

Sen4CAP Hands-on training – Louvain-la-Neuve, Belgium –  
22-23 January 2020



# Session 3: Visualization tool

Katja Bajec, Sinergise



**sen4cap**  
common agricultural policy

**UCL**  
Université  
catholique  
de Louvain



**e-geos**  
AN ASI / TELESPIAZIO COMPANY



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European Space Agency

- Thursday – 23 January (full day):

- |            |   |
|------------|---|
| 9h00-10h30 | <ul style="list-style-type: none"><li>Hands-on training using Unix Virtual Machines on CREODIAS<ul style="list-style-type: none"><li>First steps with the Sen4CAP system for an automated usage</li><li>LPIS / GSAA data preparation and upload</li></ul></li></ul> |
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| 10h30-11h00 | <ul style="list-style-type: none"><li>Break</li></ul> |
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| 11h00-12h30 | <ul style="list-style-type: none"><li>Hands-on training using Unix Virtual Machines on CREODIAS (continued)<ul style="list-style-type: none"><li>Manual usage of the Sen4CAP processors</li><li>System installation and ICT requirements</li></ul></li></ul> |
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| 12h30-14h00 | <ul style="list-style-type: none"><li>Lunch</li></ul> |
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- |             |   |
|-------------|---|
| 14h00-15h30 | <ul style="list-style-type: none"><li>Hands-on training using the Sen4CAP products<ul style="list-style-type: none"><li>Products download from the system</li><li>Sen4CAP visualization tool ←</li><li>Products exploration in Snap or QGIS</li></ul></li></ul> |
|-------------|---|

- |             |   |
|-------------|---|
| 15h30-16h00 | <ul style="list-style-type: none"><li>Break</li></ul> |
|-------------|---|

- |             |  |
|-------------|--|
| 16h00-17h00 | <ul style="list-style-type: none"><li>Hands-on training using the Sen4CAP products<ul style="list-style-type: none"><li>Products exploration in Snap or QGIS</li></ul></li></ul> |
|-------------|--|

- |             |   |
|-------------|---|
| 17h00-17h30 | <ul style="list-style-type: none"><li>Questions and discussions</li></ul> |
|-------------|---|

Session 1: First steps with the Sen4CAP system for an automated usage

Session 2: Manual usage of the Sen4CAP processors + system installation

Session 3: Products download and exploration + visualization tool

Questions and answers

## 1) Basic GIS functionality of the visualisation tool

## 2) Layers in the visualisation tool

### a) GSAA

### b) Crop type map layers

- See the link between the symbology and attributes
- See the link between the record and the codelist
- Apply filter on the layer attribute table

### c) Agricultural practices layers

- See the marker values and compliancy evolution through the season

### d) Mowing dates layers

- Create timelapse of Planet images

### e) Sentinel-2 layers

- Create timelapse of Sentinel-2 images
- Check available dates
- Get NDVI profile with Data Feature Info tool

## 1) Basic GIS functionality of the visualisation tool

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# Log in to Geopedia



Sen4CAP

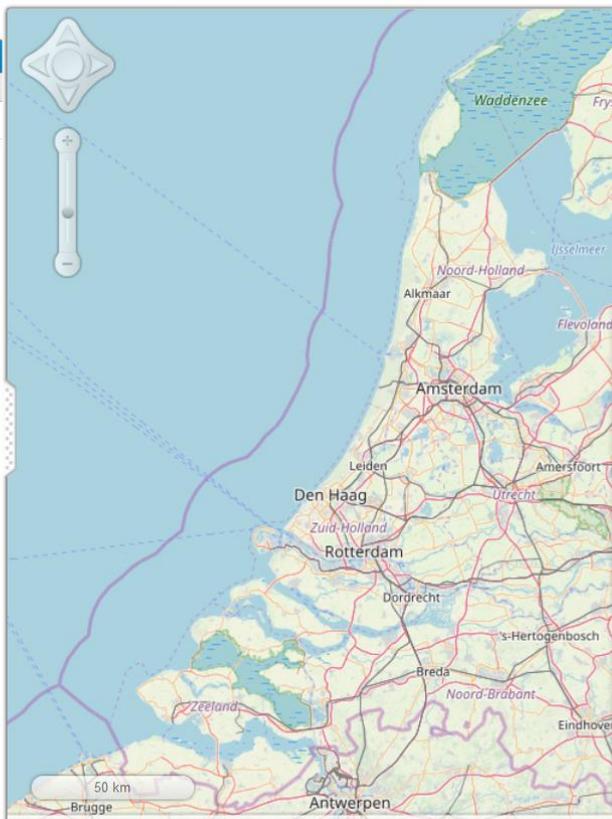
Portal Help Terms En Greetings, Sen4CAP training

INFO CONTENT PERSONAL RESULTS

Themes

Sen4CAP\_Netherlands

1. Go to <http://www.geopedia.world>
2. Log in: Sen4CAP\_training / SB85\_tLIN
3. Search for „Sen4CAP“, type = Theme.
4. Click on the result -> Sen4CAP\_Netherlands



Sen4CAP

- Places
- Coordinates
- Full text search
- Themes
- Layers

INFO CONTENT PERSONAL RESULTS

1 search result(s)

