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The potential use of geospatial data sources for Evaluation

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INSTITUTO TECNOLÓGICO AGRARIO | Junta de Castilla y León

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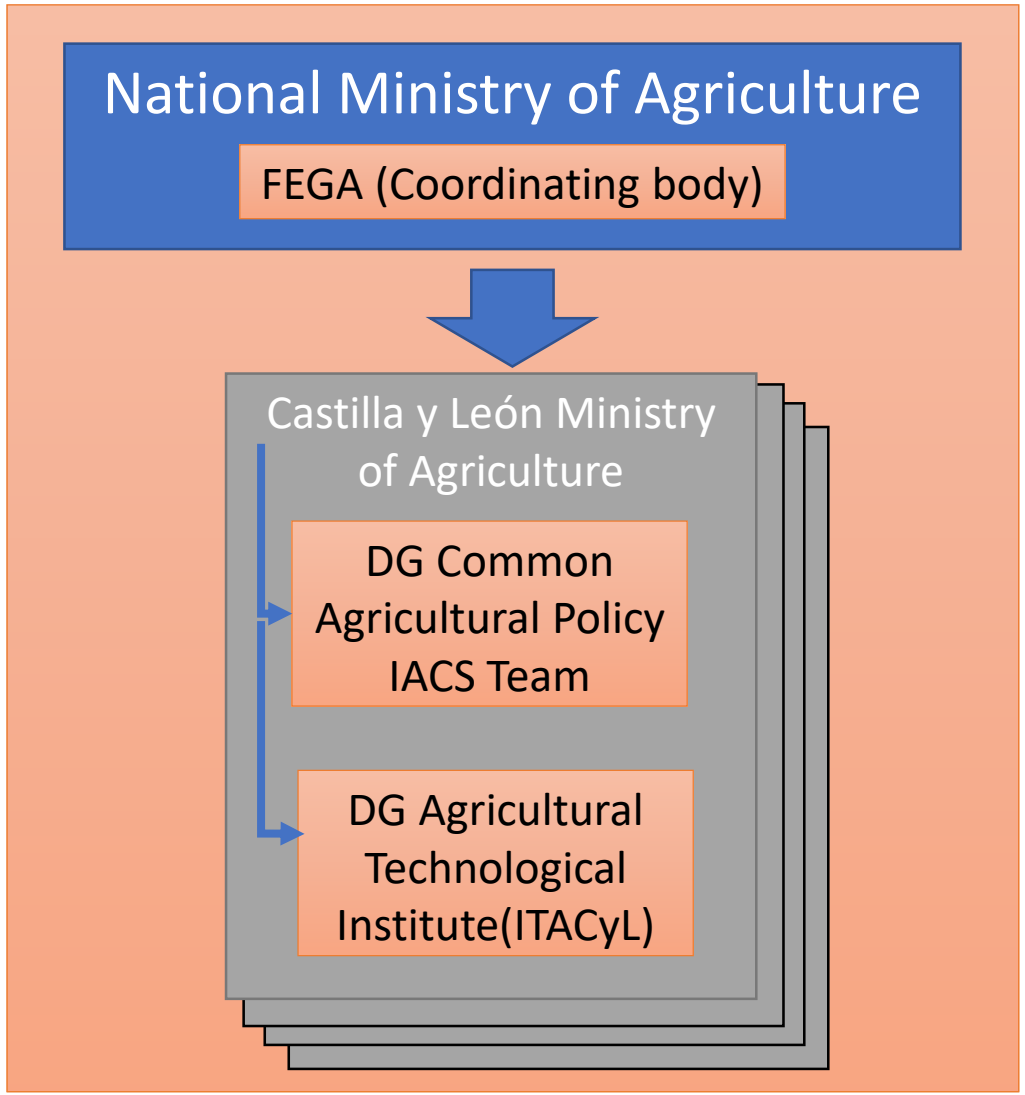

About ITACyL

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- Research and IT public entity that belongs to the Regional Ministry of Agriculture of CyL.
- Two departments specialized in Geo-technologies for agriculture.
  - ✓ CAP support: LPIS upkeeping, OTSC and CbM
  - ✓ Research and Innovation: Earth Observation, agrometeorology and soil science, crop modelling, GNSS

