CleanAtlantic

Tackling Marine Litter in the Atlantic Area

DELIVERABLE 5.1- Development of sustainable tools (Database and software) for Marine Litter Data management

WP 5: Monitoring and Data Management

Interreg Atlantic Area
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Clean Atlantic

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authors	M. Le Moigne, S. Bocande, A. lamoureux, A. Rouilly (ifremer)
participants	J. Monteiro (ARDITI), Harry Vasanth (ARDITI), S. Moutinho (DGRM), A. Cabrero (IEO), G. Gonzales-Nuevo (IEO), D. Martin (IEO), M. Incera (IEO), P. Sepulveda (DROTA), B. Vila Taboada (INTECMAR)

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Introduction

The objective of this task 5.1 was to pinpoint partner's needs in data management for Marine Litter in order to developed adapted tools to enable data storage and handling in a secure and sustainable way that facilitate data management and transmission format into other European databases.

A first phase consisted in collecting information on data management practices (storage, conservation, transmission to other international databases) in the different partners institutes of this task: ARDITI, IEO, DRGM, CEFAS, INTECMAR.

Once this analysis phase has been completed, a first workshop was organized, in March 2018, with the interested partners in order to deepen their needs, to share with them our experience in terms of data management and to start elaborating solutions that would meet their expectations.

The conclusions of the reflection led to the development of a PostGreSQL database and a entering software in english and spanish languages, late 2018 early 2019. The referential administration tool will be developed too mid-2021. A demonstration was realized during a 2nd workshop in May 2019. The integration of dataset provided by the partners and the writing of instructions for their data entry, with a tutorial/screencast to help users for the understanding of the functioning, have been proceeded in 2020. IT Installations on server's partners Institutions (IEO and ARDITI) as well as trainings on the tools have been realized remotely due to Covid-19 restrictions.

Valorization tools to manage connection with European formats (DATRAS, EMODnet) and to to facilitate the automated reporting on marine litter data have been carried out in this phase of the project.

Characterization of partner needs

Questionnaire

At first, an online questionnaire was sent to the seven partners involved in task 5.1 (IEO, INTECMAR, MARE, DROTA, DRGM, CEFAS, MI). It was composed with 9 questions (ANNEX 1):

1. Are you involved in the implementation of D10 MSFD Monitoring Program?
2. How do you collect information in the field?
3. Is there an IT service dedicated to database management in your Institut?
4. What is your data management system?
5. Are there any quality standards and norms applied by your data storage system (ISO 8000, ISO 19115)?
6. Are there data control, data validation and data qualification mechanisms (Quality, duplication, etc…)
7. Have you developed valorization products?
8. Have you developed specific extraction format compliant with international standards (OSPAR or another european institution)?
9. Would you be interested in acquiring a user-friendly application to store your Marine Litter data?

Seven answers were received on January 31st 2018.

The analysis of these answers showed that two institutes out of six were involved in the implementation of monitoring programs for MSFD Descriptor 10 –Marine Litter. The monitoring programs were related to floating litter, seafloor litter and litter ingested by marine organisms.

Information collections were mostly realized on papersheet and stored in Excel spreadsheet. Three institutes managed their dataset in databases (PostgreSQL, SQIServer 2012…). Two institutes used to develop valorization products: maps, graphs, reports, OSPAR Common Indicator Assessments, Web viewers, decision system software. The whole Institutes had developed specific extraction formats compliant with international standards: OSPAR or other European Institutions.

Three partners had no IT service and there were no quality standards or no common qualification mechanisms.

Most of the Institut were collecting marine litter data in the framework of research projects (PLASMAR – MAC Interreg project) or during fisheries surveys as part of ICES program.

Finally, six partners (for seven answers) were interested by an user friendly application to store their datasets related to Beach Litter, Seafloor Litter, Floating Litter, Litter ingested by Marine Organisms and entanglement.

Technical Workshop

Three partners from IEO, ARDITI and DGRM attended physically the first workshop on March 22nd&23rd . A brief presentation was realized remotely for partners who couldn't come to France, knowing that a further discussion would occur during the meeting in May 2018, in Madeira.

The agenda of the meeting was organized as followed (ANNEX 2):

- Experience sharing and collection of partners' needs
- Existing development, existing organization at french level
- Demonstration
- What could be done? Scenarii for an operational system
- Test cases with partners (structuration, data entry)

Functional system presentation

Ifremer has developed an information system to store monitoring datasets since 2000, date of the Water Framework Directive implementation. Since that time, this system has never stopped evolving and has adapted it to fit some MSFD needs.

Dataset from MSFD Descriptor 10 "Marine Litter" have started to be integrated since the implementation of the monitoring programs in 2015 (i.e. Seafloor Litter, Floating Litter)). With this experience, Ifremer was able to propose, as a starting point, a model of storage for this type of data and also, tools to generate exchange formats for interoperability with other International systems, e.g. OSPAR, ICES, EMODnet…

In the scope of the Interreg Project, the sharing of partner's experiences will enable the creation of a new system to answer specific needs.

The representation of the database that could be used for an harmonized Marine Litter data management can be schematized as below :

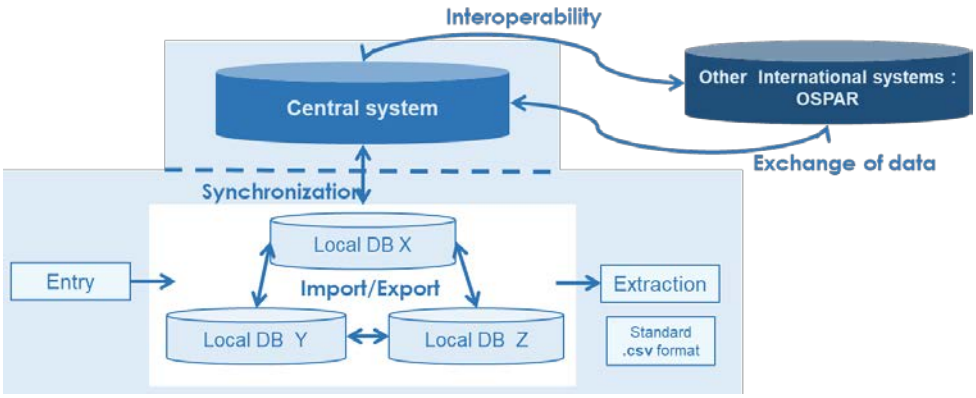


Figure 1 : Storage and handling System representation

Users can either enter their raw data in a local database and share them by synchronization to a central system (rising flow), keep them at a local level with the possibility to share them with specific files or they can import data already synchronized from the central system (descending flow).

From this central database, several data transmission format can be set up in order to make the dataset interoperable with other databases at European scale. Otherwise, data extraction can be possible at a local level using a standard format.

The implementation of monitoring programs in the framework of the MSFD induces collection of important quantities of data that will need to be gathered, have a long term existence and be available to public and to produce an assessment. This implies they need to be stored in security and in a sustainable way.

Storage structuration

A storage scheme needs to be realized in close collaboration with data producers, data managers and scientists. Data entries are adapted to local needs and thematics. Export data format should respect international standards related to metadata and interoperable Web Services.

The structuration of the storage implies the use of:

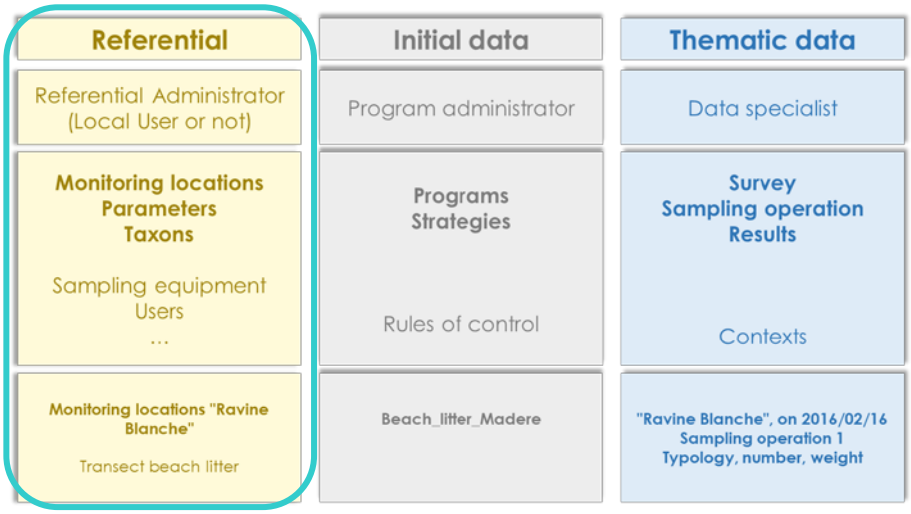
1) **Referentials** user can rely on (e.g. sampling equipment, persons/organisms, parameters …) or should have the opportunity to create his/her own.
2) **Programs / Strategies** for each monitoring programs
3) Survey / Sampling Operation describing each sample
4) **Quintuplet PMFMU (P**arameter **M**atrix **F**raction **M**ethod **U**nit**)** for each results
5) Quality Control on the storage
6) User Profiles definition

Referentials

The Table 1 below shows data organization with the use of referentials. It allows an efficient data storage and interoperability.

Referentials creation and administration are realized by the local referential administrator under program administrator[1] request. Updates can be done only at central system level and they are automatically imported at local level.

Table 1: Information Organization



Programs / strategies

The association between « **Programs » and « Strategies »** allows a robust structuration for data storage. A « Program » corresponds for example to a monitoring program (e.g. Seafloor Litter Monitoring) and a

[1] This person is in charge of the creation of the program/strategy corresponding of the implementation of the protocol

« Strategy » defines the list of parameters measured on the field. This list is linked to each monitoring locations. The content of the strategy is used to organize the way users will enter data by initializing the content of the software interfaces.

The Program administrator manages his/her strategies.

Survey/Sampling operation

Data storage can be organized like an **"information tree"** (figure 2) with:

- informations at **survey level**: monitoring location, coordinates, date, program, time,…
- informations at **sampling operation level**: sampling equipment, time, observer organism…
- and sometimes at **sampling taxon level** : Matrix, length…

Once those general information are indicated, measurements can be filled in.

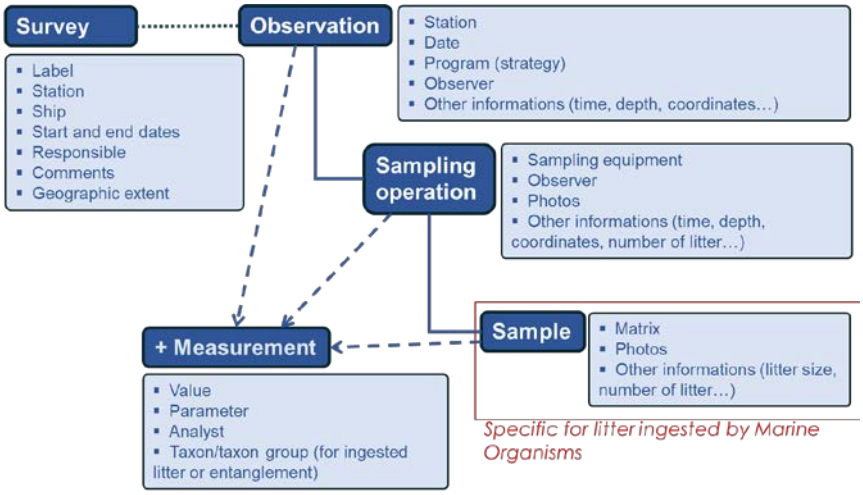


Figure 2 : Information Tree

Three kind of measurements can be encountered : simple measurement results (such as hydrology), taxa counts or measurement files. Taxa counts should systematically be associated with a taxon or group of taxa. Measurements are also systematically associated with :

- A quintuplet : Parameter / Matrix / Fraction / Method / Unit
- The person in charge of the data storage and the data analyst
- The program for which the results were acquired
- The level of the information tree where data are associated (survey, sampling operation, sampling taxon)

Quintuplet PMFMU

Quintuplet is obtained by the aggregation of a Parameter measured on a Matrix (or a matrix Fraction) with a specific Method and a specific Unit. It constitutes, with the monitoring location, the essential information (metadata) associated to the measurements.

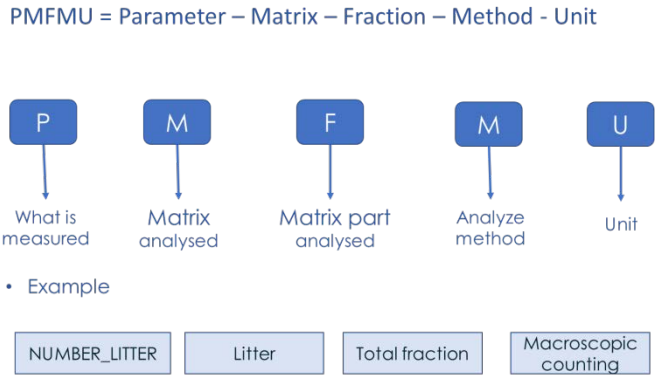


Figure 3 : PMFMU

Data story

All data stored in the information system follow the same life cycle (figure 4). Quality control occurs during several steps and are fundamental to be able to reuse the data.

Data are collected on the field and/or on laboratory and stored into the database. A **Control step** is under the responsibility of people in charge of data input and/or people with access to field records and laboratory sheets. They make a data output (results and metadata) and check their consistency with the field sheets.

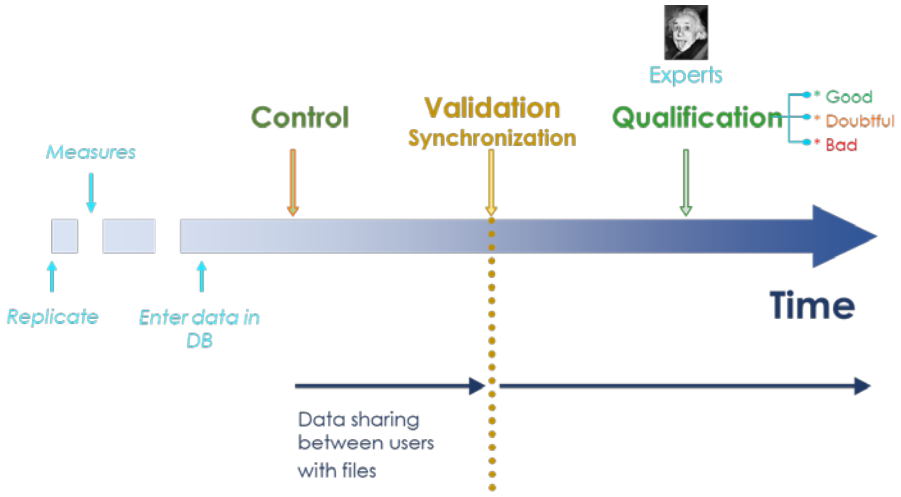


Figure 4 : Data Life Cycle

Once the control and corrections have been done, data are **validated** by these same operators:

1. Confirmation of the **technical validity** of the data (correspondence with the result of the analysis)
2. Data are **locked** (it cannot be changed, even by people in charge of data input)
3. Data are **synchronized** with the central server
4. **Dissemination** of the data: validated data are downloadable by all users having access to the database

Qualification is realized after that first data verification process. Qualification involves:

- Research of doubtful data or outliers from a scientific point of view,
- Correction of data when possible,
- Attribution of a qualification level to the data. This level is:

o **good** : data makes sense, their analysis are relevant,
o **doubtful:** data may be wrong: they may bias the analysis that will be made,
o **false:** data are aberrant or has a known problem (e.g. bad analytical series and impossibility to remake). They will not to be integrated with data analysis.

Qualification level corresponds to the confidence level in the data.

