



INSTITUTO
TECNOLÓGICO
AGRARIO



**Junta de
Castilla y León**

Integration of sen4cap products in the Check by Monitoring workflow

Paying Agency of Castile and León (Spain) case

David A. Nafría nafgarda@itacyl.es

Alberto Gutiérrez ita-gutgaral@itacyl.es

Vanessa Paredes pargomva@itacyl.es

Javier Rojo rojrevfr@itacyl.es

About ITACyL

National Ministry of Agriculture...

FEGA (Coordinating body)



Castilla y León Ministry of Agriculture

DG Common
Agricultural Policy.
IACS Team

DG Agricultural
Technological
Institute(ITACyL)

- Agricultural research and innovation public entity
- Two teams specialized in Geo-technologies for agriculture
 - ✓ Research and Innovation: Earth Observation, agrometeorology and soil science, crop modelling, GNSS
 - ✓ CAP support: LPIS upkeeping, OTSC and CbM

Castile and León is the 12th largest
EAGF paying agency in Europe.
94,000 km²



How did we get involved? Pre-CAP monitoring

2014 -2016

- USDA (CDL) methodology.
- Use of Deimos-1 and Landsat-8
- First Crop Map Classification (mcysncyl)

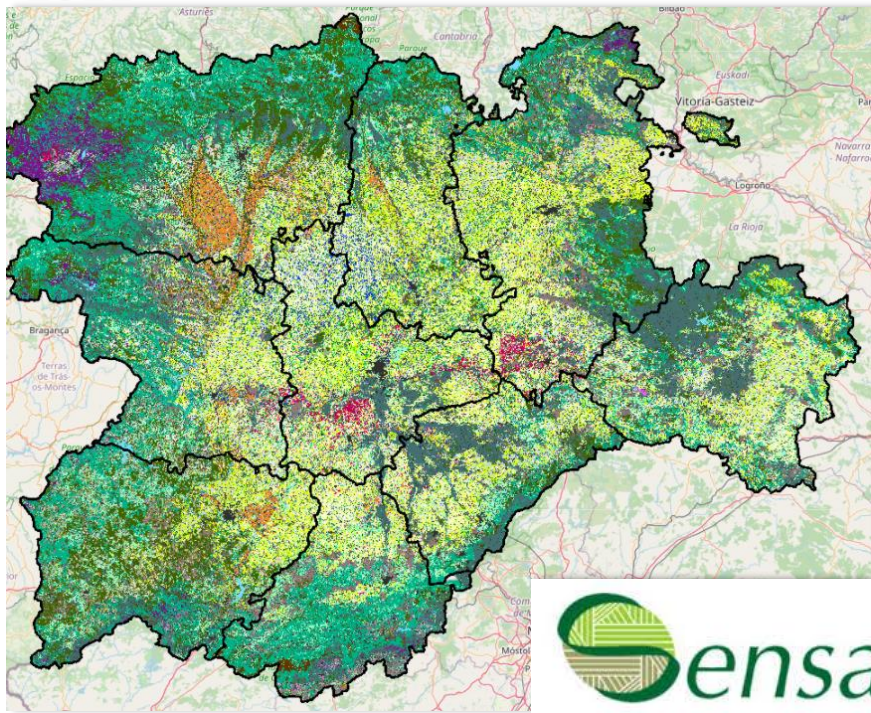
2017

- Sentinel-2 images availability
- EC shift towards CbM
- PA interest for the product

2018

- PA requirements collection
- Workflow to integrate RS data and Crop Map Classification within IACS.
- Deployment of the infrastructure

2011 → 2016 → 2020...