12th largest EAGF PA in Europe.
94,000 km²

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Remote Sensing

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2014 -2016

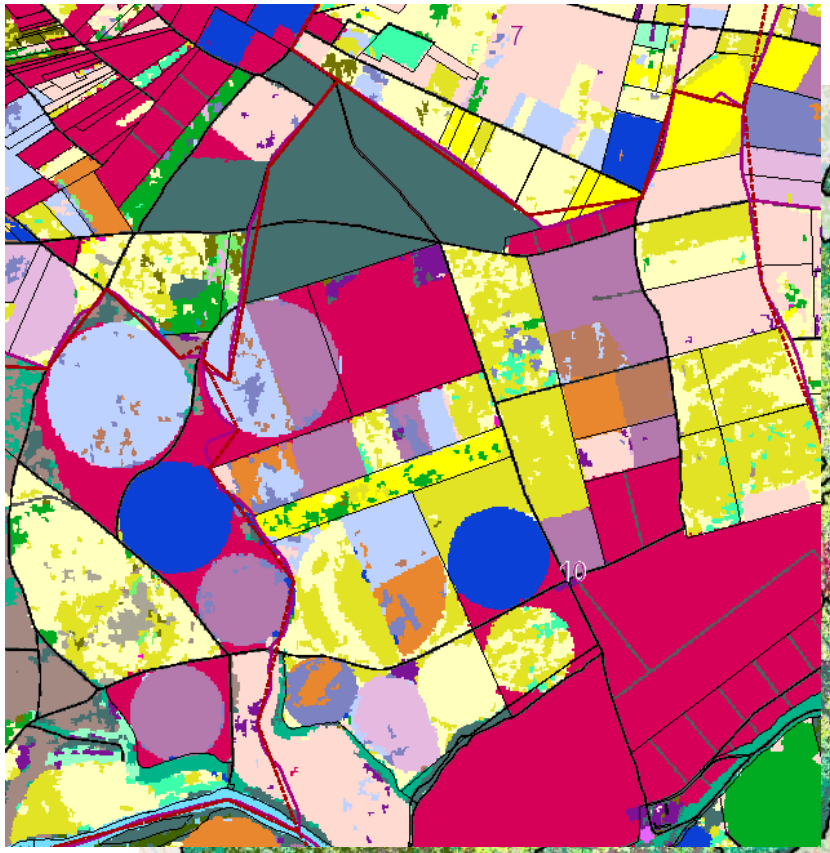
- USDA (CDL) methodology.
- Deimos-1 and Landsat-8
- First Crop Map Classification (**mcysncyl**)