User profile

User can connect at a national or a local level. Authentication is essential for user to work on local database as it gives special rights. A central level authentication is essential to synchronize data to central system and to administrate national programs. Authentication allows grant roles (user, validator, administrator) and gives right at data level (Program manager, right of consultation, right to enter data).

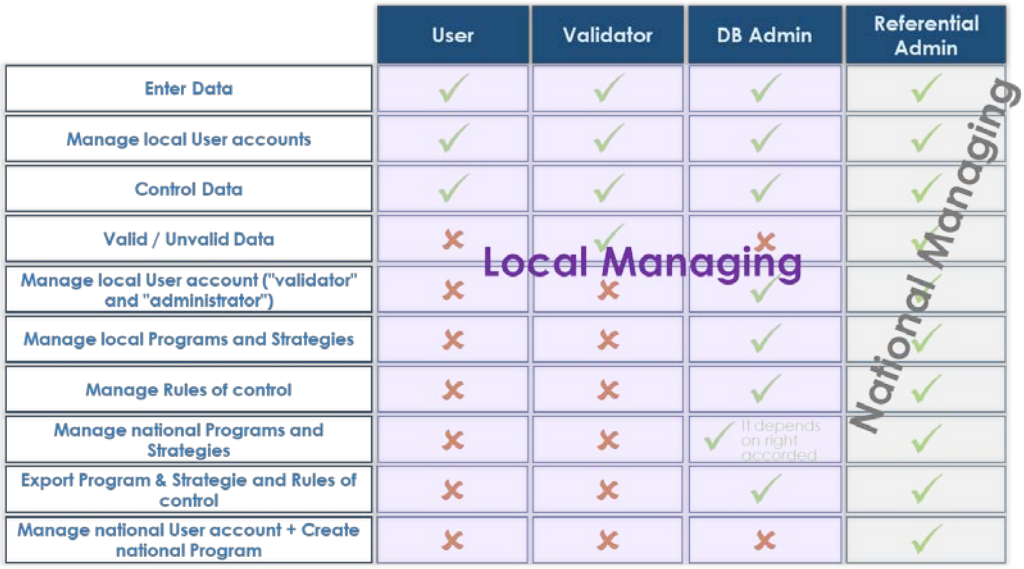


Figure 5 : Permission by user profile

Thanks to structuration elements presented in previous paragraphs, data integration is facilitated whatever the thematic.

How administrate and structure data storage?

At this stage of the definition of the harmonized tool for marine litter data management, **partners should answer to 2 questions :**

1. How could the storage system be administrated?
2. How could marine litter dataset be structured?

Architecture Proposals

To answer the first question, Ifremer proposes five architectures according to partner's IT capabilities (i.e. operating team, database server, Oracle License) (Table 2).

Table 2: Five architecture proposals

Operating team ?	Database server (and administrator) ?	Oracle License ?	Solution #
Yes	**Yes**	**Yes**	1) Replicate existing architecture
Yes	**Yes**	*No*	2) Adapt existing architecture to work with PostgreSQL
Yes	*No*	*No*	3) Use a master computer (with embedded database) and slave clients.
No	*No*	*No*	4) Hosting at Ifremer Or 5) Use isolated client, with file importation/exportation.

These different proposals are detailed below.

1. Ifremer architecture replication

As prerequisites for this proposal (Figure 6), partner should have an **operating team**, a **database server & LDAP server** (+ administrator) and an **Oracle license**.

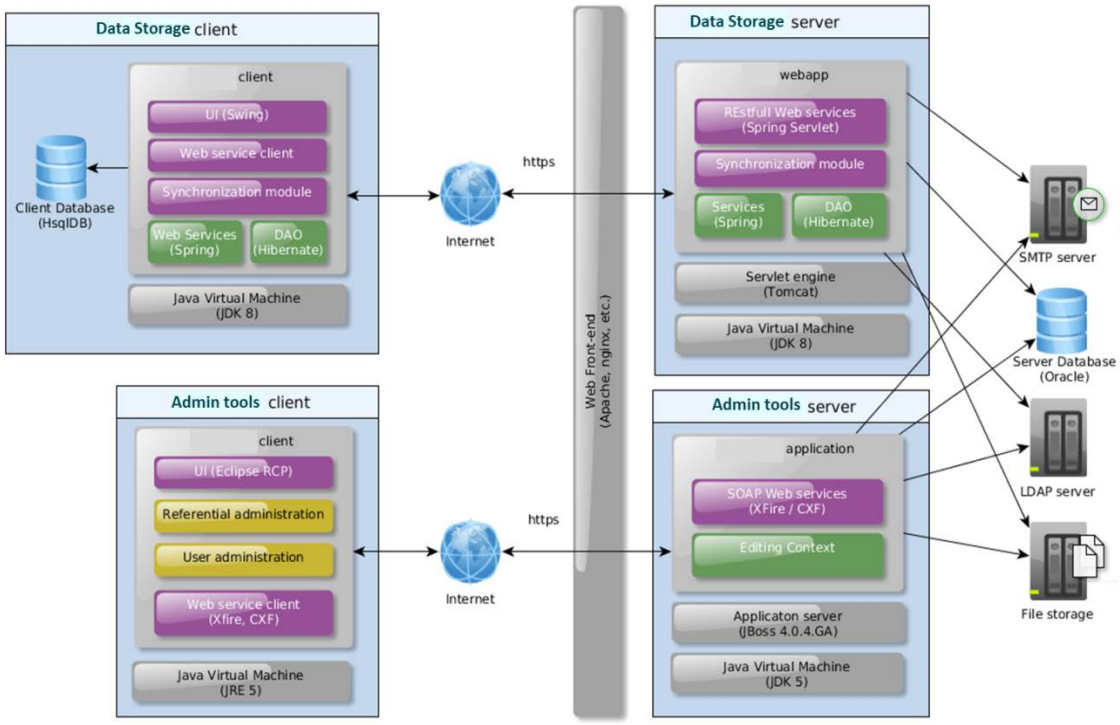


Figure 6 : Architecture implemented at Ifremer

This figure presents Ifremer's administration tools. In the framework of CleanAtlantic project, new tools will be developped.

2. Adapt existing architecture to use a PostgreSQL central Database

This proposal will require to develop **new user interfaces** to manage referentials (users, location, parameters,…). Data storage tool will also need to be adapted to point to a PostgreSQL database.

Moreover, as prerequisites, partner should have an **operating team** and a **database & LDAP server (+ administrator).**

3. Master computer used with an embbeded database (HsqlDB)

An **operating team** or advanced users will be required also for this proposal in order to **manage referentials and users.**

Clients will be connected to the **« master » computer** on local network (Figure 7). A specific database (with a server model) will be integrated to this computer and a synchronization server will be accessible from a known port range.

This solution implies a work only at a **local level**.

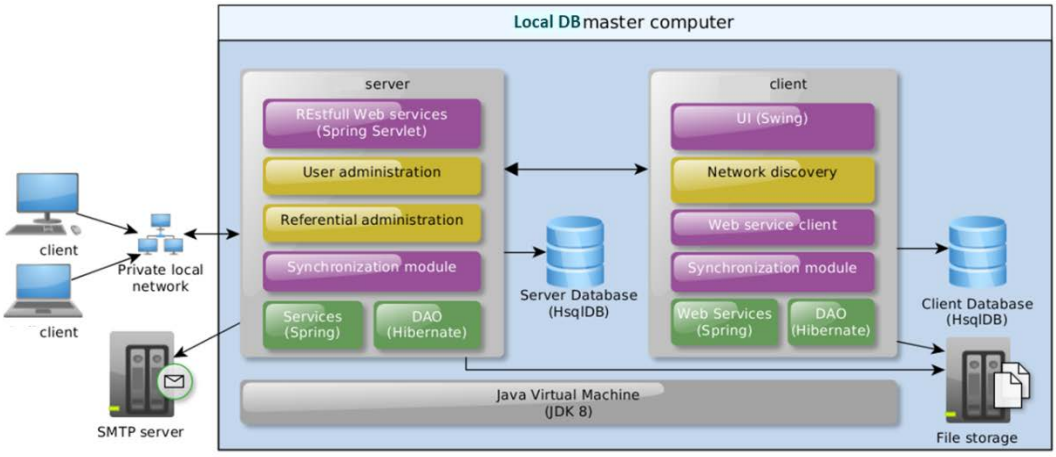


Figure 7: Master computer with embbeded database (HsqlDB)

On **« slave » computers**, a local database will be used. At the first startup, the local network will be scanned to find available « master » computers or to use a central registry to get server list.

This option will require regular database backup.

4. Hosting at Ifremer

In this proposal, data and referentials are managed by Ifremer's operating team; no prerequisites needed.

5. Isolated client without synchronization server

Client will use only local referentials. Data transmission will be realized with importation/exportation data files; no prerequisites needed.

In this case, absence of a central system makes more complex the referential administration.

Synthesis of the different solutions

Table 3 : Proposals synthesis

	Proposal	Advantages	Inconveniences
1	Ifremer architecture replication	• Mainly already exists, small software development	• Need a strong IT structure • Need a data managers team • Not only open source (Oracle

			SGBDr)
2	Adapt existing architecture to use a PostgreSQL central Database	• Open source software • Could be deployed for each different partners	• Need heavy software development • Need a strong IT structure • Need a data managers team
3	Master computer use with an embbeded database (HsqlDB)	• Open source software • Could be entirely deployed in each partners information system	• Need heavy software development, developing new referentials management is mandatory • Only work on local network Need a data managers team
4	Hosting at Ifremer	• Ifremer manages referentials, no need of a strong team of data managers on partners side • Only open source software on partners side	• Need agreement on a long term between Ifremer and partners
5	Isolated client without synchronization server	• Open source software • Could be entirely deployed in each partners information system • Mainly already exists, small software development (exception for referentials management)	• Developing new referentials management is mandatory • Exchanges by files are potentially less easy and time consuming

For each of these proposals, the project probably needs to develop new software to manage referentials, it is mandatory for some of them. In all cases, at the end of the Interreg project, the question of how the system can be still operational and operated for long term is crucial. It probably needs specific agreements between Ifremer and partners depending of the choice of the proposal.

The following tables pinpoint the evolutions and the requirements needed related to the different proposals:

Needed developments	Proposal 1	Proposal 2	Proposal 3	Proposal 4	Proposal 5
Create new Administration Tool	••	••	••	-	-
Adapt existing Data Storage Tool	•	••	•••	•	•••

Requirements	Proposal 1	Proposal 2	Proposal 3	Proposal 4	Proposal 5
IT structure	••	••	•	-	-
Data managers team	•	•	•	-	••
Oracle Licence	•	-	-	-	-
Agreement on a long term with Ifremer	-	-	-	•	-

Restriction	Proposal 1	Proposal 2	Proposal 3	Proposal 4	Proposal 5
Local Network Only	-	-	•	-	-

Example of French Marine Litter Structuration

Depending on the type of data needed to be stored from monitoring program partner's are involved in (Beach Litter, Floating Litter, Seafloor Litter, Litter ingested by Marine Organism), a data structuration needs to be adopted.

The Table 4 below shows the french Marine Litter Data Structuration in each monitoring program.

Table 4: French Marine Litter data structuration in each monitoring program

Type of data	Monitoring location	Parameters	Survey	Sampling operation
Beach litter	Transect 100 m Transect 1 km	Category Typology Number Weight	Transect	One sampling operation for the whole survey
Floating litter	Marine sub regions	Some environmental parameters Category Typology Number Size	X start,Y start of the boat prospection X end,Y end of the boat prospection	One X,Y by observation
Seafloor litter	Marine sub regions	Length Duration Wing_opening Begin_depth End_depth Category Typology Weight Number Size	X start,Y start of the trawling X end,Y end of the trawling	One by trawling
Litter ingested by Marine Organisms	Marine sub regions	Taxon_indiv Category Typology Number Weight Color Size…	X,Y Location	One sampling per location

Category parameter is equivalent to « ***General Name*** » in the TSG-ML Master List[2] and **Typology** parameter to **« *Level 1 – Materials*** ».

An example of this list **for Seafloor Litter** is shown in Table 5 below. A compilation of TSG-ML list and CEFAS list used in IBTS protocol has been performed to establish a transcoding table enabling interoperability and production of different outputs towards several european actors.

[2] Guidance on Monitoring of Marine Litter in European Seas. MSFD GES Technical Subgroup on Marine Litter (TSG-ML), 2013

Table 5 : TSG ML Master list vs IBTS protocol list

Master List of Categories of Litter Items - Seafloor						Master List vs "C-TS-REV" CEFAS List in ICES Database (reviewed in 2016)
TSG_ML	OSPAR-Code	UNEP-Code	General Name	Level 1 - Materials	Seafloor	
G2		PL07	Bags	Artificial polymer materials	x	A3
G6	4	PL02	Bottles	Artificial polymer materials	x	A1
G10	6	PL06	Food containers incl. fast food containers	Artificial polymer materials	x	
G18	13	PL13	Crates and containers / baskets	Artificial polymer materials	x	A11
G20		PL01	Plastic caps and lids	Artificial polymer materials	x	A4
G27	64	PL11	Cigarette butts and filters	Artificial polymer materials	x	
G39		PL09	Gloves	Artificial polymer materials	x	
G48			Synthetic rope	Artificial polymer materials	x	A7
G51		PL20	Fishing net	Artificial polymer materials	x	A8
G55		PL18	Fishing line (entangled)	Artificial polymer materials	x	A6
G59	35	PL18	Fishing line/monofilament (angling)	Artificial polymer materials	x	A5
G61			Other fishing related	Artificial polymer materials	x	
G66	39	PL21	Strapping bands	Artificial polymer materials	x	A10
G67	40	PL16	Sheets, industrial packaging, plastic sheeting	Artificial polymer materials	x	A2
G93			Cable ties	Artificial polymer materials	x	A9
G95	98	OT02	Cotton bud sticks	Artificial polymer materials	x	
G96	99	OT02	Sanitary towels/panty liners/backing strips	Artificial polymer materials	x	A13
G98		OT02	Diapers/nappies	Artificial polymer materials	x	A12
G99	104	PL12	Syringes/needles	Artificial polymer materials	x	
G124	48	PL24	Other plastic/polystyrene items (identifiable)	Artificial polymer materials	x	A14
G125	49	RB01	Balloons and balloon sticks	Rubber	x	C2
G127	50		Rubber boots	Rubber	x	C1
G128	52	RB04	Tyres and belts	Rubber	x	C4
G132			Bobbins (fishing)	Rubber	x	C3
G133	97	RB07	Condoms (incl. packaging)	Rubber	x	
G134	53	RB08	Other rubber pieces	Rubber	x	C5+C6

G136		CL01	Shoes	Cloth/textile	x	F2
G137	54	CL01	Clothing / rags (clothing, hats, towels)	Cloth/textile	x	F1
G141	55	CL05	Carpet & Furnishing	Cloth/textile	x	
G142		CL04	Rope, string and nets	Cloth/textile	x	E2
G145	59	CL06	Other textiles (incl. rags)	Cloth/textile	x	
G146			Paper/Cardboard	Paper/Cardboard	x	E3
G148	61	PC02	Cardboard (boxes & fragments)	Paper/Cardboard	x	
G158	67	PC05	Other paper items	Paper/Cardboard	x	
G160	69	WD04	Pallets	Processed/worked wood	x	E4
G170			Wood (processed)	Processed/worked wood	x	E1
G173		WD06	Other (specify)	Processed/worked wood	x	E5 ?
G175	78	ME03	Cans (beverage)	Metal	x	B2
G176	82	ME04	Cans (food)	Metal	x	B1
G180	79	ME10	Appliances (refrigerators, washers, etc.)	Metal	x	B5
G182	80	ME07	Fishing related (weights, sinkers, lures, hooks)	Metal	x	B3
G185			Middle size containers	Metal	x	
G187	84	ME05	*Drums*,e.g.oil	Metal	x	B4
G193			Car parts / batteries	Metal	x	B6
G194			Cables	Metal	x	B7
G196			Large metallic objects	Metal	x	
G197			Other (metal)	Metal	x	B8
G200	91	GC02	Bottles incl. pieces	Glass/ceramics	x	D2
G201		GC02	Jars incl. pieces	Glass/ceramics	x	D1
G208		GC07	Glass or ceramic fragments >2.5cm	Glass/ceramics	x	D3
G209			Large glass objects (specify)	Glass/ceramics	x	D3
G210	96	GC08	Other glass items	Glass/ceramics	x	D4

Definition of the data management project

The questionnaire and the workshop were a first step in defining the needs for the creation of a harmonized tool to manage Marine Litter data.

