

*Sen4CAP Online training
April 2020*



System operation: first steps with the system



sen4cap
common agricultural policy

UCL
Université
catholique
de Louvain

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System operation: first steps with the system



1) Launch a site in the automatic mode

- Connect to the web interface
- Create and configure your site
- Launch the automatic mode
- Download, process and resources monitoring

2) Upload parcels information

- Subsidy application layer (parcels)
- Look-Up-Tables (LUTs) and configuration files for the L4x processors

3) Launch additional jobs

- Scheduled jobs (by-default parameters)
- Custom jobs (modified parameters)

4) Access system database (using a Linux console)

System operation: first steps with the system



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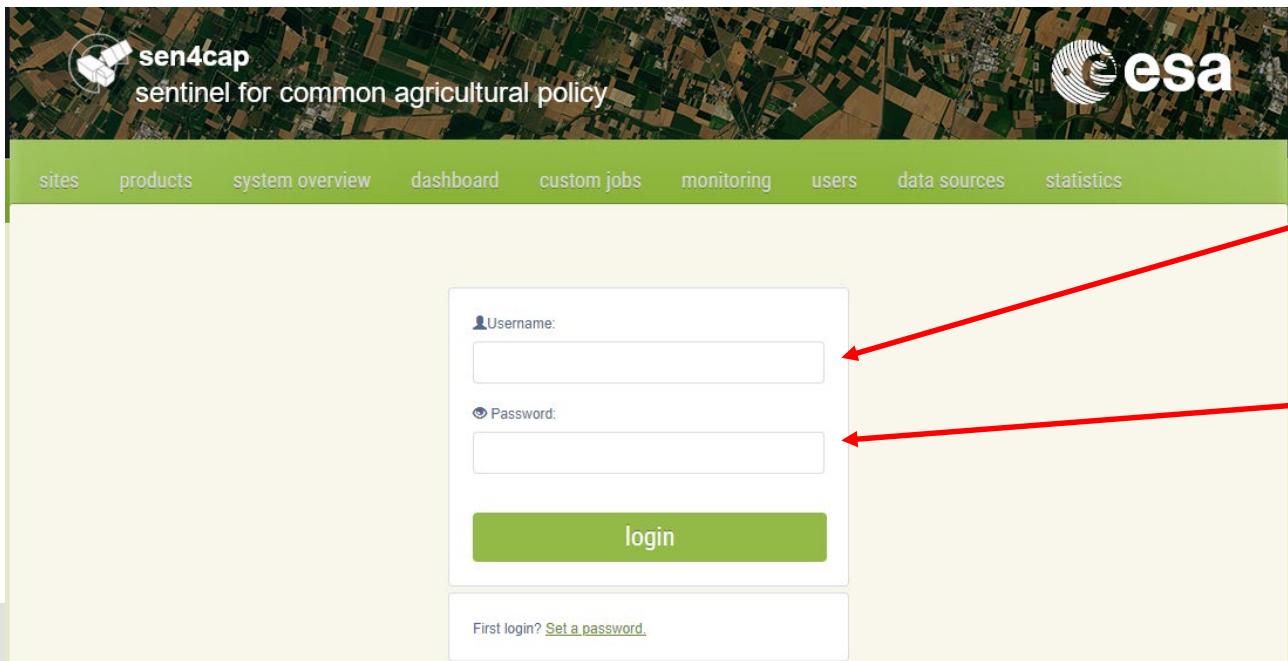
3) Launch additional jobs

- Scheduled jobs (by-default parameters)
- Custom jobs (modified parameters)

4) Access system database (using a Linux console)

STEP 1: Connect to the web interface

- Connect via any web browser
 - If you are on the machine where the system is installed: <http://localhost/>
 - If you are on another machine: http://{IP_ADDRESS}/



sen4cap
sentinel for common agricultural policy

sites products system overview dashboard custom jobs monitoring users data sources statistics

Username:

Password:

login

First login? [Set a password.](#)

Enter username
= sen4cap (by-default)

Enter password
= sen4cap (by-default)

STEP 2: Create and configure your site



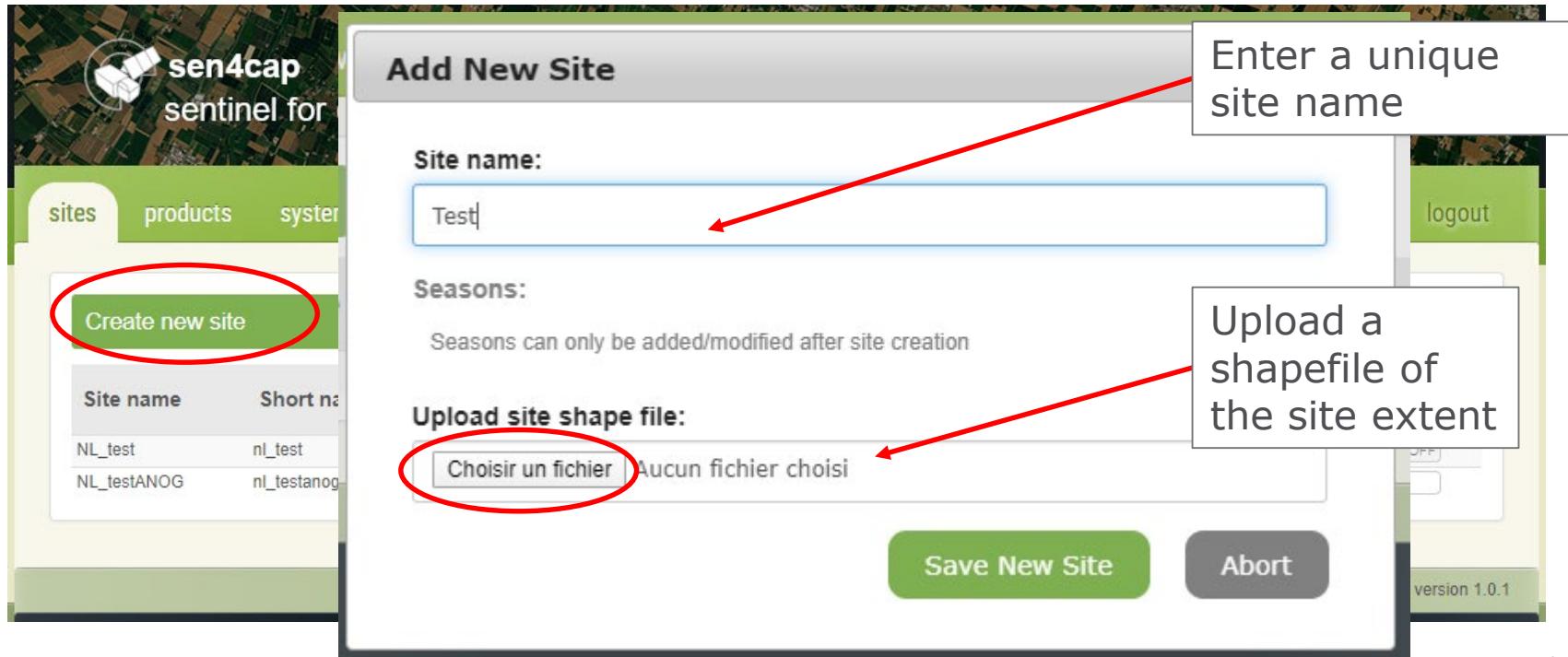
- Create your site: name and site extent

The screenshot shows the Sen4Cap web application interface. At the top, there is a banner with the text "sen4cap sentinel for common agricultural policy" and the ESA logo. Below the banner is a navigation bar with links: sites, products, system overview, dashboard, custom jobs, monitoring, users, data sources, statistics, and logout. A red circle highlights the "Create new site" button, which is located in a green header bar above a table. The table lists site configurations with columns for Site name, Short name, Season name, Season start, Season mid, Season end, Enabled, Edit, and Enabled. Two rows are shown: one for "NL_test" and another for "NL_testANOG". At the bottom of the page, a footer bar displays the text "Logged in as sen4cap | DB version 1.0.1".

Site name	Short name	Seasons					Edit	Enabled
		Season name	Season start	Season mid	Season end			
NL_test	nl_test	2019test	2019-03-01	2019-06-01	2019-10-01	<input type="button" value="OFF"/>	Edit	<input type="button" value="OFF"/>
NL_testANOG	nl_testanog	Zomer2019b	2019-04-01	2019-06-01	2019-10-01	<input checked="" type="button" value="ON"/>	Edit	<input checked="" type="button" value="ON"/>

STEP 2: Create and configure your site

- Create your site: name and site extent



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sentinel for

sites products systems

Create new site

Site name	Short na
NL_test	nl_test
NL_testANOG	nl_testanog

Add New Site

Site name:

Seasons:
Seasons can only be added/modified after site creation

Upload site shape file:
 Aucun fichier choisi

Save New Site Abort

Enter a unique site name

Upload a shapefile of the site extent

version 1.0.1

STEP 2: Create and configure your site

=> Upload a shapefile of the site extent

- zip file containing the mandatory files
- Mandatory files: .dbf, .prj, .shp and .shx
- Projection: WGS84/UTMzoneXX

Nom	Modifié le	Type	Taille
extent.dbf	16-01-20 12:06	Fichier DBF	1 Ko
extent.prj	16-01-20 12:06	Fichier PRJ	1 Ko
extent.qpj	16-01-20 12:06	Fichier QPJ	1 Ko
extent.shp	16-01-20 12:06	Fichier SHP	1 Ko
extent.shx	16-01-20 12:06	Fichier SHX	1 Ko
extent	16-01-20 14:48	Dossier compressé	2 Ko

STEP 2: Create and configure your site

- Create your site: name and site extent
- **Configure your site**

[sites](#) [products](#) [system overview](#) [dashboard](#) [custom jobs](#) [monitoring](#) [users](#) [data sources](#) [statistics](#) [logout](#)

Create new site

Site name	Short name	Season name	Season start	Season mid	Season end	Enabled	Edit	Enabled
NL_test	nl_test	2019test	2019-03-01	2019-06-01	2019-10-01	<input type="button" value="OFF"/>	Edit	<input type="button" value="OFF"/>
NL_testANOG	nl_testanog	Zomer2019b	2019-04-01	2019-06-01	2019-10-01	<input type="button" value="ON"/>	Edit	<input type="button" value="ON"/>
Test	test	-	-	-	-	<input type="button" value="OFF"/>	Edit	<input type="button" value="OFF"/>

Press the “Edit” button

STEP 2: Create and configure your site

- Create your site: name and site extent
- **Configure your site:**
 - => Add a monitoring period
 - => Activate the processors (for automatic mode)

The screenshot shows the 'Edit Site' dialog box. At the top, there is a 'Site name:' field containing 'Test'. Below it, under 'Enabled sensors:', there are three checkboxes: S2 (checked), L8 (checked), and S1 (unchecked). A red circle highlights the L8 checkbox and its associated dropdown menu, which contains a long list of dates: '199024,198023,198024,197023,199023,197024'. To the right of this list, a red annotation reads 'Add a monitoring period'. At the bottom of the dialog, there is a table titled 'List of Seasons' with columns: Season name, Season start, Season mid, Season end, Enabled, Active processors, and Action. The 'Action' column for the first row contains a green '+' button, which is also circled in red. Other buttons at the bottom include 'Delete Site' (red), 'Upload Files' (blue), and 'Save Site' (green).