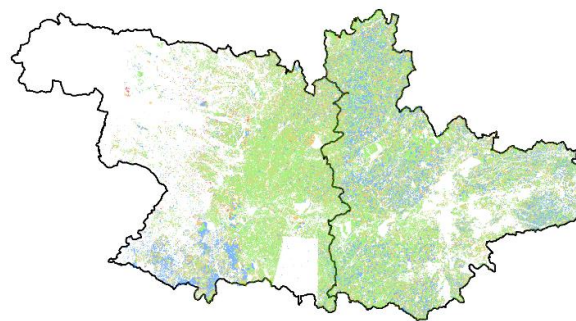


Sensagri
Sentinels Synergy for Agriculture

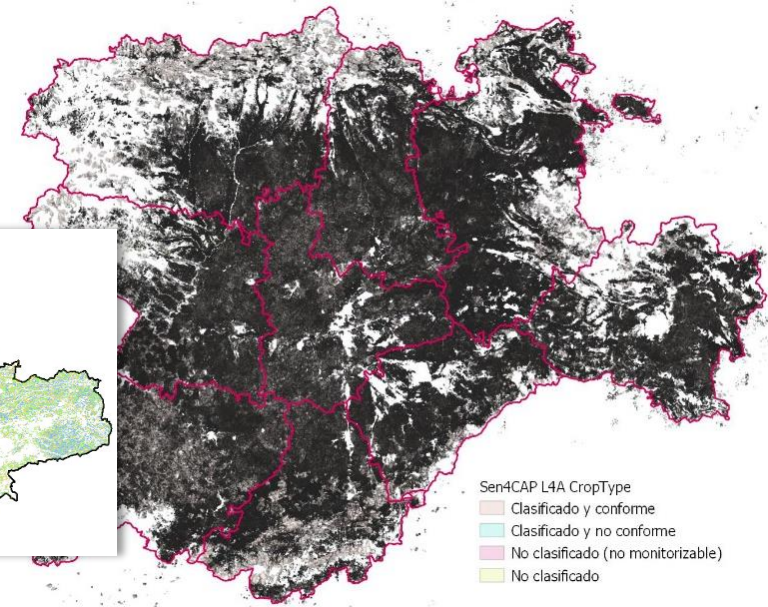


- Engagement as test site thanks to FEAGA