To move to the next step, it was crucial that partners assessed:

- Their technical capabilities to determine which architecture to host a storage tool would fit the best
- The data structuration for each monitoring program they were involved in

- What were their needs in term of data transmission
- The difficulties they encountered to gather MSFD data

At first, ARDITI choose the 4th proposal (see the previous paragraph) were database was hosted by Ifremer but rapidly, it joined IEO in the 2nd proposal which consisted in the adaptation of the existing Ifremer database architecture to use a PostgreSQL central Database. The advantages of this proposal were the use of an **Open source software** and the potential deployment to each partners Institutions quite easily. The constraints were in the requirement of the development of **new user interfaces** to manage referentials (users, location, parameters,…). Data storage tool needs also to be adapted to point to a PostgreSQL database. Moreover, as prerequisites, partner should have an **operating team** and a **database & LDAP server (+ administrator).**

IT Developments, testing and training

DALI entering software

Development of the DALI entering software in english and spanish languages started at the end of 2018.

A demonstration to enter beach litter and seafloor litter has been realized during a 2nd workshop in Vigo in May 2019 (see agenda ANNEX 3).

A manual user was written and a video was realized too to handle partners in using the software (ANNEX 4).

PostGreSQL DataBase

The development of the PostGreSQL Database started late 2019. Due to the pandemic situation and the wave of work that IT services had to face, it took some delay.

Based on dataset received from IEO/MITECO, ARDITI and DROTA (Table 6), Ifremer have performed integration tests in 2019-2020.

Table 6 : Tests integration based on the dataset provided by partners

DALI Program	Institut	Data sources
BEACH_LITTER - Monitoring program for beach litter	IEO/MITECO	OSPAR_BEACH DB Extraction : Spain_Extraction_2018-2019.xls
		2 field sheets sent by Juan Gil Gamundi (Miteco.es)
LITTER_INGESTED_FISH_Research study	IEO	Data from the article 'Ingestion of plastic debris (macro and micro) by longnose lancetfish (Alepisaurus ferox) in the North Atlantic Ocean' in Regional Studies in Marine Science 33 (2020) 100977 : **20200519_Lanzon_tratamiento_estadistico.xlsx**
SEAFLOOR_LITTER - Monitoring program for seafloor litter	IEO	ICES DATRAS Litter Extraction : Litter Exchange Data_2020-02-13 17_43_04.xls
BEACH_LITTER_SED - Monitoring program for Microlitter on beaches	ARDITI	xls file sent by J. Monteiro: marine_litter_database_v2_SOLE_22_05_2020.xls
FLOATING_MICROLITTER_MANTA_200	ARDITI	xls file sent by J. Monteiro: marine_litter_database_v2_SOLE_22_05_2020.xls
BEACH_LITTER - Monitoring program for beach litter	DRAAC	Xls file sent by Pedro Monteiro DRAAC : BD Teste IFremer.xlsx

Data entry instructions have been written for each kind of dataset (ANNEX 5). They have been shared with partners to help them to tests proceedings.

Quadmire referential administration tool

The Quadmire administration tool (ANNEX 6) has been set up to allow the management of the structuration of the data in DALI PostGreSQL database. Its development has been delayed due to the sanitary situation. It has been installed remotely at IEO and ARDITI in June 2021, at the same time with the database and a remote training session was held in September 2021.

DALI format proposed for D10C3 data at OSPAR

DALI full extraction format for dataset on litter ingested by marine turtles (INDICIT protocole/D10C3) has been subscribed in OSPAR Action 26.

This format has been adopted at the EIHA meeting hold on November 2021. This will be the data format leaned to the evaluation that was conducted for this indicator.

Valorization products

R Scripts for converting DALI extractions to EMODnet/DATRAS formats

A set of R functions were developed to support conversion of DALI extractions to DATRAS and derived EMODnet format applied to seafloor litter data (https://www.emodnet-chemistry.eu/doi/documents/Seafloor_format_template.pdf). The R functions, named 'createDATRASDataset', 'createEMODNETDataset' that could be used as macros as long the input data is provided as DALI full export format.

The development was carried out using a full extraction of data test from spanish seafloor litter program and as long as there is no DATRAS/EMODNET format modification.

These R functions will be provided to the partners and will be maintained inside the different institutes.

Various perspectives of developments are considered:

- The capacity to use DALI exports expressed in different languages. It has been subject of a recent feasibly study to understand how above R functions could be enhanced with multi-lingual support, key need in the CleanAtlantic context.
- The extension of these converters to other marine litter types (beach litter, floating litter, litter ingested by marine organisms), with the pre-requisite to adopt the same EMODnet exchange format as common data exchange one for all marine litter types.
- The consolidation and standardization of R functions, through a dedicated R open and publicly available package (standard methodology to expose R functions in R), in order to facilitate use of these converters by CleanAtlantic partners; either directly by R data analysts, or through a dedicated R Shiny user interface to make the conversion even easier (see next section).

R-Shinny to display the contents of the database

The CleanAtlantic R Shiny dashboard is a piece of software developed to facilitate the automated reporting on marine litter data. It was primarily developed with focus on seafloor marine litter and beach litter.

Launching the shiny dashboard application

Its simple and modular design, based on R software, is aimed to be reusable for other marine litter components, and maintainable by marine data experts with knowledge in R programming. The application

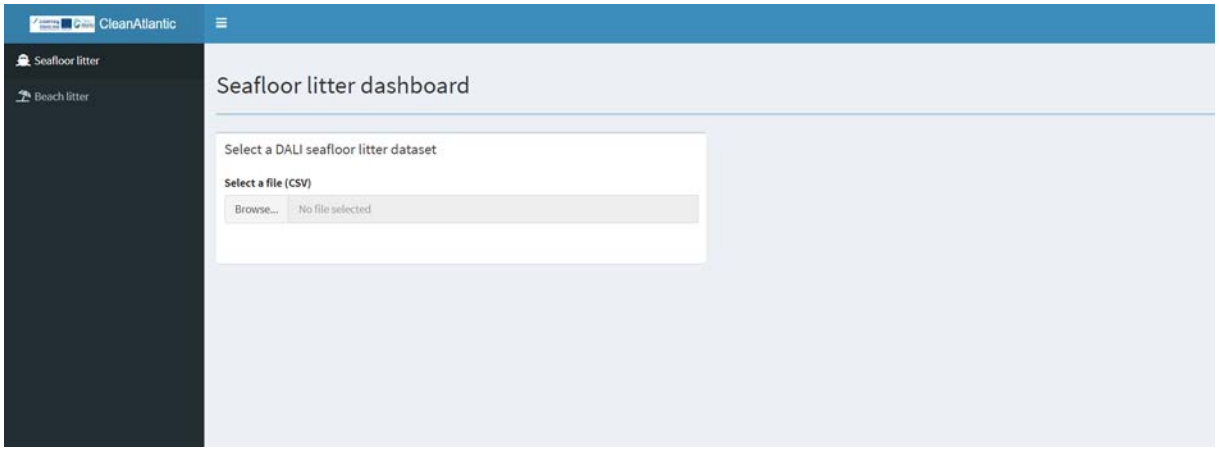
is also designed to be easily usable as a standalone desktop tool (on marine data analyst computers) but may also be deployed in R shiny servers to be exposed on internet or intranet networks, depending on specific needs.

For use as a standalone desktop tool, the R software should be installed on the computer where it is launched. An executable 'run.bat' file is provided to easily launch the application. Executing this file will automatically launch the application that will open in the default web browser set-up on the computer. At first time, all R packages required for the functioning of the application will be installed behind the scene, and the application will be launched.

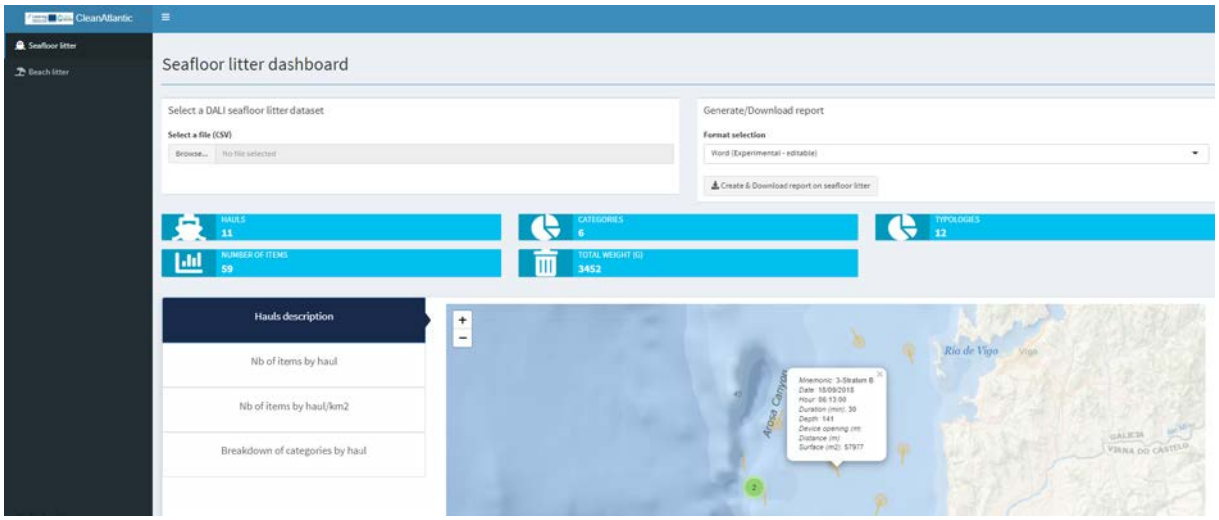
Each module (seafloor litter, beach litter) starts with a file uploader that allows loading a DALI full extraction file. Once the file is loaded, the dashboard is automatically loaded on the user interface. The following sections present overview of the two modules currently set-up in the dashboard.

Seafloor litter dashboard

File uploader



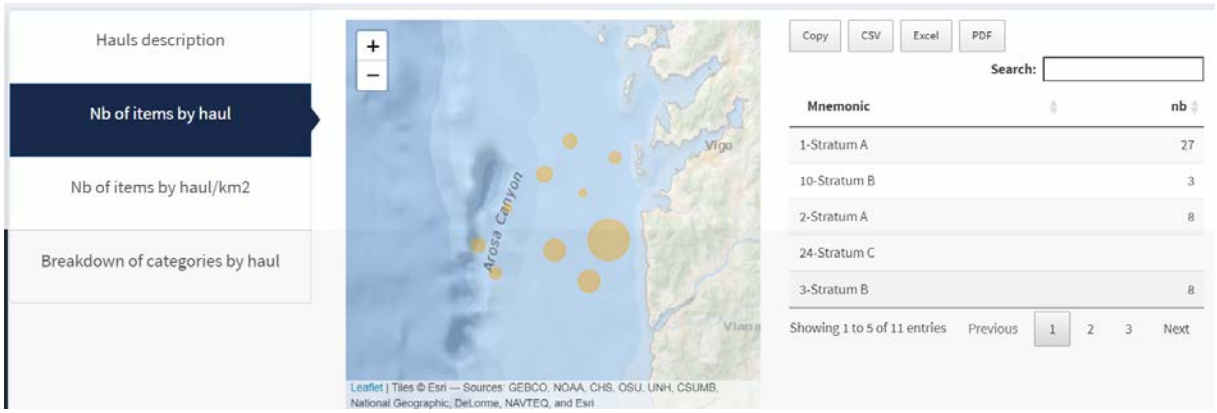
Overview of the dashboard once DALI extraction file was uploaded:



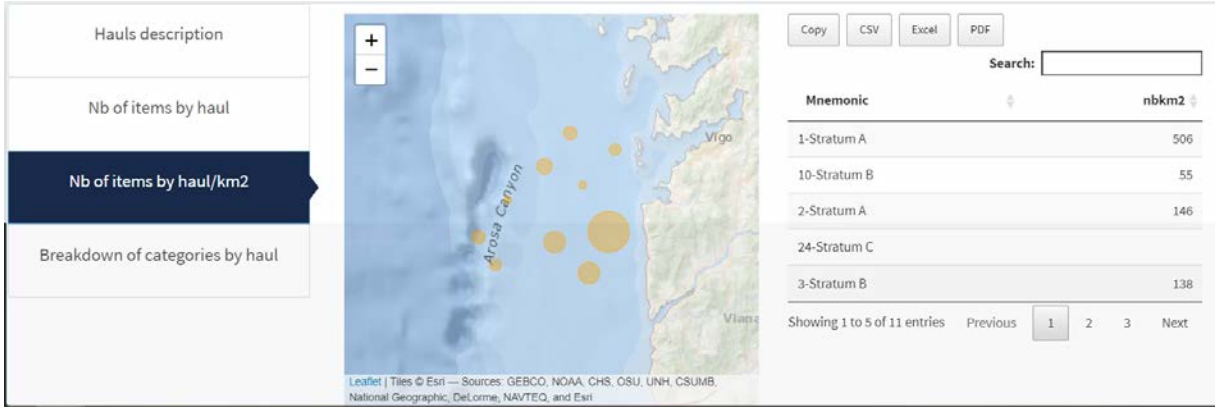
The dashboard is composed by a set of quantitative indicators (number of hauls, litter categories/typologies, number of items, total litter weight), followed by various views structured by tabs:

- **Hauls description (clickable map)**

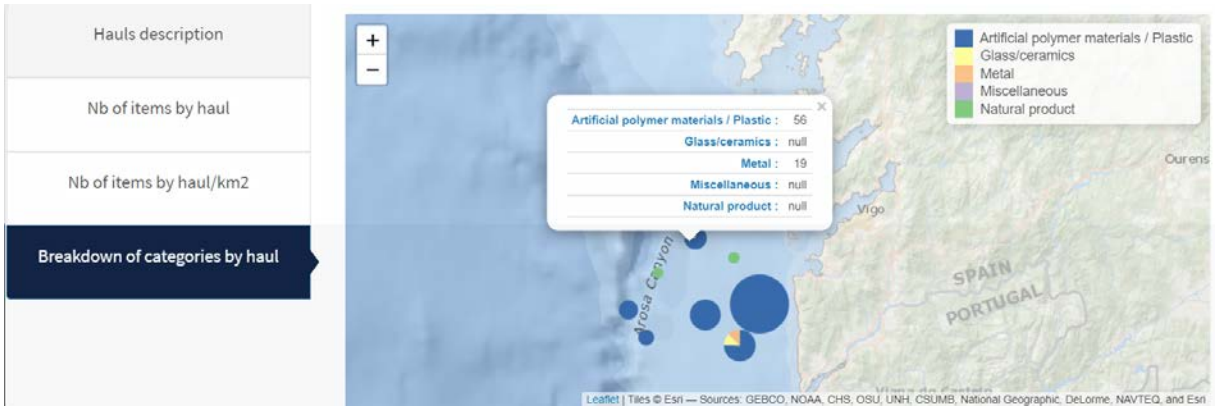
- **Number of items by haul** (map + table with exports facility)



