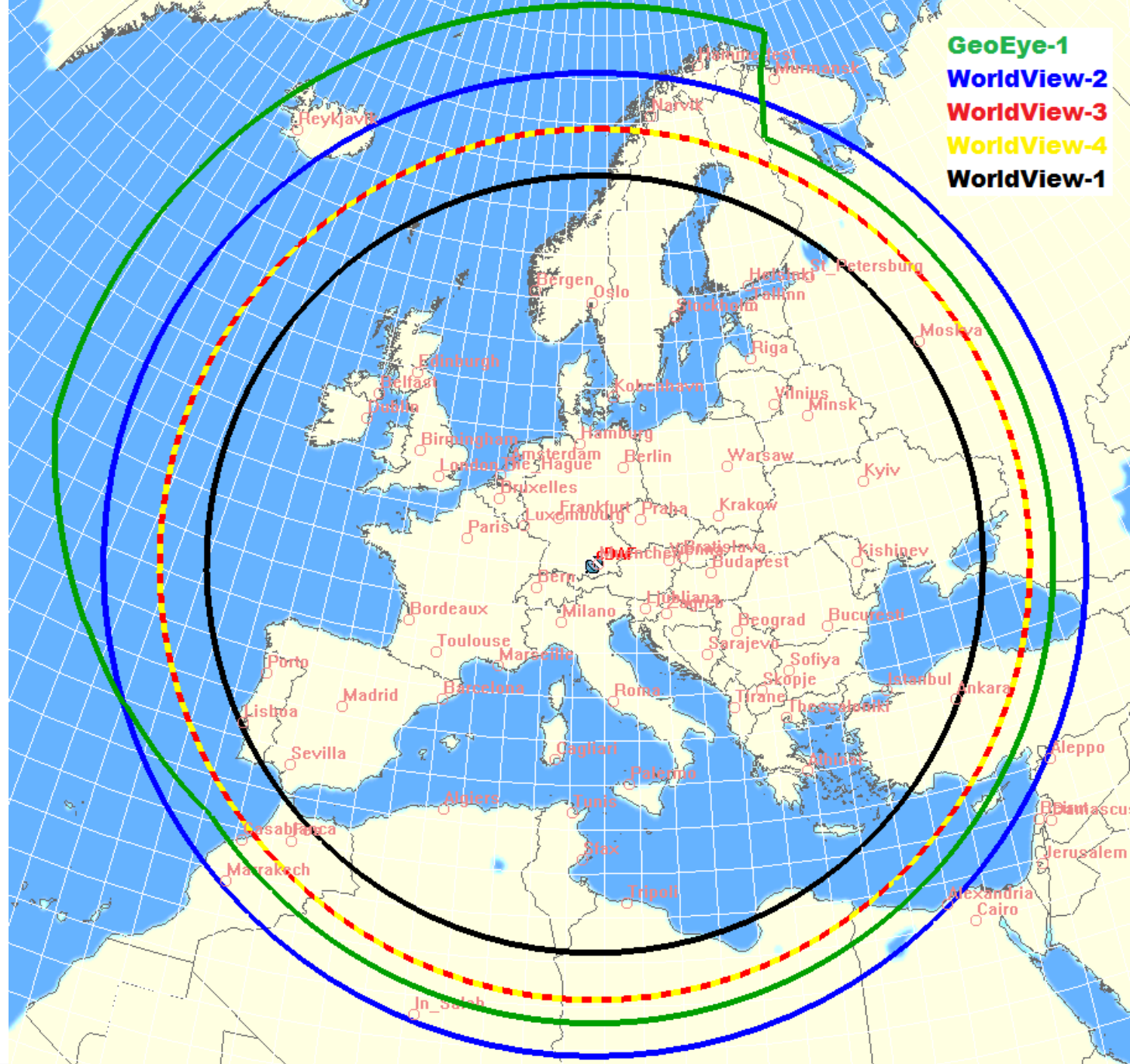
**IKONOS**

80 cm  
4-band color



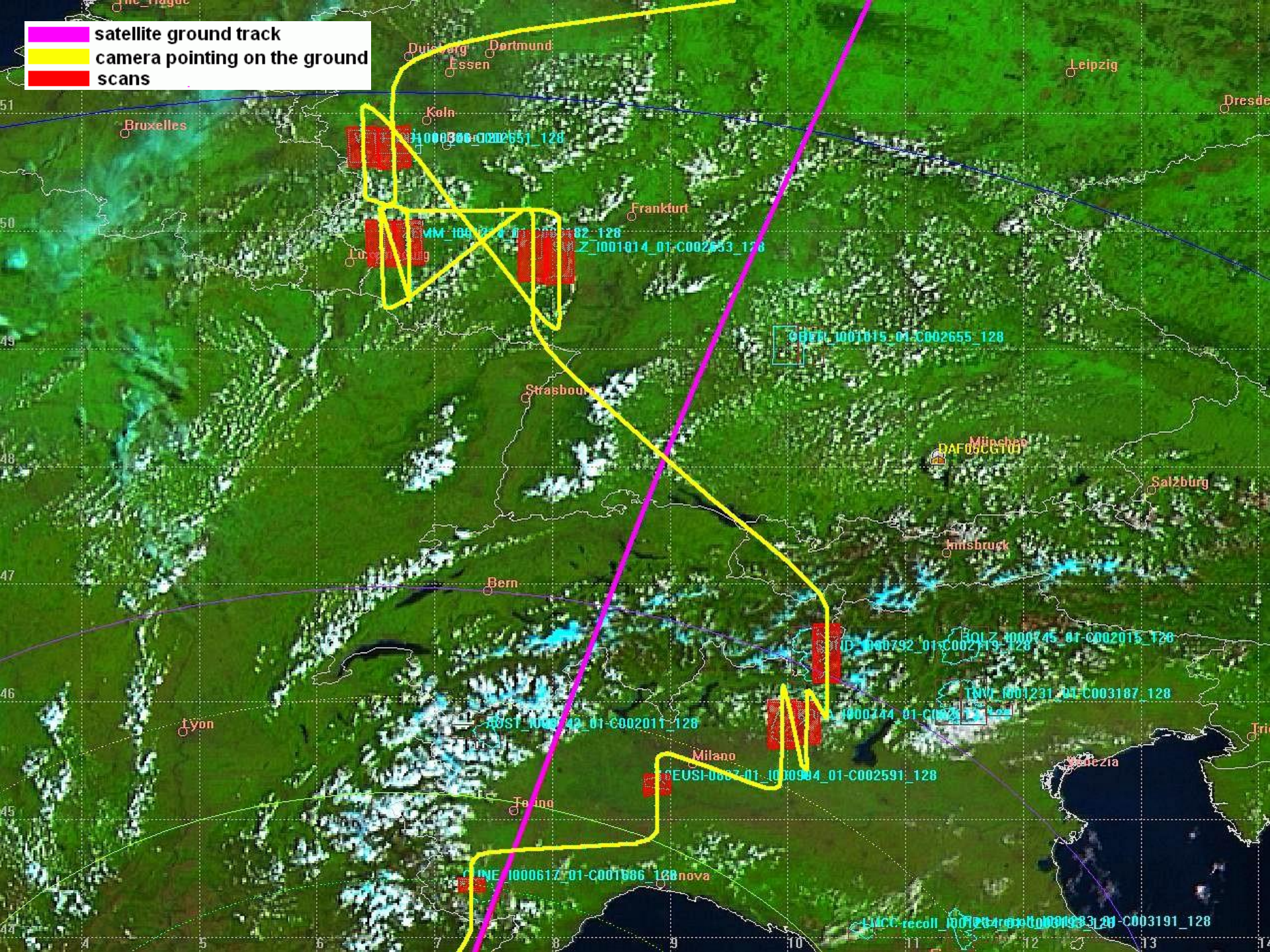
**QuickBird**

60 cm  
4-band color





- satellite ground track
- camera pointing on the ground
- scans





## Leading Satellite Constellation



- Largest fleet of VHR satellites  
