



Use of Sentinel images for fairer control of the Common Agricultural Policy

EFGS –

10-11 October 2019

Plan

- New CAP monitoring process
 - Introduction to CAP
 - Drawbacks of current process
 - Sentinel images
 - Smart monitoring approach
- NIVA project
 - Overview
 - Monitoring related Use Cases
 - Challenges

The theory

The practice

New CAP monitoring process

CAP management

- Common Agricultural Policy
 - Payment from European Commission
 - Managed by Member States
 - IACS : Integrated Administration and Control System
- Different kinds of payments, most depending on the cultivated areas
 - Agricultural activity
 - Agriculture greening
- Farmers declare
 - Parcel geometry => eligible area
 - Agriculture practice (e.g. crop)



Current monitoring process: principles

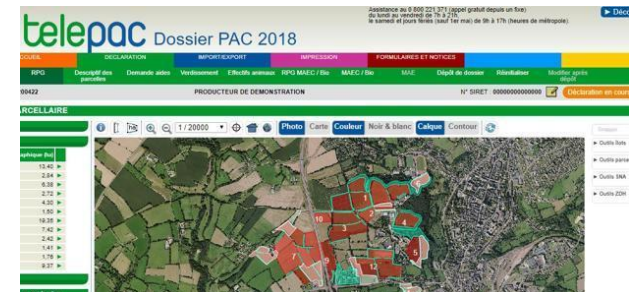
- On The Spot Checks

- Based on sampling

- 5% of farmer declarations

- Using

- (human) photo-interpretation of images
 - Few dates in a year (e.g. 4 dates in France)
 - Visits on the fields



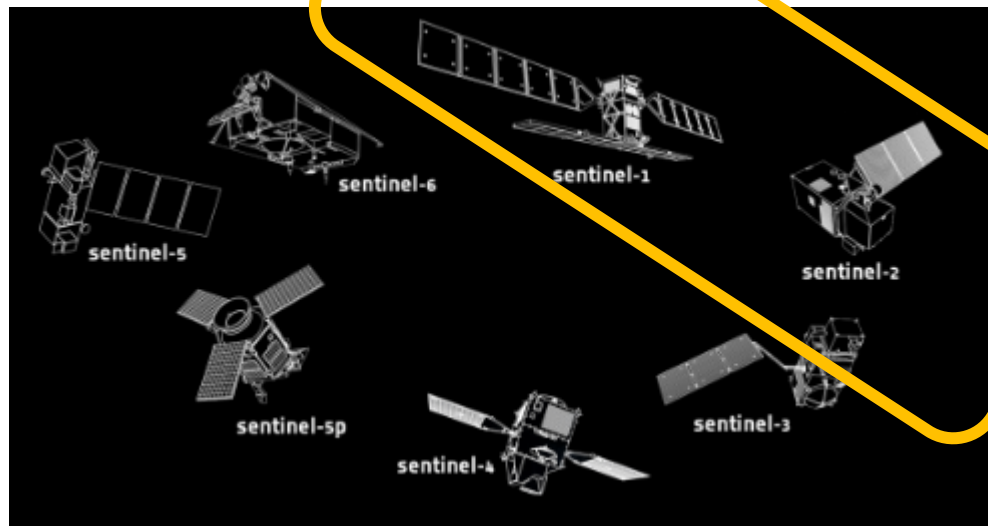
Current monitoring process: drawbacks

- Farmers
 - Only a few ones are checked
 - But exaggerated penalties
 - Fraud still possible (if among the lucky 95 % not checked!)
- Members States
 - “conflicts” with European Commission
 - If national control system considered as not efficient enough

**Some mistrust
Control process not very fair and not totally efficient**

Sentinel images

- Earth Observation satellites
- Within Copernicus program (European Commission)