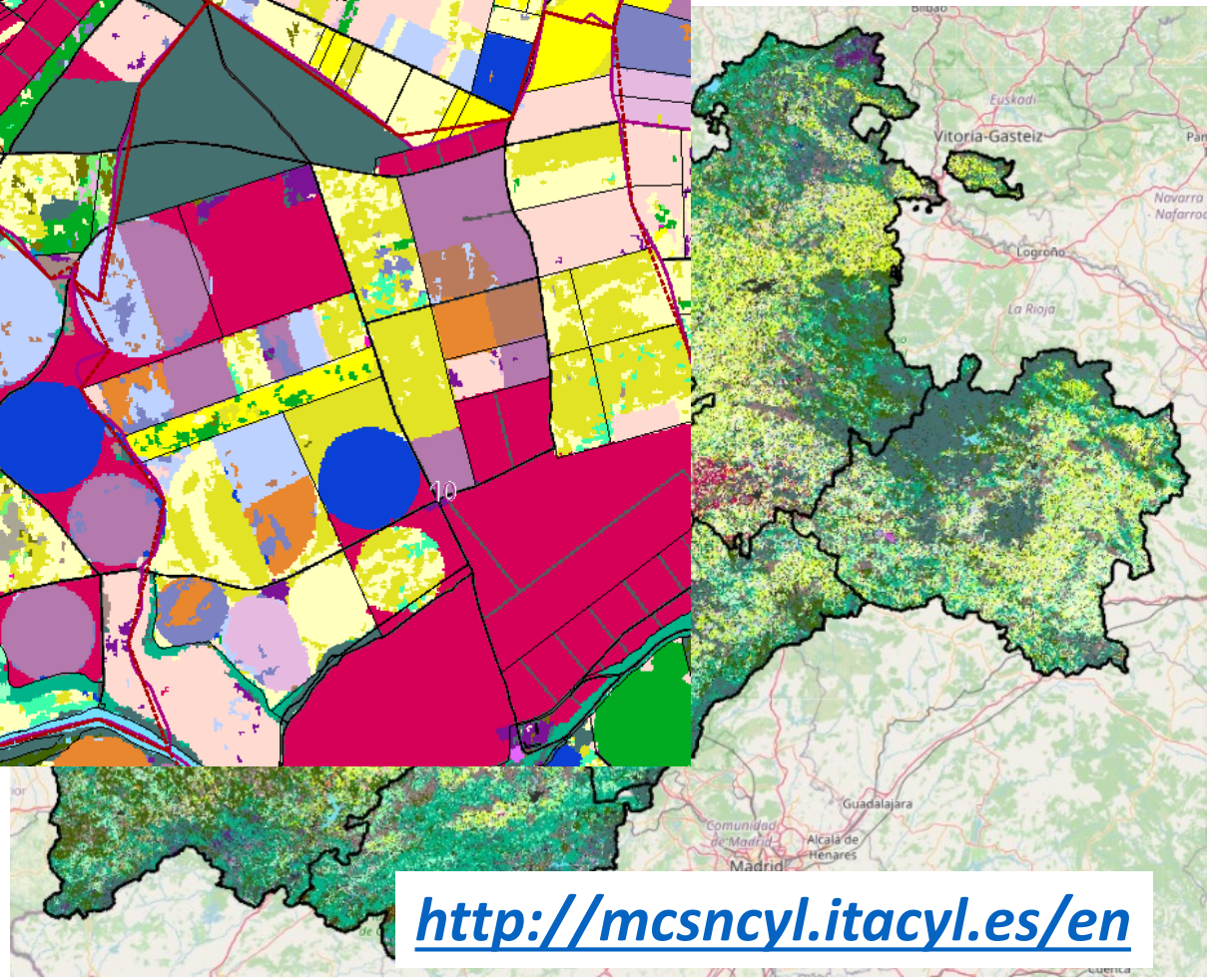
2017

- Sentinel-2 images availability
- Shift from OTSC towards CbM
  - ✓ **Control** direct payments (area based)
  - ✓ 5% -> **100%**

2018

- Workflow to **integrate RS** data and Crop Map Classification within **IACS**.





http://mcsncyl.itacyl.es/en

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How we use Remote Sensing in CbM

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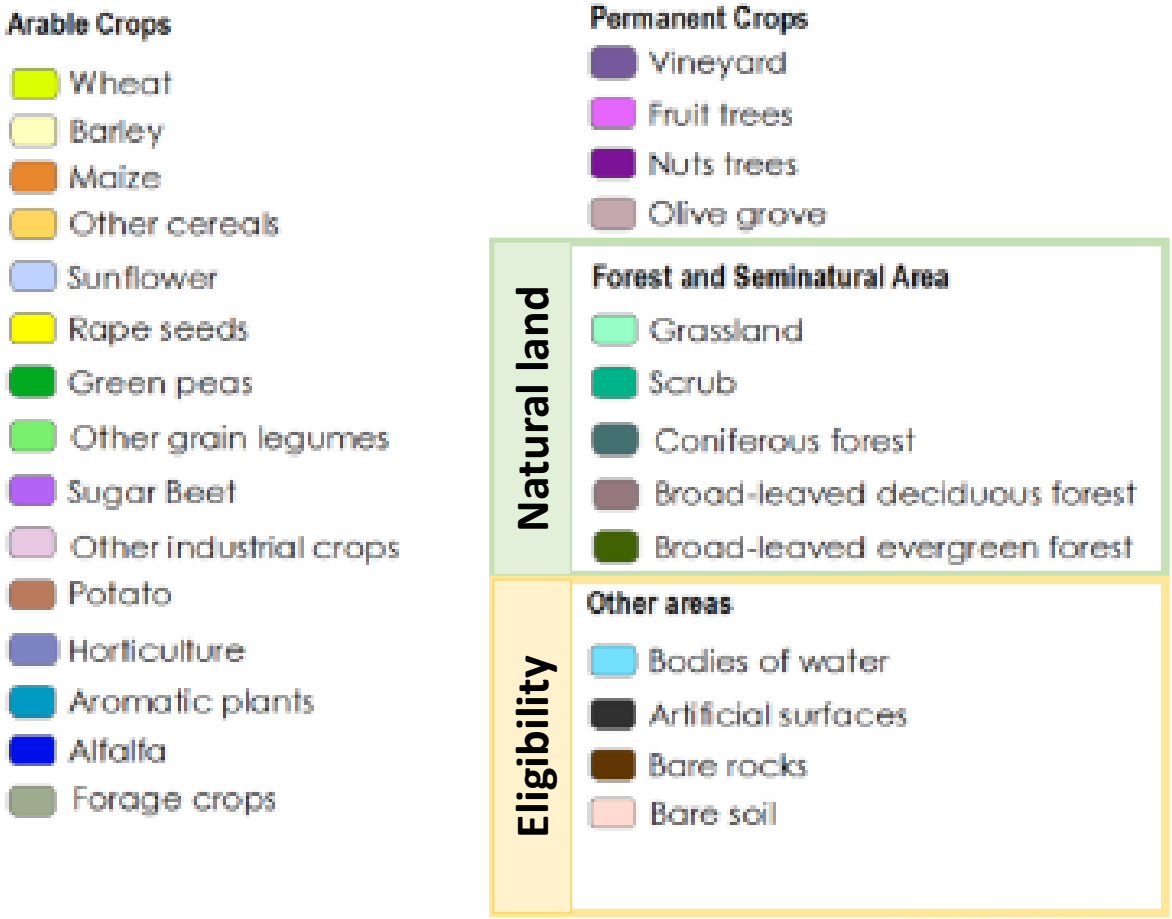
Base payment
1) BPS / SFS