Themes

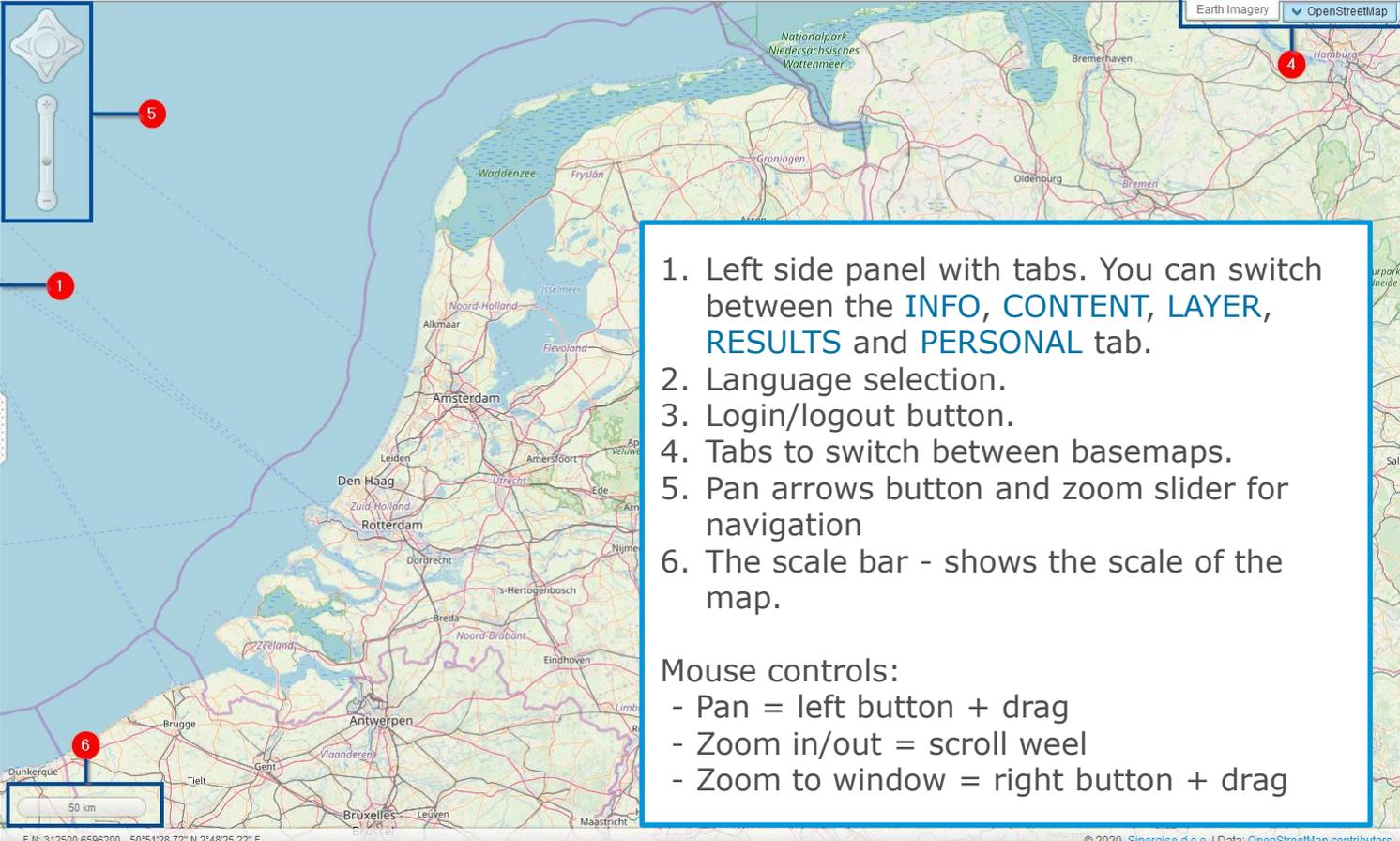
Sen4CAP\_Netherlands

E N: 710600 6991500 53°24'6.20" N 6°22'59.00" E

# Basic GIS functionality of the visualisation tool

INFO CONTENT PERSONAL

- Sen4CAP\_Netherlands
- LPIS/GSAA 2019
  - NL\_GSAA\_2019
  - Cultivated crop type map (UR1) 2019
  - NL\_CropType\_2019\_common
  - NL\_CropType\_2019\_results\_latest (Classif\_r)
  - NL\_CropType\_2019\_results\_latest (CD\_cat)
  - NL\_CropType\_2019\_results\_latest (CD\_diagn)
  - NL\_CropType\_2019\_results\_all
  - NL\_CropCode\_GSAA\_2019
  - NL\_CropCode\_L4A\_2019
  - NL\_CropCode\_DIV\_2019
  - Classif\_r 2019
  - CD\_cat 2019
  - CD\_diagn 2019
- Agricultural practices monitoring (UR4) 2019
  - NL\_AgriPractices\_2019\_common
  - NL\_AgriPractices\_2019\_results\_latest
  - NL\_AgriPractices\_2019\_results\_all
  - NL\_Agr\_Practice
  - NL\_AgrPractice\_subType
  - AgPr\_Ind\_Cond\_Indicator
  - AgPr\_Comp\_Indicator
- Grassland mowing product (UR2) 2019
  - NL\_mowingDates\_2019\_latest
  - NL\_mowingDates\_2019\_all
  - Satellite\_Mission
  - GrMow\_Compliancy\_2019
- Sentinel-2
  - Sentinel-2 L2A - True Color
  - Sentinel-2 L2A - False Color
  - Vegetation status indicator (UR3)
  - Sentinel-2 L3A - NDVI



1. Left side panel with tabs. You can switch between the **INFO**, **CONTENT**, **LAYER**, **RESULTS** and **PERSONAL** tab.
  2. Language selection.
  3. Login/logout button.
  4. Tabs to switch between basemaps.
  5. Pan arrows button and zoom slider for navigation
  6. The scale bar - shows the scale of the map.
- Mouse controls:
- Pan = left button + drag
  - Zoom in/out = scroll wheel
  - Zoom to window = right button + drag



Home - reset the view ([HOME](#) tab, [LAYER](#) tab).



Activate layer - if the layer is not activated, enable it ([CONTENT](#) tab).



Open layer details ([CONTENT](#) tab).



Open table with all layer features - opens all the layer's records as a list view under the map.



❑ To show a feature on the map, click the "Show" button search in the corresponding table row.



❑ To update the table with the latest state click the "Refresh" button refresh (this does not happen automatically for performance reasons).



❑ To create a query expression which filters data appearing in the map and list, click the "Filter" button filter on the right-hand side.

❑ To resize the list vertically, drag the splitter bar above the table's title up or down.

❑ To close the list, click the X in the upper right of the table. Any filters will be reset.

❑ To hide the list, click the horizontal gray bar at the very bottom of your browser underneath the list.

## 1) Basic GIS functionality of the visualisation tool

## 2) Layers in the visualisation tool

### a) GSAA

### b) Crop type map layers

- See the link between the symbology and attributes
- See the link between the record and the codelist
- Apply filter on the layer attribute table

### c) Agricultural practices layers

- See the marker values and compliancy evolution through the season

### d) Mowing dates layers

- Create timelapse of Planet images

### e) Sentinel-2 layers

- Create timelapse of Sentinel-2 images
- Check available dates
- Get NDVI profile with Data Feature Info tool

# GSAA layer (provided by PA)



INFO CONTENT LAYER PERSONAL

- Sen4CAP\_Netherlands
- LPI/GSAA 2019
- NL\_GSAA\_2019
- Cultivated crop type map (UR1) 2019
- NL\_CropType\_2019\_common
- NL\_CropType\_2019\_results\_latest (Classif\_r)
- NL\_CropType\_2019\_results\_latest (CD\_cat)
- NL\_CropType\_2019\_results\_latest (CD\_diagn)
- NL\_CropType\_2019\_results\_all
- NL\_CropCode\_GSAA\_2019
- NL\_CropCode\_L4A\_2019
- NL\_CropCode\_DIV\_2019
- Classif\_r 2019
- CD\_cat 2019
- CD\_diagn 2019
- Agricultural practices monitoring (UR4) 2019
- NL\_AgriPractices\_2019\_common
- NL\_AgriPractices\_2019\_results\_latest
- NL\_AgriPractices\_2019\_results\_all
- NL\_Agr\_Practice
- NL\_AgrPractice\_subType
- AgPr\_Ind\_Cond\_Indicator
- AgPr\_Comp\_Indicator
- Grassland mowing product (UR2) 2019
- NL\_mowingDates\_2019\_latest
- NL\_mowingDates\_2019\_all
- Satellite\_Mission
- GfMow\_Compliance\_2019
- Sentinel-2
- Sentinel-2 L2A - True Color
- Sentinel-2 L2A - False Color
- Vegetation status indicator (UR3)
- Sentinel-2 L3A - NDVI



INFO CONTENT LAYER PERSONAL

NL\_GSAA\_2019

- NewID: Sen4CAP internal parcel id
- Functionee: (FUNCTIONEEL\_ID) identification of the parcel
- Begingeldi: (BEGINGELDIGHEID) commencement of the parcel
- Eindgeldig: (EINDGELDIGHEID) finality of the parcel
- Oppervlakt: (OPPERVLAKTE) area of the main crop
- Grondbedek: (GRONDBEDEKKING) crop code of the main crop
- eaoppervla: (EAOPPERVLAKTE) area of the EFA main crop, weighing factor included
- Grondbed\_1: (GRONDBEDEKKING2) crop code of the catch crop in case of EFA
- Omschrijvi: (OMSCHRIJVING) description of the main crop AND catch crop in case of EFA
- grondbed\_2: (Grondbedekking2categorie) category in case of a catch crop EFA
- Grondbed\_3: /
- Fake\_brsnr: fake identification number
- Shape\_leng: Shape length
- Shape\_area: Shape area

Table of records for layer: NL\_GSAA\_2019

NewID	Functionee	Begingeldi	Eindgeldig	Oppervlakt	Grondbedek consumption	Eaoppervla	Grondbed_1	Omschrijvi consumptie	Grondbed_2	Grondbed_3	Fake_brsnr	Shape_leng	Shape_area
500608	31.000000412	2019-01-01	2020-01-01	9.2	233 (Wheat winter-)		3504 (fodder radish)	Tarwe, winter-	1	2	201706740	1,837.61	92,005.99
500609	31.000000412	2019-01-01	2020-01-01	6.53	256 (Beets sugar-)			Bieten, suiker-			201706740	1,405.69	65,273.07
500610	31.000000412	2019-01-01	2020-01-01	0.41	233 (Wheat winter-)		428 (Yellow mustard)	Tarwe, winter-	1	0	201777075	284.13	4,071.65
500612	31.000000412	2019-01-01	2020-01-01	5.72	2014 (Potatoes consumption)		3506 (English raagrass)	Aardappelen, consumptie	1	1	204436955	1,110.63	57,221.21
500614	31.000000412	2019-01-01	2020-01-01	3.12	265 (Grassland permanent)			Grasland, blijvend			203712678	1,242.09	31,233.55
500615	31.000000412	2019-01-01	2020-01-01	2.28	331 (Grassland natural: Main			Grasland, natuurlijk			204436955	508.3	22,784.53