- **Number of items by haul/km2** (map + table with exports facility)

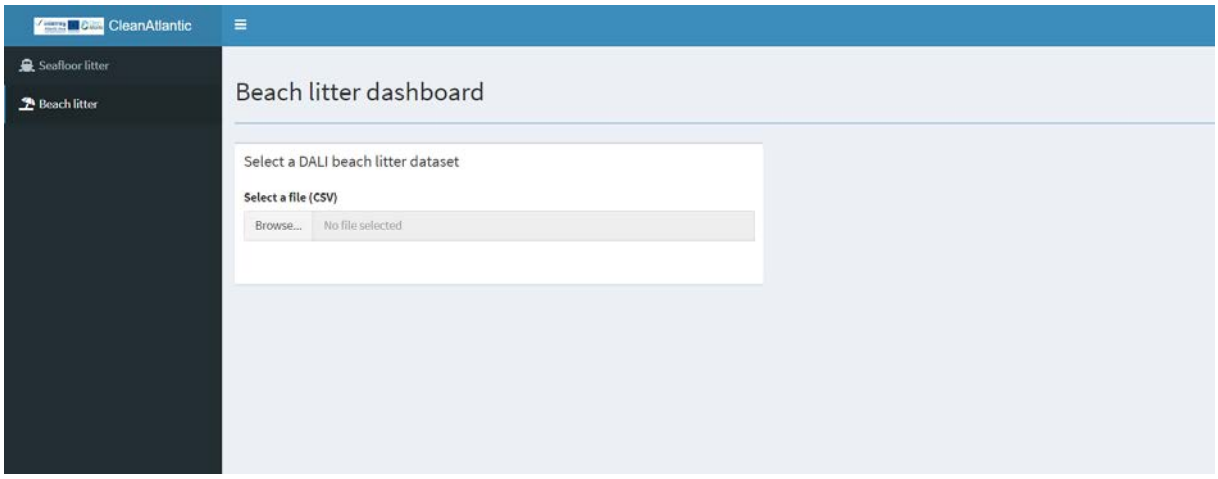


- **Breakdown of categories by haul** (piechart map giving the breakdown of categories by haul)

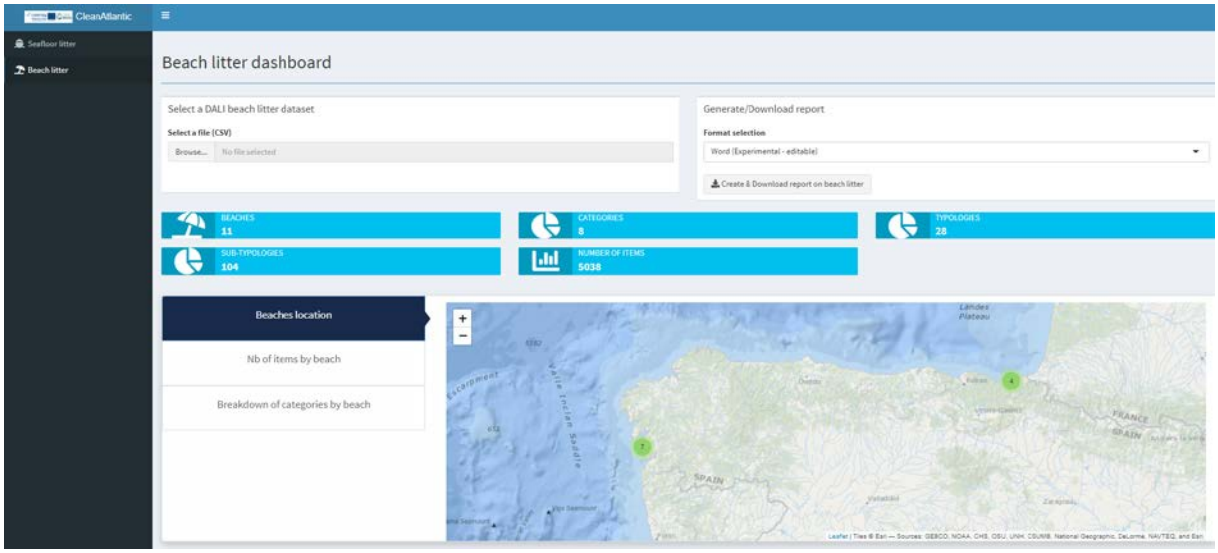


Beach litter dashboard

File uploader

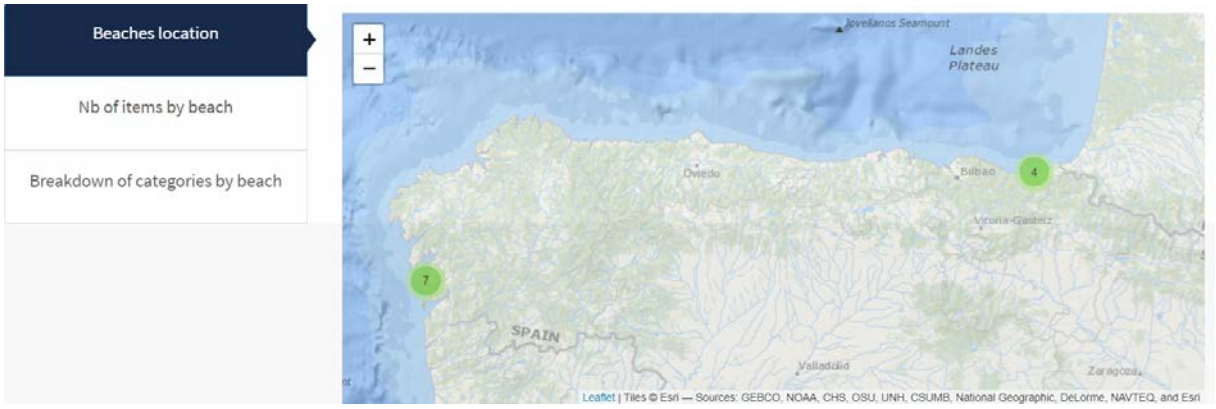


Overview of the dashboard once DALI extraction file was uploaded:

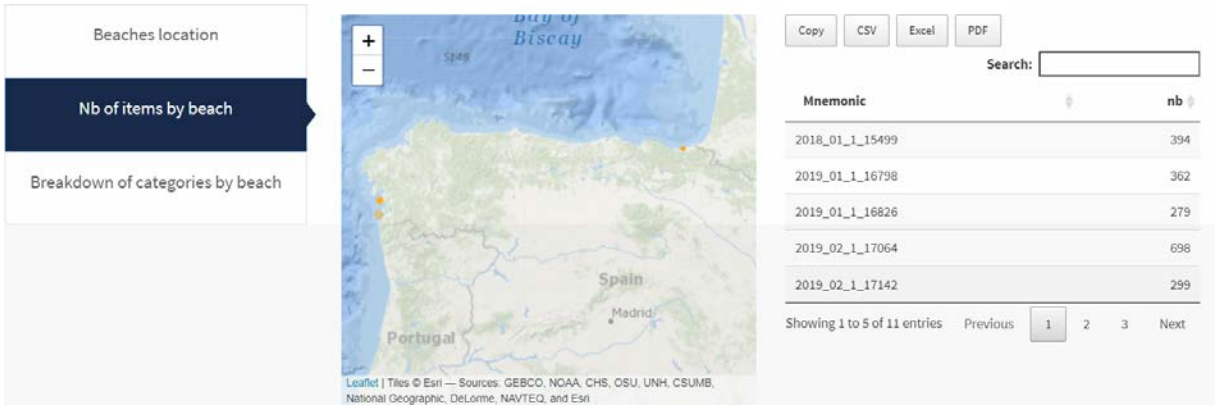


The dashboard is composed by a set of quantitative indicators (number of beaches, beach litter categories/typologies and sub-typologies, number of items), followed by various views structured by tabs:

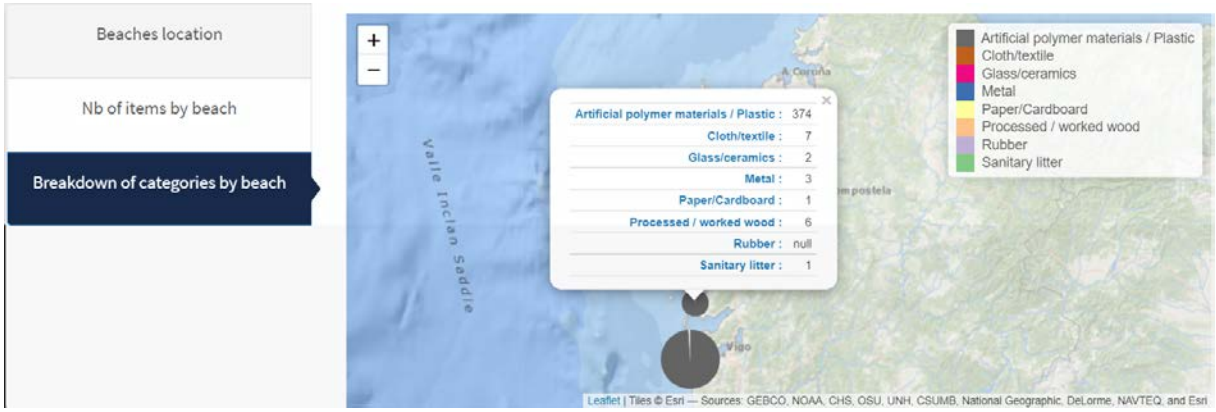
- **Beaches location**



- **Number of items by beach**



- **Breakdown of categories by beach**



Development perspectives

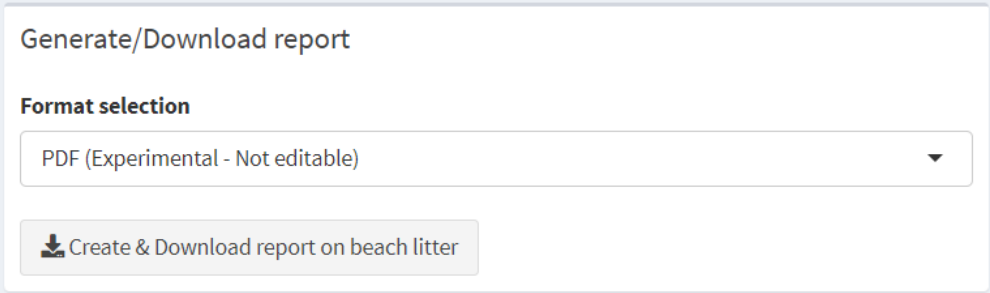
The R shiny has proven to be a very flexible tool powered by the R language. They are various development perspectives that could provide useful features for CleanAtlantic marine litter data analysts. They could be developed depending on the outcome of the project and the resources available.

As follows is a non-exhaustive list of features under consideration:

- Complement the file uploader with a choice option to connect directly to the DALI application for direct analysis of DALI content.

- Add module for direct conversion/export of DALI extractions to EMODnet / DATRAS formats, exploiting R scripts already developed to perform such conversions.
- Add facility for automatic report generation and export in formats such as PDF, Word or LaTeX (editable/compilable PDF report). To illustrate this potential, an experimental proof-of-concept has been designed within the shiny application:

Overview of the report generation/download module



- Extend the dashboard modules with advanced and dynamic visualization widgets (maps, tables, charts) and computed indicators on marine litter.
- Extend the dashboard to additional modules covering other types of marine litter (eg. Floating litter, litter ingested)
- Support restricted (authorized) access to the R shiny application based

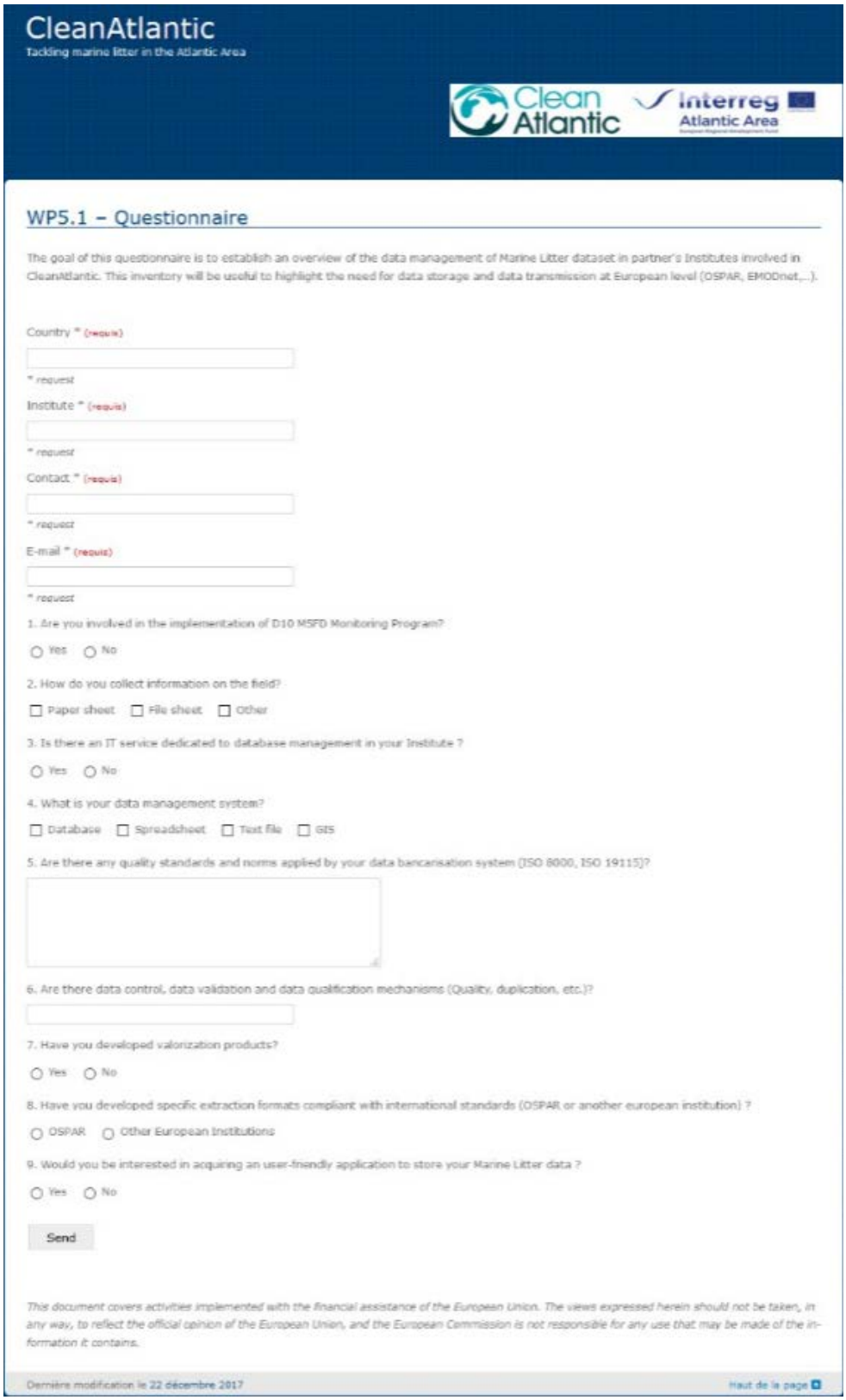
Conclusion

This first phase of the project allowed the development of a Dali PostGreSQL database to manage dataset collected during marine litter monitoring programs or research programs. Two partners adopted this management tools: IEO (Spain) and ARDITI (Portugal). The installation has already been done remotely in each institute, entries need to be carried out by both institutes in order to test its functioning. Ifremer will assist the partners in entering their own dataset and in the administration tasks they will need to acquire during the extension of the project and will provide an updated version of the tools.