Sentinel images

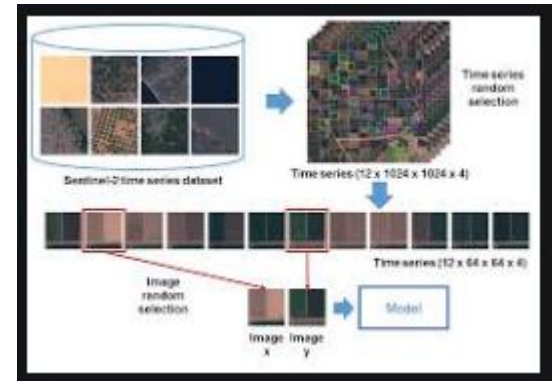
- Image characteristics:

- **Frequency : 5 days**

- Resolution : 10 m

- Radar (Sentinel-1) and optic (Sentinel-2)

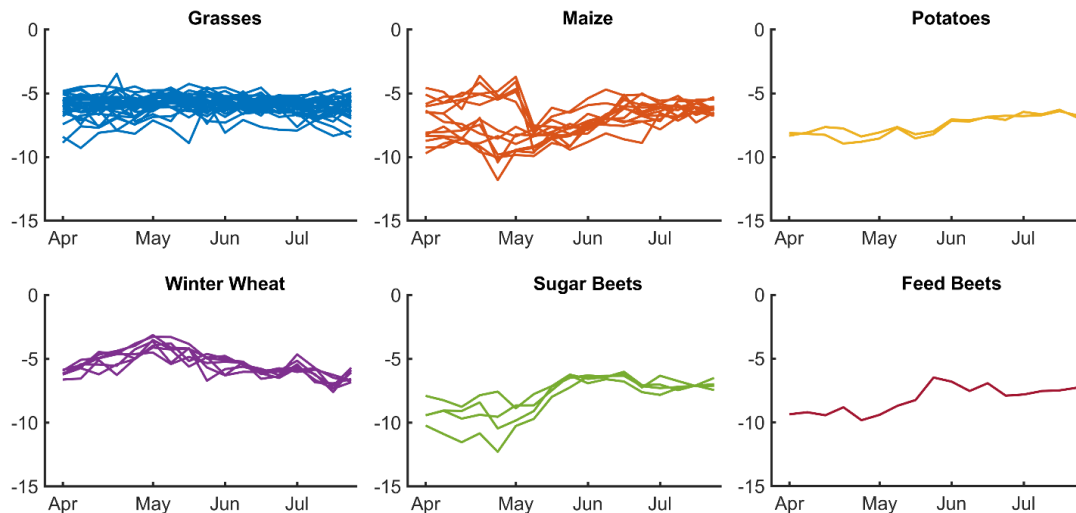
- Free



Time series of Sentinel images enable continuous monitoring of land cover

New monitoring process

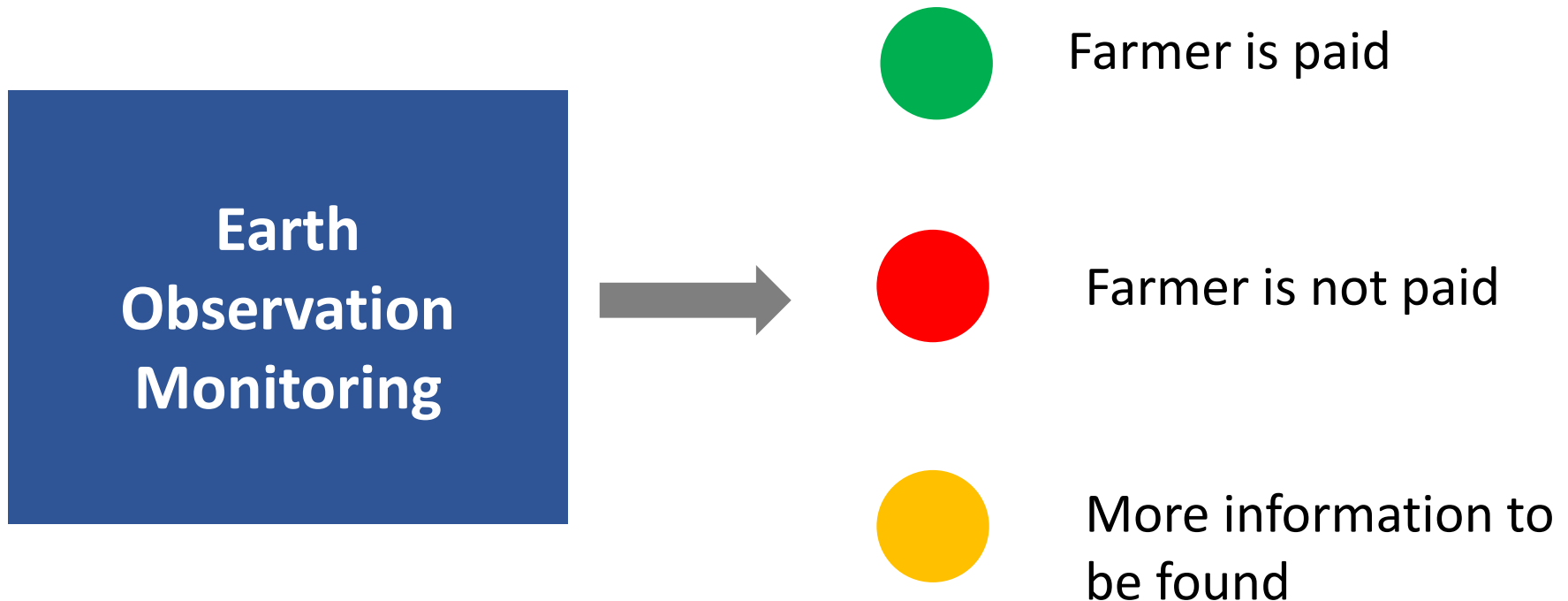
- Principle : use potential of Sentinel images
 - Systematic monitoring (100 % parcels)