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# Crop type map layers (NL\_CropType\_2019\_common)



INFO CONTENT LAYER PERSONAL

Sen4CAP\_Netherlands

LPIS/GSAA 2019

- NL\_GSAA\_2019
- Cultivated crop type map (UR1) 2019
- NL\_CropType\_2019\_common
- NL\_CropType\_2019\_results\_latest (Classif\_r)
- NL\_CropType\_2019\_results\_latest (CD\_cat)
- NL\_CropType\_2019\_results\_latest (CD\_diagn)
- NL\_CropType\_2019\_results\_all
- NL\_CropCode\_GSAA\_2019
- NL\_CropCode\_L4A\_2019
- NL\_CropCode\_DIV\_2019
- Classif\_r 2019
- CD\_cat 2019
- CD\_diagn 2019
- Agricultural practices monitoring (UR4) 2019
- NL\_AgriPractices\_2019\_common
- NL\_AgriPractices\_2019\_results\_latest
- NL\_AgriPractices\_2019\_results\_all
- NL\_Agr\_Practice
- NL\_AgrPractice\_subType
- AgPr\_Ind\_Cond\_Indicator
- AgPr\_Comp\_Indicator
- Grassland mowing product (UR2) 2019
- NL\_mowingDates\_2019\_latest
- NL\_mowingDates\_2019\_all
- Satelife\_Mission
- GrMow\_Compliancy\_2019
- Sentinel-2
- Sentinel-2 L2A - True Color
- Sentinel-2 L2A - False Color
- Vegetation status indicator (UR3)
- Sentinel-2 L3A - NDVI



1. **NewID**: Sen4CAP internal parcel id
2. **Original attribute fields**: attribute fields from the original LPIS / GSAA dataset, including the original crop type code as provided by the PA (click on the **Newid** to view them)
3. **Ori\_id**: original parcel id
4. **Ori\_hold**: original holding id
5. **Ori\_crop**: the initial crop code name from the declaration dataset
6. **CT\_decl**: Sen4CAP L4A code of the crop type declared by the farmer
7. **CTnumDIV**: The crop diversification class code, corresponding to the declared crop type
8. **Area\_meter**: area of the parcel (m<sup>2</sup>)
9. **LC**: general high-level land cover class defining if the parcel is monitorable or not
10. **S2pix**: number of S2 pixels covered by the parcel
11. **S1pix**: number of S1 pixels covered by the parcel
12. **GeomValid**: indicator of parcels for which no polygon exists in the declaration dataset or with a not valid geometry
13. **Duplic**: indicator of parcels that have the exact same geometry as another
14. **Overlap**: indicator of parcels which overlaps with neighbouring parcels
15. **Date\_imported**: date of the import of the record to the Visualisation tool

Table of records for layer: NL\_CropType\_2019\_common

	NewID	Ori_id	Ori_hold	Ori_crop	CT_decl	CTnumDIV	LC	S2pix	S1pix	GeomValid	Duplic	Overlap	Area_meter	Date
	521199	31.000000358	202525893	235 (Barley winter)	68(Hordeum_winter	55(Hordeum_winter	Arable land	470	105	Yes	No	No	52,021.2	2019
	521200	31.000000359	40082456	265 (Grassland permanent)	3000(Grass)	50(Grass_perm)	Grassland	1,457	328	Yes	No	No	80,657.9	2019
	521202	31.000000363	120037568	265 (Grassland permanent)	3000(Grass)	50(Grass_perm)	Grassland	20	3	Yes	No	No	3,297.76	2019
	521203	31.000000355	212147824	266 (Grassland temporarily)	3000(Grass)	51(Grass_temp)	Grassland	39	6	Yes	No	No	5,459.69	2019
	521204	31.000000355	212147824	266 (Grassland temporarily)	3000(Grass)	51(Grass_temp)	Grassland	6	0	Yes	No	No	4,931.2	2019
	521205	31.000000355	204449196	266 (Grassland temporarily)	3000(Grass)	51(Grass_temp)	Grassland	610	131	Yes	No	No	35,185.4	2019

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# Crop type map layers

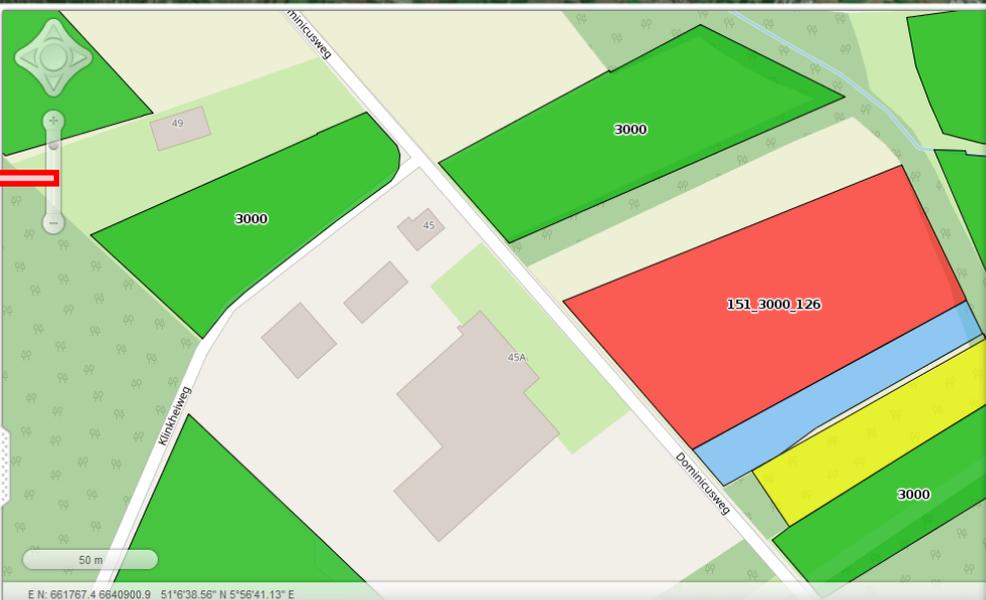
## NL\_CropType\_2019\_results\_latest (Classif\_r)



INFO CONTENT LAYER PERSONAL RESULTS

Sen4CAP\_Netherlands

- LPIS/GSAA 2019
  - NL\_GSAA\_2019
  - Cultivated crop type map (UR1) 2019
  - NL\_CropType\_2019\_common**
  - NL\_CropType\_2019\_results\_latest (Classif\_r)**
  - NL\_CropType\_2019\_results\_latest (CD\_cat)
  - NL\_CropType\_2019\_results\_latest (CD\_diagn)
  - NL\_CropType\_2019\_results\_all
  - NL\_CropCode\_GSAA\_2019
  - NL\_CropCode\_L4A\_2019
  - NL\_CropCode\_DIV\_2019
  - Classif\_r 2019
  - CD\_cat 2019
  - CD\_diagn 2019
- Agricultural practices monitoring (UR4) 2019
  - NL\_AgriPractices\_2019\_common
  - NL\_AgriPractices\_2019\_results\_latest
  - NL\_AgriPractices\_2019\_results\_all
  - NL\_Agr\_Practice
  - NL\_AgrPractice\_subType
  - AgPr\_ind\_Cond\_Indicator
  - AgPr\_Comp\_Indicator
- Grassland mowing product (UR2) 2019
  - NL\_mowingDates\_2019\_latest
  - NL\_mowingDates\_2019\_all
  - Satellite\_Mission
  - GrMow\_Compliance\_2019
- Sentinel-2
  - Sentinel-2 L2A - True Color
  - Sentinel-2 L2A - False Color
  - Vegetation status indicator (UR3)
  - Sentinel-2 L3A - NDVI