5 satellites in orbit



- Highest spatial resolution  
Up to 31 cm per pixel



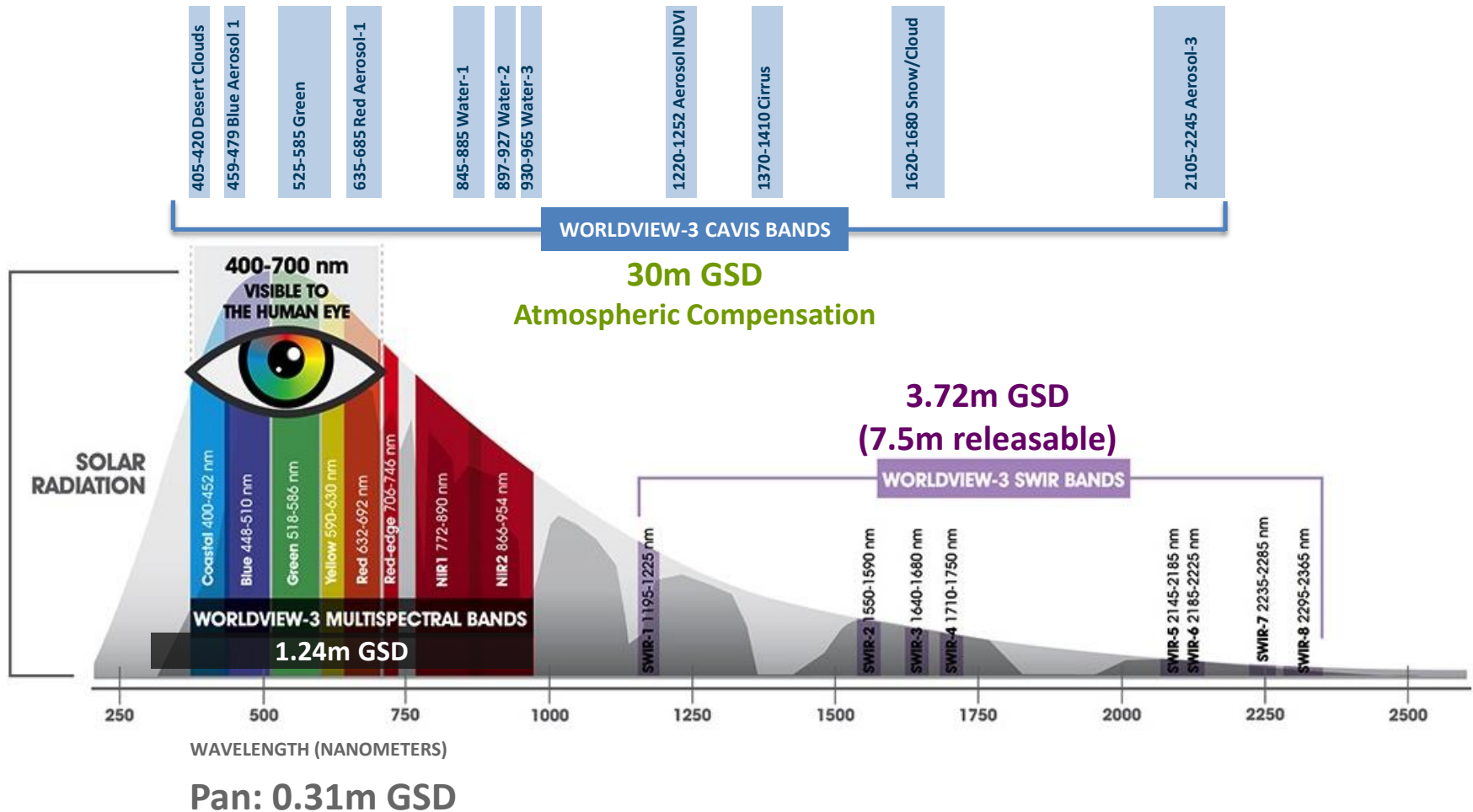
- Highest spectral resolution on VHR satellites  
8 spectral bands on WorldView-2 and WorldView-3  
+ 8 extra SWIR bands on WorldView-3



