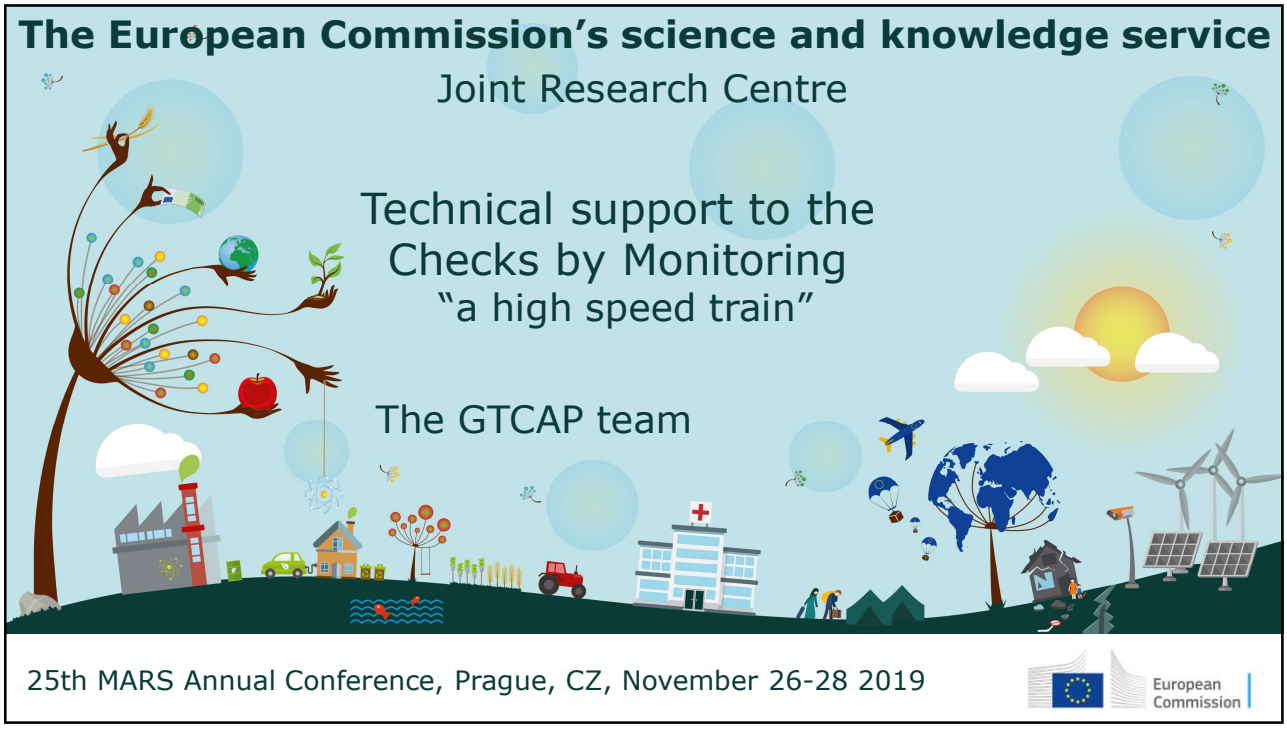
25th
MARS
Annual
Conference
Prague 2019
26-28 November
TOP HOTEL Praha & Congress Centre
Joint Research Center
The European Commission's
science and knowledge service
SZIF
The State Agricultural
Intervention Fund
European
Commission


The European Commission's science and knowledge service
Joint Research Centre
Technical support to the
Checks by Monitoring
"a high speed train"
The GTCAP team
25th MARS Annual Conference, Prague, CZ, November 26-28 2019
European
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The Dubrovnik promises

What can the EC offer in 2019?