Greening
2) Crop Diversification
3) EFA
4) Grasslands

VCS
5) Protein crops
6) Oilseed
7) Legumes HQ
8) Sugar beet
9) Nuts and carob beans

Pillar II
10) Extensive rainfed agroecosystems
11) Integrated agricultural production
12) Industrial crops
13) Grazed forage areas
14) Organic farming
15) Areas with naturals constraints



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Potential use of Remote Sensing in Evaluation

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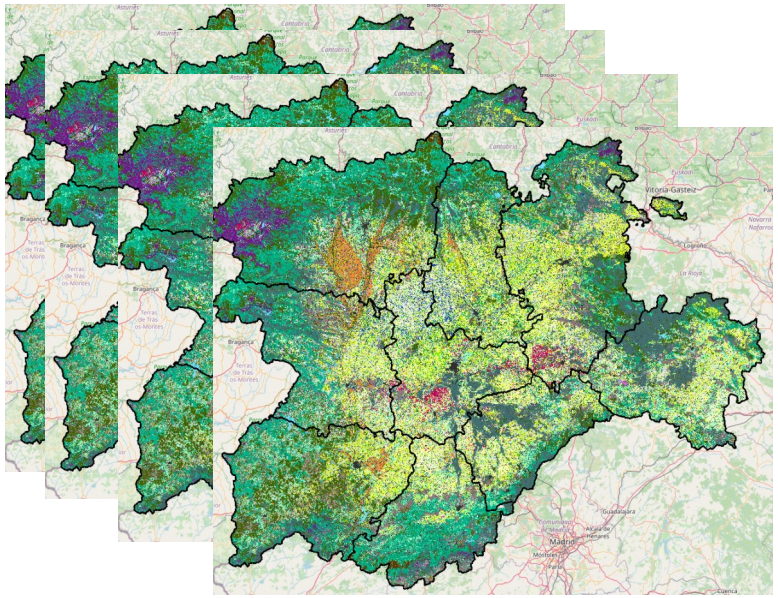
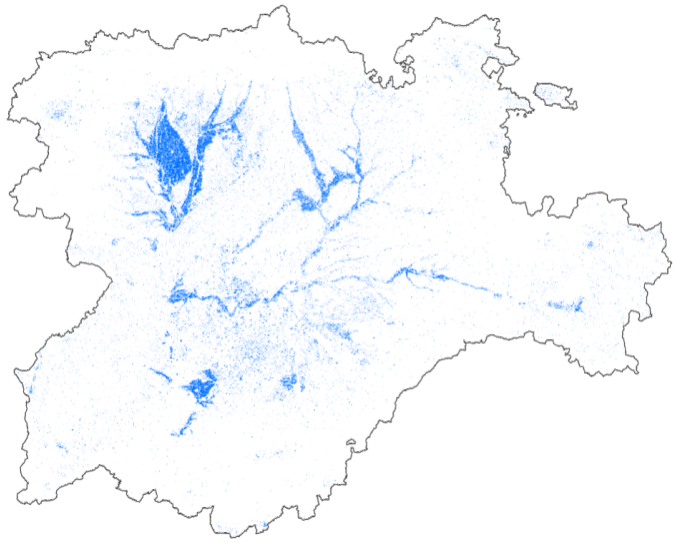
Temporal