- User requirements

Prototyping



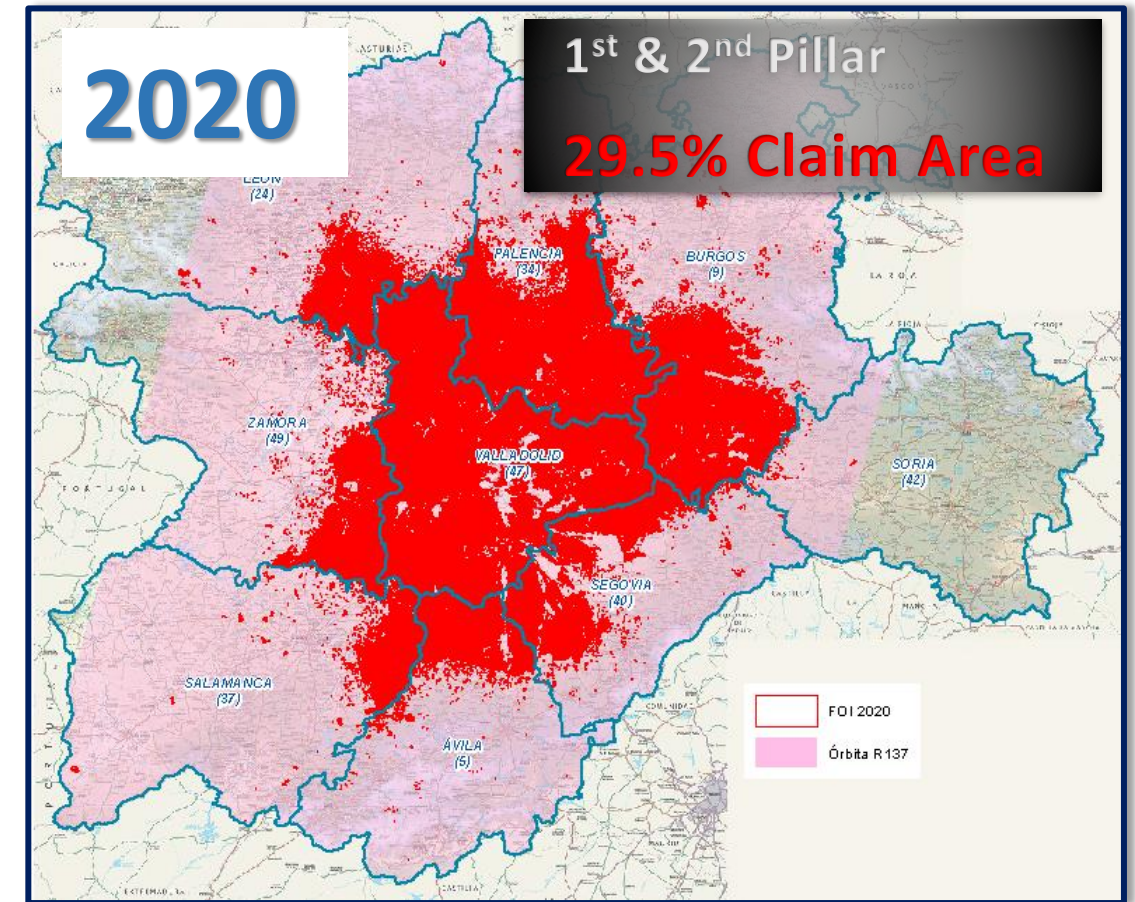
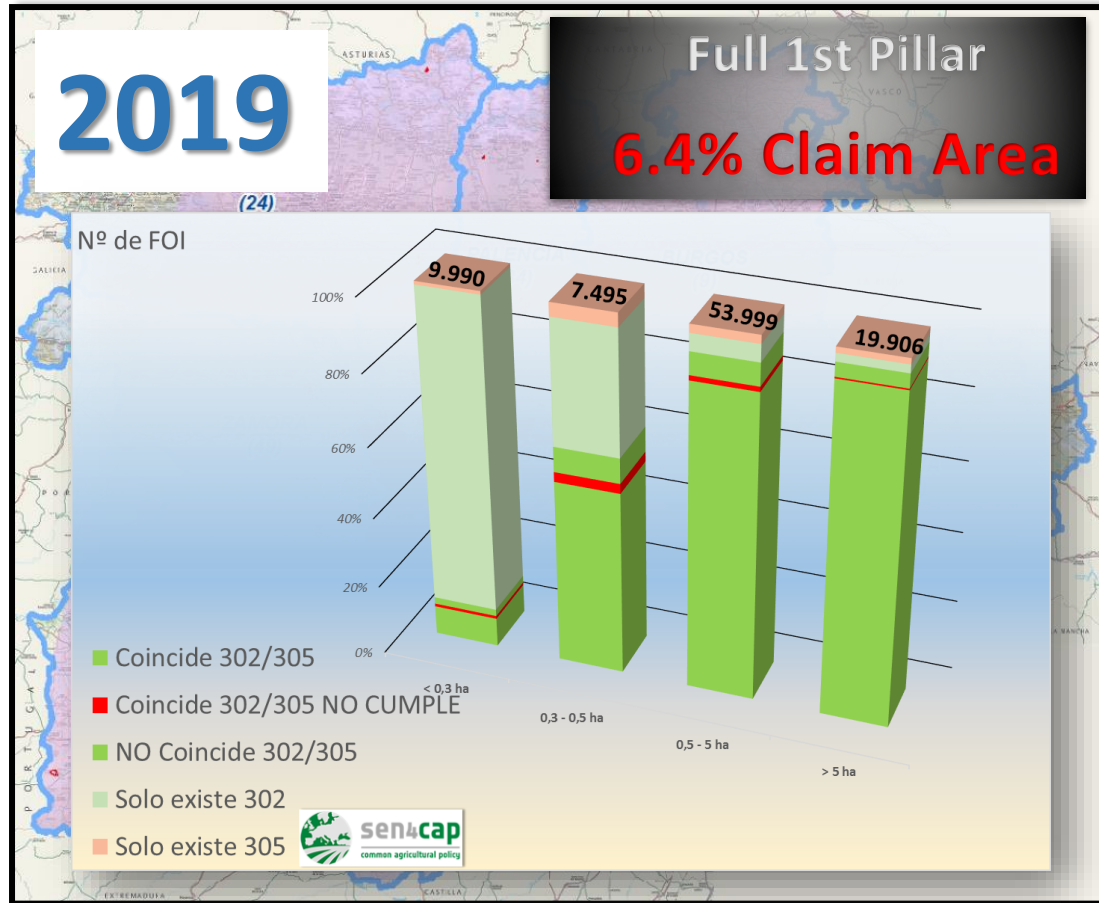
1st Evidence