- The acknowledgement that data, technology and methodology in 2019 is not yet perfect, so work towards a customized solution of inconclusive outcomes (based on relevance and context)

  collaborative, inclusive and customized agreements

- A DIAS support mechanism for data storage and processing, with the hope of sharing

  standard account, but hopefully facilitating sharing

- In progress, a mechanism to offer archive HRR data stacks on inconclusive parcels, relevant for payment

  in addition to national methods

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Continued developments

The fear: methods and technology are not ready

The remedy: collaborate on appropriate solutions

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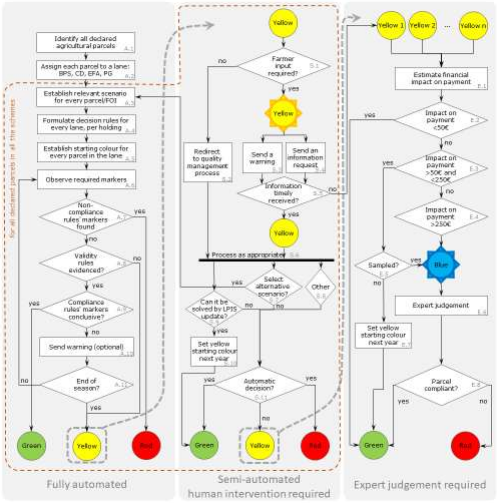
Customisation of the methodology/choices

Discussion Document



Implementation choices – tentative!

Flexibility and evolution

2019 methodological adaptations after bilateral discussions

- Implementing additional support schemes
- Modifications to the declared GSAA
- Early use of the financial backstop as a filter
- Methods to collect ground data
- Use of readily available evidence

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Onboarding of DIAS

The fear: IT capacity is not available, decisions may backlash

The solution: evaluate DIAS/clouds as a platform for the future

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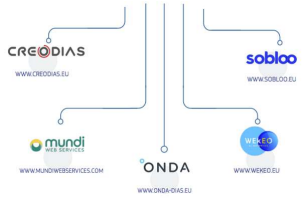
The functional package

DIAS account

- **Storage**: full territory Copernicus Application Ready Data (CARD) generation (S1-BS, S1-C6, S2-L2A) - 3 years
- **Access**: time series extraction for full annual agricultural parcel sets (2017, 2018, 2019)
- **Processing**: machine learning, analysis and visualization

JRC interest

- **Portability** shared documentation and code
- **Scalability**
- **Simplicity**
- **Cost-effectiveness**



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Our OpenSource catalogue

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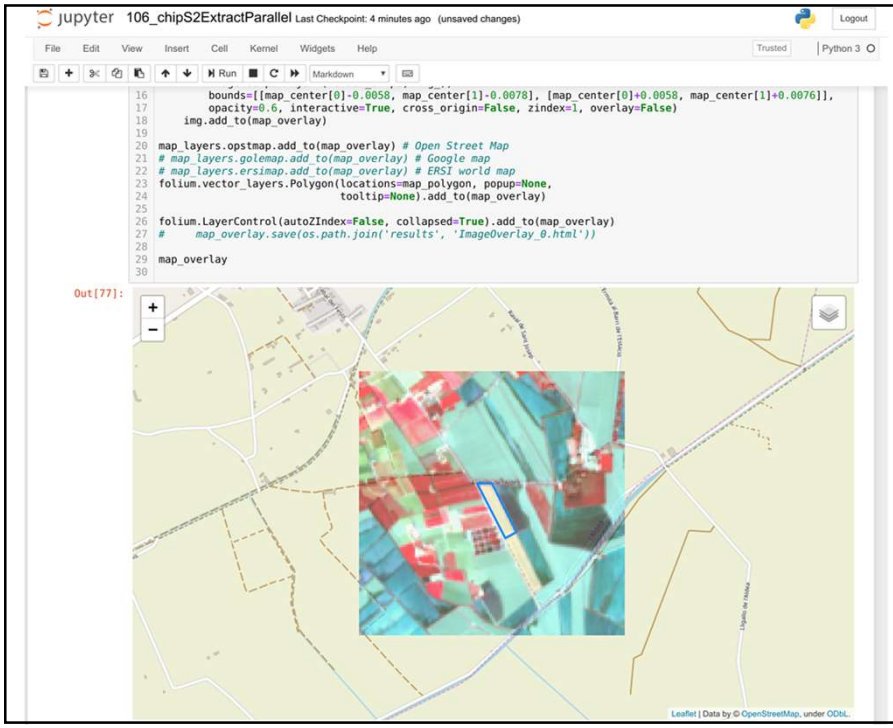

Example:

Check outliers:

1st step

Identified with machine learning on S1 time series

Visual check against a S2 chip for relevant part of the season

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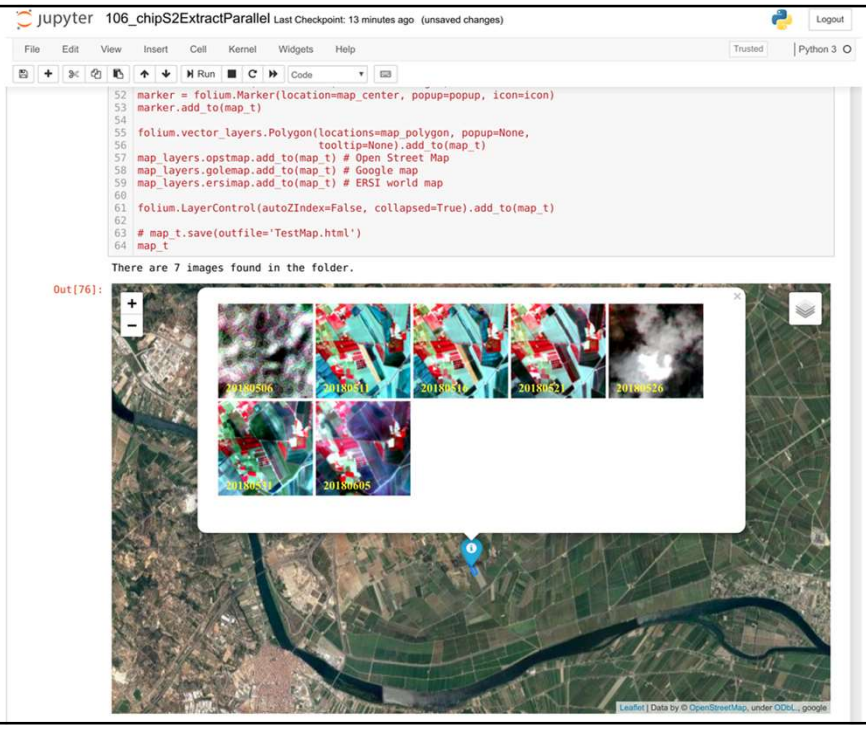

Example:

Check outliers:

2nd step

Identified with machine learning on S1 time series

Visual check against a S2 image chip time series

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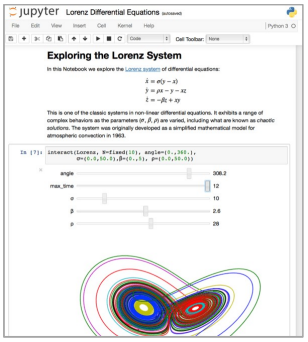
The Jupyter notebook: access, processing and portability

"open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text"

- So, one solution that holds
  - The code
  - The documentation
  - The edit/test/display environment
- Runs on any DIAS
- Can be combined at will



➔ This is repository backbone for RS knowhow / algorithm

➔ Visit the JRC market stand on notebooks and markers

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Access to archive HHR time stacks

The fear: field visiting zillions of small parcels

The answer: provide data in appropriate resolution

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What's on offer?

backstop

1. No planning
2. No real-time access

for **inconclusive**, **physically small** parcels

1. Time series from 2.5m to 5m image archives
2. No imagery, but 8 coordinate pairs / parcel
3. 2019 covering 5 month period

as a Sentinel 2 complement

1. Optical bands (blue, green, red, near infraread)
2. Twice weekly

First half of week 22

Field_ID	Week	Date	Sensor	ItemID
36.18.0.0.33.1020.1_39	22A	28/05	1050	20190528_095539_1050

Point	B	G	R	NIR	CC	CS	Hz
1	726	894	1083	2736	0	0	0
2	635	746	830	2760	0	0	0
3	784	889	967	2787	0	0	0
4	706	811	963	2317	0	0	0
5	703	800	971	2277	0	0	0
6	588	714	809	2717	0	0	0
7	627	727	829	2330	0	0	0
8	564	679	746	2865	0	0	0

Second half of week 41

Field_ID	Week	Date	Sensor	ItemID
36.18.0.0.33.1020.1_39	41B	10/10	1008	20191010_110457_1008