2017 *Effective* irrigation
81% declared in IACS



Context and Impact

Environment

- Land Cover (C31)
- Conservation status of agricultural habitats (grassland) (C36)
- Natura 2000 areas (C34)
- HNV (high nature value) farming (C37/I09)
- Water abstraction in agriculture (C39/I10)
- Emissions from agriculture (C45)
- Soil erosion by water (C42/I13)
- Water quality (C40/I11)

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Soil Properties Geo-Database

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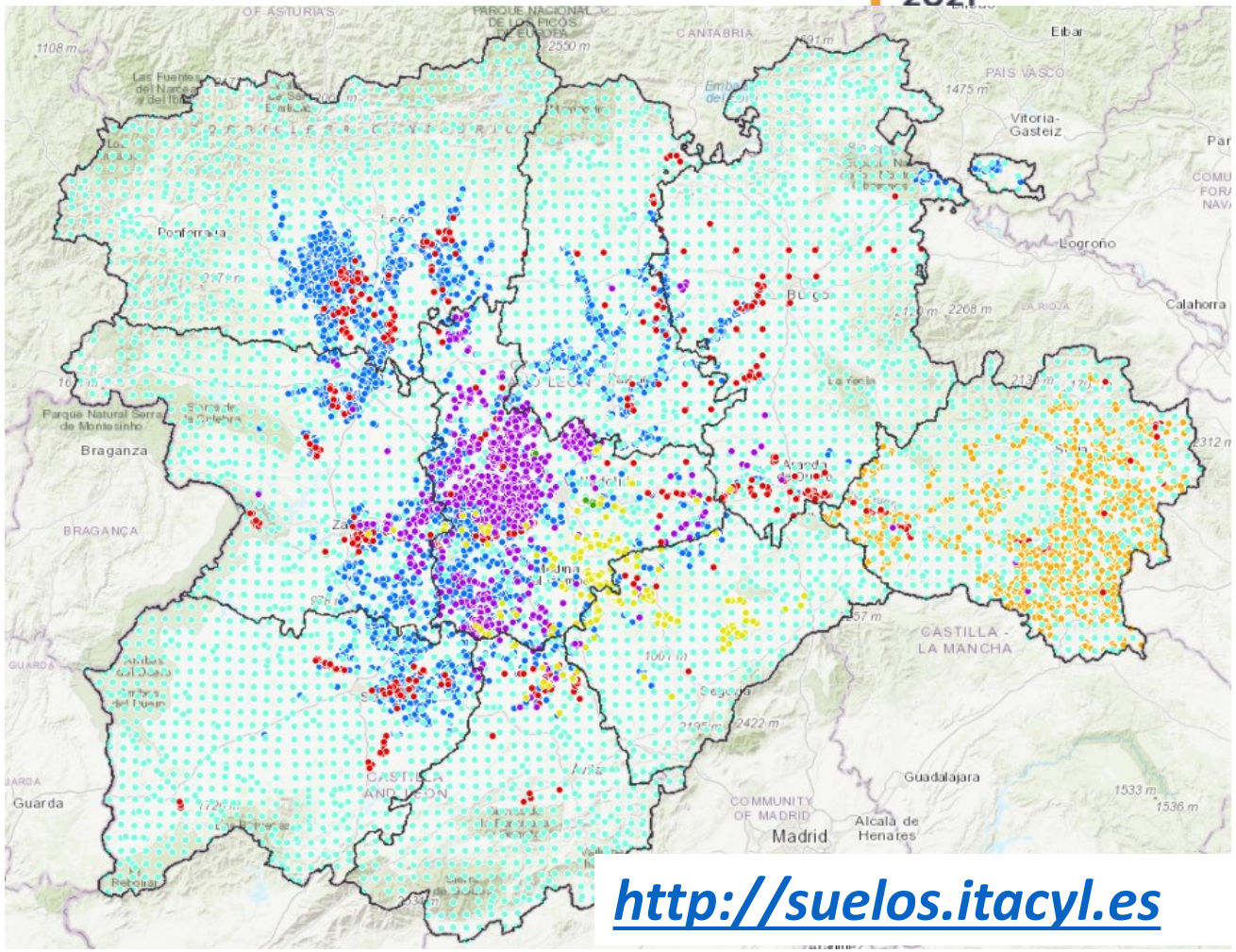
- Started in 2011
- Collaboration Agreements with:
  - ✓ Professional organizations
  - ✓ Advisory services
  - ✓ Research projects
  - ✓ Public entities
- More than 20,000 geo-referenced samples.
- Main analytics on:
  - ✓ % of Clay, sand and silt
  - ✓ Organic matter content
  - ✓ pH
  - ✓ Crop nutrition parameters