1. **NewID**: Sen4CAP internal parcel id
2. **Original attribute fields**: attribute fields from the original LPIS / GSAA dataset, including the original crop type code as provided by the PA (click on the **NewID** to view them)
3. **CT\_common**: link to the CropType\_Common table
4. **Ori\_id**: original parcel id
5. **Ori\_hold**: original holding id
6. **CT\_pred1**: Sen4CAP L4A code of the crop type predicted by the model with the highest degree of confidence
7. **CT\_conf\_1**: degree of confidence of CT\_pred\_1 (ranging from 0 to 1)
8. **CT\_pred2**: Sen4CAP L4A code of the crop type predicted by the model with the second highest degree of confidence
9. **CT\_conf\_2**: degree of confidence of CT\_pred\_2 (ranging from 0 to 1)
10. **CNumDIV\_p**: The crop diversification class code, corresponding to CT\_pred\_1
11. **Classif\_r**: results of the conformity assessment at the parcel level (conform, not conform, not classified)
12. **CD\_cat**: results of the category assessment at the holding level
13. **CD\_diagn**: results of the holding-level assessment about crop diversification rules (compliant or missing info for the specific crop diversification category)
14. **Valid\_from**: starting date of the data used for acquisition of the results
15. **Valid\_to**: end date of the data used for acquisition of the results
16. **Date\_imported**: Date of the import of the record to the Visualisation tool

Table of records for layer: NL\_CropType\_2019\_results\_latest (Classif\_r) (Filtered)

NewID	CropType common	Ori_id	Ori_hold	CT_pred_1	CT_conf_1	CT_pred_2	CT_conf_2	CNumDIV_p
230632	230632	31.000000374	201140496	3000(Grass)	0.925	2000(Permanent fruit)	0.018	50(Grass)
329419	329419	31.000000374	120073585	3000(Grass)	0.105	126(Secale)	0.09	50(Grass)
475110	475110	31.000000390	204520636					
45370	45370	31.000000380	204663138	153(Zea)	0.911	38(Chicory)	0.008	117(Zea)
125603	125603	31.000000357	120151505					
143843	143843	31.000000376	120030304	153(Zea)	0.161	3000(Grass)	0.059	117(Zea)

**VISUALISATION (1) by Classif\_r:**

- Classified\_conform
- Classified\_not\_conform
- Classified\_not\_conform\_prediction\_used
- Not\_classified\_land\_cover
- Not\_classified\_minS2pix
- Not\_classified\_noS1pix
- Not\_classified\_undefined
- Not\_classified\_geometry
- Not\_classified\_mixed\_class

# Crop type map layers

## NL\_CropType\_2019\_results\_latest (Classif\_r)



INFO CONTENT LAYER PERSONAL RESULTS

1 search result(s)

NL\_CropType\_2019\_common

329419

NewID > 329419

Ori\_id > 31.0000003747346.001

Ori\_hold > 120073585

Ori\_crop > 233 (Wheat winter-)

CT\_decl > 151 (Winter wheat)

CTnumDIV > 109 (Triticum\_winter)

LC > Arable land

S2pix > 118

S1pix > 22

GeomValid > Yes

Duplic > No

Overlap > No

Area\_meter > 7,849.50

Date\_imported > 2019-10-15

Results

- 329419-2019-05-31
- 329419-2019-06-30
- 329419-2019-07-31
- 329419-2019-08-31
- 329419-2019-09-30

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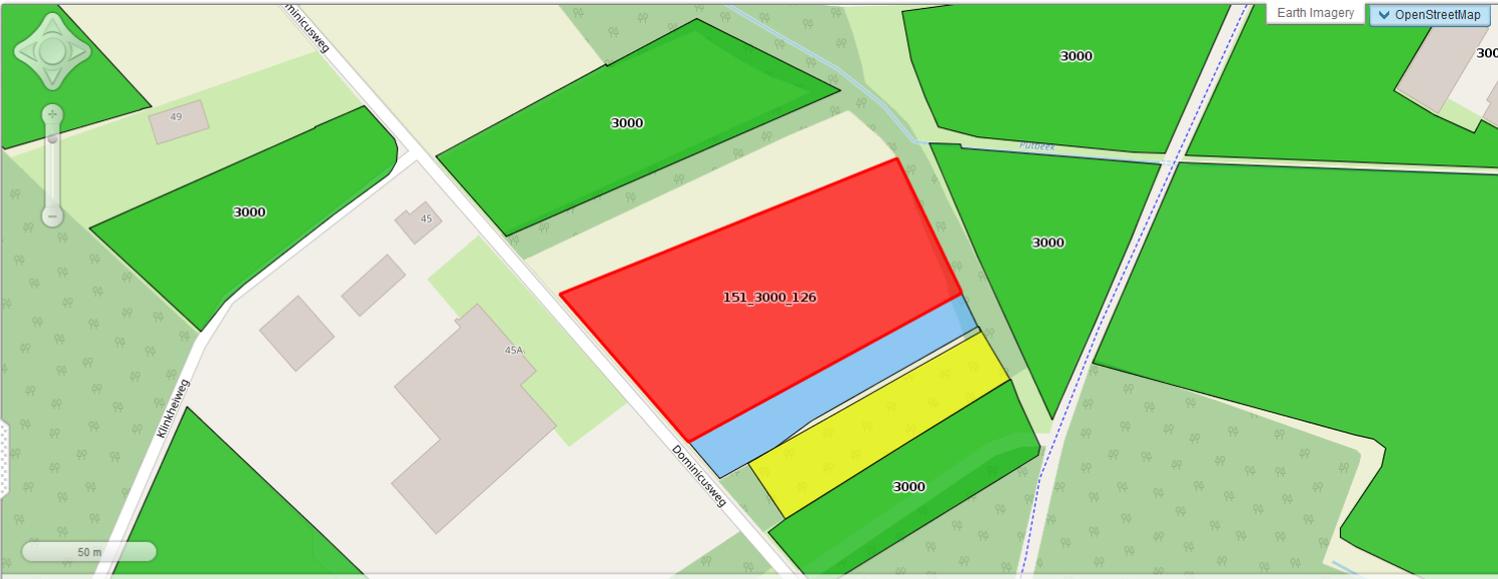


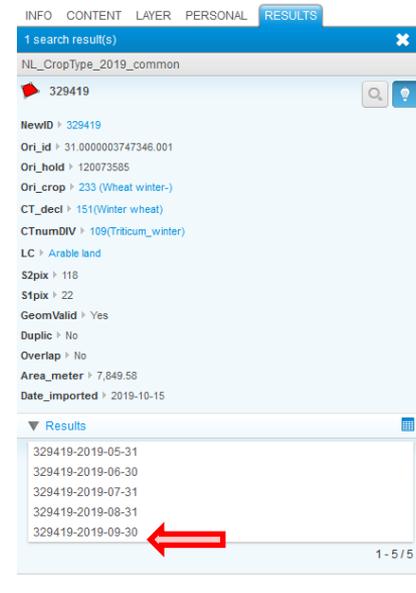
Table of records for layer: NL\_CropType\_2019\_results\_latest (Classif\_r) (Filtered)

NewID	CropType common	Ori_id	Ori_hold	CT_pred_1	CT_conf_1	CT_pred_2	CT_conf_2	CTnumDIV_p	Classif_r	CD_cat	CD_diagn	Valid_from
230632	230632	31.000000374	201140496	3000(Grass)	0.925	2000(permanent fruit)	0.018	50(Grass_perm)	Classified_conform	Category2	Compliant	2019-03-01
329419	329419	31.000000374	120073585	3000(Grass)	0.105	126(Secale)	0.09	50(Grass_perm)	Classified_not_conf	Category1	Compliant	2019-03-01
475110	475110	31.000000390	204520636						Not_classified_noS	Category2	Compliant	2019-03-01
45370	45370	31.000000380	204663138	153(Zea)	0.911	38(Chicory)	0.008	117(Zea)	Classified_conform	Category1	Missing_info	2019-03-01
125603	125603	31.000000357	120151505						Not_classified_land	Exemption1	Not_required	2019-03-01

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## Observe the declared and predicted crop type for a non-conform parcel

- ❑ Activate the NL\_CropType\_2019 results latest (Classif\_r) layer.
- ❑ Find one of the red parcels on the map and click on it.
- ❑ Click on the „CropType common“ id.
- ❑ See that the declared crop (CT\_decl) matches the first code of the parcel label.
- ❑ Extend the „Results“ list and click on the record with the latest date (2019-09-30).
- ❑ See that the first predicted crop (CT\_pred1) matches the second code of the parcel label.
- ❑ See that the second predicted crop (CT\_pred2) matches the last code of the parcel label.