Concerning valorization products, R scripts for converting DALI full extractions for spanish seafloor litter dataset to DATRAS and EMODnet formats have been set up. An adaptation for other dataset need to carry out as well as the development of R scripts for other types of data: beach litter, floating litter and litter ingested by marine organisms.

Moreover, a CleanAtlantic R Shiny dashboard has been developed in order to facilitate the automated reporting on marine litter data. It was primarily developed with focus on seafloor marine litter and beach litter. Further developments will be realized in the extension of the project to improve this tool in order to meet the expectations of the partners.

ANNEX 1 – Online questionnaire



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Tackling marine litter in the Atlantic Area

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WP5.1 – Questionnaire

The goal of this questionnaire is to establish an overview of the data management of Marine Litter dataset in partner's Institutes involved in CleanAtlantic. This inventory will be useful to highlight the need for data storage and data transmission at European level (OSPAR, EMODnet,...).

Country * (requis)

* request

Institute * (requis)

* request

Contact * (requis)

* request

E-mail * (requis)

* request

1. Are you involved in the implementation of D10 MSFD Monitoring Program?

○ Yes ○ No

2. How do you collect information on the field?

☐ Paper sheet ☐ File sheet ☐ Other

3. Is there an IT service dedicated to database management in your Institute ?

○ Yes ○ No

4. What is your data management system?

☐ Database ☐ Spreadsheet ☐ Text file ☐ GIS

5. Are there any quality standards and norms applied by your data bancarisation system (ISO 8000, ISO 19115)?

6. Are there data control, data validation and data qualification mechanisms (Quality, duplication, etc.)?

7. Have you developed valorization products?

○ Yes ○ No

8. Have you developed specific extraction formats compliant with international standards (OSPAR or another european institution) ?

○ OSPAR ○ Other European Institutions

9. Would you be interested in acquiring an user-friendly application to store your Marine Litter data ?

○ Yes ○ No

Send

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Dernière modification le 22 décembre 2017 — Haut de la page

ANNEX 2 – 1st workshop agenda

Tackling marine litter in the Atlantic Area

WP 5: Monitoring and Data Management

Action 5.1 - Technical Workshop
Setting criteria for harmonizing ML data management

March 22nd & 23rd 2018

NANTES

Clean Atlantic
Interreg Atlantic Area
European Regional Development Fund

Workshop Agenda

The objective of the workshop is to give a good overview of the future system to be used to store litter data on the following subjects:

- How to build a functional system? How to organize data? Which scenarios are possible and which one is the best for our needs?
- Which interfaces are suitable for our needs and data?

Participants are kindly asked to come with a laptop and data samples: excel or text files are welcome, as well as field records on paper. Bring with you as many information as you can, metadata on your data samples are very important, such as: name and description of the protocols, prefilled list used for litter types, measured parameters, localizations of your data collection etc.

Thursday, March 22nd

13h30-14h00: Welcome – configuration of laptop and data samples analysis

14h00-16h00: Overview of data organization. Referentials management, data structuration and system organization

16h00-16h30: coffee break

16h30-17h30: Demonstration of existing interfaces: referentials creation and update, data entry and data export.

17h30-18h00: Different scenarios for an operational system. Arguments and choice of the best one.

18h00-18h30: Definition of user cases for 23rd morning.

Dinner at Nantes City Center

Friday, March 23rd

9h00-13h00: Test cases with users data. Users use their own laptop and if possible their own data.

- Data Structuration – Referentials creation and/or update
- Data entry exercises on real cases

Lunch at Ifremer before leaving

ANNEX 3 – 2nd workshop agenda

Tackling marine litter in the Atlantic Area

WP 5: Monitoring and Data Management

Action 5.1 - Technical Workshop 2
Presentation and practical session on the data storage application

Monday 6th May 2019
VIGO

Ifremer

Clean Atlantic

Interreg Atlantic Area
European Regional Development Fund

Workshop Agenda

The aim of the workshop is to present partners the functioning of the application and for them to test it.

For that, participants are kindly asked to come with a laptop with the minimum requirements defined as follow:

Operating System:

- Microsoft Windows XP (Family Edition, Professional Edition, Media Center Edition and for Tablet-PC) with Service Pack 2 (SP2 or higher)
- Microsoft Windows Vista
- Microsoft Windows 7
- Microsoft Windows 8
- Microsoft Windows 10

Material:

- PC with at least 2GHz processor (at least Dual Core processor)
- RAM: 6 Gb
- Hard disk space available: 1.1 Gb (600 Mb for the installation and use + 500 Mb of space for data storage) – SSD disk recommended
- Screen size: at least 17 inches (recommended: 21 inches)
- Screen resolution:
  - Minimum vertical resolution: 1,024 pixels
  - Minimum horizontal resolution: 1,280 pixels

Participants are also welcomed to bring dataset examples on beach and seafloor litter. Excel or text files are welcome, as well as field records on paper. Those dataset must be accompanied by the associated metadata, such as: name and description of the protocols, prefilled list used for litter types, measured parameters, localizations of your data collection etc.

Monday 6th May 2019

09h00-10h00: Welcome and Laptop configuration

10h00-12h30: Presentation of the app functioning and demonstrations

12h30-14h00: Lunch

14h00-17h30: Practical session

ANNEX 4 – DaLI Manual User

CleanAtlantic

Tackling Marine Litter in the Atlantic Area

DELIVERABLE – DALI User Manual

WP 5.1.3 : IT Developments

Ifremer
Interreg Atlantic Area European Regional Development Fund
EUROPEAN UNION
Clean Atlantic

WP	5
Action	1.3
last updated	08/09/2020
version	1
authors	Morgan Le Moigne – ODE/VIGIES Ifremer
participants	Alice Lamoureux – ODE/VIGIES Ifremer, Stéphane Bocandé (ISI/IRSI) Ifremer

Disclaimer

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Introduction

DAta LItter is **an information system** developed in the framework of CleanAtlantic Project to enter, store and extract data on Marine Litter thematic. It includes a software connected to a PostGreSQL database to enable **secure** and **sustainable data storage on a harmonised way to facilitate transmissions to other databases.**

This manual explains how to use the DALI application.

This document does not replace data entry instructions specified for each dataset.

Documentation, terms and acronyms

This glossary aims to define the main terms used in this manual and the DALI interfaces. It is not designed to be exhaustive, but is a useful reference to understand the rest of the document.

A

Analyst

The **analyst** corresponds to the organization that takes a measurement on a Parameter Matrix Fraction Method Unit (PMFMU).

B

Base (Local)

The **local base** corresponds to the DALI database installed locally on a computer. It allows data based on national reference data referentials to be entered off line. The entered data is recorded locally. It can be then synchronized with the central system (after data has been validated).

C

Context

The **context** brings together a set of filters: it corresponds to a set of data entry preferences. The default context is created by the programme officer. This relies on existing filters that need to be created beforehand. Data entry persons can create as many contexts as necessary to adapt to ongoing data entry (for example: a context devoted to marine litter on a certain beach, etc.). The “active” context is the latest context used by the data entry person.

Control Rules

Control Rules correspond to rules that you can force at data entry time. A control rule applies to a field within a programme. At saving time, the base will check that all rules are verified. If the rule is blocking, it

will not be possible to save the data. If the rule is not blocking, a warning message will appear when saving, but the save operation will not be blocked.

Control

The **control** is operated by the data entry person. This control is performed after data entry by verifying the consistency between data entered in the database, and field sheets. Errors detected must be corrected in the database immediately.

F

Filter

The **filter** allows a selection of elements of reference entity, for example a set of stations, of PMFMUs, or of observers, to be created. Thereafter, using filters makes it easier to integrate data to the reference dataset associated with the strategy on the one hand, and on the other to help data entry by creating shorter drop-down lists limited to elements defined by the filter.

Fraction

A **fraction** analysed by a component of the matrix on which the analysis is based.

I

Interoperability

The **interoperability** is the capacity of a product or a system to run with other existing or future products without restrictions for access or implementation. For example, it is the possibility to access geographic data series from different sources, without manual and repetitive intervention, in such way that the result is consistent and the added value of data series and services is strengthened.

M

Matrix

This is one of the materials that constitute the measurement, on which the analysis will be made or counting will be done. The **matrix** can be inorganic, such as “hard substrate”, “soil” or organic “bivalve”, ”phytoplankton”, etc.

Measurement

The **measurement** corresponds to the result of a parameter on an survey or a sampling operation; this measurement can be quantitative or qualitative. It can be an abundance (number of marine litter in the sample), a weight, a size, etc.

Metadata

Metadata group information describing or defining series and data access services.

Method

The list of **methods** is generic and covers all phases of the parameter measurement process. A method can cover the entire process cycle and/or be usable for one phase, whatever the nature of the parameter. As part of DALI, the method is assimilated to the protocol used for data acquisition.

Means of acquisition

Means of acquisition group together the tools used for observing or sampling the environmental material that will be analysed.

O

Observer

The **observer** is the person who carries out the survey. He/she is the field operator. There can be multiple observers per survey.

P

Parameter

A **parameter** can be quantitative or qualitative. The quantitative type refers to parameters that are countable, with an infinite number of possible results (number of waste items, weight of waste, etc.). The qualitative type refers to parameters that take only a limited number of categories or modalities defined for each of them (category, typology of marine litter).

Pictures

These are **pictures** that can be associated with either reference data entities or data acquired *in situ*.

Pictures are not stored in the central system, but in an external centralised directory. DALI manages them only on the local computer. The access and physical management of these pictures are totally managed by the system.

Positioning

The **positioning** is integrated in metadata which is ISO 19115-compliant. It corresponds to the methodology used to locate geographic entities. It is based on a positioning device (GPS, Ortholittorale, Google Earth, etc.), and defines the way this device has been used to position the entity. In particular, it defines the precision of positioned data.

Program

A **program** designates the activities leading to the collection of a consistent dataset, whether for monitoring networks or for studies limited over time. The amount of data attached to a programme varies depending if it deals with a long or intensive activity, or a more time-specific operation (study).

Program officer

The **programme officer** describes the protocol by entering programmes and, strategies, manages reference data referentials, can create controls and ensures good data synchronization at the national level. The programme officer prepares data entry forms for the data entry person(s).

PMFMU

See Quintuplet.

Q

Quintuplet: PMFMU

A **quintuplet** is made up of the association of five elements: Parameter – Matrix – Fraction – Method – Unit (**PMFMU**). The quintuplet defines the results of the analysis (measurement results). The unit of measurement is linked to the PMFM itself, and not to the result.

Qualification

The **qualification** targets only data pushed up to the national level, hence those that have been stored into the central system. It is operated by a qualifier working with data domain experts. It attributes a quality level to results. The data qualification is based on several operations, for example, an expert's input, an automatic pre-qualification, statistical tests, conformity to the Statement of Work, etc. The qualification can lead to data modification while conserving the original data. A history of qualifications (nature, reason) is maintained by the system.

R

Reference data referential

A **reference data referential** is the collection of reference datasets of the information system. Elements of the reference data referential are:

- persons / data entry person bodies,
- PMFMUs: parameter / matrix / fraction / method / unit
- taxa / taxa groups,
- stations,
- means of acquisition.

S

Sampling operation

The **sampling operation** is a representative part of the environment in a given location, isolated to enable its sampling. This theoretical definition covers different realities depending on the field of activity. Generally, the sampling operation is the result of implementing a single means of acquisition. For a given survey, there are as many sampling operations as there are means of acquisition-levels used during the survey.

Sharing

The field "Partage" (**Sharing**), filled at survey level shows whether an survey is currently being entered or if it has been pushed up (= synchronized) at level of the central system.

State

The **state** field specified at survey level lets you know if an survey has been validated, controlled or is under ongoing data entry.

Station (Monitoring station)

The geographic **station** where it is planned to operate surveys, measurements and/or sampling operations. It is located in a unique way by its geographic extent (polygon, line or point. A monitoring station can be used by various programmes.

Strategy

The **strategy** defines *a priori* what data should be in the database depending on the programme that led to the data collection. It is the list of parameters to be measured at each sampling point, as well as prescribed methods for each of these parameters. The strategy helps for date entry at a location by customizing screens and facilitates rapid consultation in the database's theoretical content.

Survey

The **survey** is the set of operations carried out for one or several programs in a given location at a given time (start and end date/hour). The duration of the survey varies. For example, for seafloor litter, a survey corresponds to a haul.

System (central)

The **central system** corresponds to the national database (Quadrige) that the DALI data model relies on. It is designed to store data belonging to a national programme, entered within DALI.

U

Unit of measurement

The **unit of measurement** is associated with PMFMUs composed of a quantitative parameter.

V

Validation

The **validation** is the action operated by the person with the "validator" profile. The validation makes it possible to certify that the control operation has been carried out. Validated data is accessible to all users with consultation privileges. As long as the data has not been validated, it is only accessible to the data entry person. This step precedes the data qualification.

DALI General Principles

DALI has been developed with two specific objectives:

- To be able to collect and maintain data from the whole monitoring programme of the descriptor D10 MSFD – Marine Litter or research studies on this thematic. Such data collection should enable easier exploitation and valuable utilization of acquired datasets,
- To ensure interoperability with international systems, e.g. DATRAS/ICES, EMODnet DB. This requires the possibility to export data in national formats and to be able to rely on national reference data referentials.

The system can work locally, in constrained environments in terms of communication: network connections, transfer rates, etc. At the local level, data is entered and conserved on the data entry person's computer, with the presence of national reference dataset downloaded beforehand and that can be synchronized upon request. The synchronization is done *a posteriori* towards the central system (PostGreSQL database).

1. Different login profiles

Depending on the privileges granted by the programme at national level, the user will be able to work on both local and national data.