Sen4CAP L4A CropType

- Clasificado y conforme
- Clasificado y no conforme
- No clasificado (no monitorizable)
- No clasificado

How did we monitor CAP?



- All processors run in cloud environment
- Supervised and managed by sen4cap team
- Crop type map integrated in IACS workflow

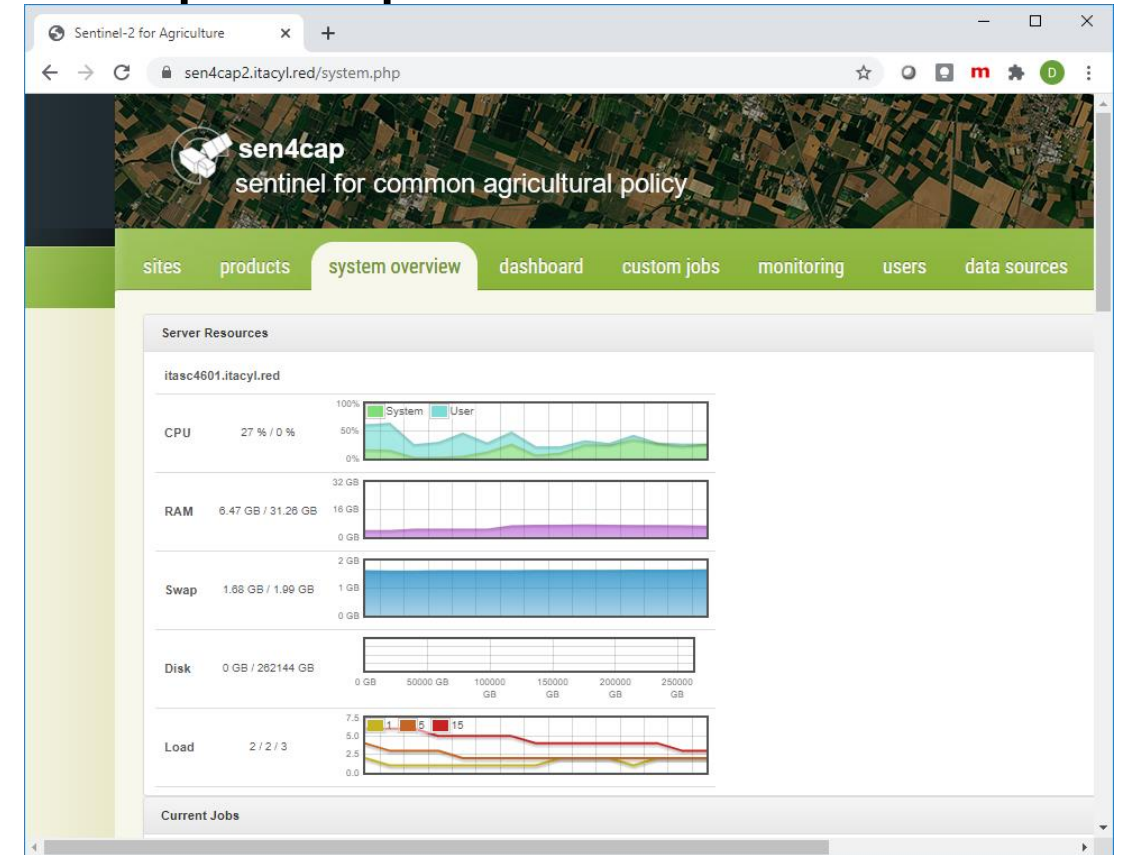


sen4cap
common agricultural policy

- Sen4cap run during 2020 campaign
- Two sen4cap instances running:
 - ✓ PA premises
 - ✓ Cloud environment: SCAYLE