INFO CONTENT LAYER PERSONAL RESULTS

1 search result(s)

NL\_CropType\_2019\_common

329419

NewID > 329419

Ori\_id > 31.0000003747346.001

Ori\_hold > 120073585

Ori\_crop > 233 (Wheat winter-)

CT\_decl > 151(Winter wheat)

CTnumDIV > 109(Triticum\_winter)

LC > Arable land

S2pix > 118

S1pix > 22

GeomValid > Yes

Duplic > No

Overlap > No

Area\_meter > 7,849.58

Date\_imported > 2019-10-15

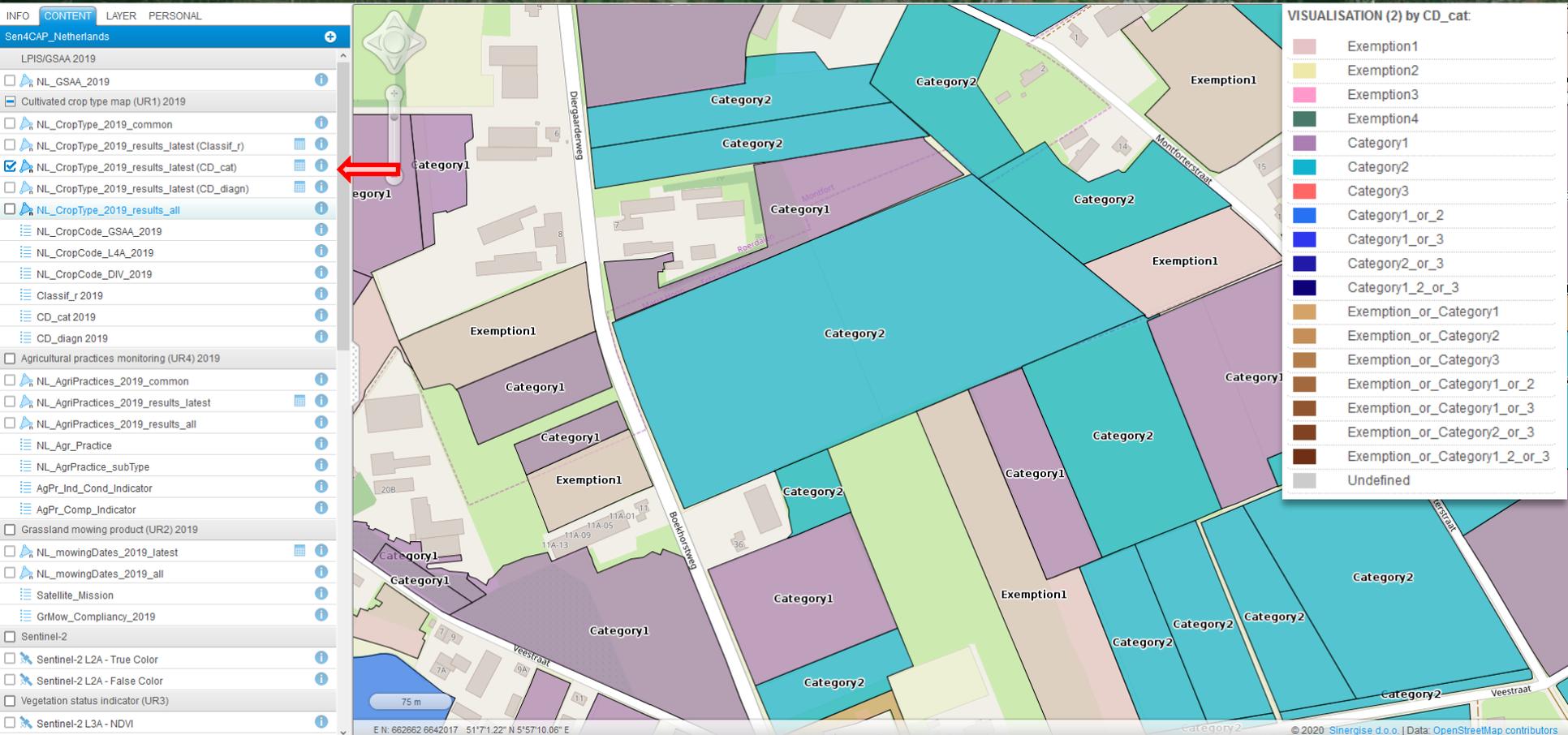
Results

- 329419-2019-05-31
- 329419-2019-06-30
- 329419-2019-07-31
- 329419-2019-08-31
- 329419-2019-09-30

1 - 5 / 5

# Crop type map layers

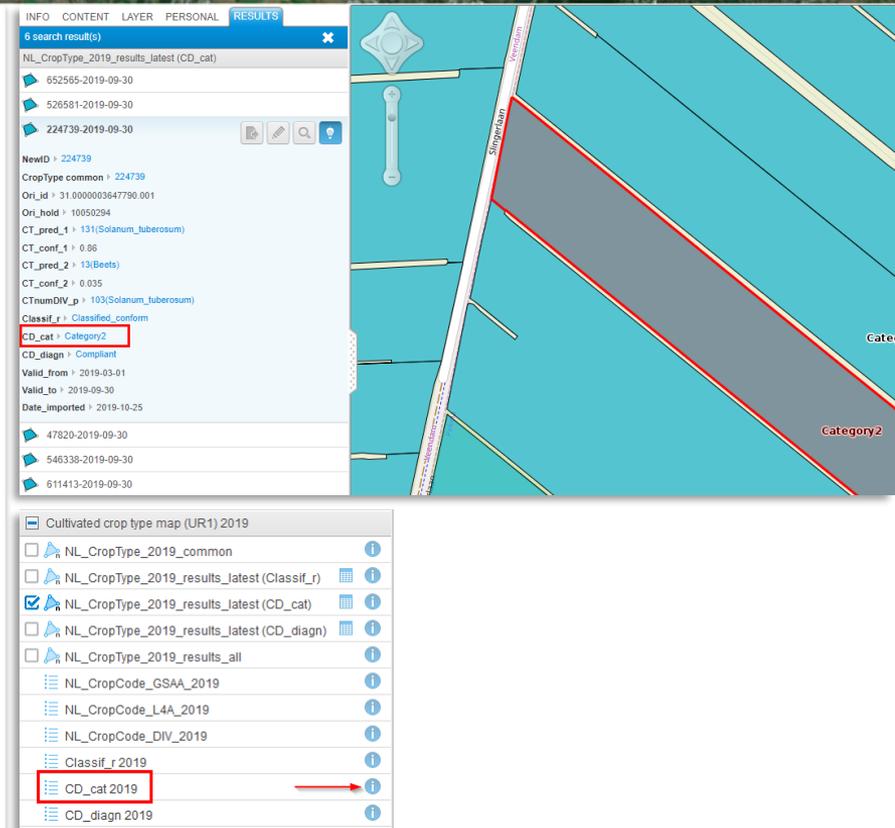
## NL\_CropType\_2019\_results\_latest (CD\_cat)



# Crop type map layers – Exercise

## Observe which crop diversification categories were considered in Sen4CAP

- ❑ Activate the NL\_CropType\_2019\_results\_latest (CD\_cat) layer.
- ❑ On the map, find one of the parcels labeled as *Category2* and click on it.
- ❑ **RESULTS** tab: click on the Category2 value of the **CD\_cat** attribute of the selected parcel to see the description of *Category2*.
- ❑ **CONTENT** tab: to see a description of all diversification categories, click on the info button of the CD\_cat2019 codelist.