STEP 2: Create and configure your site

=> Add a monitoring period

List of Seasons

Season name	Season start	Season mid	Season end	Enabled	Active processors	Action
2019	2019-03-01	2019-06-30	2019-09-30	<input type="checkbox"/> OFF	<input checked="" type="checkbox"/> L2A	

September 2019

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Enable site: OFF

Delete Site **Upload Files** **Save Site**

Enter an explicit
season name

Define:

- **Season start** = start of your monitoring
- **Season mid** = for automatic scheduling
- **Season end** = end of your monitoring

STEP 2: Create and configure your site

=> Activate the processors (for automatic mode)

List of Seasons

Season name	Season start	Season mid	Season end	Enabled	Action
2019	2019-03-01	2019-06-30	2019-09-30	<input type="button" value="OFF"/>	<input checked="" type="checkbox"/> L2A <input type="checkbox"/> L3B_LAI <input type="checkbox"/> S4C_L4A <input type="checkbox"/> S4C_L4B <input type="checkbox"/> S4C_L4C <input checked="" type="checkbox"/> L2-S1 <input checked="" type="checkbox"/> LPIS

Enable site:

Delete Site **Upload Files** **Save Site**

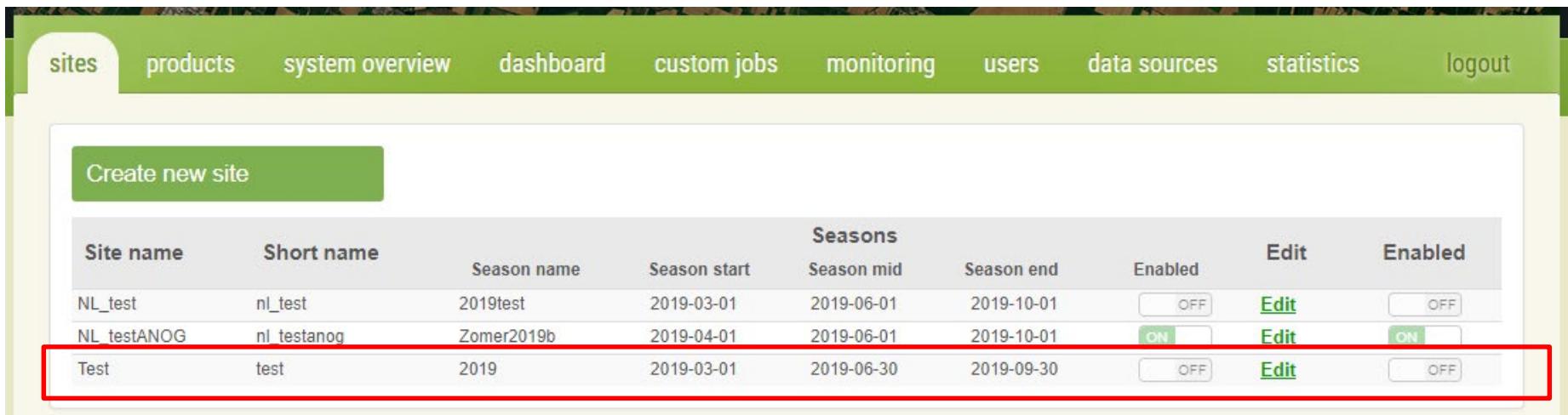
Activate the **processors** (for automatic mode):

- L3B vegetation status
- L4A crop type map
- L4B grassland mowing detection
- L4C agricultural practices monitoring

SAVE

STEP 2: Create and configure your site

- Create your site: name and site extent
- Configure your site



The screenshot shows a web-based application for managing sites. The top navigation bar includes links for 'sites', 'products', 'system overview', 'dashboard', 'custom jobs', 'monitoring', 'users', 'data sources', 'statistics', and 'logout'. The 'sites' link is highlighted.

A green button labeled 'Create new site' is visible. Below it is a table listing site configurations:

Site name	Short name	Seasons			Enabled	Edit	Enabled	
		Season name	Season start	Season mid	Season end			
NL_test	nl_test	2019test	2019-03-01	2019-06-01	2019-10-01	<input type="button" value="OFF"/>	Edit	<input type="button" value="OFF"/>
NL_testANOG	nl testanog	Zomer2019b	2019-04-01	2019-06-01	2019-10-01	<input checked="" type="button" value="ON"/>	Edit	<input checked="" type="button" value="ON"/>
Test	test	2019	2019-03-01	2019-06-30	2019-09-30	<input type="button" value="OFF"/>	Edit	<input type="button" value="OFF"/>

STEP 3: Launch the automatic mode



First, enable the monitoring period

Edit Site

Site name: Nld_training

Enabled sensors:

- S2 31UFT,31UFU
- L8 199024,198023,198024,197023,199023,197024
- S1

List of Seasons

Season name	Season start	Season mid	Season end	Enabled	Active processors	Action
2019	2019-03-01	2020-06-01	2019-10-01	ON	hover to reveal	
				OFF		

Enable site:

Second, enable your site

Edit Site

Site name: Nld_training

Enabled sensors:

- S2 31UFT,31UFU
- L8 199024,198023,198024,197023,199023,197024
- S1

List of Seasons

Season name	Season start	Season mid	Season end	Enabled	Active processors	Action
2019	2019-03-01	2020-06-01	2019-10-01	ON	hover to reveal	
				OFF		

Enable site:

SAVE

Your site is created and launched



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sites products system overview dashboard custom jobs monitoring users data sources logout

Create new site

Site name	Short name	Season name	on end	Enabled	Edit	Enabled
NLD_2019	nld_2019	2019	01-12-31	ON <input checked="" type="checkbox"/>	Edit	ON <input checked="" type="checkbox"/>
Nld_training	nld_training	2019	01-10-01	OFF <input type="checkbox"/>	Edit	OFF <input type="checkbox"/>

Your site has been successfully modified!

OK

Logged in as sen4cap | DB version 1.0.1

And then?

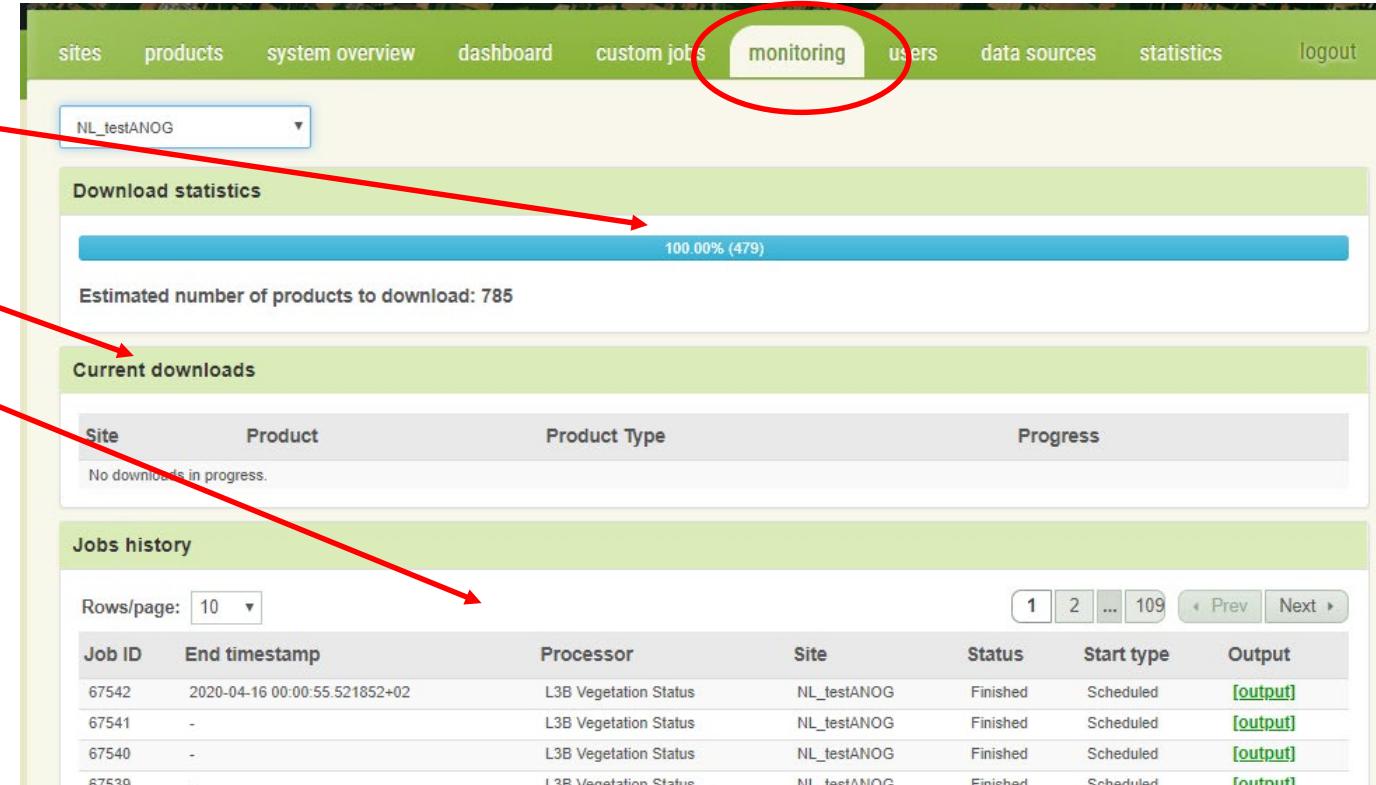
- Depending on the data sources configuration, the system **will start**:
 - ❑ If **no local depository** is defined:
 - ⇒ To **download** Level-1 S1 and S2 data from SciHub
 - ⇒ To **download** Level-1 L8 from USGS (if activated)
 - ⇒ To **download** directly S2 L2A Sen2Cor data from SciHub (if activated)
 - ❑ If a **local depository** is defined (typically on a DIAS or cloud service where the Level-1 S1, S2 and L8 (if activated) archive is available):
 - ⇒ To **import** Level-1 S1, S2 and L8 in the database
 - ⇒ To **import** directly S2 L2A Sen2Cor data (if activated)
- As soon as the system access the data => **PREPROCESSING** is launched

And then?

- As soon as the system access the data => **PREPROCESSING** is launched:
 - **S2 and L8:**
 - ⇒ Cloud detection and atmospheric correction (**CNES-MAJA**) to produce S2 / L8 L2A data (surface reflectance products)
 - ⇒ No preprocessing when using S2 L2A Sen2Cor data (if activated)
 - **S1:**
 - ⇒ backscattering (by orbit, VV / VH) + weekly coherence computation (by orbit, VV / VH)

STEP 4: Download, process and resources monitoring

- Monitoring tab:
 - ➡ S2 download statistics
 - ➡ Current downloads (S1 / S2 / L8)
 - ➡ Jobs history: all jobs with status (Running, Finished, Error)



The screenshot shows the 'monitoring' tab selected in the top navigation bar. A red arrow points from the 'Monitoring tab:' bullet point to the 'monitoring' button. Another red arrow points from the 'S2 download statistics' bullet point to the 'Download statistics' section, which displays a progress bar at 100.00% (479) and an estimated number of products to download: 785. A third red arrow points from the 'Jobs history' bullet point to the 'Jobs history' table, which lists four completed jobs (Job IDs 67542, 67541, 67540, 67539) with details like processor (L3B Vegetation Status), site (NL_testANOG), and output status (Finished). The table includes columns for Job ID, End timestamp, Processor, Site, Status, Start type, and Output.

Job ID	End timestamp	Processor	Site	Status	Start type	Output
67542	2020-04-16 00:00:55.521852+02	L3B Vegetation Status	NL_testANOG	Finished	Scheduled	[output]
67541	-	L3B Vegetation Status	NL_testANOG	Finished	Scheduled	[output]
67540	-	L3B Vegetation Status	NL_testANOG	Finished	Scheduled	[output]
67539	-	L3B Vegetation Status	NL_testANOG	Finished	Scheduled	[output]

STEP 4: Download, process and resources monitoring



- Monitoring tab
- Statistics tab (new tab):
 - ⇒ Orbit Acquisition Reports
 - ⇒ Monthly Preprocessing reports

The screenshot shows the Sen4cap web interface. At the top, there is a banner with the text "sen4cap sentinel for common agricultural policy" and the ESA logo. Below the banner is a navigation bar with the following links: sites, products, system overview, dashboard, custom jobs, monitoring, users, data sources, statistics, and logout. The "statistics" link is circled in red. Underneath the navigation bar, there are two green buttons: "Monthly Preprocessing Reports" and "Orbit Acquisition Reports".