There are **four profiles** in DALI:

- **The programme officer** is in charge of managing programmes, strategies (See §3) and control rules (See §7.5). He/she describes the protocol through the definition of programmes and strategies. The officer prepares the structure of data entry sheets and drop-down list content for data entry persons.
- **The data entry person**, as the name indicates, has data entry privileges on some datasets. His/her rights are defined by the programme (See §7.3), and he/she is also in charge of controlling the data.
- **The validator** is responsible for validating the data entered before the synchronization with the central system. (See §8.2);
- **The qualifier** is responsible for providing the first level of data qualification (See §8.3);

2. REFERENCE DATA REFERENTIALS FOR DALI

	Referentials	Initial data	Thematic data
Profile	*Reference data Administrator*	*Programme officer*	*Data entry person*
	Station PMFMUs Taxa Taxa groups Means of acquisition Users…	Programmes Strategies Control rules	Surveys Sampling operations Measurements Surveys User contexts

Table 1: Typology of data managed in DALI

Among the reference data referentials, you need to ensure completeness of the **lists of parameters, matrixs, fractions, methods and units**. These elements are essential for data entry. Indeed, the database model relates **any measurement to metadata, and especially to a quintuplet Parameter – Matrix – Fraction – Method – Unit namely "PMFMU" (See figure 1).**

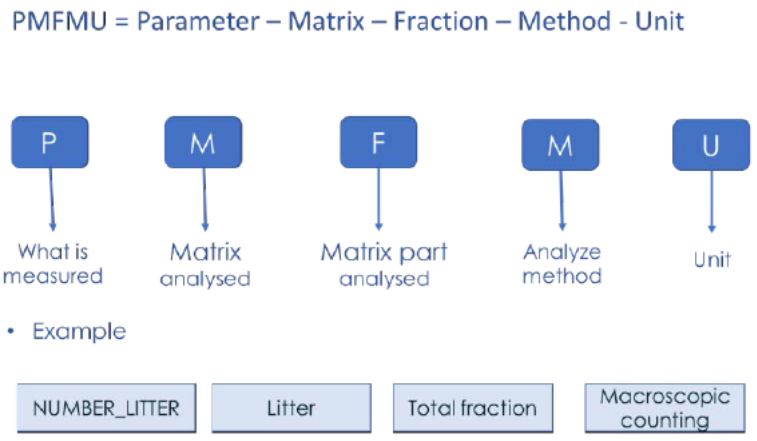


Figure 1: Organization of PMFMUs

Within reference data referentials we find the **"user"** part broken down into **persons** and **services**. This part meets two objectives:

- To allow **login to the application** with credentials. When connecting, the application recognizes the user profile.
- To allow **filling in of metadata** related to the measurement, i.e.: who entered the data (data entry person)? Who sampled the data (Sampler)? Who carried out the identification (Analyst)? etc.
-

3. INTEGRATE DATA

a. GENERAL PRINCIPLES

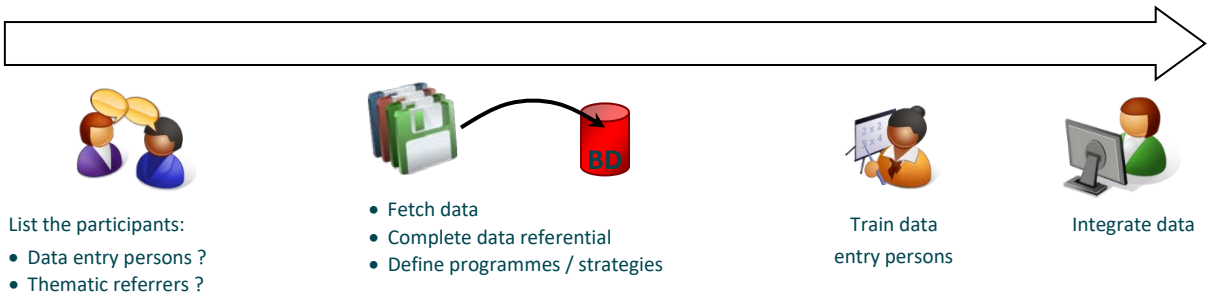


Figure 2: Data integration steps

Before entering or retrieving any data, DALI requires the **structuration** of the data. This work is an essential prerequisite for any data integration and is led by the administrator unit in collaboration with thematic responsible, guaranteeing subsequent efficient extraction and exploitation of the data.

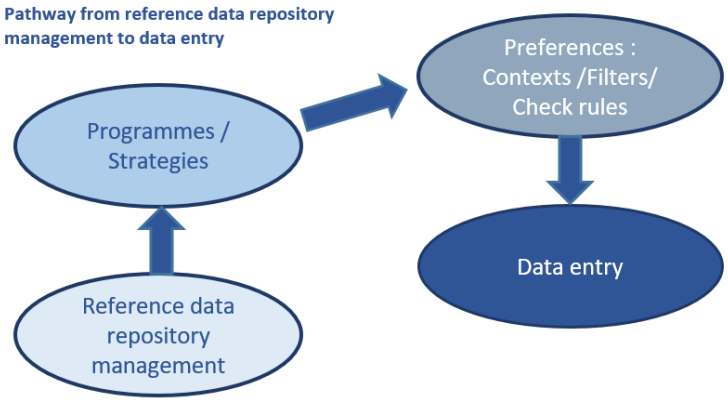


Figure 3: Sequencing of operations to allow data entry

The order of operations to carry out is generally as the following:

1. Complete data referentials beforehand (if necessary). However, this completion can be carried out later, in case a missing reference dataset is observed during data entry. This can also be done at any time with the national data referentials. The latter are made available and regularly updated to ensure optimal management of these steps.
2. Position on programmes and strategies targeted by the data entry.
3. Choose filters, contexts and control rules, or create or update them,
4. Enter the data

In the most common case, the first three operations do not need to be performed because the data entry environment will be already specified. This considerably facilitates and structures the data entry operations and this initialization configuration makes it possible to save more time later.

b. DATA REFERENTIAL MANAGEMENT

The initialization of data referentials is an essential first step for data integration. The user must ensure that he/she has up-to-date reference datasets available in the database in order to integrate data. These are:

- The list of parameters available in the programme, with the method (protocol), the matrix, the fraction, and the suitable unit.
- The complete list of monitoring locations,
- Persons / Services

These referentials are available in DALI after synchronization.

c. CHOOSE OR CREATE A PROGRAMME

Referentials mentioned in the previous paragraph are structured within a **programme**, and then organized within **strategies** which define parameters station by station. These strategies are essential elements for data entry since they allow data entry interfaces to be defined and new parameters to be easily inserted.

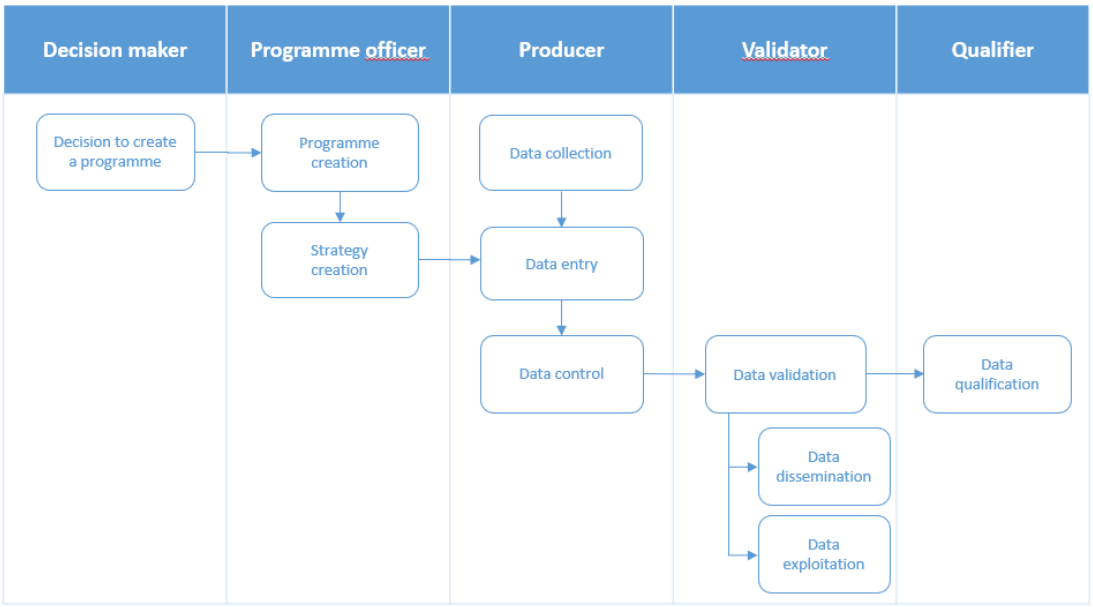


Figure 4: Data collection process for DALI

Any data entry can only be done within a single programme.

The list of national programmes is not final. New programmes are created depending on data recovered and user needs.

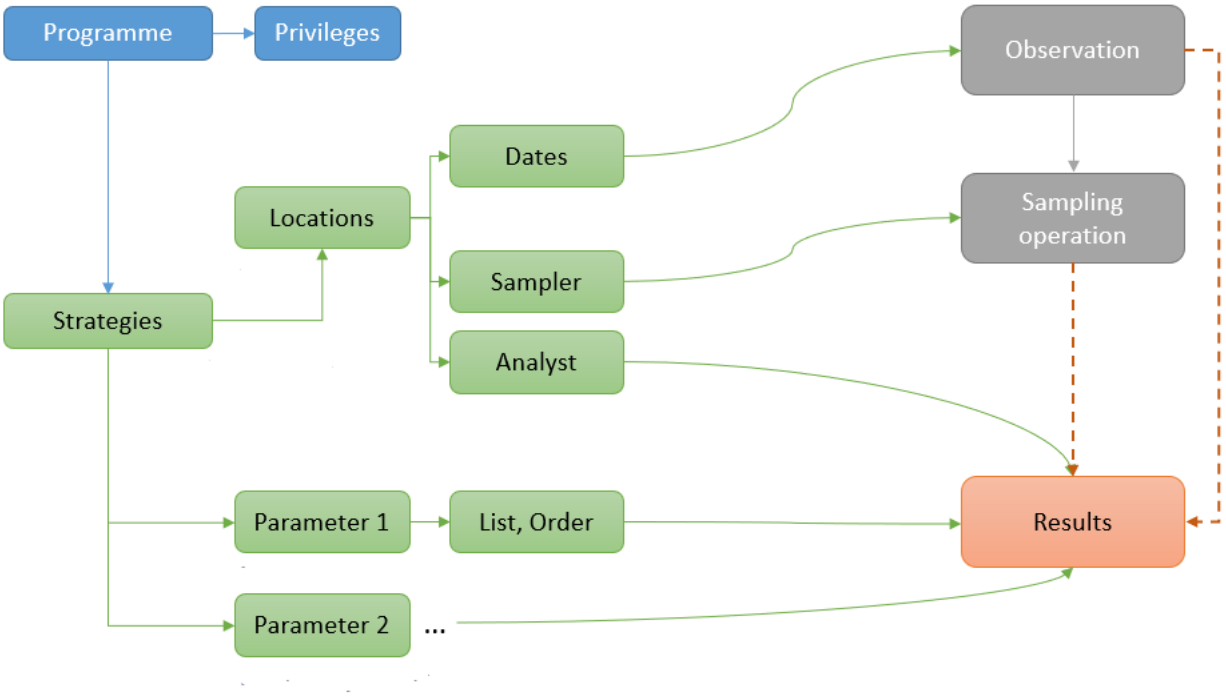


Figure 5: Programme and Strategies

d. THEMATIC DATA ORGANISATION AND DATA ENTRY

Data to enter in DALI has a hierarchical structuration at two levels. The figure below represents these levels with the associated information or metadata that will also need to be entered.

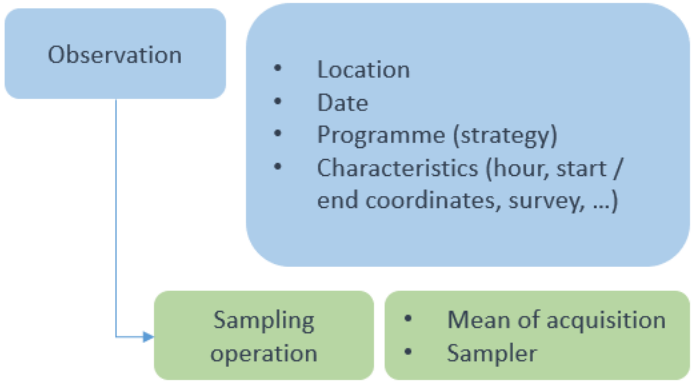


Figure 6: Tree survey / sampling operation

The first level is the survey, which represents an operation carried out in the field as part of a programme at a station, on date t. You can enter a certain number of measurements, depending on the content of strategies. At this level, these generally concern **environmental parameters** (wind speed, current speed, etc.).

You can associate **one or more sampling operations** with a survey.

Install DALI

To see the minimum system requirements to run DALI on a computer, refer to the annex.

1. Download & Installation

Refer to your IT administrator to install DALI on your computer

2. Application start

The **first opening** of the application requires that the machine is connected to Internet in order to synchronize the identification. A software update can occur at launch time. In this case, simply follow the instructions.

Then, authenticate with the credentials (login/password).

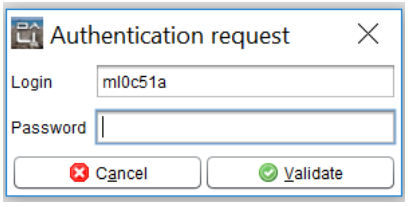


Figure 7: DALI Authentication window

For more details on DALI access privileges depending on different profiles, see the chapters on authentication and the programme and strategies (§3.1 and §7.3).

Data entry

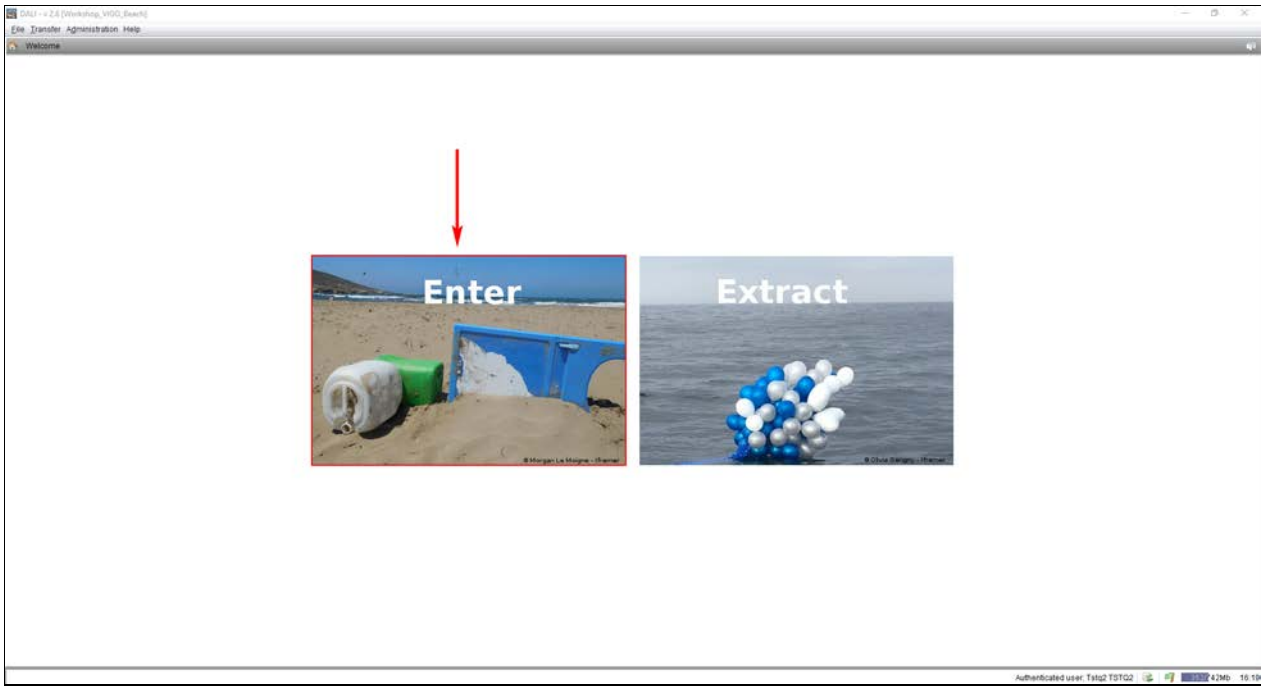


Figure 8: Home page: Data entry

1. DATA ENTRY WINDOW

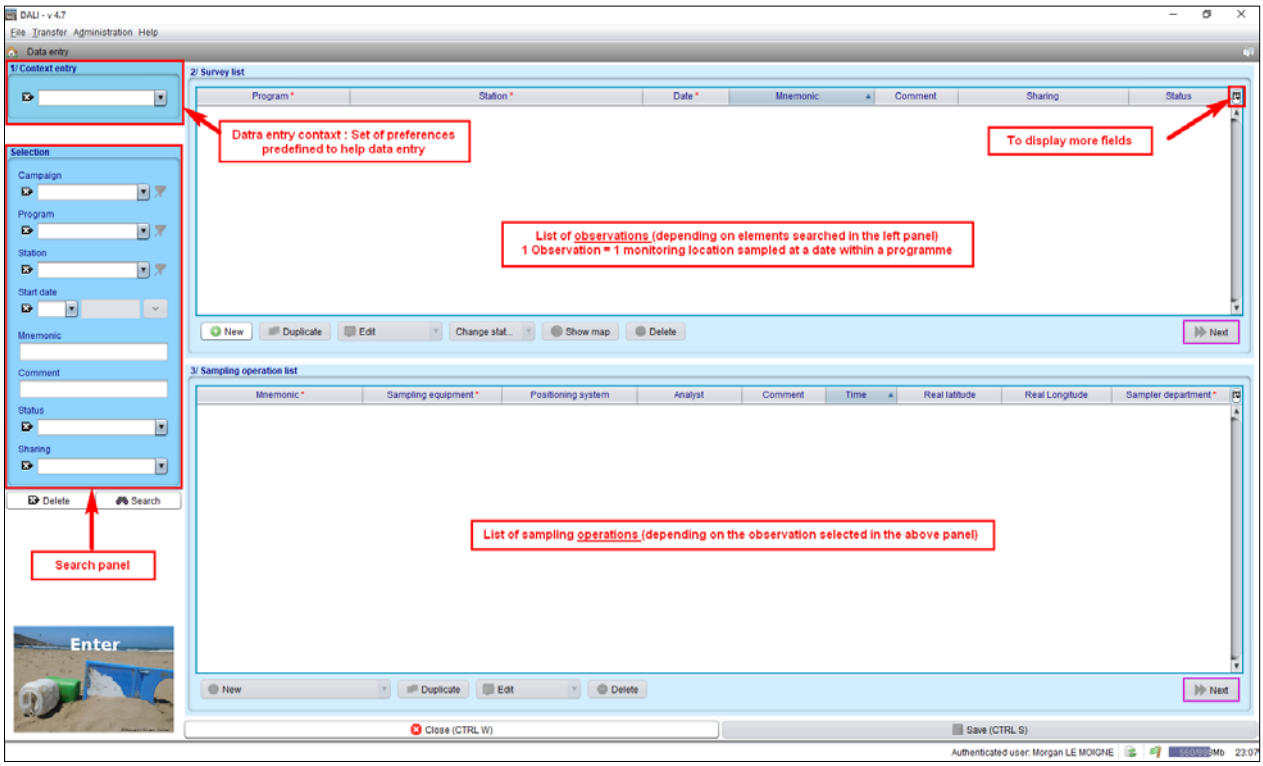


Figure 9: Data entry screen

From this interface, data already available can be consulted, and new data can be entered. If there is a default context, it will be loaded: it provides filters from the reference data referential which are adapted to the ongoing data entry (stations, PMFMU etc.).