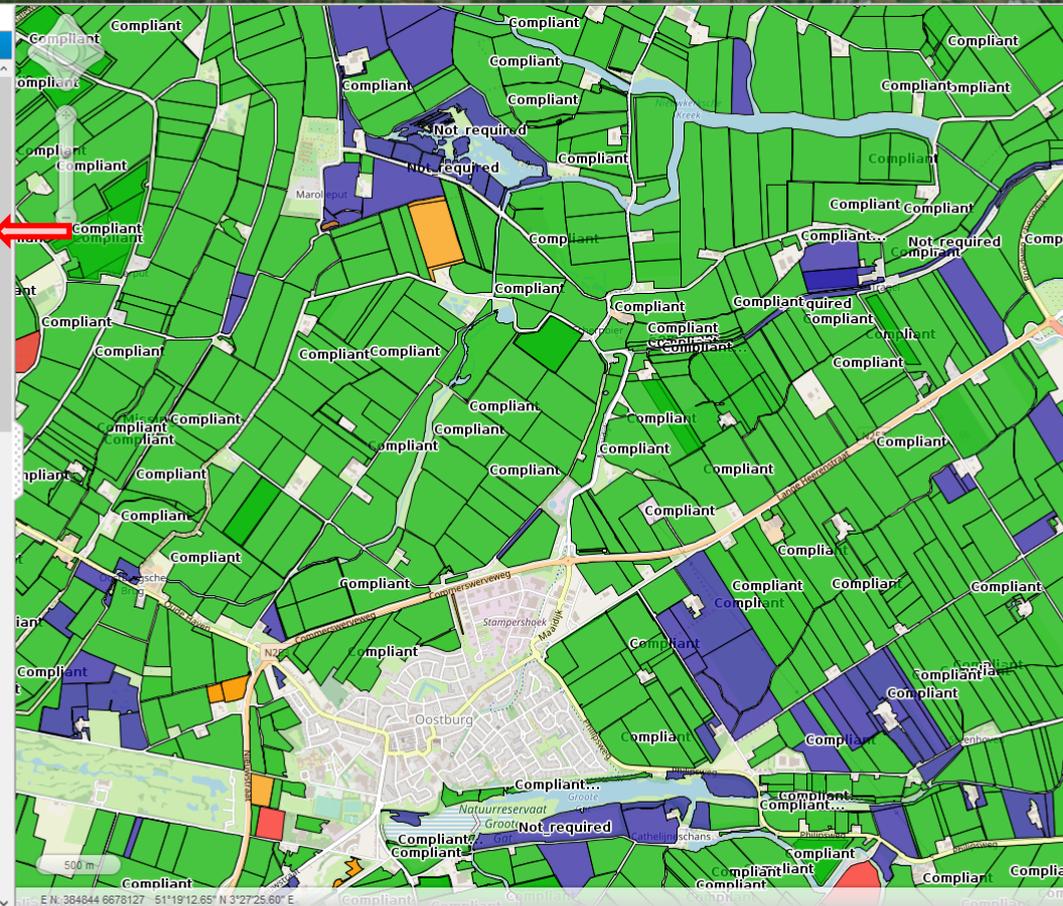
The screenshot displays the Sen4CAP web interface. On the right, a satellite map shows agricultural parcels. One parcel is highlighted in grey and labeled 'Category2'. On the left, the 'RESULTS' panel shows search results for 'NL\_CropType\_2019\_results\_latest (CD\_cat)'. The selected parcel's details are shown, with 'CD\_cat' set to 'Category2'. Below the map, the 'Cultivated crop type map (UR1) 2019' layer list is visible, with 'CD\_cat 2019' highlighted and its info button (an 'i' in a circle) indicated by a red arrow.

# Crop type map layers

## NL\_CropType\_2019\_results\_latest (CD\_diagn)



- INFO CONTENT LAYER PERSONAL RESULTS
- Send4CAP\_Netherlands
- LPIS/GSAA 2019
  - NL\_GSAA\_2019
  - Cultivated crop type map (UR1) 2019
  - NL\_CropType\_2019\_common
  - NL\_CropType\_2019\_results\_latest (Classif\_r)
  - NL\_CropType\_2019\_results\_latest (CD\_cat)
  - NL\_CropType\_2019\_results\_latest (CD\_diagn)
  - NL\_CropType\_2019\_results\_all
  - NL\_CropCode\_GSAA\_2019
  - NL\_CropCode\_L4A\_2019
  - NL\_CropCode\_DIV\_2019
  - Classif\_r 2019
  - CD\_cat 2019
  - CD\_diagn 2019
- Agricultural practices monitoring (UR4) 2019
  - NL\_AgriPractices\_2019\_common
  - NL\_AgriPractices\_2019\_results\_latest
  - NL\_AgriPractices\_2019\_results\_all
  - NL\_Agr\_Practice
  - NL\_AgrPractice\_subType
  - AgPr\_Ind\_Cond\_Indicator
  - AgPr\_Comp\_Indicator
- Grassland mowing product (UR2) 2019
  - NL\_mowingDates\_2019\_latest
  - NL\_mowingDates\_2019\_all
  - Satellite\_Mission
  - GrMow\_Compliancy\_2019
- Sentinel-2
  - Sentinel-2 L2A - True Color
  - Sentinel-2 L2A - False Color
  - Vegetation status indicator (UR3)
  - Sentinel-2 L3A - NDVI



**VISUALISATION (3) by CD\_diagn:**

- **Compliant** - Holding compliant regarding crop diversification
- **Not compliant** - Holding not compliant regarding crop diversification
- **Not required** - Holding with no crop diversification required
- **Missing info** - Not enough information to assess the holding compliance regarding crop diversification

# Crop type map layers – Exercise



Observe a farm which has one field non-conform regarding the crop type but was assessed as compliant regarding the crop diversification rules.

- ❑ Activate the NL\_CropType\_2019\_results\_latest (CD\_diagn) layer and open its attribute table.
- ❑ Filter the table by Ori\_hold = 100043539.
- ❑ Zoom to individual parcels of this farm by clicking on the "Show" button  in the corresponding table row.
- ❑ In the attribute table, find a parcel which has different predicted crop type than the declared one and zoom to it.

The screenshot shows the QGIS interface. In the top-left panel, the layer list includes 'Cultivated crop type map (UR1) 2019'. The layer 'NL\_CropType\_2019\_results\_latest (CD\_diagn)' is selected and highlighted with a red box. An arrow points to the 'Show' button (a magnifying glass icon) next to this layer. Below the layer list, an 'Advanced filter' dialog is open. It contains the following fields:

- 'Use all fields (AND)' dropdown.
- 'Valid\_to' field with a value of '2019-09-30 00:00:00' and a date picker icon.
- 'Ori\_hold' field with a value of '100043539'.

Red circles with numbers 1 through 4 are overlaid on the interface: 1 points to the 'Filter' button in the top-right panel; 2 points to the '+' button in the 'Advanced filter' dialog; 3 points to the 'Ori\_hold' field; 4 points to the 'OK' button in the 'Advanced filter' dialog.



## 1) Basic GIS functionality of the visualisation tool

## 2) Layers in the visualisation tool

### a) GSAA

### b) Crop type map layers

- See the link between the symbology and attributes
- See the link between the record and the codelist
- Apply filter on the layer attribute table

### c) Agricultural practices layers

- See the marker values and compliancy evolution through the season

### d) Mowing dates layers

- Create timelapse of Planet images

### e) Sentinel-2 layers

- Create timelapse of Sentinel-2 images
- Check available dates
- Get NDVI profile with Data Feature Info tool





## Observe change of compliancy assessment regarding the declared agricultural practice

- ❑ Open attribute table of the NL AgriPractices 2019 common layer
- ❑ Filter the table by `Orig_id = 31.0000003461210.001`
- ❑ Click on the "Show" button  in the corresponding table row.
- ❑ Click on the *Table* icon next to **Results** list to open all records of the NL AgriPractices 2019 results table.
- ❑ Use the horizontal slider to display the **Valid\_to** column. Sort the records by `Valid_to` date by clicking on the column header.
- ❑ At a certain `Valid_to` date, `C_INDEX` becomes STRONG. Find the connection of this date to the practice period (`P_END`).
- ❑ Click on the **Image** and observe the L4C chart.