- Largest archived collection  
More than 5 billion km<sup>2</sup> imagery  
Historical imagery back to 1999  
Growing by more than 3 million km<sup>2</sup> every day

## PRODUCTS

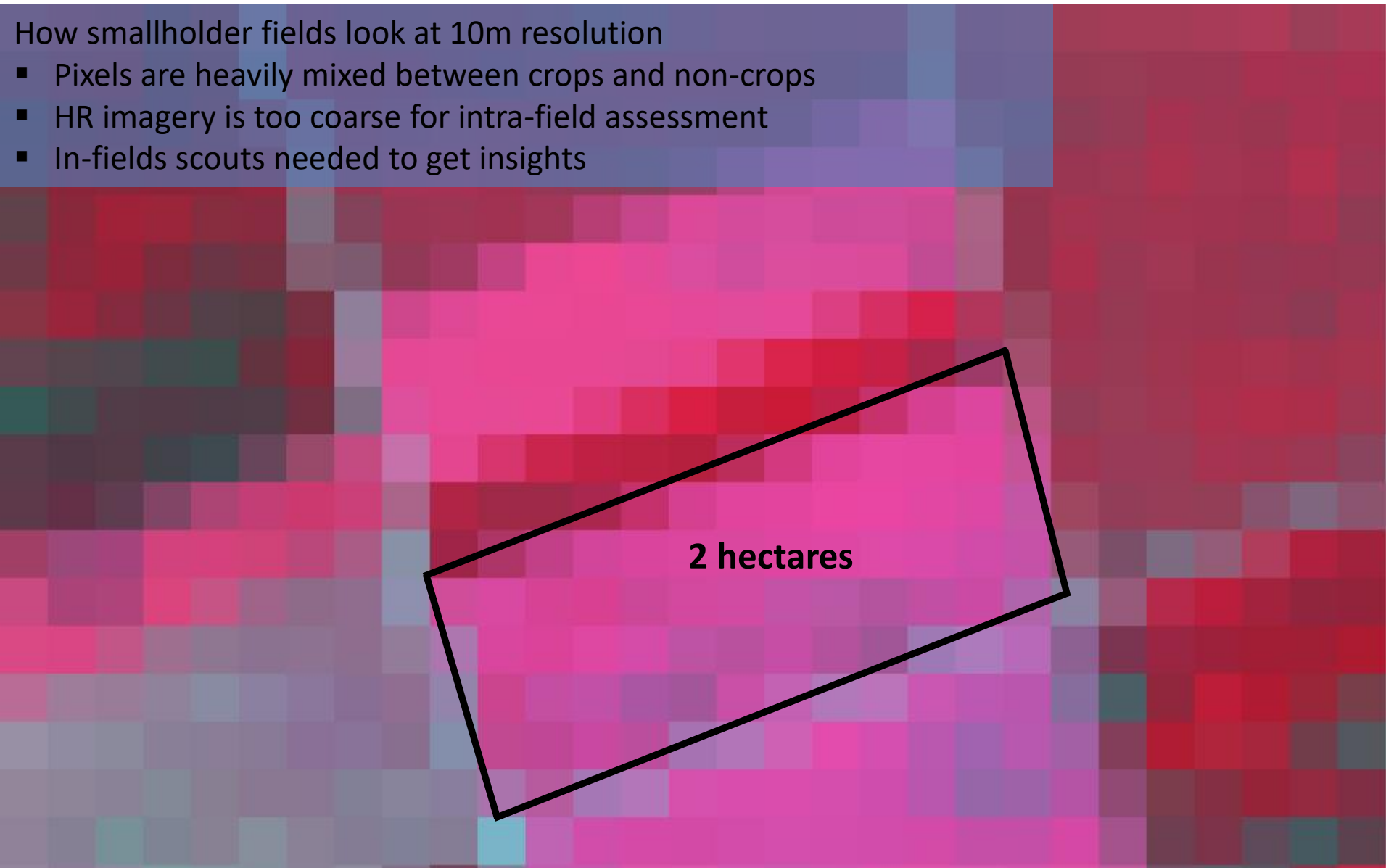
WorldView-3 is the only high-resolution “super spectral” (> 10 bands) satellite in the industry