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How we use Soil Properties Geo-Database

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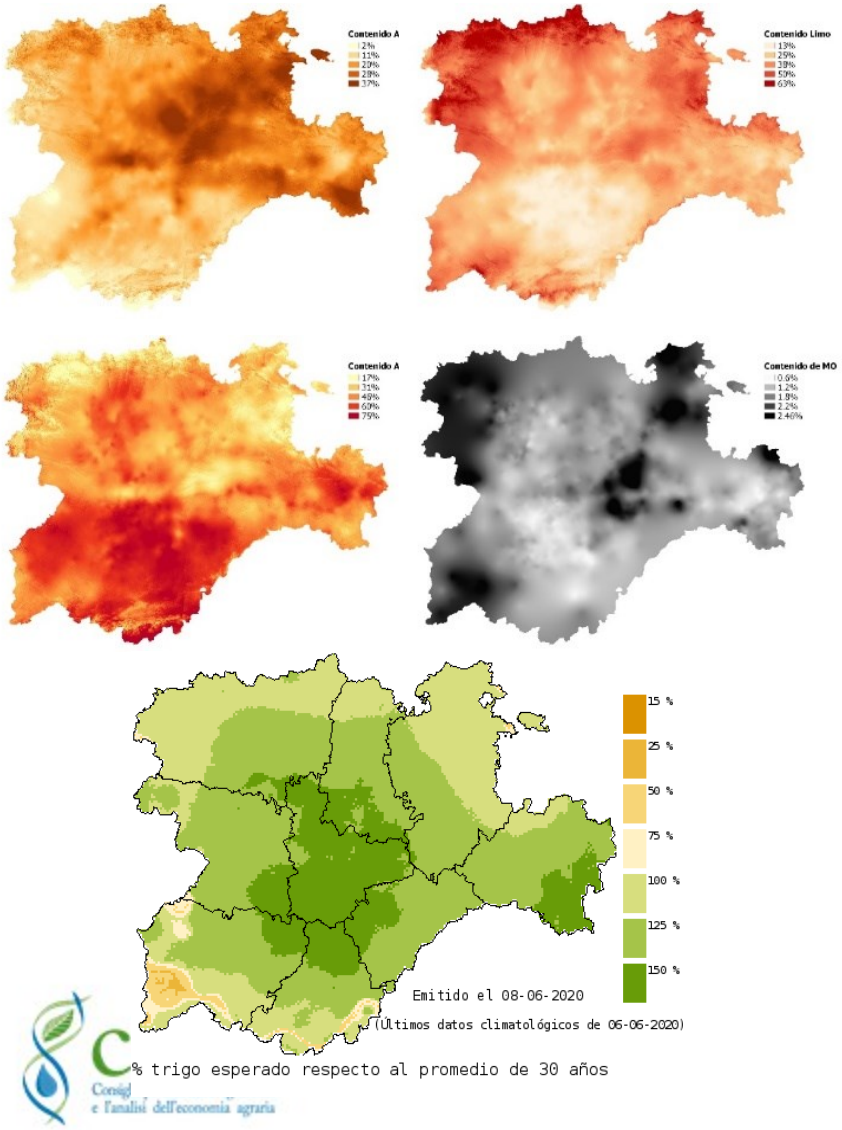
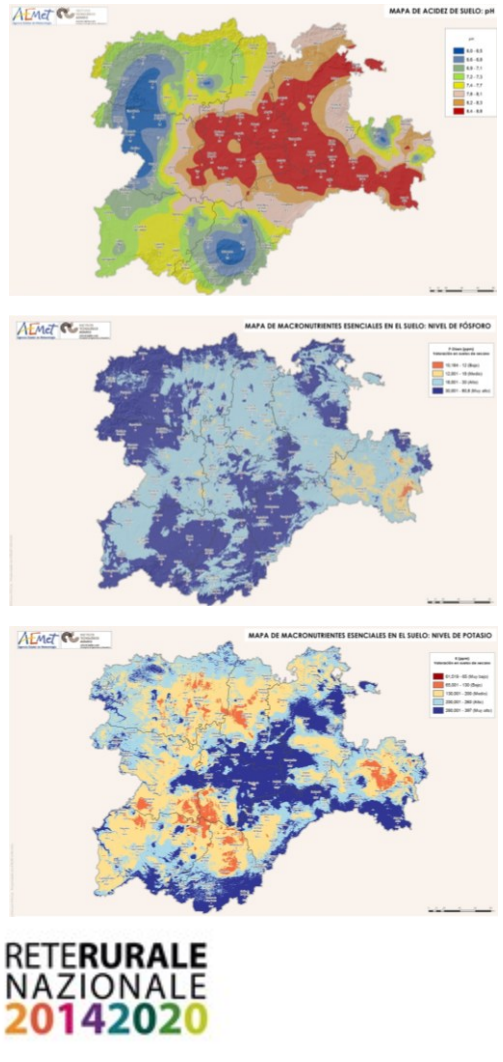
Crop modelling