Advanced filter

Use all fields (AND)  

ORIG\_ID = 31.0000003461210.001  

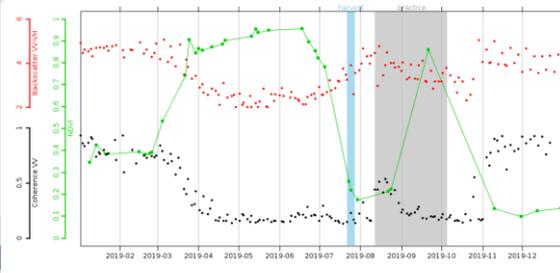
PRACTICE > CatchCrop  
P\_TYPE > CatchCrop\_1  
P\_START > 2019-08-12  
P\_END > 2019-10-06  
S1PIX > 148  
Date\_imported > 2019-10-16

▼ Results 

719221-2019-10-04  
719221-2019-09-20  
719221-2019-09-27  
719221-2019-10-11  
719221-2019-10-18

Table of records for layer: NL\_AgriPractices\_2019\_results (Filtered)

M0	M10	C_INDEX	S1GAPS	H_S1GAPS	P_S1GAPS	L4C_Graph	Valid_from	Valid_to	Date_imported
NR	NR	NR	0	0	0	<a href="#">Image</a>	2019-01-01	2019-10-04	2019-10-09
NR	NR	NR	0	0	0	<a href="#">Image</a>	2019-01-01	2019-09-20	2019-10-15
NR	NR	NR	0	0	0	<a href="#">Image</a>	2019-01-01	2019-09-27	2019-10-16



Parcel ID: 719221

European Space Agency

## 1) Basic GIS functionality of the visualisation tool

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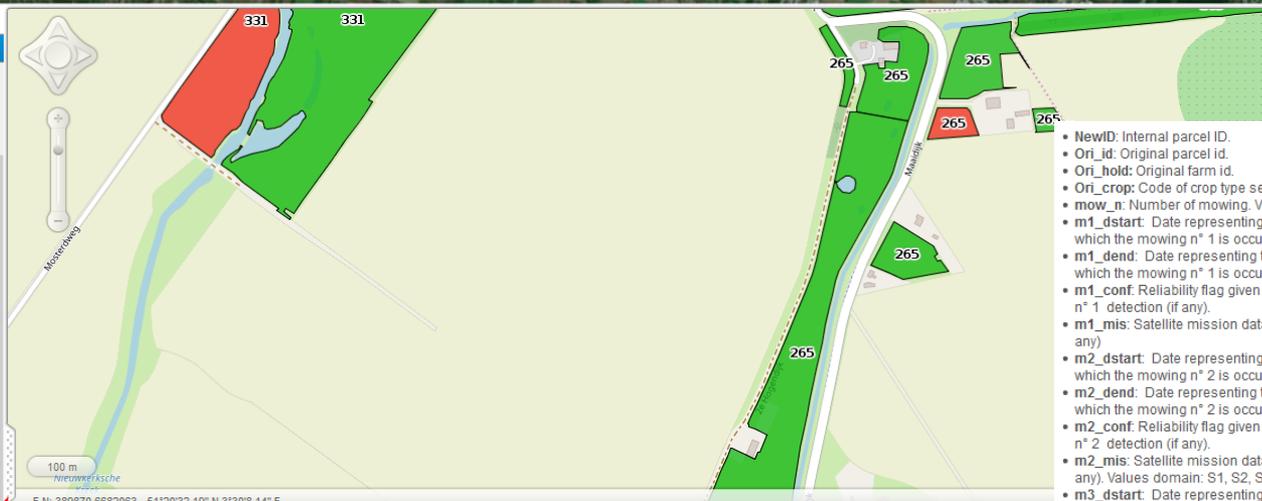
# Mowing dates layers

## NL\_mowingDates\_2019\_latest



INFO CONTENT LAYER PERSONAL RESULTS

- Sen4CAP\_Netherlands
- NL\_CropType\_2019\_results\_latest (CD\_diagn)
  - NL\_CropType\_2019\_results\_all
  - NL\_CropCode\_GSAA\_2019
  - NL\_CropCode\_L4A\_2019
  - NL\_CropCode\_DIV\_2019
  - Classif\_r\_2019
  - CD\_cat 2019
  - CD\_diagn 2019
  - Agricultural practices monitoring (UR4) 2019
  - NL\_AgriPractices\_2019\_common
  - NL\_AgriPractices\_2019\_results\_latest
  - NL\_AgriPractices\_2019\_results\_all
  - NL\_Agr\_Practice
  - NL\_AgrPractice\_subType
  - AgPr\_Ind\_Cond\_Indicator
  - AgPr\_Comp\_Indicator
  - Grassland mowing product (UR2) 2019
  - NL\_mowingDates\_2019\_latest**
  - NL\_mowingDates\_2019\_all
  - Satellite\_Mission
  - GrMow\_Compliance\_2019
  - Sentinel-2
  - Sentinel-2 L2A - True Color
  - Sentinel-2 L2A - False Color
  - Vegetation status indicator (UR3)
  - Sentinel-2 L3A - NDVI
  - Sentinel-2 L3A - LAI
  - Sentinel-2 L3A - FAPAR
  - Planet imagery
  - Planet - PlanetScope
  - LPIS/GSAA 2018
  - NL\_GSAA\_2018
  - Cultivated crop type map (UR1) 2018



- Not assessed
- Compliant
  - Not compliant

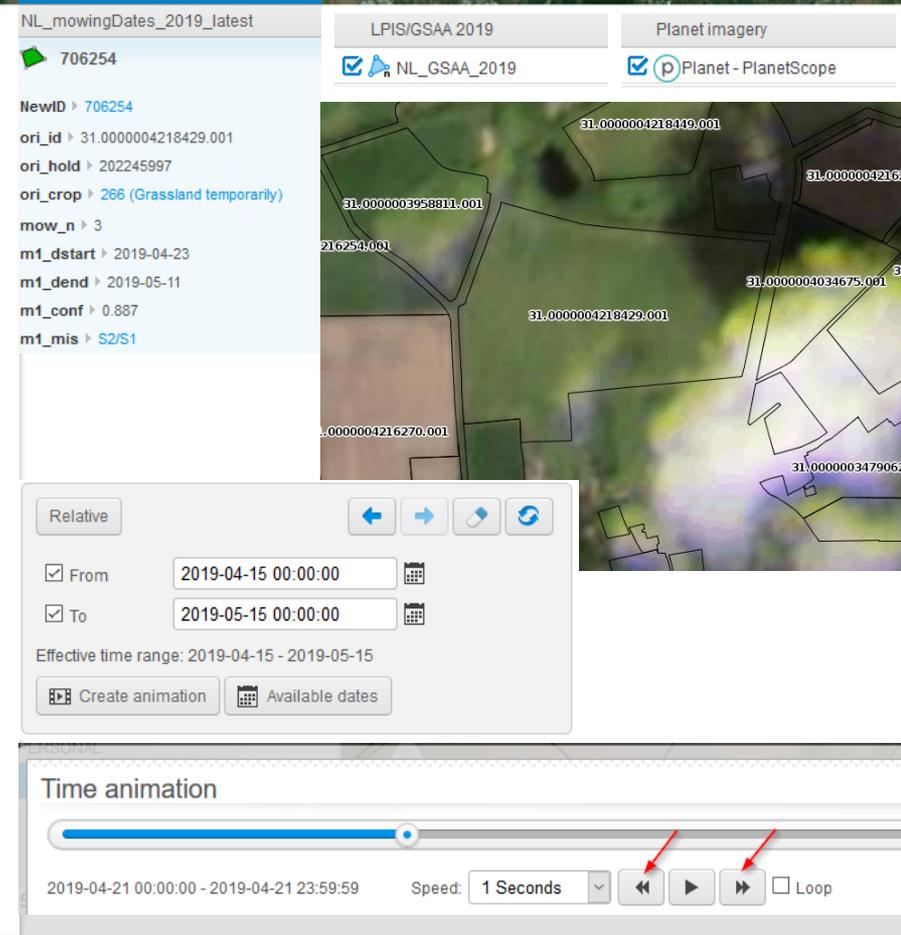
- NewID:** Internal parcel ID.
- Ori\_id:** Original parcel id.
- Ori\_hold:** Original farm id.
- Ori\_crop:** Code of crop type selected as grassland.
- mow\_n:** Number of mowing. Values domain: 0, 1, 2, 3, 4.
- m1\_dstart:** Date representing the start date of the time interval in which the mowing n° 1 is occurred (if any).
- m1\_dend:** Date representing the end date of the time interval in which the mowing n° 1 is occurred (if any).
- m1\_conf:** Reliability flag given in terms of probability of right mowing n° 1 detection (if any).
- m1\_mis:** Satellite mission data used for detection of mowing n° 1 (if any).
- m2\_dstart:** Date representing the start date of the time interval in which the mowing n° 2 is occurred (if any).
- m2\_dend:** Date representing the end date of the time interval in which the mowing n° 2 is occurred (if any).
- m2\_conf:** Reliability flag given in terms of probability of right mowing n° 2 detection (if any).
- m2\_mis:** Satellite mission data used for detection of mowing n° 2 (if any). Values domain: S1, S2, S1/S2
- m3\_dstart:** Date representing the start date of the time interval in which the mowing n° 3 is occurred (if any).
- m3\_dend:** Date representing the end date of the time interval in which the mowing n° 3 is occurred (if any).
- m3\_conf:** Reliability flag given in terms of probability of right mowing n° 3 detection (if any).
- m3\_mis:** Satellite mission data used for detection of mowing n° 3 (if any). Values domain: S1, S2, S1/S2
- m4\_dstart:** Date representing the start date of the time interval in which the mowing n° 4 is occurred (if any).
- m4\_dend:** Date representing the end date of the time interval in which the mowing n° 4 is occurred (if any).
- m4\_conf:** Reliability flag given in terms of probability of right mowing n° 4 detection (if any).
- m4\_mis:** Satellite mission data used for detection of mowing n° 4 (if any). Values domain: S1, S2, S1/S2.
- compt:** Compliance flag. Value domain: 0, 1, 2 according to the following rules: - "0": Not assessed - "1": Assessed and compliant because a mowing occurred in the reference period - "2": Assessed and not compliant because no mowing occurred in the reference period.
- Valid\_from:** starting date of the data used for acquisition of the results.
- Valid\_to:** end date of the data used for acquisition of the results.
- Date\_imported:** Date of the import of the record to the Visualisation tool.