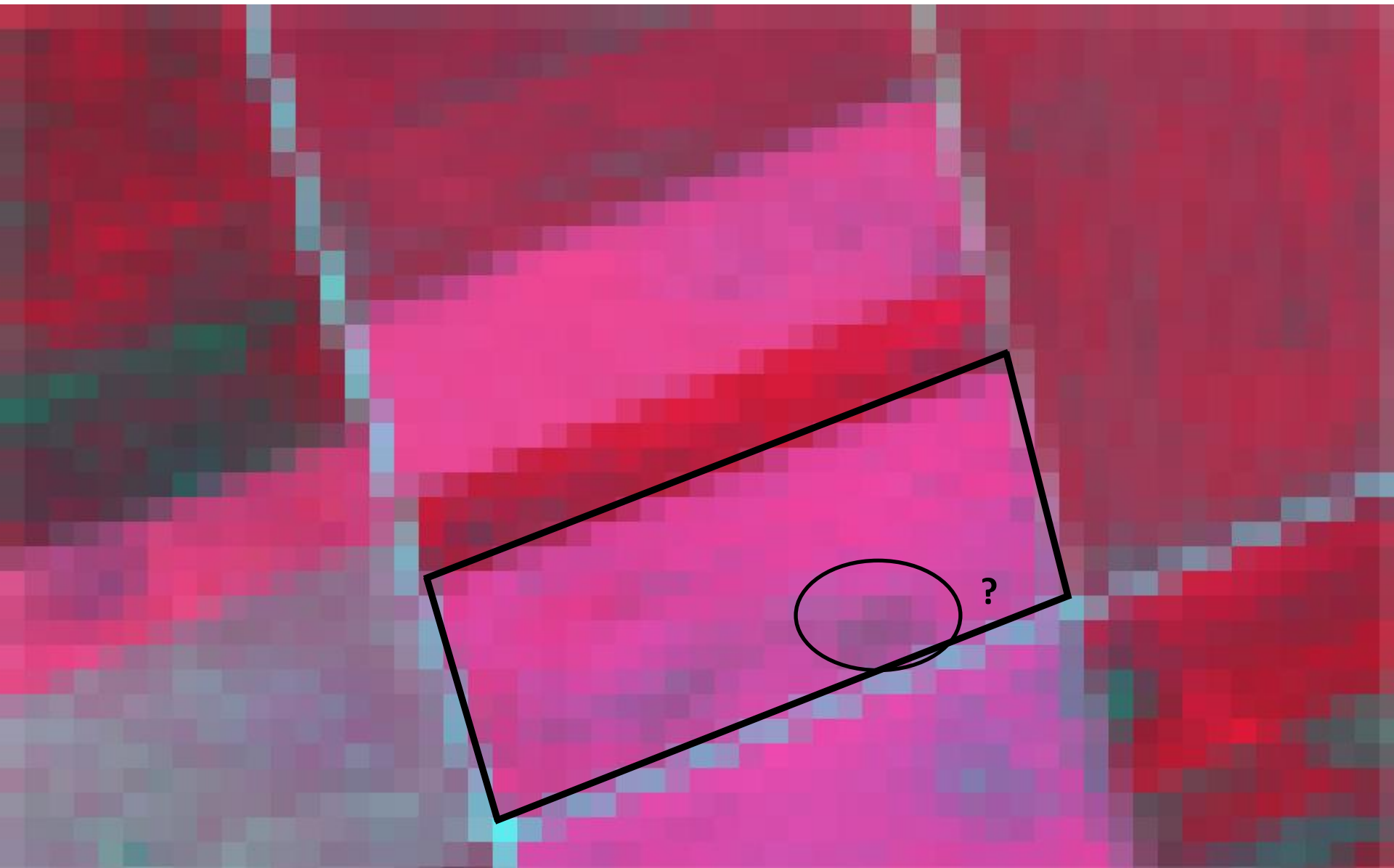


## How smallholder fields look at 10m resolution

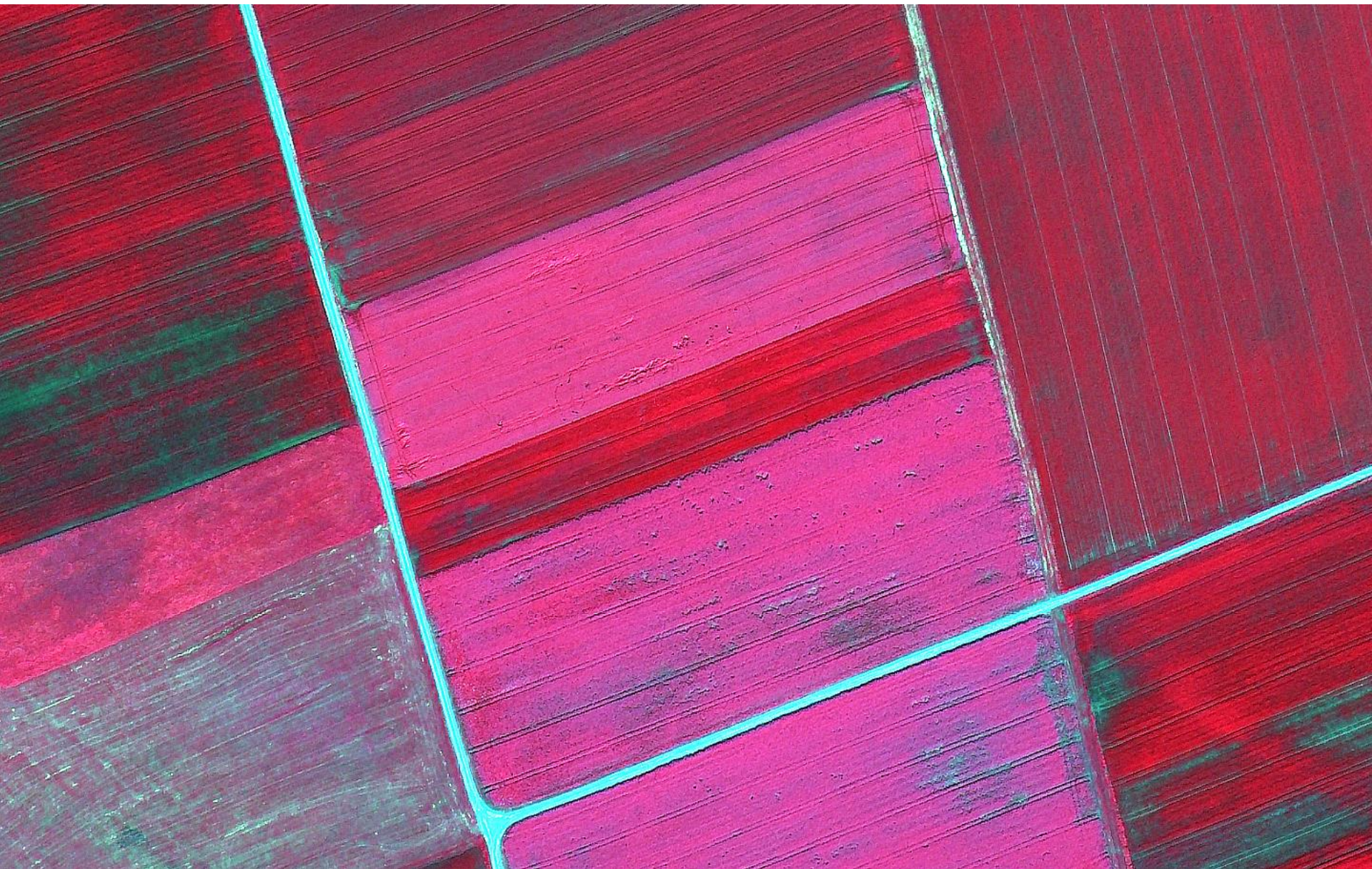
- Pixels are heavily mixed between crops and non-crops
- HR imagery is too coarse for intra-field assessment
- In-fields scouts needed to get insights