Fertilization advisory



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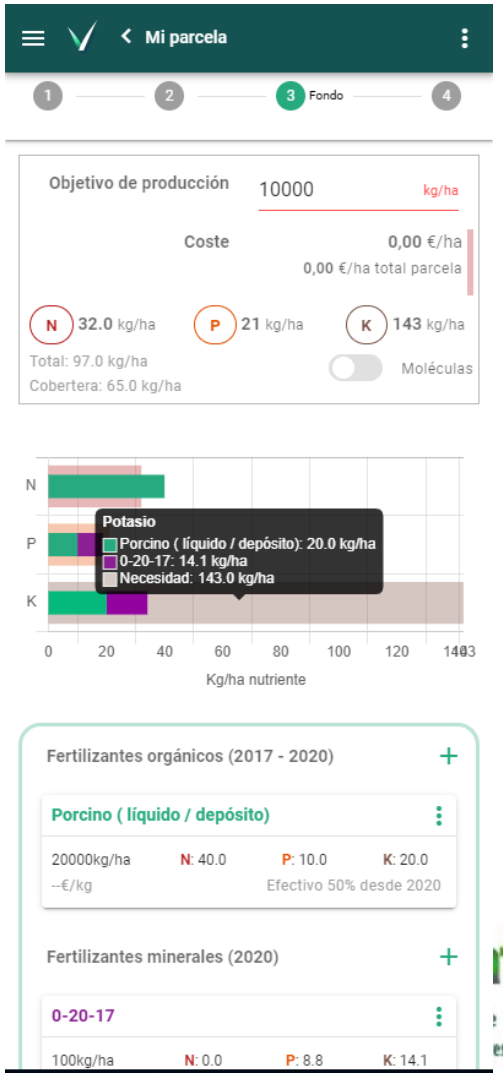

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Potential use of the Soil Properties Geo-Database