Table of records for layer: NL\_mowingDates\_2019\_latest (Filtered)

Ori_crop	Mow_n	M1_dstart	M1_dend	M1_conf	M1_mis	M2_dstart	M2_dend	M2_conf	M2_mis
200 (Grassland permanent)	0			0				0	
265 (Grassland permanent)	2	2019-04-29	2019-05-05	0.5	S1	2019-06-05	2019-06-11	0.021	S1
265 (Grassland permanent)	2	2019-05-13	2019-05-16	0.875	S2/S1	2019-08-14	2019-08-24	0.887	S2
265 (Grassland permanent)	3	2019-04-21	2019-05-11	0.878	S2/S1	2019-07-22	2019-07-25	0.868	S2/S1
265 (Grassland permanent)	2	2019-04-23	2019-06-22	0.912	S2/S1	2019-09-10	2019-09-16	0.438	S1

## Visually validate the detected mowing event with the Planet imagery

- ❑ Open attribute table of the NL\_mowingDates\_2019\_latest layer.
- ❑ Filter the table by Ori\_id = 31.0000004218429.001 and zoom to the corresponding table row. We will validate the mowing event detected between 2019-04-23 and 2019-05-11.
- ❑ Deactivate all layers but NL\_GSAA\_2019 and Planet - PlanetScope.
- ❑ Click on the info button of Planet layer and then on the „clock“ icon (time range selector).
- ❑ Set „From“ date to **2019-04-15** and „To“ date to **2019-05-15**. Click on the „Apply selected time range“
- ❑ Click on the „Create animation“ button. Wait until all images are loaded and scroll through the frames. Observe if the Planet images confirm the detected mowing event.



The screenshot displays a GIS application interface. On the left, the attribute table for the 'NL\_mowingDates\_2019\_latest' layer is shown, with a filter applied to 'Ori\_id = 31.0000004218429.001'. The selected row shows a mowing event with 'm1\_dstart' on 2019-04-23 and 'm1\_dend' on 2019-05-11. The main map area shows a satellite image with overlaid parcel boundaries and IDs. The 'NL\_GSAA\_2019' and 'Planet - PlanetScope' layers are active. A time range selector dialog is open, showing the 'From' date as 2019-04-15 00:00:00 and the 'To' date as 2019-05-15 00:00:00. Below the dialog, the 'Effective time range' is 2019-04-15 - 2019-05-15, and the 'Create animation' button is highlighted. At the bottom, a 'Time animation' control bar shows a timeline from 2019-04-21 00:00:00 to 2019-04-21 23:59:59, with a speed of 1 Second and playback controls.

## 1) Basic GIS functionality of the visualisation tool

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- Create timelapse of Sentinel-2 images
- Check available dates
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# Sentinel-2 layers



INFO CONTENT LAYER PERSONAL

Sentinel-2 L2A - True Color

Relative

From: 2019-04-23 00:00:00

To: 2019-04-23 23:59:59

Effective time range: 2019-04-23 - 2019-04-23 23:59:59

Sentinel-2 L2A - True Color

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- Sentinel-2
- Sentinel-2 L2A - True Color
- Sentinel-2 L2A - False Color
- Vegetation status indicator (UR3)
- Sentinel-2 L3A - NDVI
- Sentinel-2 L3A - LAI
- Sentinel-2 L3A - FAPAR



Earth Imagery OpenStreetMap

E N: 709957 6955441 52°51'2.75" N 6°22'39.54" E

© 2020 Sinergise d.o.o. | Data: OpenStreetMap contributors



# Sentinel-2 layers – Exercise



## Visualize Sentinel layers:

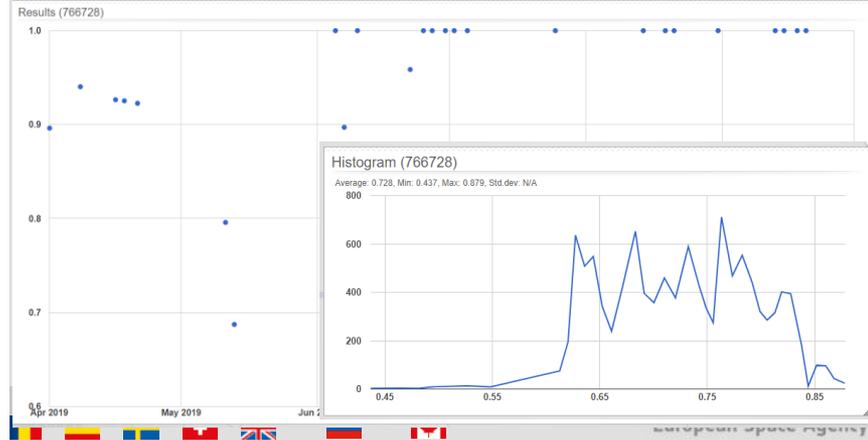
- ❑ Create animation of Sentinel-2 L2A - True Color images for period **2019-04-15** to **2019-05-15**. Use the same tools as you used for the Planet data.
- ❑ Display Sentinel-2 L2A - False Color image for date **2019-04-16** (use „Available dates tool“).
- ❑ Observe NDVI profile for parcel 31.0000003858908.001 using the Data feature info tool on Sentinel-2 L3A – NDVI layer for beginning of April til end of September.

Available dates

Limit to the selected time range

- 2019-04-16
- 2019-04-18
- 2019-04-21
- 2019-04-23
- 2019-05-11
- 2019-05-13

Select Cancel



INFO CONTENT LAYER PERSONAL RESULTS

Sentinel-2 L3A - NDVI

Data feature info

Pick existing feature on map to use its geometry for calculation.

Export

NL\_GSAA\_2019

666290

NewID > 666290

31.000000372984.001

31.000000372963.001

31.000000372959.001

31.000000372751.001

31.000000372750.001

**Thank you for your attention  
and your contribution**

**Any questions?**



**sen4cap**  
common agricultural policy