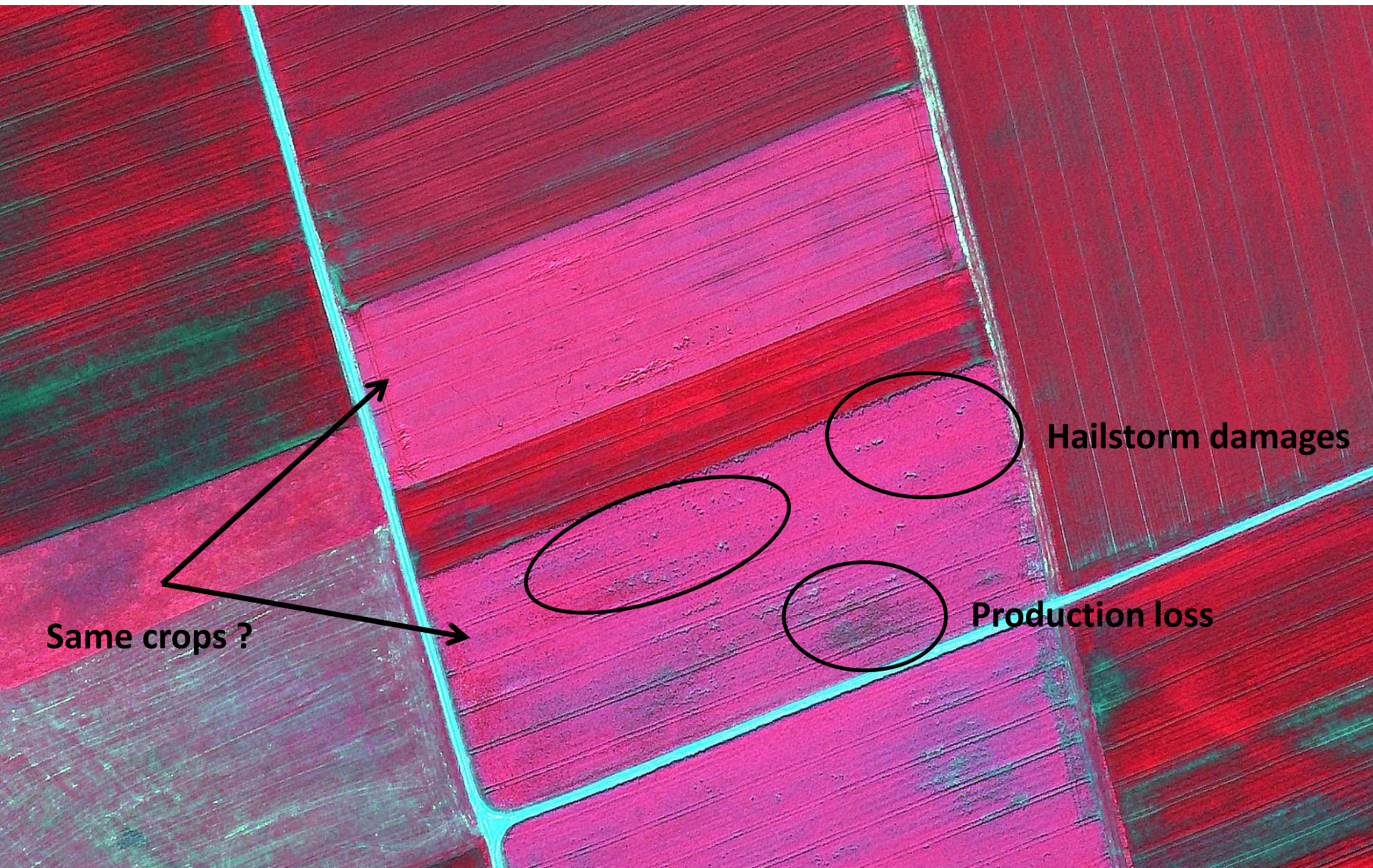
5m resolution









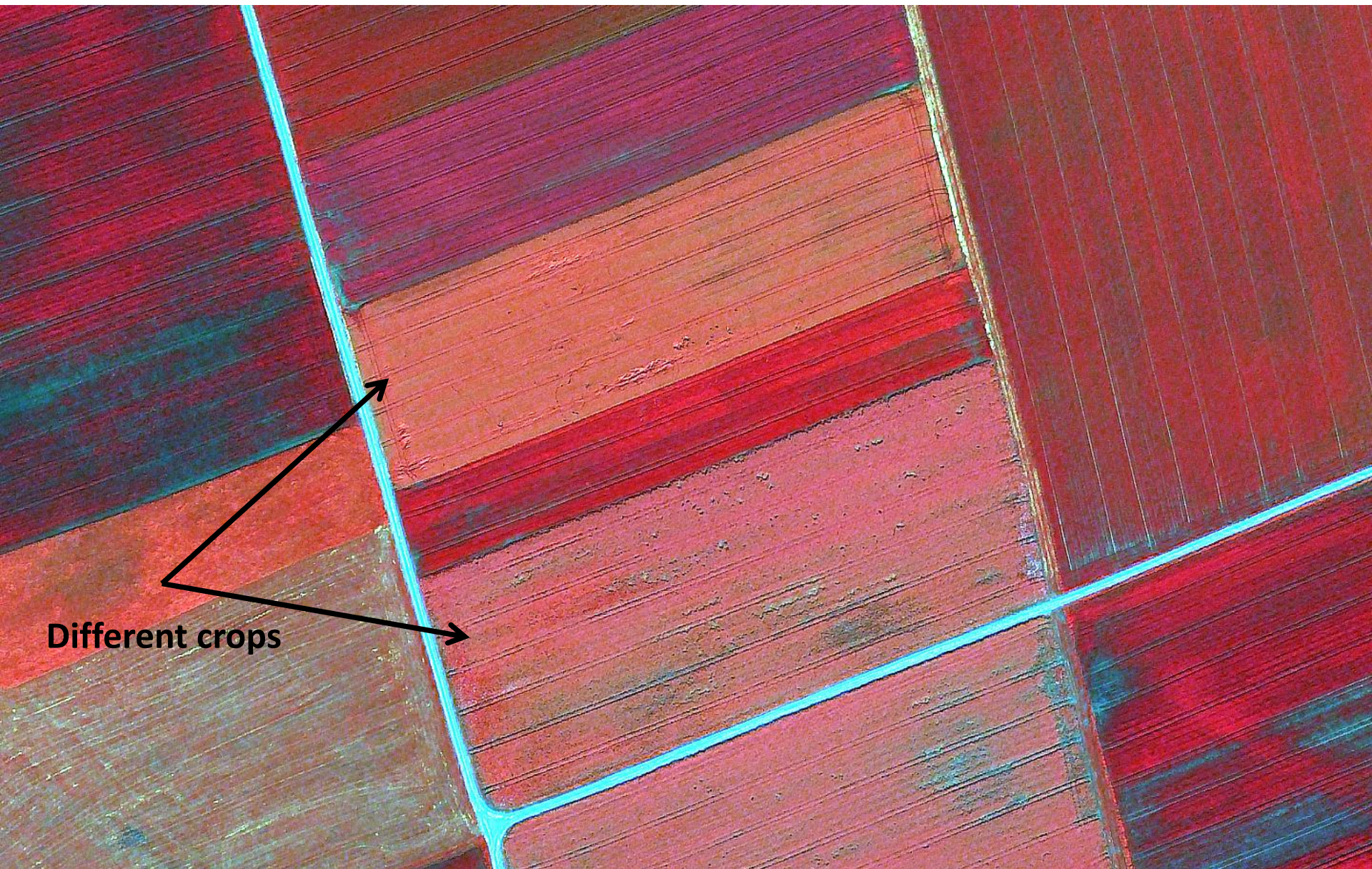


Same crops ?

Hailstorm damages

Production loss





**Different crops**



# Common Agricultural Policy Checks in the EU Member States

## EU Common Agriculture Policy (CAP)

- Provision of financial support to EU farmers
- Initially focused on export and market support
- Today used to foster compliance with agri-environmental rules

## Background

- Each year, at least 5% of EU farmers claiming direct subsidies are checked
- Up to 100% of whom are checked by remote sensing
- Farmers are chosen according to a random risk analysis carried out by the Member States
- Satellite imagery is provided to the Member States to perform the checks

## Control with Remote Sensing programme (CwRS)

- JRC programme for checking farmer's declarations
- Very high-resolution (VHR) satellite imagery began as a pilot project in 2003