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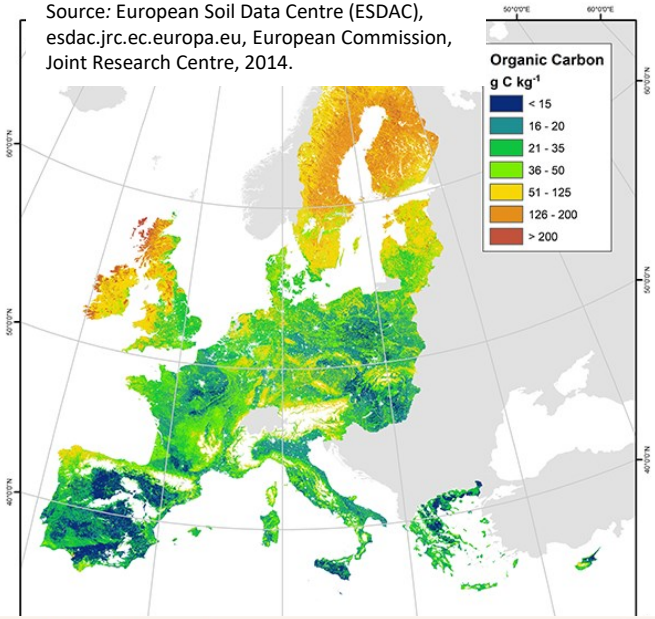
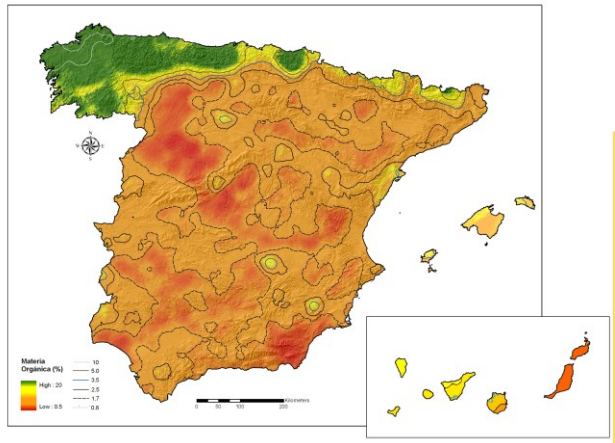
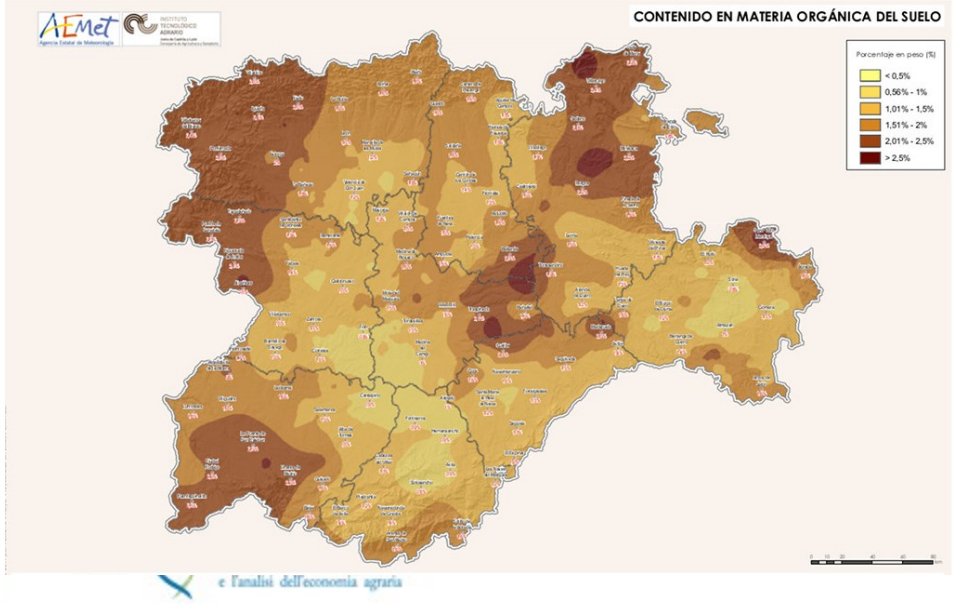
Source: European Soil Data Centre (ESDAC), esdac.jrc.ec.europa.eu, European Commission, Joint Research Centre, 2014.



Source: *"Metales pesados, materia orgánica y otros parámetros de los suelos agrícolas y pastos de España"*, INIA 2009





Context and Impact

Environment

- Soil organic matter in arable land (C41/I12)
- Soil erosion by water (C42/I13)

INDICATOR I.12	
Indicator Name	Soil organic matter in arable land
Related general objective(s)	Sustainable management of natural resources and climate action
References/location of the data	The Map of Topsoil Organic Carbon Content is available on the European Soil Datacentre hosted by the Joint Research Centre http://eusoils.jrc.ec.europa.eu/ Other sources: National studies, surveys, reports

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MEF4CAP

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Key activities

- Describe future monitoring and evaluation needs
- Make an inventory of relevant technological developments
- Assess the potential of technological developments to address information needs
- Demonstration cases to illustrate and test potential combination of needs and technological developments
- Develop a roadmap and innovation agenda for the future
- Stakeholder involvement important in all activities

WAGENINGEN UNIVERSITY & RESEARCH

eagasc

EEB European Environmental Bureau

NEUROPUBLIC Information Systems & Technologies

Software Soops Group Amsterdam

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Conclusions

- New technologies enable the acquisition of data at larger scale, with higher frequency and over the whole population of beneficiaries.
- The potential of these new data sources are fully exploded when they are combined and integrated with administrative records of public intervention.
- Even though algorithms ensure reproducibility of results, some precautions need to be considered when these results are derived from EO exclusively. The combination with other data sources would reduce uncertainty and help cross-checking.
- A clear definition of indicators eases the task of identifying the adequate data acquisition technology.
- Balance between data coverage and accuracy.

Thank you for your attention!

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