Sen4cap installation from IT perspective

- Clean process using scripts with some dependencies.
- Well documented
- Easy update
- Very Good support from Cosmin Udriou – Cs-Ro
- Problem with the disk usage monitoring



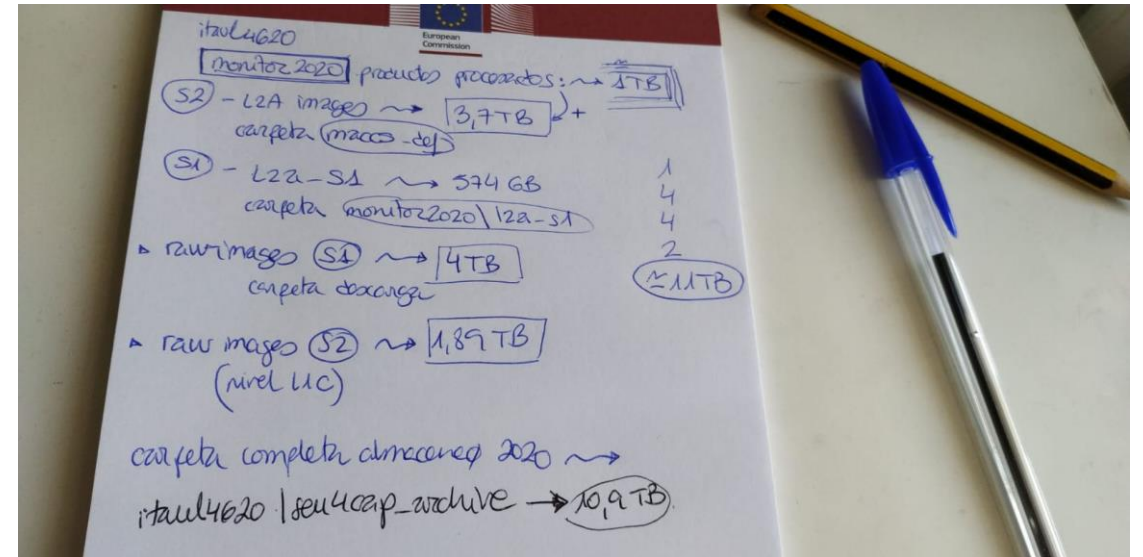
Technical requirements (~90 000km²)

- CPU: 8 Cores
- RAM: 64GB
- HDD Storage: 8 TB (without S-1, S-2 L1 storage)
- SSD Storage: 150 GB (optional)

Data usage for CyL PA in 2020 (100,000 km²)

- S1 raw 4 TB
- S2 raw (L1C) 1,89 TB
- S1 derived products 4 TB
- S2 derived products 4TB