STEP 4: Download, process and resources monitoring

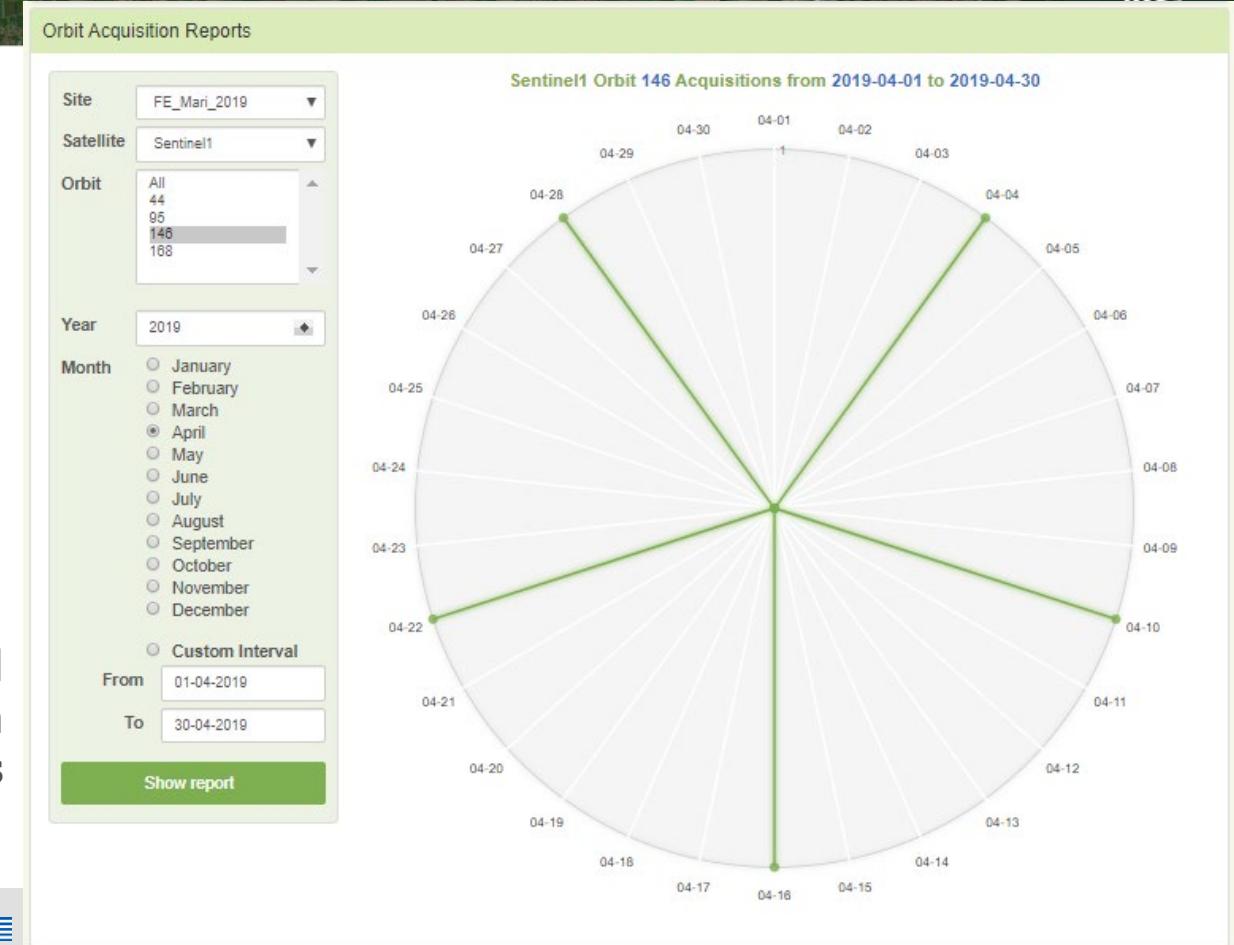


- Monitoring tab
- Statistics tab (new tab):

➡ Orbit Acquisition Reports

➡ Monthly Preprocessing reports

Number and dates of data acquisitions

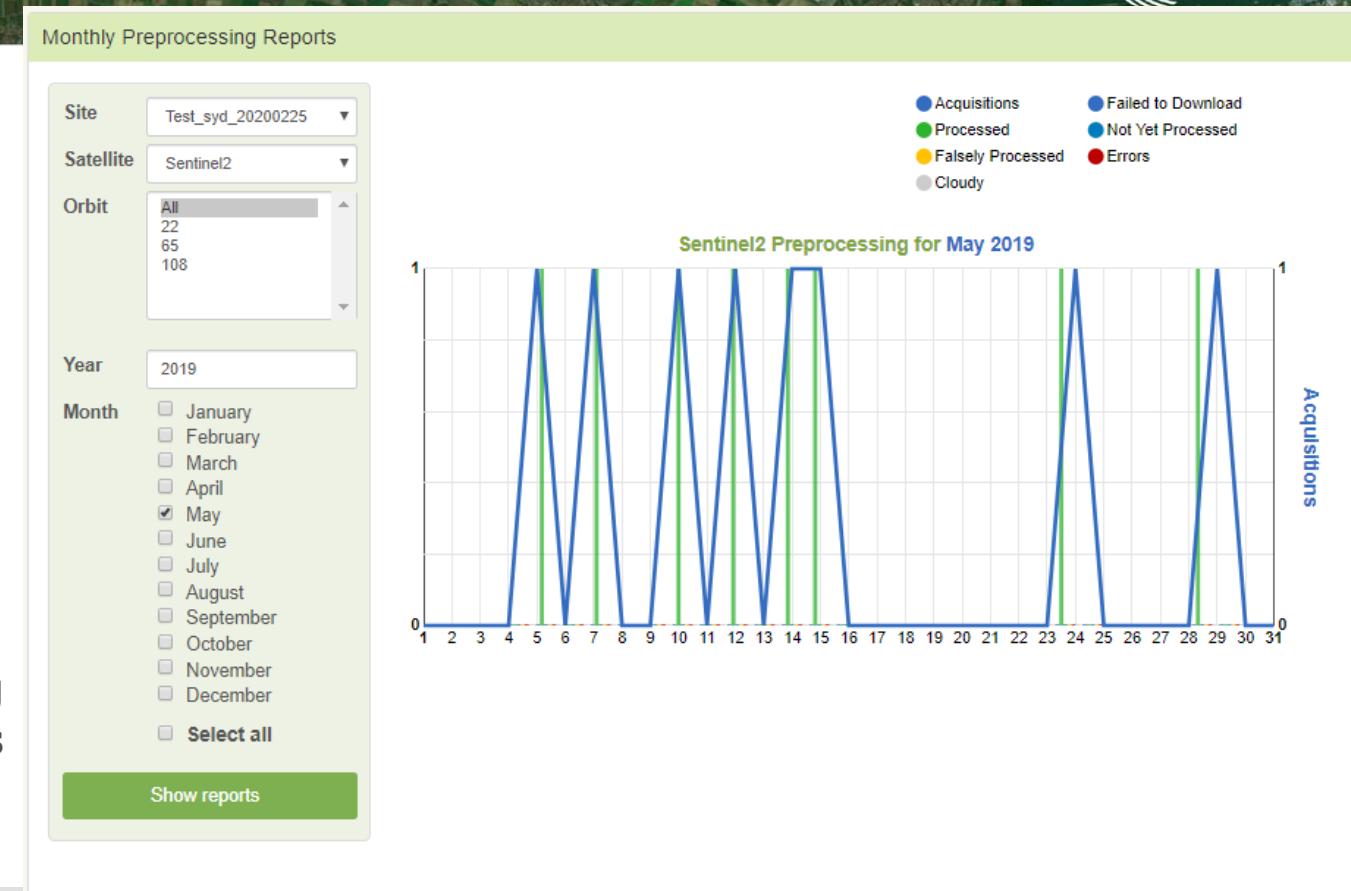


STEP 4: Download, process and resources monitoring



- Monitoring tab
- Statistics tab (new tab):
 - ➡ Orbit Acquisition Reports
 - ➡ **Monthly Preprocessing reports**

Preprocessing status



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STEP 4: Download, process and resources monitoring



- Monitoring tab
- Statistics tab (new tab)
- System overview tab:
 - ⇒ Used ressources
 - ⇒ Current running jobs (except S2 / L8 L2A preprocessing)

System overview tab highlighted with a red circle.

Used resources highlighted with a red arrow pointing to the RAM section.

Current running jobs table highlighted with a red arrow pointing to the first row.

The screenshot shows the system overview interface for two servers: mars2019.novalocal and trainme0.novalocal. The interface includes sections for Server Resources (CPU, RAM, Swap, Disk, Load) and Current Jobs.

Server Resources:

- mars2019.novalocal:**
 - CPU: 0 % / 0 %
 - RAM: 0 GB / 0 GB
 - Swap: 0 GB / 0 GB
 - Disk: 0 GB / 0 GB
 - Load: 0 / 0 / 0
- trainme0.novalocal:**
 - CPU: 2 % / 97 %
 - RAM: 1.21 GB / 62.76 GB
 - Swap: 0 GB / 0 GB
 - Disk: 2509.23 GB / 3998.05 GB
 - Load: 13 / 6 / 2

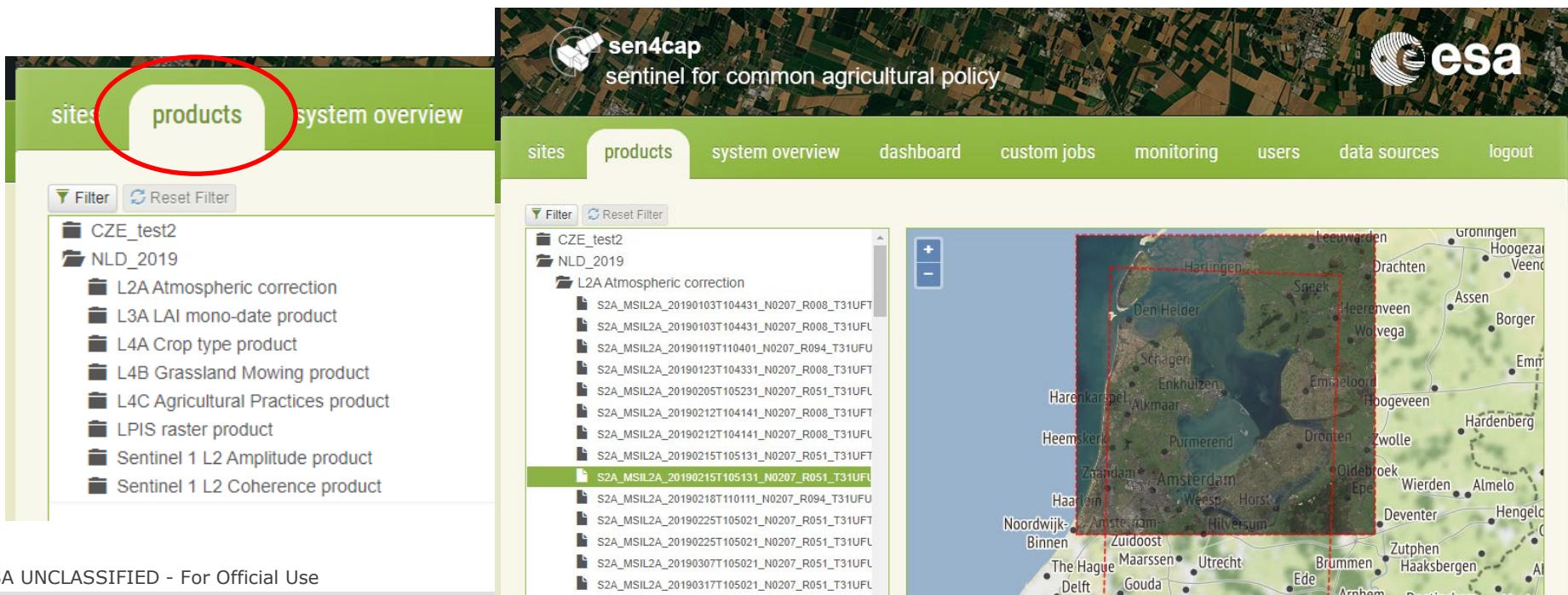
Current Jobs:

Id	Processor	Site	Triggered By	Triggered On	Status	Tasks Completed / Running	Current Task		Actions
							Module	Tiles Completed / Running	
64977	L2-S1 Pre-Processor	Nld_training	Available Product	2020-01-21 04:10:32	Running	1 / 8	Amplitude Deburst	0 / 1	
							Amplitude Merge	0 / 1	
							Amplitude Multilook	0 / 1	
							Amplitude Terrain Correction	0 / 1	
							Calibration	0 / 1	
							Coherence Deburst	0 / 1	

Pause Cancel

STEP 4: Download, process and resources monitoring

- Products tab: when a S1 backscatter / S1 coherence / S2 L2A / L8 L2A product is ready, it appears in the Products tab + quick visualization (for S2 L2A)



The image shows two screenshots of the sen4cap web application. Both screenshots have a green header bar with tabs: 'sites', 'products' (which is highlighted with a red circle), and 'system overview'. Below the header is a 'Filter' button.

Left Screenshot: Shows a list of products under the 'products' tab. The list includes:

- CZE_test2
- NLD_2019
 - L2A Atmospheric correction
 - L3A LAI mono-date product
 - L4A Crop type product
 - L4B Grassland Mowing product
 - L4C Agricultural Practices product
 - LPIS raster product
 - Sentinel 1 L2 Amplitude product
 - Sentinel 1 L2 Coherence product

Right Screenshot: Shows a similar list of products under the 'products' tab, with a larger list of S2A_MSIL2A files for atmospheric correction. A red dashed box highlights a specific file: S2A_MSIL2A_20190215T105131_N0207_R051_T31UFL. To the right of the list is a map of the Netherlands with a red dashed rectangle highlighting the coastal region around Harlingen, Den Helder, and Alkmaar.

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System operation: first steps with the system



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- **Subsidy application layer (parcels)**
- **Look-Up-Tables (LUTs) and configuration files for the L4x processors**

3) Launch additional jobs

- Scheduled jobs (by-default parameters)
- Custom jobs (modified parameters)

4) Access system database (using a Linux console)

STEP 1: Subsidy application layer (parcels)



sites products system overview dashboard custom jobs monitoring users data sources logout

Create new site

Edit Site

Site name:	Lux_2019
Enabled sensors:	<input checked="" type="checkbox"/> S2 31UGQ,32ULV,31UFR,32ULA,31UFQ,31UGR
	<input checked="" type="checkbox"/> L8 196026,197025,196025,197026

List of Seasons

Season name	Season start	Season mid	Season end	Enabled	Active processors	Action
2019_Ju	2019-01-01	2019-06-30	2019-09-01	ON		
				OFF		

Enable site:

Delete Site **Upload Files** **Save Site**

Edit

OFF

Go to the **Sites** tab
Press the **Edit** button

Upload Files

Site name:	Lux_2019	Configuration year:	2019	Change year
Declarations				
LUT data				
L4B configuration				
L4C configuration				
L4C CC practices infos				
L4C FL practices infos				
L4C NFC practices infos				
L4C NA practices infos				

Start Upload **Close**

Press the **Upload Files** button

STEP 1: Subsidy application layer (parcels)

- Change the year (if needed)
- Upload zip file containing the parcels (shapefile)
- Define attribute fields:
 - ➡ Parcel unique id
 - ➡ Holding id
 - ➡ Crop code
- 3 methods

Upload Files

Site name: Test Configuration year: 2019 Change year

Declarations (changed)

Year: 2019

Method: Update existing LPIS

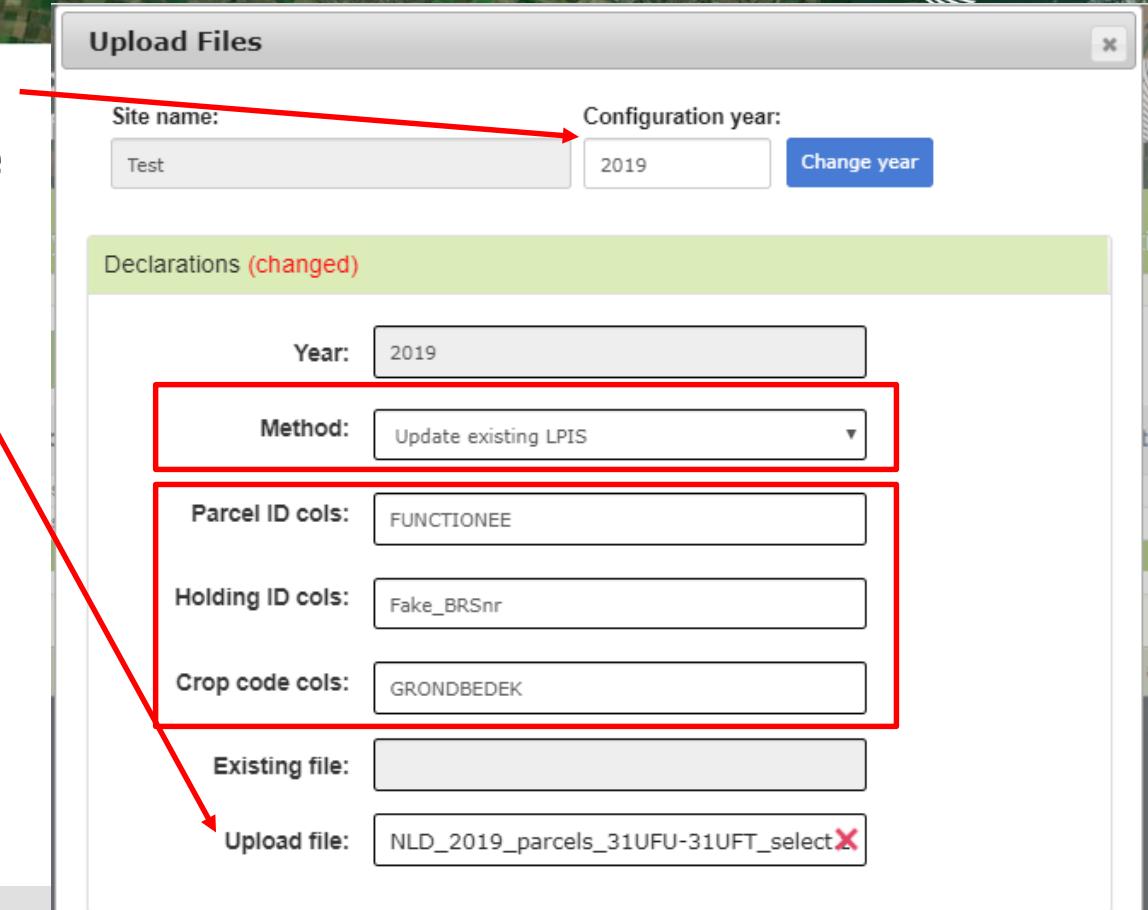
Parcel ID cols: FUNCTIONEE

Holding ID cols: Fake_BRSnr

Crop code cols: GRONDBEDEK

Existing file:

Upload file: NLD_2019_parcels_31UFU-31UFT_select



STEP 1: Subsidy application layer (parcels)

- 3 methods:
 - ➡ **Replace existing LPIS** = to use when **deleting existing dataset and uploading a new one**
 - ➡ **Reuse existing LPIS (incremental)** = to use when **adding new parcels to existing ones**
 - ➡ **Update existing LPIS** = to use when **re-uploading the whole dataset with differences** compared to the existing one (changes in existing parcels or added ones)

Upload Files

Site name: Test Configuration year: 2019 Change year

Declarations (changed)

Year: 2019

Method: Update existing LPIS
Update existing LPIS
Replace existing LPIS
Reuse existing LPIS (incremental)

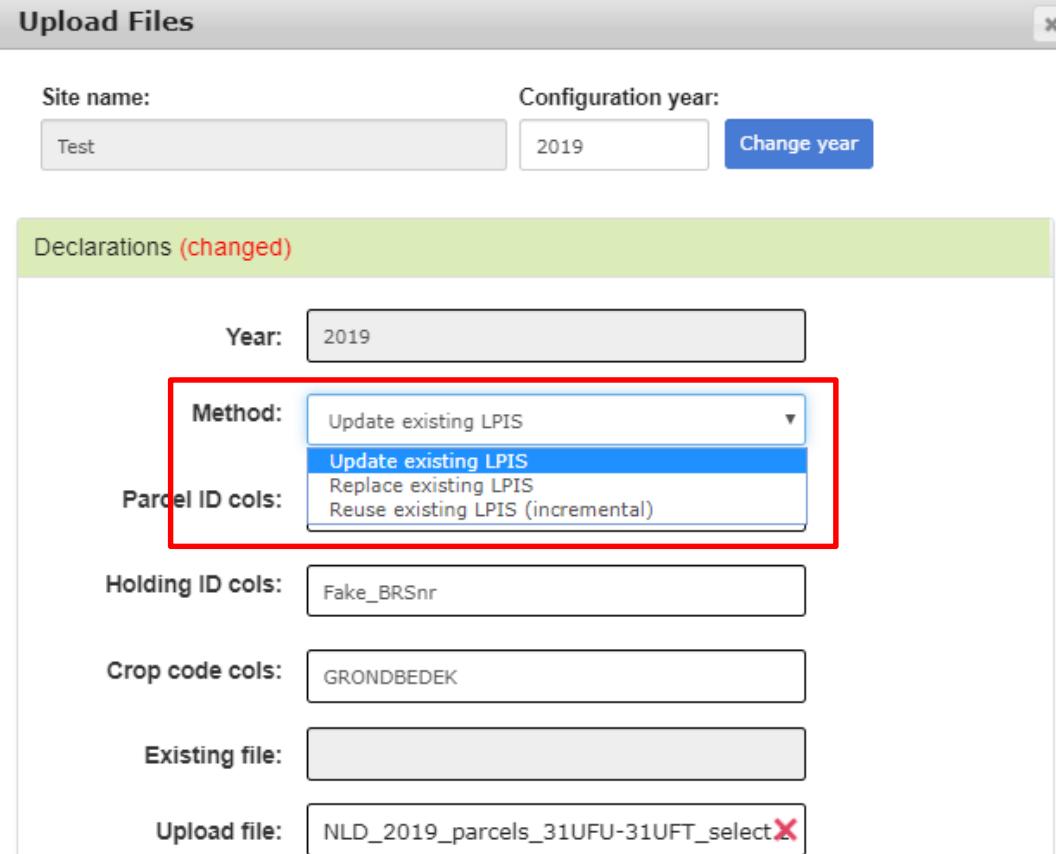
Parcel ID cols: Fake_BRSnr

Holding ID cols: GRONDBEDEK

Crop code cols:

Existing file:

Upload file: NLD_2019_parcels_31UFU-31UFT_select



STEP 1: Subsidy application layer (parcels)