2. CONSULTATION OR MODIFICATION

Here is an example of data consultation:

- Choice of programme:

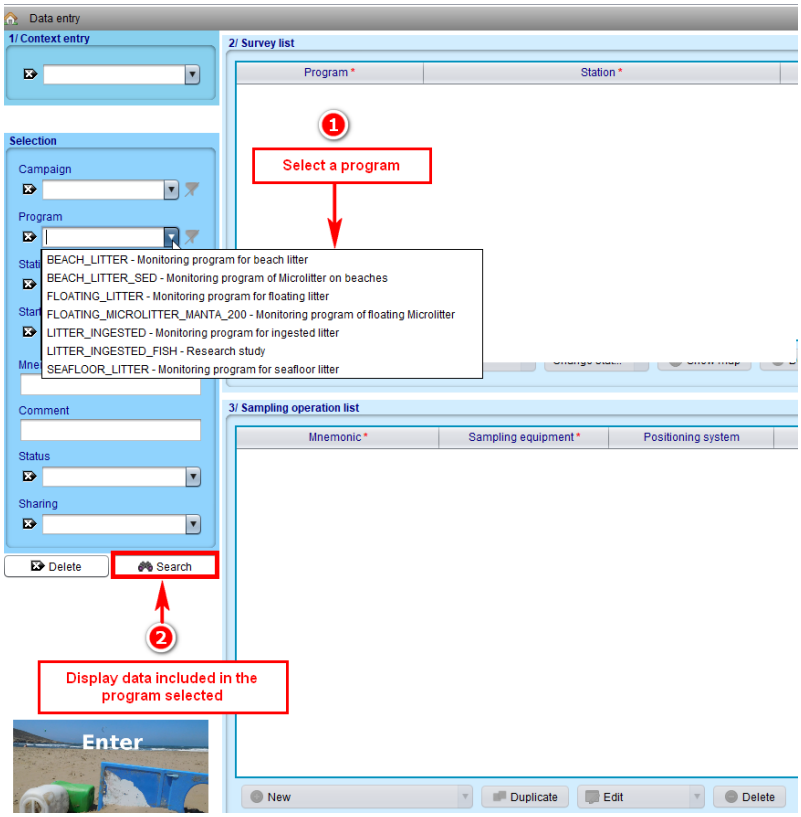
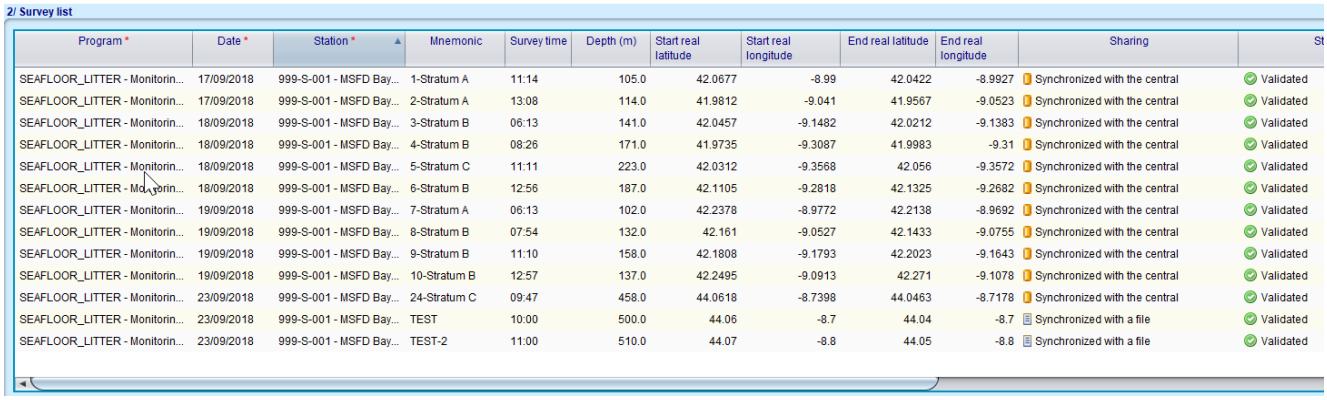


Figure 10: Selection Menu

- List of surveys:



Program *	Date *	Station *	Mnemonic	Survey time	Depth (m)	Start real latitude	Start real longitude	End real latitude	End real longitude	Sharing	St
SEAFLOOR_LITTER - Monitorin...	17/09/2018	999-S-001 - MSFD Bay...	1-Stratum A	11:14	105.0	42.0677	-8.99	42.0422	-8.9927	Synchronized with the central	Validated
SEAFLOOR_LITTER - Monitorin...	17/09/2018	999-S-001 - MSFD Bay...	2-Stratum A	13:08	114.0	41.9812	-9.041	41.9567	-9.0523	Synchronized with the central	Validated
SEAFLOOR_LITTER - Monitorin...	18/09/2018	999-S-001 - MSFD Bay...	3-Stratum B	06:13	141.0	42.0457	-9.1482	42.0212	-9.1383	Synchronized with the central	Validated
SEAFLOOR_LITTER - Monitorin...	18/09/2018	999-S-001 - MSFD Bay...	4-Stratum B	08:26	171.0	41.9735	-9.3087	41.9983	-9.31	Synchronized with the central	Validated
SEAFLOOR_LITTER - Monitorin...	18/09/2018	999-S-001 - MSFD Bay...	5-Stratum C	11:11	223.0	42.0312	-9.3568	42.056	-9.3572	Synchronized with the central	Validated
SEAFLOOR_LITTER - Monitorin...	18/09/2018	999-S-001 - MSFD Bay...	6-Stratum B	12:56	187.0	42.1105	-9.2818	42.1325	-9.2682	Synchronized with the central	Validated
SEAFLOOR_LITTER - Monitorin...	19/09/2018	999-S-001 - MSFD Bay...	7-Stratum A	06:13	102.0	42.2378	-8.9772	42.2138	-8.9692	Synchronized with the central	Validated
SEAFLOOR_LITTER - Monitorin...	19/09/2018	999-S-001 - MSFD Bay...	8-Stratum B	07:54	132.0	42.161	-9.0527	42.1433	-9.0755	Synchronized with the central	Validated
SEAFLOOR_LITTER - Monitorin...	19/09/2018	999-S-001 - MSFD Bay...	9-Stratum B	11:10	158.0	42.1808	-9.1793	42.2023	-9.1643	Synchronized with the central	Validated
SEAFLOOR_LITTER - Monitorin...	19/09/2018	999-S-001 - MSFD Bay...	10-Stratum B	12:57	137.0	42.2495	-9.0913	42.271	-9.1078	Synchronized with the central	Validated
SEAFLOOR_LITTER - Monitorin...	23/09/2018	999-S-001 - MSFD Bay...	24-Stratum C	09:47	458.0	44.0618	-8.7398	44.0463	-8.7178	Synchronized with the central	Validated
SEAFLOOR_LITTER - Monitorin...	23/09/2018	999-S-001 - MSFD Bay...	TEST	10:00	500.0	44.06	-8.7	44.04	-8.7	Synchronized with a file	Validated
SEAFLOOR_LITTER - Monitorin...	23/09/2018	999-S-001 - MSFD Bay...	TEST-2	11:00	510.0	44.07	-8.8	44.05	-8.8	Synchronized with a file	Validated

Figure 11: List of existing or already-entered surveys

- Selection of a survey:

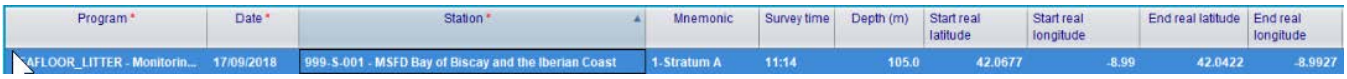
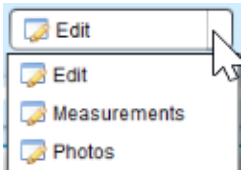


Figure 12: Selected survey

- To see associated data, go the **Edit** menu:



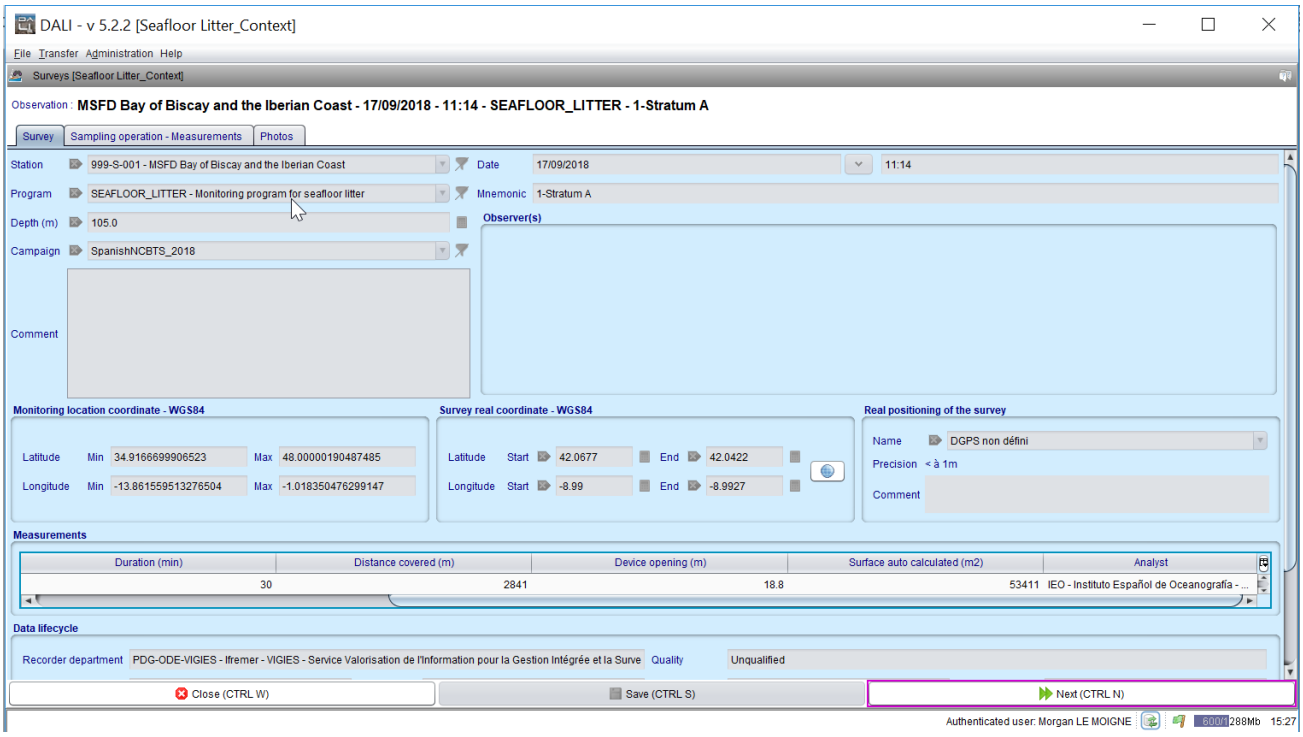


Figure 13: Data Details for a survey

In this case, all fields are shared because the data are validated and cannot be modified (see § Validation). Thus, you can consult the set of information associated with each sampling operation.

- List of sampling operations:

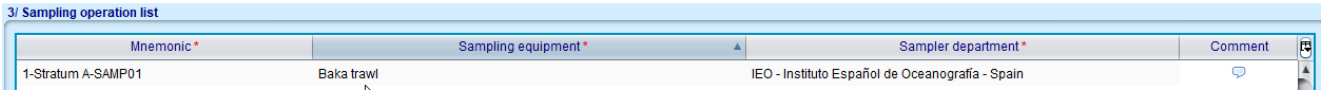
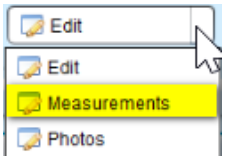


Figure 14: List of existing sampling operations and its metadata

- Selection of a sampling operation:

Figure 15: Selected sampling operation

To see the associated data, go to the Edit menu:



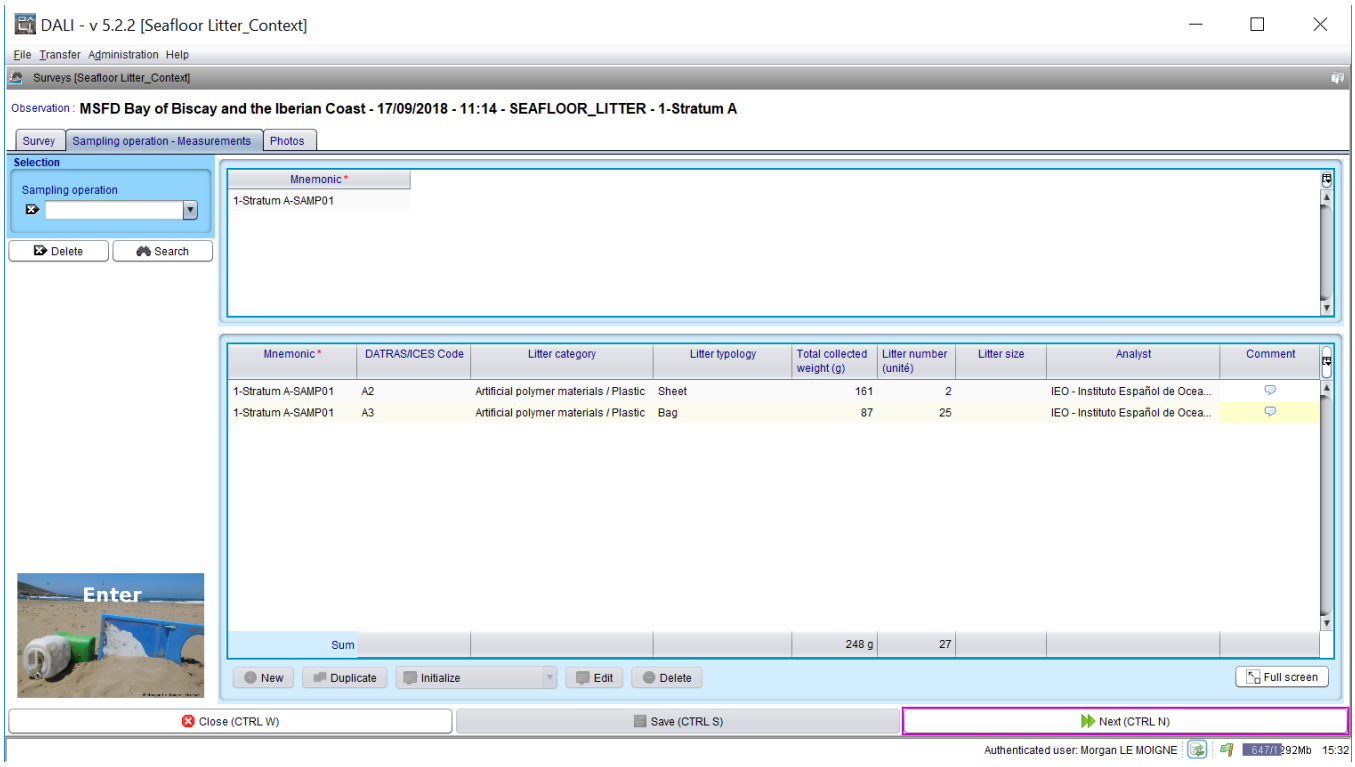
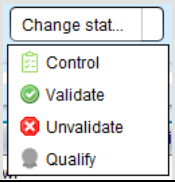


Figure 16: Results of the selected sampling operation

Data already entered can be modified at each level, survey and sampling operation.