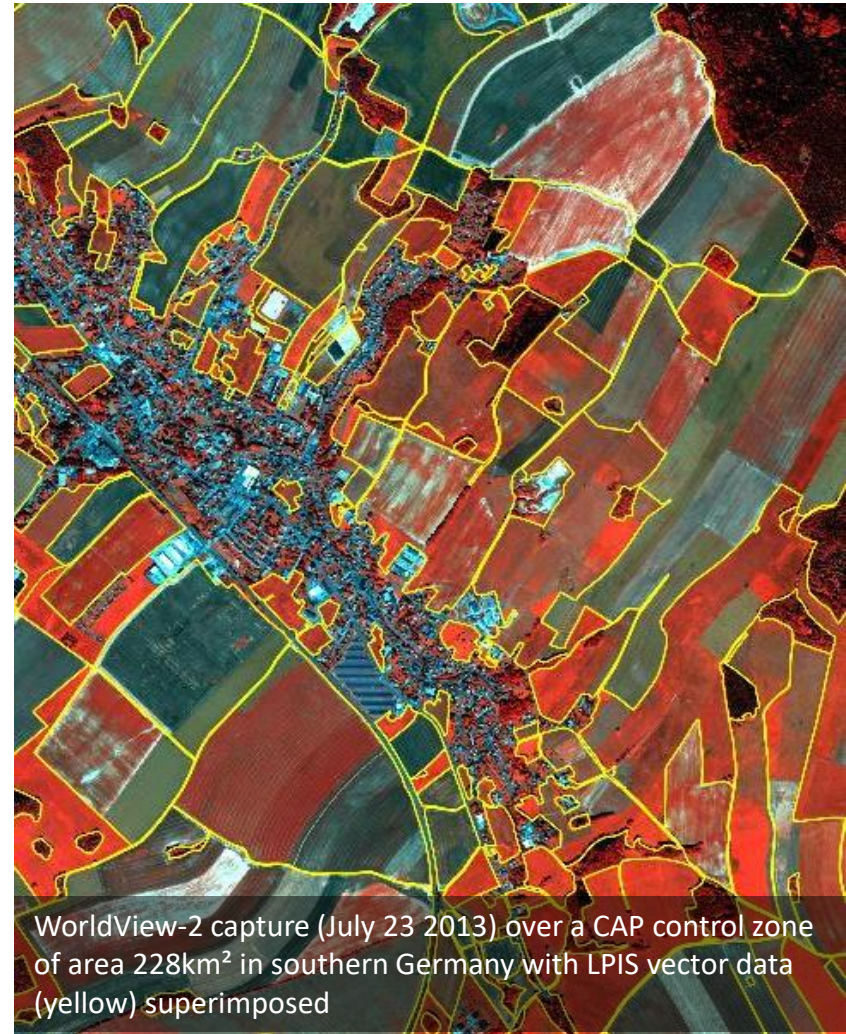




## Common Agricultural Policy Checks in the EU Member States

### EUSI's tasks are:

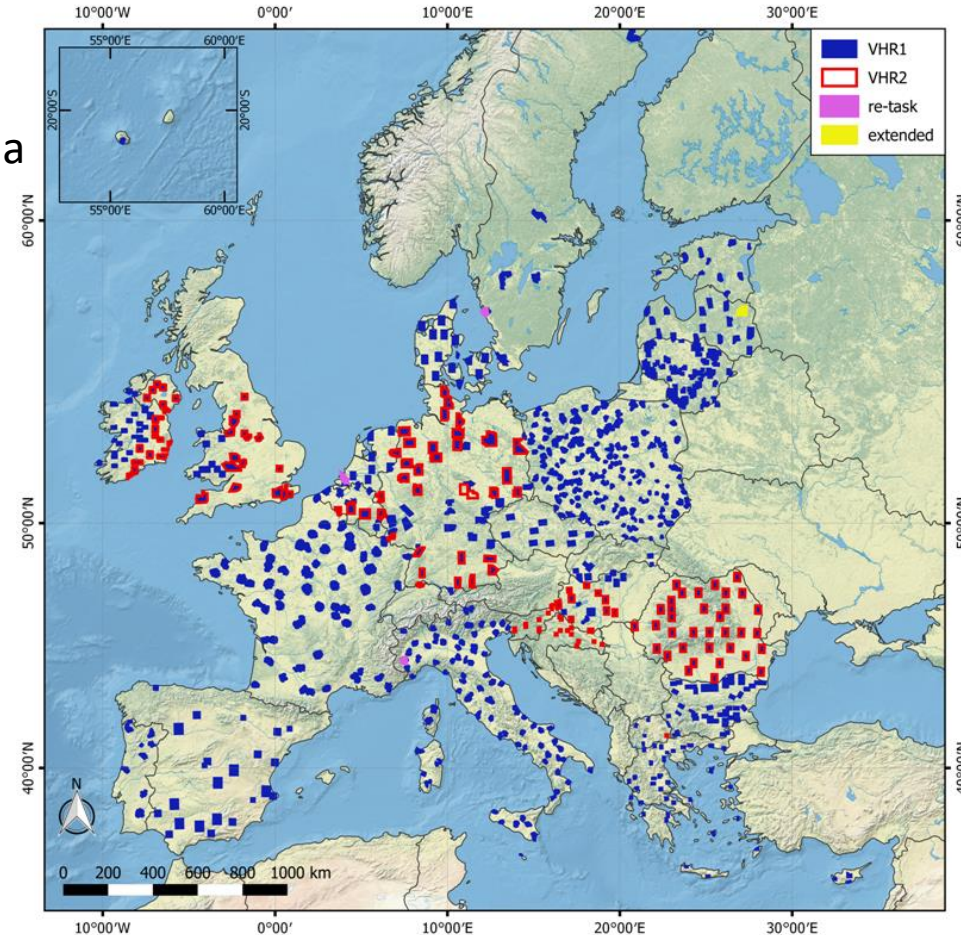
- 1) Liaise with the Member States
  - 2) Manage the incoming Member States AOIs,
  - 3) Collect the data within the varying parameters of each Member States
  - 4) Deliver the imagery within given timeframes
- Definition of new order parameter profiles (GSD, RMSE, spectral bands, stereo or mono, AOI in mountainous regions or not)
- Any sensor fitting the requirements may be used in order to increase successful image acquisition