- And then,
 - ❑ Subsidy application layer imported in the system
 - ❑ Standardization: NewID and HoldID
 - ❑ Quality flags: GeomValid, Duplicate, Overlap, Area_meters, ShapeInd, S1pix, S2pix
 - ❑ Information flags: is_deleted, inserted_t, updated_t, geom_chg
 - ❑ Intermediate results: buffer and raster files

STEP 2: Look-Up-Tables (LUTs) and configuration files for the L4x processors



- L4A crop type LUT
- ⇒ Change year (if needed)
- ⇒ Upload file
- ⇒ Start upload

Upload Files

Site name: Test Configuration year: 2019

Declarations

LUT data (changed)

Year: 2019

Existing file:

Upload file: Sen4CAP_L4A_NLD_2019_CropCode_LUT~~X~~

L4B configuration

L4C configuration

L4C CC practices infos

L4C FL practices infos

L4C NFC practices infos

L4C NA practices infos

STEP 2: Look-Up-Tables (LUTs) and configuration files for the L4x processors



- L4A crop type LUT
- L4B configuration file
- ⇒ Change year (if needed)
- ⇒ Upload file
- ⇒ Define mowing start date

To prevent the algorithm to look for grassland mowing events before the grassland growing season

- ⇒ Start upload

Upload Files

Site name: Test Configuration year: 2019 2019 Change year

Declarations

LUT data

L4B configuration (changed)

Year: 2019

Grassland mowing start date: 2019-04-01

Existing file:

Upload file: S4C_L4B_NLD_Config.cfg (8 kb) ×

A screenshot of a web-based application titled 'Upload Files'. At the top, there are fields for 'Site name' (set to 'Test') and 'Configuration year' (set to '2019', which is circled in red). Below these are sections for 'Declarations', 'LUT data', and 'L4B configuration (changed)'. In the 'L4B configuration' section, the 'Year' is set to '2019'. Under 'Grassland mowing start date', the value '2019-04-01' is entered. There is a field for 'Existing file' which is currently empty. At the bottom, there is a 'Upload file:' field containing the file 'S4C_L4B_NLD_Config.cfg (8 kb)', which is also circled in red. A red arrow points from the text 'Start upload' in the previous slide to this 'Upload file:' field.

STEP 2: Look-Up-Tables (LUTs) and configuration files for the L4x processors



- L4A crop type LUT
- L4B configuration file
- L4C configuration file
- ⇒ Change year (if needed)
- ⇒ Upload file
- ⇒ Define monitored practices (codes separated by comma): NA / CC / NFC / FL
- ⇒ Define country/region identifier: used in output names
- ⇒ Start upload

Upload Files

Site name: Test Configuration year: 2019 2019 Change year

Declarations

LUT data

L4B configuration

L4C configuration (changed)

Year: 2019

Practices: NA,CC →

Country: NLD →

Existing file:

Upload file: S4C_L4C_Config_NLD.cfg (1 kb) X

STEP 2: Look-Up-Tables (LUTs) and configuration files for the L4x processors

- L4A crop type LUT
- L4B configuration file
- L4C configuration file
- L4C LUTs
- ➡ Change year (if needed)
- ➡ Upload file
- ➡ Start upload

Upload Files

Site name: Test Configuration year: 2019 **Change year**

Declarations

LUT data

L4B configuration

L4C configuration

L4C CC practices infos (changed)

Year: 2019

Existing file:

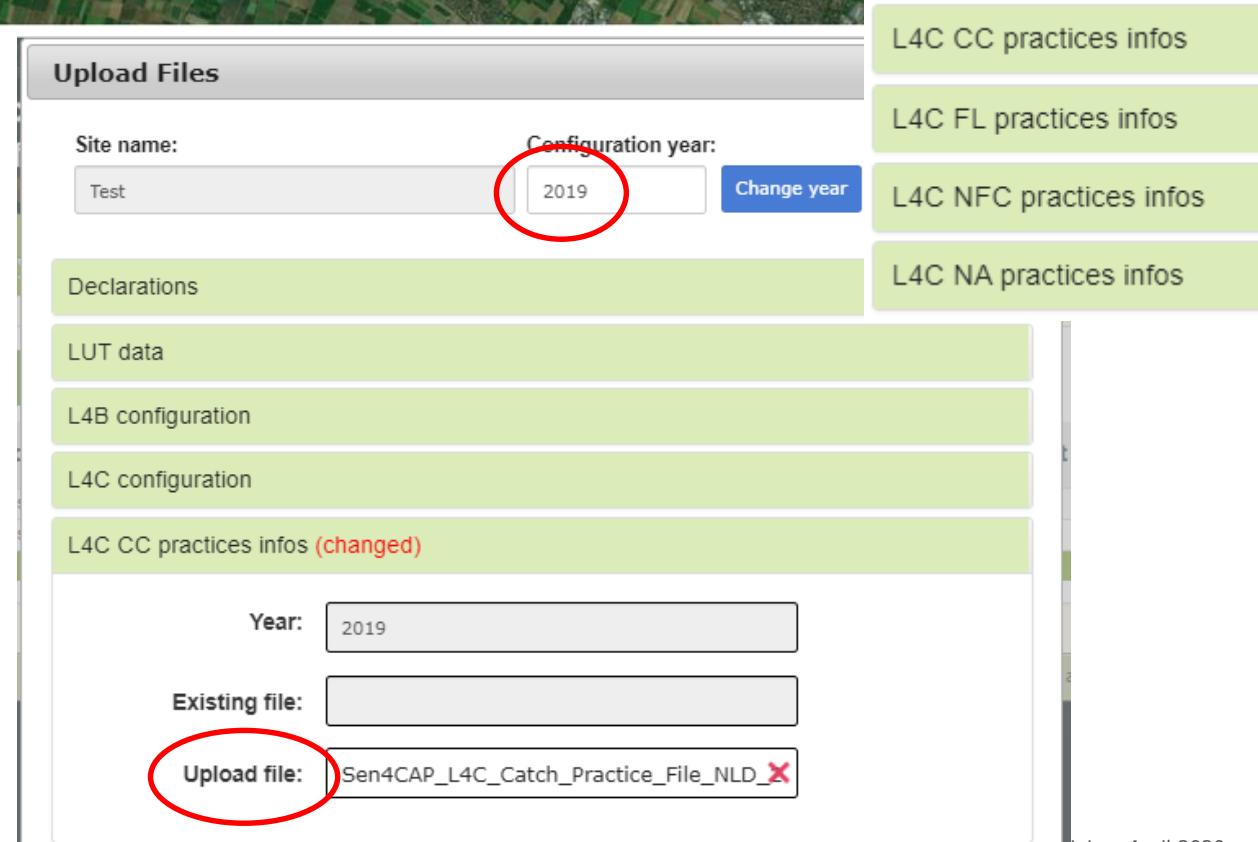
Upload file: Sen4CAP_L4C_Catch_Practice_File_NLD_*

L4C CC practices infos

L4C FL practices infos

L4C NFC practices infos

L4C NA practices infos



STEP 2: Look-Up-Tables (LUTs) and configuration files for the L4x processors



- And then,
 - ❑ These LUTs and configuration files are imported in the system
 - ❑ The L4x processors are ready to be used
 - ❑ Of course, one L4x processor can be used independantly of the others
- If the processor was activated during the configuration of the site, the processor is launched during the monitoring period, following the scheduled plan (automatic mode)

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- Subsidy application layer (parcels)
- Look-Up-Tables (LUTs) and configuration files for the L4x processors

3) Launch additional jobs

- **Scheduled jobs (by-default parameters)**
- **Custom jobs (modified parameters)**

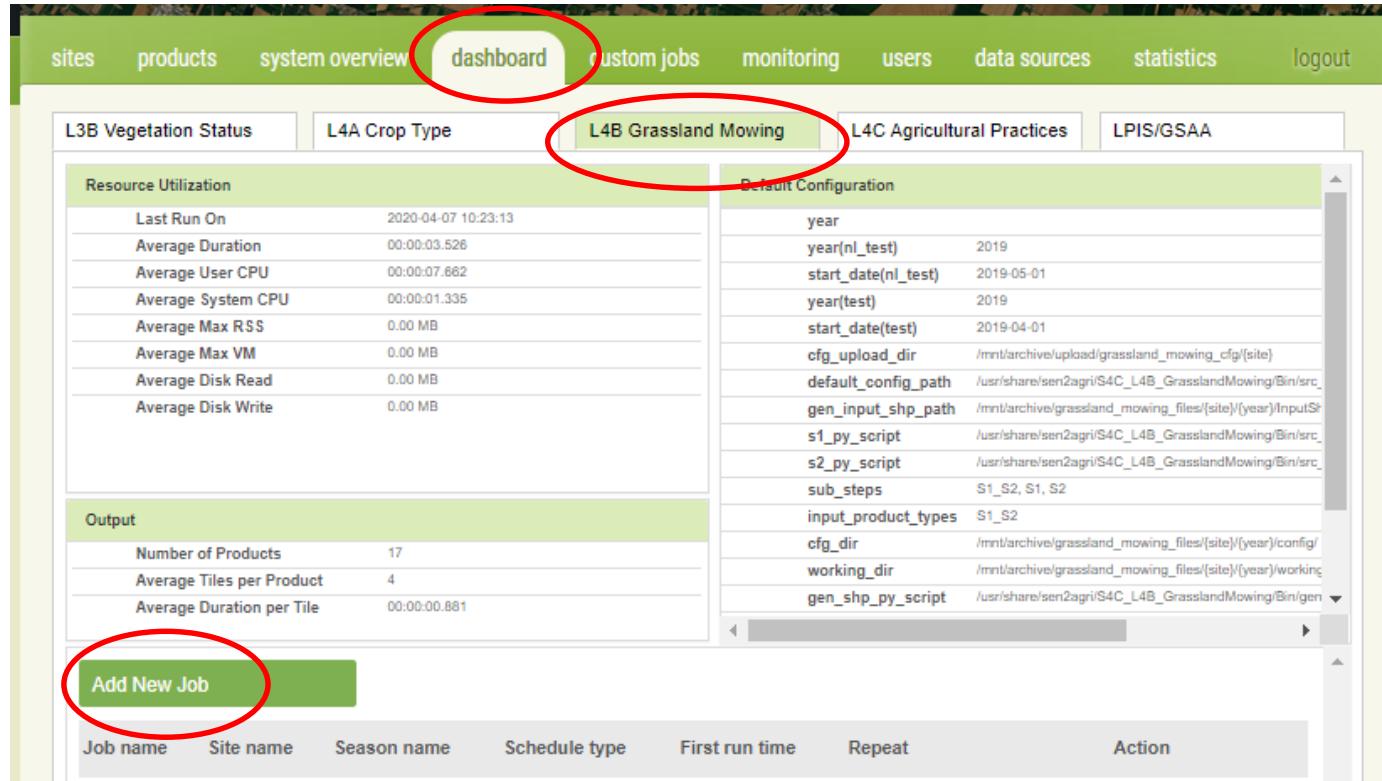
4) Access system database (using a Linux console)

Scheduled jobs (by-default parameters)

- What's a scheduled job?
 - Launched via the Dashboard tab
 - Manual processing, independently from the automatic mode
 - Not configurable: will use the by-default parameters of the processors
 - 3 modes:
 - Once: defined date when the processor is launched
 - Cycle: defined first date and repetition cycle (every x days)
 - Repeat: defined date, each month

Scheduled jobs (by-default parameters)

- How to launch a scheduled job?
- ➡ Dashboard tab
- ➡ Select a processor
- ➡ Add New Job



The screenshot shows a web-based dashboard for managing agricultural processing jobs. The top navigation bar includes links for sites, products, system overview, dashboard (which is highlighted with a red circle), custom jobs, monitoring, users, data sources, statistics, and logout.