Point	B	G	R	NIR	CC	CS	Hz
1	451	678	680	3893	0	0	0
2	326	585	539	4369	0	0	0
3	361	594	576	3835	0	0	0
4	510	732	784	3710	0	0	0
5	487	731	829	3279	0	0	0
6	361	642	609	4637	0	0	0
7	487	726	791	3228	0	0	0
8	350	620	606	3996	0	0	0

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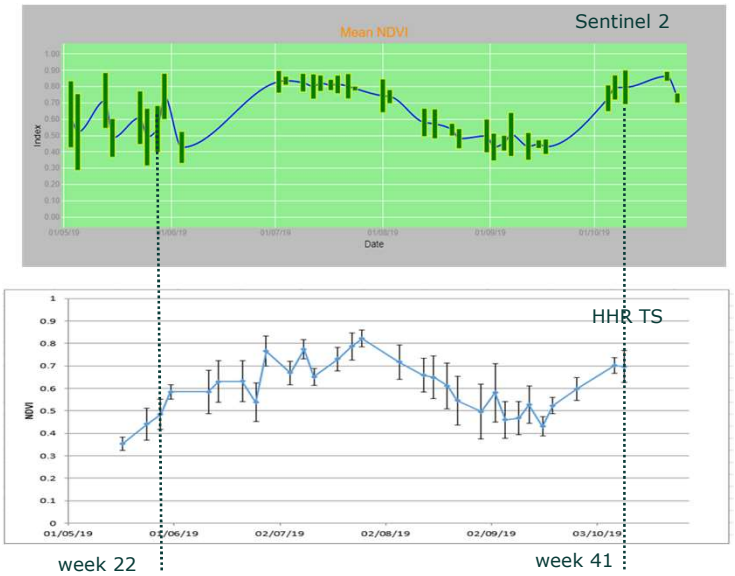
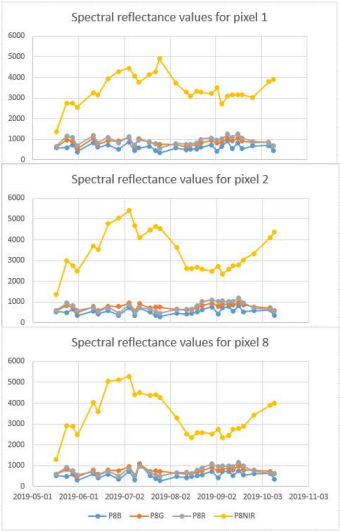
The resulting time series





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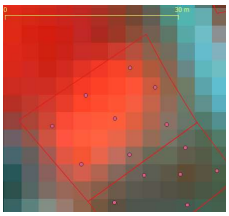
The size/resolution in pictures*

Aerial image

Date unknown



HHR (2019: Planet)

10 October 2019 (#41A)

30 meter

Sentinel 2

7 October 2019

Applicable rules based on:

Dubrovnik: Vajsova et al https://ec.europa.eu/jrc/sites/jrcsh/files/11-sifting_and_hhr.pdf

*: operational HHR imagery is not acquired by JRC, only the time series.

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What else?

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Geotagged imagery

Cfr. yesterday
- GSA collaboration
- Protocols
- Processing libraries

See market stand

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Facilitate area monitoring in rural development

Analysis of agri-environmental and climate measures + organic farming commitments in 124 rural development programmes (2814 measures/sub-measures reviewed)

1. 35 commitment-types were considered doable (e.g. no tillage, arable to grassland conversion, etc.),
→ covering 57% of the committed area

2. Regions and MSs with an important number of measures (>10) that could run tests: (FR, RO, DE, ES etc.)

Exchanges with Member States administration to launch 2020 uptake (BE-Wallonia)

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Ehh, What's up, doc?

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What can the EC(JRC) offer for 2020?

- "*more* of the same old" BPS
  - Marker (repository) support
  - DIAS access and support
  - HHR time stacks
- developing the quality elements
- close collaboration on cross-compliance and RD-AEM with the early adopters
- structure artificial intelligence developments
- follow the many ongoing projects

… while OTSC is still very much alive!

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Thank you!

On behalf of the JRC.GTCAP team

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