Temporal profiles of vegetation index enable crop identification (previous projects Sen4CAP, Sen4Agri,)

New monitoring process

- Process



New monitoring process

- Expected benefits
 - Continuous monitoring
 - Farmer may (quickly) provide alternative proofs
 - Farmer might be offered to withdraw his/her declaration
 - Systematic monitoring
 - Everyone checked
 - => more proportionate sanctions

The purpose is not to chase the red lights, it is to make them disappear (DG AGRI)

NIVA project



Context

- New smart monitoring approach to be applied on whole (political) Europe in 2022
- Some preliminary activities
 - European projects about exploitation of Sentinel images
 - Automatic processes (machine learning)
 - Some national implementations
 - Limited scope (type of aid)
 - Limited geographic extent



Need for “large scale” solutions

NIVA project



- NIVA: New IACS Vision in Action
 - IACS: Information System for CAP administration
- Objectives:
 - **Provide common tools for the new smart monitoring approach**
 - Modernise CAP administration
 - Open IACS data to other domains (e.g. environment)

NIVA project



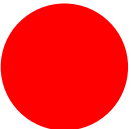
- Calendar
 - 3 years
 - June 2019 – May 2022
- Partners:
 - Paying Agencies (9 MS)
 - Technical partners
- Budget : 10 M €



Monitoring related Use Cases

Sentinel images

Farmer declaration



Machine



Monitoring related Use Cases

*Open IACS
data to
other
domains*

**Agro-environmental
monitoring**

**Farmer
performance**

Technical challenges

- Processing of Sentinel images
 - Big data (volume, velocity)
 - => need to process lots of images in short time
- Limits of Sentinel images:
 - Resolution : not fine enough
 - For checking eligible area
 - For checking cultures on small parcels
 - Relevance for CAP monitoring depending on
 - Geographic extent (clouds)
 - Type of agricultural activity
 - Grazing in permanent grassland
 - Type of aid

Aerial
orthoimages



(Parcel)
Change
detection



Human challenges

- Some fears from farmers
 - Reluctance to provide machine data
 - Taking (valid) geotagged photos might be not so easy
 - Big Brother feeling
- Mitigation actions in NIVA
 - A few Farmer organisations being in the project
 - Involve farmers (workshops)

Issues mainly in
case farmers
should provide
alternative
proofs

Conclusions

New CAP monitoring

- Sentinel images provide good opportunity for better CAP control
 - **Fairer**
 - More efficient
- More **trust** between European Commission, Member States and farmers is expected
- But still a lot of challenges to migrate from (nice) theory into real practice!

Thanks for your attention