The main content area has several tabs at the top: L3B Vegetation Status, L4A Crop Type, L4B Grassland Mowing (which is highlighted with a red circle), L4C Agricultural Practices, and LPIS/GSAA.

Resource Utilization:

Last Run On	2020-04-07 10:23:13
Average Duration	00:00:03.526
Average User CPU	00:00:07.662
Average System CPU	00:00:01.335
Average Max RSS	0.00 MB
Average Max VM	0.00 MB
Average Disk Read	0.00 MB
Average Disk Write	0.00 MB

Default Configuration:

year	
year(nl_test)	2019
start_date(nl_test)	2019-05-01
year(test)	2019
start_date(test)	2019-04-01
cfg_upload_dir	/mnt/archive/upload/grassland_mowing_cfg/[site]
default_config_path	/usr/share/sen2agni/S4C_L4B_GrasslandMowing/Bin/src
gen_input_shp_path	/mnt/archive/grassland_mowing_files/[site]/InputShp
s1_py_script	/usr/share/sen2agni/S4C_L4B_GrasslandMowing/Bin/src
s2_py_script	/usr/share/sen2agni/S4C_L4B_GrasslandMowing/Bin/src
sub_steps	S1_S2, S1_S2
input_product_types	S1_S2
cfg_dir	/mnt/archive/grassland_mowing_files/[site]/[year]/config
working_dir	/mnt/archive/grassland_mowing_files/[site]/[year]/working
gen_shp_py_script	/usr/share/sen2agni/S4C_L4B_GrasslandMowing/Bin/gen

Add New Job

Job list:

Job name	Site name	Season name	Schedule type	First run time	Repeat	Action
----------	-----------	-------------	---------------	----------------	--------	--------

Scheduled jobs (by-default parameters)

⇒ Add New Job

⇒ Define Job name

⇒ Choose the Site and Season

⇒ Define option depending on the processor: L4B input data (S1 / S2 / S1_S2)

⇒ Define schedule type and corresponding information (first date, cycle, etc.)

Add New Job

Job name	Site name	Season name	Schedule type	First run time	Repeat	Action
Test_L4B_20200416	NL_testANOG	Zomer2019b	S1_S2	Cycle	2019-06-15	After 10 days Save

Scheduled jobs (by-default parameters)

- Look at the by-default parameters

Default Configuration	
year	
year(nld_training)	2019
start_date(nld_training)	2019-04-01
cfg_upload_dir	/mnt/archive/upload/grassland_mowing_cfg
default_config_path	/usr/share/sen2agri/S4C_L4B_GrasslandM/Bin/src_in/S4C_L4B_Default_Config.cfg
gen_input_shp_path	/mnt/archive/grassland_mowing_files/{site}/l/inputShp/SEN4CAP_L4B_GeneratedInputShp.shp
s1_py_script	/usr/share/sen2agri/S4C_L4B_GrasslandMowing/Bin/src_s1/S1_main.py
s2_py_script	/usr/share/sen2agri/S4C_L4B_GrasslandMowing/Bin/src_s2/S2_main.py
sub_steps	S1_S2, S1, S2
input_product_types	S1_S2
cfg_dir	/mnt/archive/grassland_mowing_files/{site}/{year}/config/
working_dir	/mnt/archive/grassland_mowing_files/{site}/{year}/working_dir/

L4B

Default Configuration	
global_kv_samples_file	/usr/share/sen2agri/LaiCommonBVDistributionSamples.txt
laibandscfgfile	/usr/share/sen2agri/Lai_Bands_Cfgs_Belcam.cfg
link_l3c_to_l3b	0
localwnd.bwr	2
localwnd.fwr	0
lut_path	/usr/share/sen2agri/lai.map
modelsfolder	/mnt/archive/L3B_GeneratedModels/
produce_fapar	1
produce_fcover	1
produce_lai	1
produce_ndvi	
rsrcfgfile	
tiles_filter	
use_inra_version	
use_lai_hands_cfr	

L3B

Default Configuration	
country(nld_2019)	NLD
practices(nld_2019)	CC, NA
sub_steps	ALL, DataExtraction, CatchCrop, Fallow,
nrt_data_extr_enabled	true
prds_per_group	1
execution_operation	ALL
cfg_upload_dir	/mnt/archive/upload/agric_practices_files/{site}/config
ts_input_tables_uploadrootdir	/upload/agric_practices_files/{site}/ts_input_tables
default_config_path	/usr/share/sen2agri/S4C_L4C_Configurations/S4C_L4C_Default_Config.cfg
cfg_dir	/mnt/archive/agric_practices_files/{site}/{year}/config/
data_extr_dir	/mnt/archive/agric_practices_files/{site}/{year}/data_extraction/{year}/
ts_input_tables_dir	/mnt/archive/agric_practices_files/{site}/{year}/ts_input_tables/{year}/
filter_ids_path	/mnt/archive/agric_practices_files/{site}/{year}/ts_input_tables/Fi/Sen4CAP_L4C_FilterIds.csv
practices	NA

L4C

Default Configuration	
min-s2-pix	3
min-s1-pix	1
best-s2-pix	10
lc	1234
pa-min	30
pa-train-h	4000
pa-train-l	1100
sample-ratio-h	0.25
sample-ratio-l	0.75
smote-target	1000
smote-k	5
num-trees	300
min-node-size	10

L4A

Scheduled jobs (by-default parameters)

- Look at the by-default parameters
 - ⇒ These are the by-default parameters of the different processors, **on top of the ones defined in the L4B and L4C configuration tables**
 - ⇒ To better understand them, you can refer to
 - the Algorithm Theoretical Basis Document (**ATBD**) of the different processors
 - the « **config_metadata** » table from the system database, which shortly defines each parameter
 - ⇒ The by-default parameters can be adapted (by site) in the « **config** » table of the system database
- Available on the website, in the resources tab
- We will see how to connect to the system database later

Custom jobs (modified parameters)

- What's a custom job?
 - Launched via the Custom jobs tab
 - Manual processing, independently from the automatic mode
 - Configurable: easy way to change the by-default parametrization for tests
 - Not scheduled: will be immediately launched

Custom jobs (modified parameters)



- How to launch a custom job?
- Custom jobs tab
- Select a processor
- Select a site

The screenshot shows a navigation bar with tabs: sites, products, system overview, dashboard, and custom jobs. The 'custom jobs' tab is highlighted with a red circle. Below the navigation bar, there are four categories: L3B Vegetation Status, L4A Crop Type, L4B Grassland Mowing, and L4C Agricultural Practices. The 'L4C Agricultural Practices' category is also highlighted with a red circle.

The screenshot shows a configuration interface for 'L4C Agricultural Practices'. At the top, there is a 'Site:' dropdown menu with the value 'NL_testANOOG' selected. This dropdown is circled with a red circle. Below the dropdown, there is a section titled 'Filter Criteria For Input Files'. Underneath this, there are three sections: 'Available NDVI input files', 'Available COHE input files', and 'Available AMP input files', each listing a series of file names. At the bottom of the interface is a green 'Submit' button.

Custom jobs (modified parameters)



- How to launch a custom job?
- Custom jobs tab
- Select a processor
- Select a site
- Filter input data

1. By **S2 tile**

2. By **date:**
From ... To ...

3. **Filter**

L4C Agricultural Practices

Site: *****
NL_testANOG

Filter Criteria For Input Files

Sensor: S2 S1 L8

Tiles
31UGV,32ULD,32ULE

Tiles
198023,197023

Season:
Select season

From: 2019-05-01 To: 2019-09-01

Filter Reset Filter

Available NDVI input files:

S2AGRI_L3B_PRD_S14_20200307T001054_A20190
S2AGRI_L3B_PRD_S14_20200307T002758_A20190
S2AGRI_L3B_PRD_S14_20200307T004722_A20190
S2AGRI_L3B_PRD_S14_20200307T010121_A20190
S2AGRI_L3B_PRD_S14_20200307T011213_A20190
S2AGRI_L3B_PRD_S14_20200307T012720_A20190
S2AGRI_L3B_PRD_S14_20200307T013833_A20190

The list of NDVI products

September 2019

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

April 2020

pace Agency

Custom jobs (modified parameters)

- How to launch a custom job?
- ⇒ Custom jobs tab
- ⇒ Select a processor
- ⇒ Select a site
- ⇒ Filter input data
- ⇒ Select input data
- ⇒ Submit

Available NDVI input files:

```
S2AGRI_L3B_PRD_S14_20200307T010121_A20190503T104611
S2AGRI_L3B_PRD_S14_20200307T011213_A20190513T104625
S2AGRI_L3B_PRD_S14_20200307T012720_A20190518T104630
S2AGRI_L3B_PRD_S14_20200307T013833_A20190523T104611
S2AGRI_L3B_PRD_S14_20200307T014801_A20190528T104616
S2AGRI_L3B_PRD_S14_20200307T015821_A20190602T104623
S2AGRI_L3B_PRD_S14_20200307T021244_A20190607T104629
S2AGRI_L3B_PRD_S14_20200307T021244_A20190607T104629
S2AGRI_L3B_PRD_S14_20200307T021244_A20190607T104629
```

The list of NDVI products

Available COHE input files:

```
SEN4CAP_L2A_S14_V20190427T054854_20190503T054944_VH_037_S1_L2A_COHE
SEN4CAP_L2A_S14_V20190427T054854_20190503T054944_VV_037_S1_L2A_COHE
SEN4CAP_L2A_S14_V20190430T172437_20190506T172501_VH_088_S1_L2A_COHE
SEN4CAP_L2A_S14_V20190430T172437_20190506T172501_VV_088_S1_L2A_COHE
SEN4CAP_L2A_S14_V20190430T172437_20190506T172528_VH_088_S1_L2A_COHE
SEN4CAP_L2A_S14_V20190430T172437_20190506T172528_VV_088_S1_L2A_COHE
SEN4CAP_L2A_S14_V20190504T054044_20190428T054134_VH_139_S1_L2A_COHE
SEN4CAP_L2A_S14_V20190504T054044_20190428T054134_VV_139_S1_L2A_COHE
```

The list of COHE products

Available AMP input files:

```
SEN4CAP_L2A_S14_V20190419T171854_20190501T171855_VH_015_S1_L2A_AMP
SEN4CAP_L2A_S14_V20190419T171854_20190501T171855_VV_015_S1_L2A_AMP
SEN4CAP_L2A_S14_V20190427T054854_20190503T054944_VH_037_S1_L2A_AMP
SEN4CAP_L2A_S14_V20190427T054854_20190503T054944_VV_037_S1_L2A_AMP
SEN4CAP_L2A_S14_V20190430T172437_20190506T172501_VH_088_S1_L2A_AMP
SEN4CAP_L2A_S14_V20190430T172437_20190506T172501_VV_088_S1_L2A_AMP
SEN4CAP_L2A_S14_V20190430T172437_20190506T172528_VH_088_S1_L2A_AMP
SEN4CAP_L2A_S14_V20190430T172437_20190506T172528_VV_088_S1_L2A_AMP
```

The list of AMP products

Submit

Custom jobs (modified parameters)

- How to change parameters?
- ⇒ L4A crop type: using custom jobs
- ⇒ L4B grassland mowing detection: mainly using config table
- ⇒ L4C agricultural practices: using config table