## Common Agricultural Policy Checks in the EU Member States

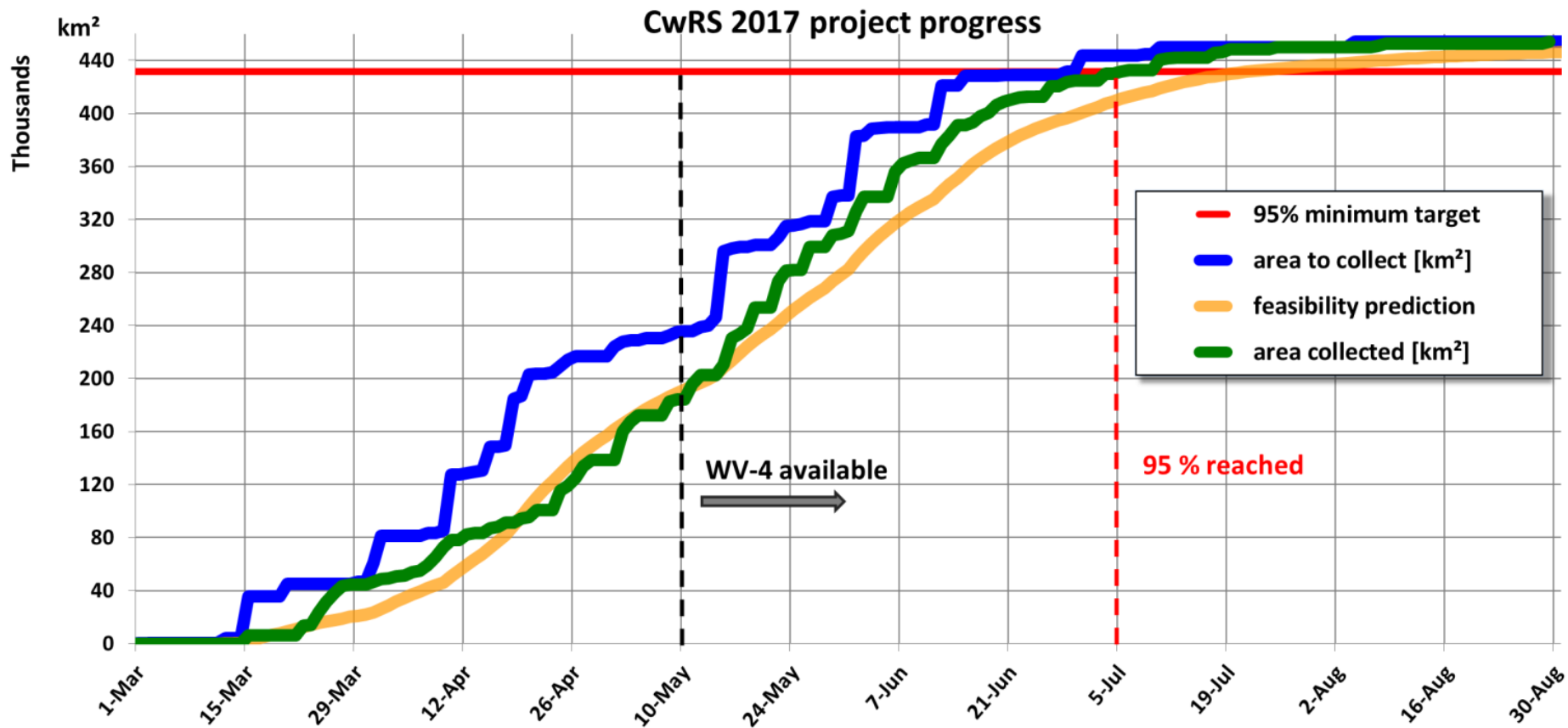
### VHR Image Acquisition Campaign 2017

- 26 EU Member States + Republic of Macedonia
- Nearly half a million sq.km
- 845 agricultural zones spread all over Europe
- Images collected for over 70% of the zones within two weeks of the window opening
- **Success rate : 100%**

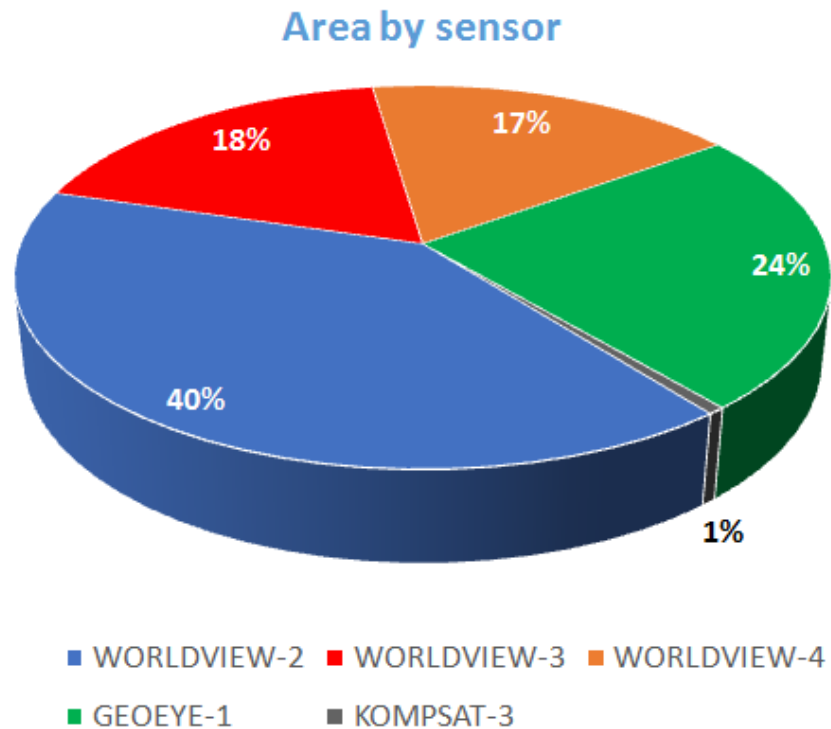




## Common Agricultural Policy Checks in the EU Member States



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Sensor	Area km <sup>2</sup>
GEOEYE-1	108.191
WORLDVIEW-2	182.393
WORLDVIEW-3	81.886
WORLDVIEW-4	78.824
KOMPSAT-3	2.709





## Image samples
































Thank you for your attention !