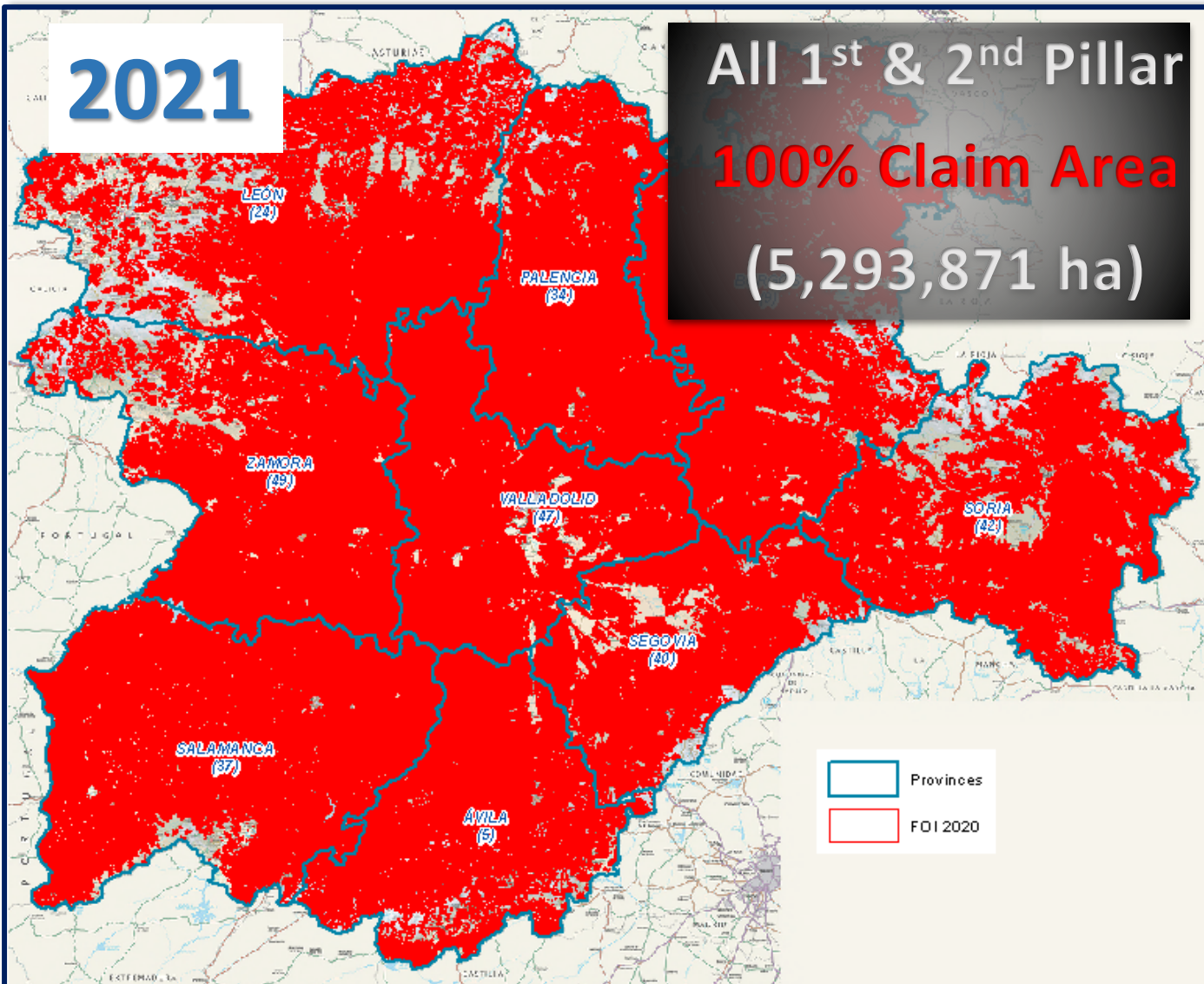
11 TB full season



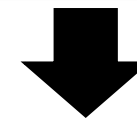
What about 2021?



- Replace our downloading system with Sen4cap's
- Define new markers from Sentinel-1 signal and from biophysical products
- Take advantage of new markers such as tillage from Sen4CAP 2.0



What do PAs need to set a monitoring system?



1. **Farmers application** software

- Updated with current season satellite imagery
- Preloaded markers from previous years and current season land cover

NO

essential → 2. **Image downloading** and pre-processing scripts (signals)

Yes

3. Derived products for crop and ag. practices identification (**markers**)

Some

essential → 4. **Vector intersection** to store markers in Monitoring DB next to IACS DB

Yes

essential → 5. Decision rules based in Monitoring and IACS databases.

NO

essential → 6. **Expert judgement tool** that integrate application data with signals, markers and rules.

NO

7. Farmer Interaction APP (notifications, geotagged pictures, etc.)

NO

Conclusions and remarks

- Sen4cap looks appealing, it has some features quite interesting for us.
- Challenge to integrate with in-home process and IACS. Need to explore:
 - GSAA live update in sen4cap postGIS layer
 - Markers database API
- **If we were starting with CbM from scratch right now, sen4cap would be the our starting point.**