L4A Crop Type

Show advanced parameters

Site:^{*}
NL_testANO

Filter Criteria For Input Files

Available input files:^{*}

- S2A_MSIL2A_20190406T105031_N0207_R051
- S2A_MSIL2A_20190406T105031_N0207_R051
- S2A_MSIL2A_20190410T103021_N0207_R108

1000
Target sample count for SMOTE

Training ratio for uncommon crop types:
0,75

Training ratio for uncommon crop types

Training ratio for common crop types:
0,25

Training ratio for common crop types

Lower threshold for parcel counts by crop type:
1100

Lower threshold for parcel counts by crop type

Upper threshold for parcel counts by crop type:
4000

Upper threshold for parcel counts by crop type

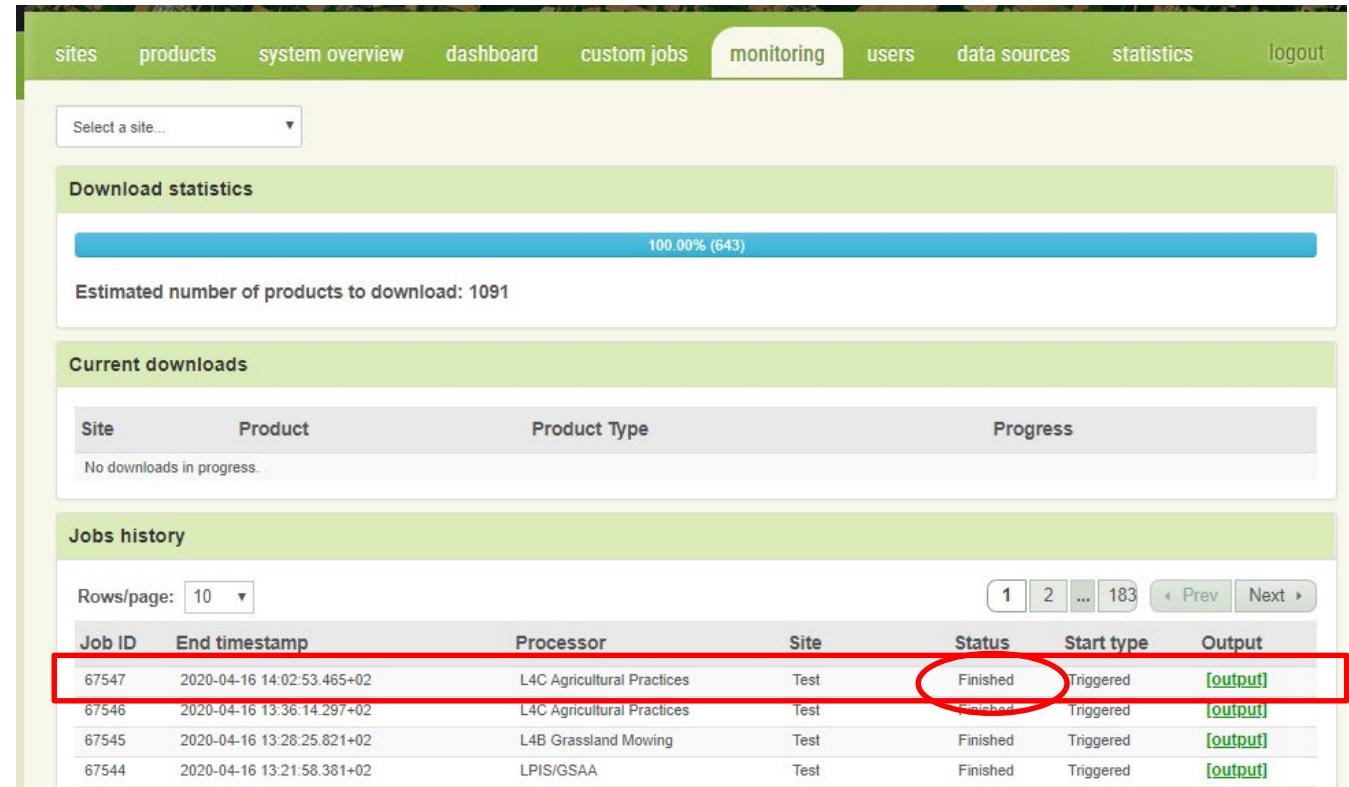
Minimum parcels to assess a crop type:
30

Minimum parcels to assess a crop type

Minimum number of S2 pixels for parcels to use in training:
10

Jobs progress monitoring

- Monitoring tab
- ➡ Status: Running / Finished / Error

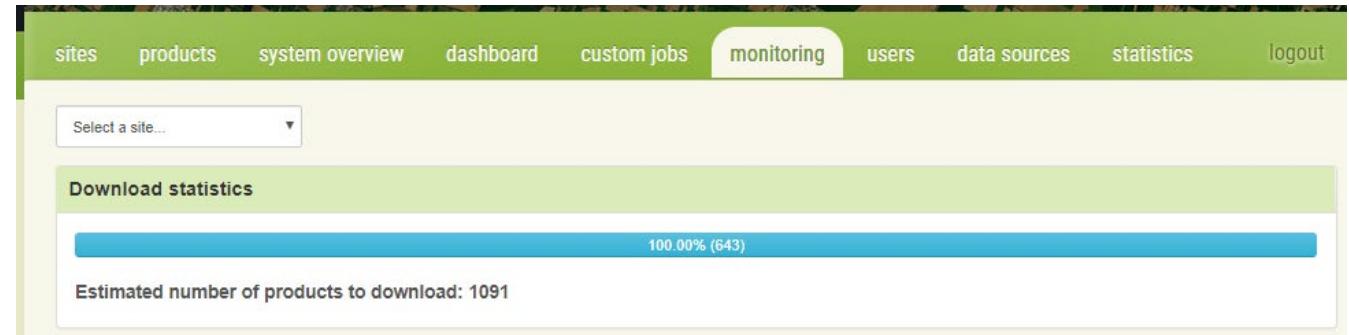


The screenshot shows the 'monitoring' tab selected in the top navigation bar. The interface includes sections for 'Download statistics', 'Current downloads', and 'Jobs history'. A red box highlights the 'Status' column in the 'Jobs history' table, where all listed jobs are marked as 'Finished'. The 'output' link for the first job is also circled in red.

Job ID	End timestamp	Processor	Site	Status	Start type	Output
67547	2020-04-16 14:02:53.465+02	L4C Agricultural Practices	Test	Finished	Triggered	[output]
67546	2020-04-16 13:36:14.297+02	L4C Agricultural Practices	Test	Finished	Triggered	[output]
67545	2020-04-16 13:28:25.821+02	L4B Grassland Mowing	Test	Finished	Triggered	[output]
67544	2020-04-16 13:21:58.381+02	LPIS/GSAA	Test	Finished	Triggered	[output]

Jobs progress monitoring

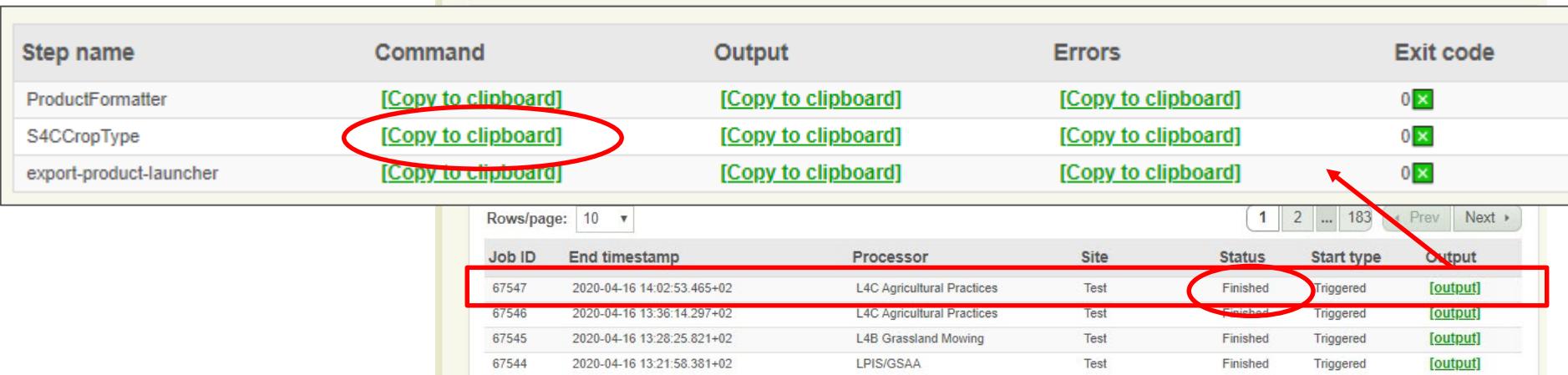
- Monitoring tab
- Status: Running / Finished / Error
- Output: to copy in notepad



The screenshot shows a monitoring dashboard with the following sections:

- Navigation bar:** sites, products, system overview, dashboard, custom jobs, **monitoring** (highlighted), users, data sources, statistics, logout.
- Select a site...** dropdown menu.
- Download statistics:** A progress bar showing 100.00% (643) completed. Below it, the text "Estimated number of products to download: 1091".
- Job Step Table:** A table with columns: Step name, Command, Output, Errors, and Exit code. It lists three entries:

Step name	Command	Output	Errors	Exit code
ProductFormatter	[Copy to clipboard]	[Copy to clipboard]	[Copy to clipboard]	0 ✘
S4CCropType	[Copy to clipboard]	[Copy to clipboard]	[Copy to clipboard]	0 ✘
export-product-launcher	[Copy to clipboard]	[Copy to clipboard]	[Copy to clipboard]	0 ✘



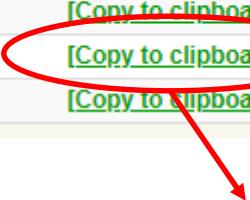
The screenshot shows a detailed table of job logs with the following columns: Job ID, End timestamp, Processor, Site, Status, Start type, and Output. The table has 10 rows per page. The first row is highlighted with a red box and circled with a red arrow pointing to the status column. The last row is also circled with a red box.

Job ID	End timestamp	Processor	Site	Status	Start type	Output
67547	2020-04-16 14:02:53.465+02	L4C Agricultural Practices	Test	Finished	Triggered	[output]
67546	2020-04-16 13:36:14.297+02	L4C Agricultural Practices	Test	Finished	Triggered	[output]
67545	2020-04-16 13:28:25.821+02	L4B Grassland Mowing	Test	Finished	Triggered	[output]
67544	2020-04-16 13:21:58.381+02	LPIS/GSAA	Test	Finished	Triggered	[output]

Jobs progress monitoring

- Monitoring tab
- ⇒ Status: Running / Finished / Error
- ⇒ Output: to copy in notepad

Step name	Command	Output	Errors	Exit code
ProductFormatter	[Copy to clipboard]	[Copy to clipboard]	[Copy to clipboard]	0
S4CCropType	[Copy to clipboard]	[Copy to clipboard]	[Copy to clipboard]	0
export-product-launcher	[Copy to clipboard]	[Copy to clipboard]	[Copy to clipboard]	0



```

new 1 x
1 crop-type-wrapper.py -s 14 --season-start 2019-04-01 --season-end 2019-09-30
--working-path /mnt/archive/orchestrator_temp/s4c_14a/67533/73773-s4c-crop-type/
--out-path /mnt/archive/orchestrator_temp/s4c_14a/67533/73774-product-formatter/
--tiles 31UGV 32ULD 32ULE

```

Jobs progress monitoring

- Monitoring tab
- System overview tab
- ⇒ Steps progress: Completed / Remaining
- ⇒ Action: Pause / Cancel

Current Jobs								
Id	Processor	Site	Triggered By	Triggered On	Status	Tasks Completed / Running	Current Task	
						Module	Tiles Completed / Running	
67548	L4A Crop Type	NL_testANOG	User Request	2020-04-16 04:04:08	Running	0 / 3	export-product-launcher product-formatter s4c-crop-type	0 / 1 0 / 1 1 / 1

System operation: first steps with the system



1) Launch a site in the automatic mode

- Connect to the web interface
- Create and configure your site
- Launch the automatic mode
- Download, process and resources monitoring

2) Upload parcels information

- Subsidy application layer (parcels)
- Look-Up-Tables (LUTs) and configuration files for the L4x processors

3) Launch additional jobs

- Scheduled jobs (by-default parameters)
- Custom jobs (modified parameters)

4) Access system database (using a Linux console)

Access system database (using a Linux console)



- Operations that can be performed from a Linux console:
 - Access system database and change configuration parameters**
 - Look at processed data
 - Launch processor commands
 - View the system logs
 - Start and stop system components
 - ...

Access system database (using a Linux console)

⇒ Connect to the **system database (PostgreSQL)**

`sudo -u postgres psql sen4cap`

⇒ **List** the content of the database

`\d`

config table

config_metadata table

prepared subsidy application
layer for the NLD_2019 site

list of the S2 L1C to download
and preprocessed by the
system with status

...

+ LUT, product, etc.

Schema	Name	Type	Owner
public	activity_status	table	postgres
public	agricultural_practice	table	postgres
public	cog_archive	table	postgres
public	cog_archive_id_seq	sequence	postgres
public	config	table	postgres
public	config_category	table	postgres
public	config_id_seq	sequence	postgres
public	config_job	table	postgres
public	config_metadata	table	postgres
public	datasource	table	admin
public	datasource_id_seq	sequence	admin
public	decl_nld_2019_2019	table	admin
public	decl_nld_training_2019_staging	table	admin
public	decl_nld_training_2019_staging_ogc_fid_seq	sequence	admin
public	downloader_count	table	admin
public	downloader_history	table	postgres
public	downloader_history_id_seq	sequence	postgres
public	downloader_status	table	postgres
public	event	table	postgres
public	event_id_seq	sequence	postgres
public	event_type	table	postgres
public	geography_columns	view	postgres
public	geometry_columns	table	postgres

Access system database (using a Linux console)



- ⇒ Look in the config_metadata table

```
select key, friendly_name from config_metadata;
```

= list of the system parameters with a short explanation

- ⇒ Look for the parameters of the L4A crop type processor in the config table

```
select key, value from config where key like '%l4a%';
```

key	friendly_name
archiver.archive_path	Archive Path
archiver.max_age.l2a	L2A Product Max Age (days)
archiver.max_age.l3b	L3B Product Max Age (days)
archiver.max_age.s4c_14a	L4A Product Max Age (days)
archiver.max_age.s4c_14b	L4A Product Max Age (days)
archiver.max_age.s4c_14c	L4A Product Max Age (days)
demmaccs.cog-tiffs	Produce L2A tiff files as Cloud Optimized Geotiff
demmaccs.compress-tiffs	Compress the resulted L2A tiff files
demmaccs.gips-path	path where the gips files are to be found
demmaccs.maccs-launcher	launcher for maccs within the keeping unit
demmaccs.output-path	path for l2a products
demmaccs.remove-fre	Remove FRE files from resulted L2A product
demmaccs.remove-sre	Remove SRE files from resulted L2A product
demmaccs.srtm-path	path where the srtm files are to be found
demmaccs.swbd-path	path where the swbd files are to be found
demmaccs.working-dir	working directory for demmaccs
downloader.enabled	Downloader is enabled
downloader.18.enabled	
downloader.18.max-retries	
downloader.18.write-dir	
downloader.max-cloud-coverage	
downloader.s1.enabled	
downloader.s2.enabled	
downloader.s2.max-retries	

key	value
archiver.max_age.s4c_14a	1
executor.processor.s4c_l4a.slurm_qos	qoscrop
general.scratch-path.s4c_l4a	/mnt/ar
processor.l4a.reference_data_dir	N/A
processor.s4c_l4a.min-s2-pix	duct
processor.s4c_l4a.min-s1-pix	3
processor.s4c_l4a.best-s2-pix	10
processor.s4c_l4a_lc	1234
processor.s4c_l4a_pa_min	30
processor.s4c_l4a_pa_train-h	4000
processor.s4c_l4a_pa_train-l	1100
processor.s4c_l4a_sample_ratio-h	0.25
processor.s4c_l4a_sample_ratio-l	0.75
processor.s4c_l4a_smote_target	1000
processor.s4c_l4a_smote_k	5
processor.s4c_l4a_num_trees	300
processor.s4c_l4a_min_node_size	10
(17 rows)	

Access system database (using a Linux console)



⇒ Change by-default parameters of processors for a specific site

⇒ Define id of the site

`select id,name from site;`

⇒ Change the minimum number of parcels for to
be included in the classification for the Test site
(L4A crop type processor)

`insert into config(key,value,site_id) values ('processor.s4c_l4a.pa-min',50,15);`

⇒ Look at this parameter again

`select key,value,site_id from config where key like '%l4a.pa-min%';`

```
sen4cap=# select id,name from site;
+---+-----+
| id | name |
+---+-----+
| 13 | NL_test
| 14 | NL_testANOG
| 15 | Test
+---+-----+
(3 rows)
```

```
sen4cap=# select key,value,site_id from config
+-----+-----+-----+
| key | value | site_id |
+-----+-----+-----+
| processor.s4c_l4a.pa-min | 30 | 15
| processor.s4c_l4a.pa-min | 50 | 15
+-----+-----+-----+
(2 rows)
```

Look at processed data (using a Linux console)



⇒ Look at the list of processed S2 L2A data

ll /cd/mnt/archive/maccs_def/nld_2019/l2a/

⇒ Look at the list of processed S1 data

ll /cd/mnt/archive/nld_2019/l2a-s1/

⇒ Look at more advanced products

ll /cd/mnt/archive/nld_2019/s4c_l4a

ll /cd/mnt/archive/nld_2019/s4c_l4b

ll /cd/mnt/archive/nld_2019/s4c_l4c

From a site called
NLD_2019

```
drwxr-xr-x 5 sen2agri-service sen2agri-service 143 Jan 21 21:43 S2AGRI_S4C_L4B_PRD_S1_20200121T214355_V20190101T000000_20190801T000000
drwxr-xr-x 5 s4cuser        s4cuser        143 Jan 17 12:36 S2AGRI_S4C_L4B_PRD_S18_20190615T181320_V20190401T000000_20190531T000000
drwxr-xr-x 5 s4cuser        s4cuser        143 Jan 17 12:36 S2AGRI_S4C_L4B_PRD_S18_20190715T125313_V20190401T000000_20190630T000000
drwxr-xr-x 5 s4cuser        s4cuser        143 Jan 17 12:36 S2AGRI_S4C_L4B_PRD_S18_20190815T123515_V20190401T000000_20190731T000000
drwxr-xr-x 5 s4cuser        s4cuser        143 Jan 17 12:36 S2AGRI_S4C_L4B_PRD_S18_20190915T010517_V20190401T000000_20190831T000000
drwxr-xr-x 5 s4cuser        s4cuser        143 Jan 17 12:36 S2AGRI_S4C_L4B_PRD_S18_20191015T172541_V20190401T000000_20190930T000000
drwxr-xr-x 5 s4cuser        s4cuser        143 Jan 17 12:36 S2AGRI_S4C_L4B_PRD_S18_20191115T060814_V20190401T000000_20191031T000000
```

Launch processor commands (using a Linux console)

- Not all processors can be invoked from the Linux console
- Some of the steps of the processors can be executed in command lines by taking the commands in the Monitoring tab of the web interface
- Example of processor invocation (more examples in SUM):

```
crop-type-wrapper.py -s SITE_ID --season-start 2018-01-01 --season-end 2019-01-01 --working-path /mnt/archive/tmp --out-path /mnt/archive/crop-type-output/ --tiles 31UWT 32UQR
```

View the system logs (using a Linux console)

- Following the logs on console

`sudo journalctl -fu <service_name>`

Ex:

`sudo journalctl -fu sen2agri-orchestrator`

`sudo journalctl -fu sen2agri-services`

`sudo journalctl -fu sen2agri-demmaccs`

`sudo journalctl -fu sen2agri-executor`

- Redirecting logs to file:

`sudo journalctl -fu <service_name> > file_name.log`

Ex.:

`sudo journalctl -fu sen2agri-orchestrator > orchest.log`

`sudo journalctl -fu sen2agri-services > services.log`

`sudo journalctl -fu sen2agri-demmaccs > demmaccs.log`

`sudo journalctl -fu sen2agri-executor > executor.log`

```
eouser@trainme-21: ~ % sudo journalctl -fu sen2agri-services
-- Logs begin at Tue 2020-01-21 07:48:27 CET. --
Jan 21 16:26:36 trainme-21.novalocal start.sh[2315]: 2020-Jan-21 16:26:36.537 TRACE [DefaultQuartzScheduler_Worker-6] r.c.t.utils.executors.Executor - 0 running tasks, 0 queued tasks
Jan 21 16:26:36 trainme-21.novalocal start.sh[2315]: 2020-Jan-21 16:26:36.871 DEBUG [DefaultQuartzScheduler_Worker-6] o.e.s.p.SentinelLevel2Worker - Step 7 (Coherence Deburst) completed in 02m02s
Jan 21 16:26:36 trainme-21.novalocal start.sh[2315]: 2020-Jan-21 16:26:36.885 DEBUG [DefaultQuartzScheduler_Worker-6] o.e.s.p.SentinelLevel2Worker - Executing step 8 (Coherence Merge): [{gpt,-c,256M,-q,8,/ssd/SEN4CAP_L2A_S1_V20190110T174018_20190116T174113_VV_059/sl_step_8_1.xml}]
Jan 21 16:26:36 trainme-21.novalocal start.sh[2315]: 2020-Jan-21 16:26:36.911 DEBUG [DefaultQuartzScheduler_Worker-6] r.c.t.utils.executors.Executor - Job 2064946564 requires 8192MB of RAM, system has 61368MB available (of which 0MB requested by other jobs)
Jan 21 16:26:36 trainme-21.novalocal start.sh[2315]: 2020-Jan-21 16:26:36.912 TRACE [process-exec-2] r.c.t.utils.executors.Executor - [trainme-21.novalocal] gpt -c 256M -q 8 /ssd/SEN4CAP_L2A_S1_V20190110T174018_20190116T174113_VV_059/sl_step_8_1.xml
Jan 21 16:26:36 trainme-21.novalocal start.sh[2315]: 2020-Jan-21 16:26:36.912 TRACE [Thread-90] r.c.t.utils.executors.Executor - 0 running tasks, 1 queued tasks
Jan 21 16:26:38 trainme-21.novalocal start.sh[2315]: 2020-Jan-21 16:26:38.941 TRACE [process-exec-2] r.c.t.utils.executors.Executor - INFO: org.esa.snap.core.gpf.operators.tooladapter.ToolAdapterIO: Initializing external tool adapters
Jan 21 16:26:42 trainme-21.novalocal start.sh[2315]: 2020-Jan-21 16:26:42.911 TRACE [process-exec-2] r.c.t.utils.executors.Executor - SEVERE: org.esa.s2tbx.dataio.gdal.activator.GDALDistributionInstaller: The environment variable LD_LIBRARY_PATH is not set. It must contain the current folder '.'.
Jan 21 16:26:44 trainme-21.novalocal start.sh[2315]: 2020-Jan-21 16:26:44.002 TRACE [process-exec-2] r.c.t.utils.executors.Executor - Executing processing graph
Jan 21 16:26:45 trainme-21.novalocal start.sh[2315]: 2020-Jan-21 16:26:45.466 TRACE [process-exec-2] r.c.t.utils.executors.Executor - INFO: org.hsqldb.persist.Logger: dataFileCache open start
```

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Start and stop system components (using a Linux console)



- Check the status of a service:

```
sudo systemctl status <service_name>
```

Ex: `sudo systemctl status sen2agri-services`

- Stop a service:

```
sudo systemctl stop <service_name>
```

- Start (Restart) a service:

```
sudo systemctl start <service_name>
```

```
sudo systemctl restart <service_name>
```