Note: once data is validated, it cannot be modified. To modify it, data must be first invalidated. In List of surveys, button Change state.



3. NEW DATA ENTRY

For new data entry, it is strongly recommended that you **select the context corresponding to the theme** you are working on.

a. CHOOSE A CONTEXT

A context is a set of preferences, which lets you personalize the data entry. It groups together different filters for monitoring programmes. Each filter reduces the list of available elements within the reference datasets or linking to essential information for the data entry. Data entry drop-down lists are then reduced, making entering faster and limiting entry errors. The creation of context is described in detail in paragraph 7.2.

Figure 17: Context selection

Example: The context "Seafloor Litter_context" groups filters limiting surveys, sampling operation devices, monitoring stations, programmes, PMFMUs and services specific to the data entry for monitoring Seafloor litter

b. CREATE A NEW SURVEY

In the list of surveys, click on 

to add the first observation: station/date/related programme, etc.

a) Choose the station

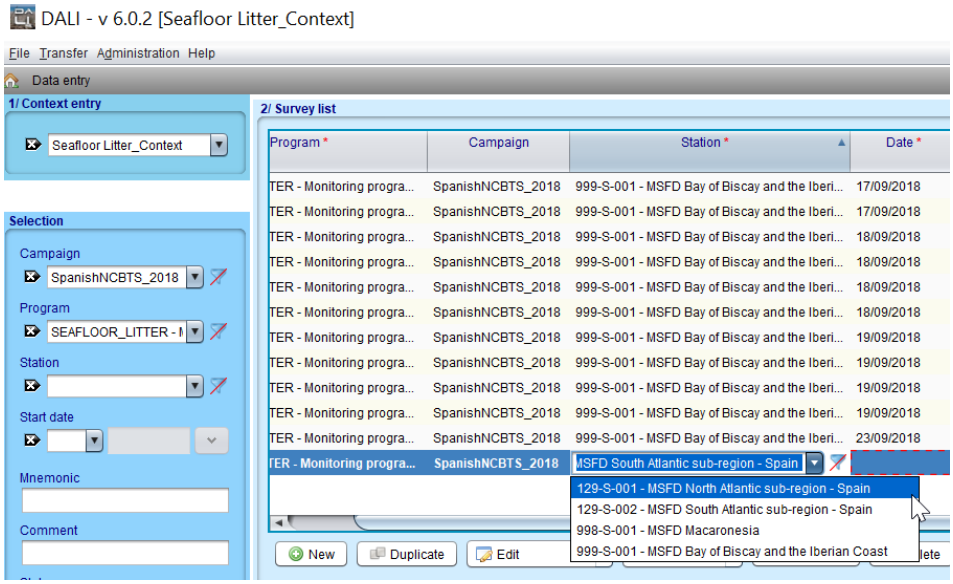


Figure 18: Choice of a station

The list of stations will be reduced by a context.

If a station is missing in the list, this is not blocking, the filter can be deleted and all stations from the reference dataset will appear. If a station is missing, its creation should be requested from the administrator

In the case where no context is applied, the list of all existing stations from the reference dataset appears.

b) Define the date

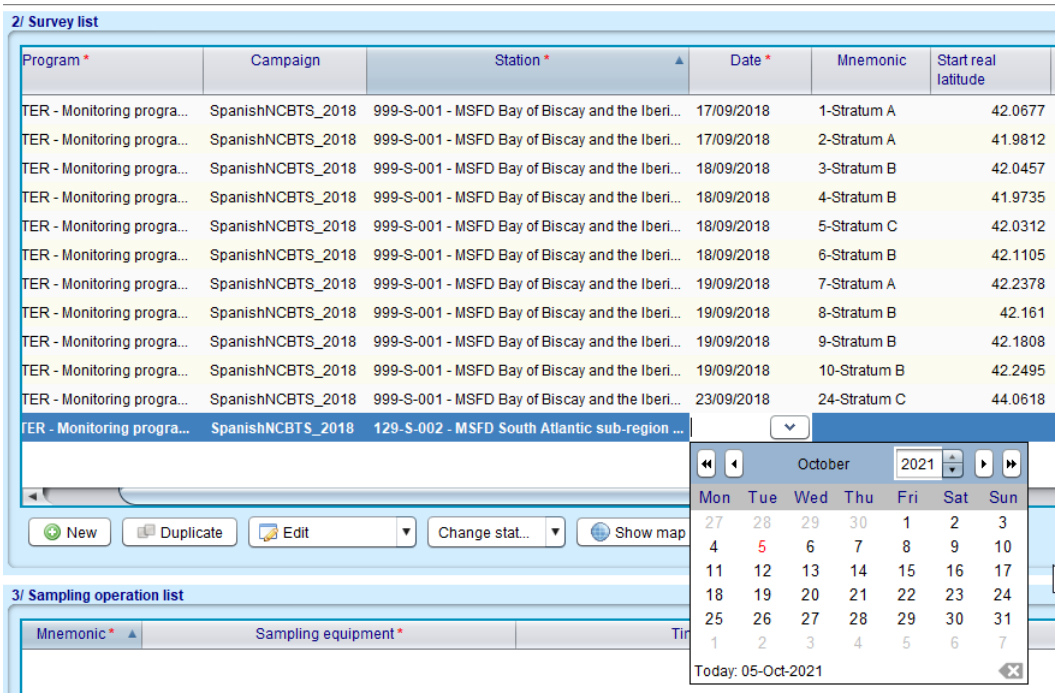


Figure 19: Choice of a survey date

c) Programme selection

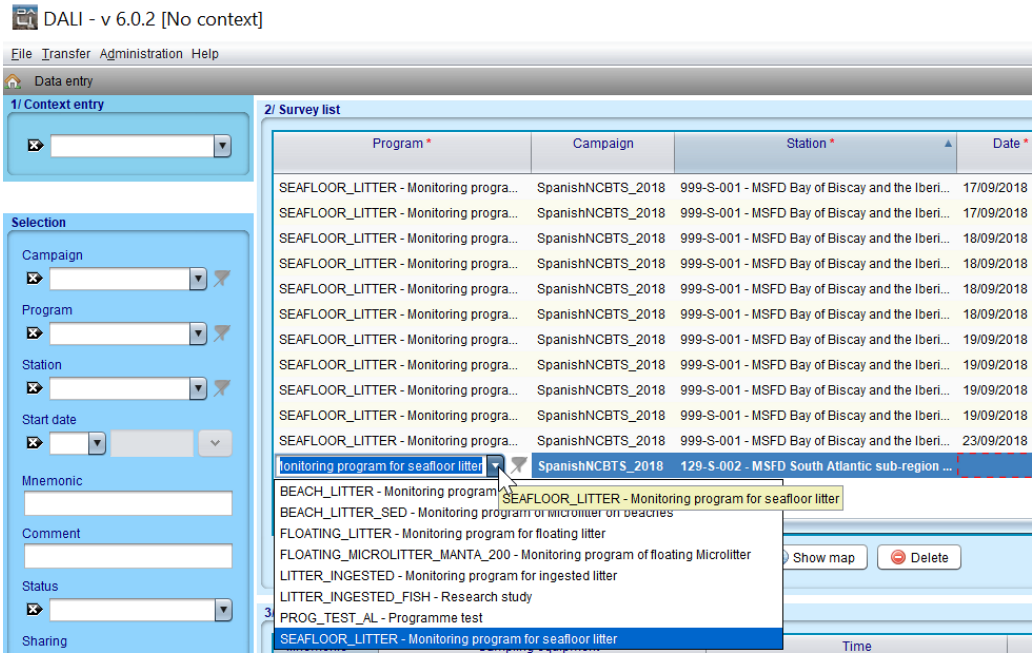


Figure 20: Programme selection

The list of programmes can be reduced by a context.

c. CREATION OF SAMPLING OPERATIONS

Once the survey is created, click on Next. You can also select the survey, and then click on New in the sampling operations panel.

The next window opens and allows you to create sampling operations, specifying the number of sampling operations and their characteristics (means of acquisition, parameters associated with the sampling operation, as well as other optional elements which can be attached).

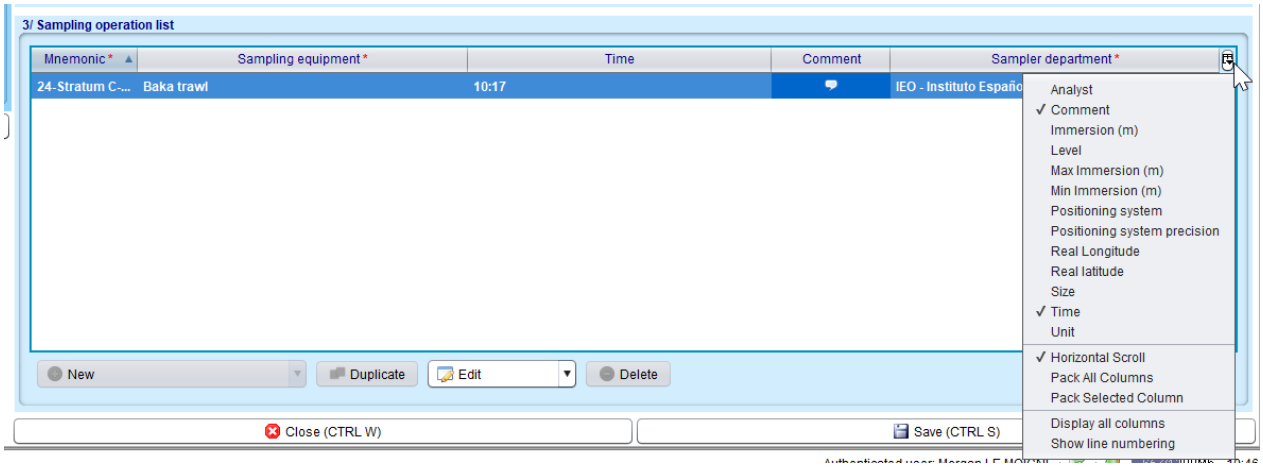


Figure 21: Creation of a sampling operation

d. DATA ENTRY

After entering the sampling operation, click on the button “Next” or on the button “Edit “

a/ The tab Survey, lets you specify elements such as: the observer, date/hour, survey identifier; to give details on exact coordinates (if they are different from the monitoring station) and specify parameters linked to the survey. These are the PMFMUs, whose result is entered at the survey level and not at the sampling operation level; for example: environmental conditions (wind strength, direction, etc.)

b/ The tab Sampling operation - Measurements lets you specify parameters linked to the sampling operations. They are PMFMUs whose result belongs to the sampling operation and not to the survey. This tab is organized in 2 parts:

- the top panel for selecting the sampling operation on which data is entered and,
- the bottom panel for data entered on the selected sampling operation.

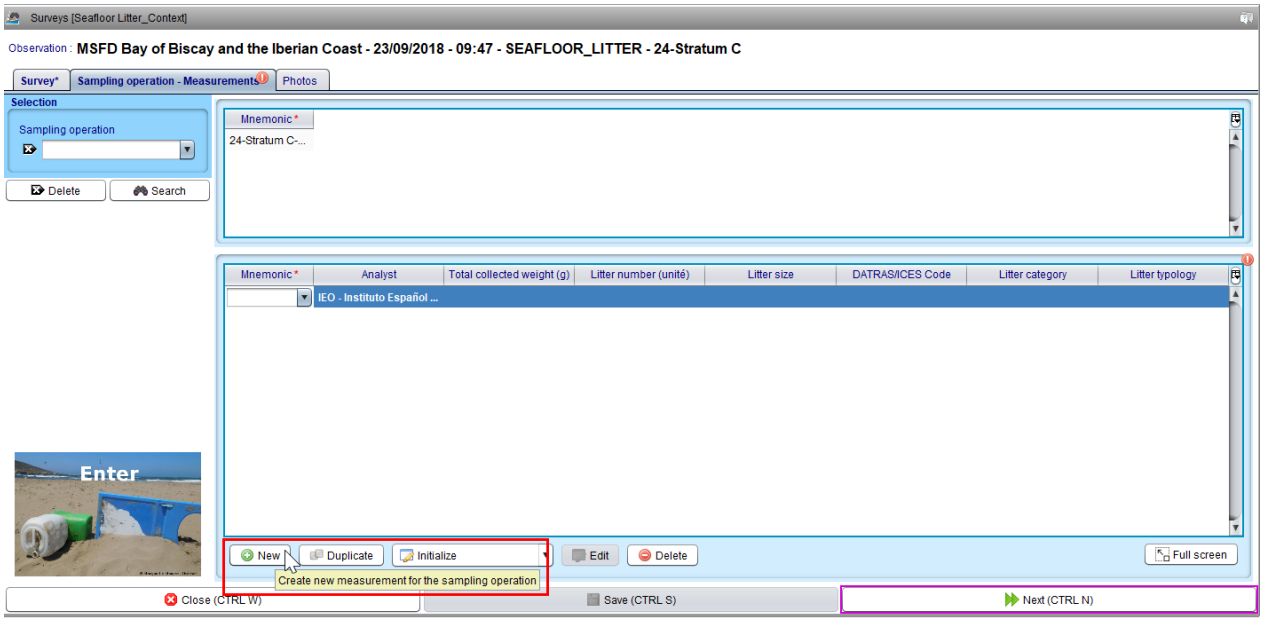


Figure 22: Data entry screen - Tab Sampling operation – measurements

For each sampling operation, one or more parameters are measured.

As for surveys, sampling operations can be duplicated. It is essential to think about how to organize the data from the beginning of the data entry in order to duplicate similar elements, which will facilitate the data entry.

d/ The tab Photos allows to attach pictures to a sampling operation:

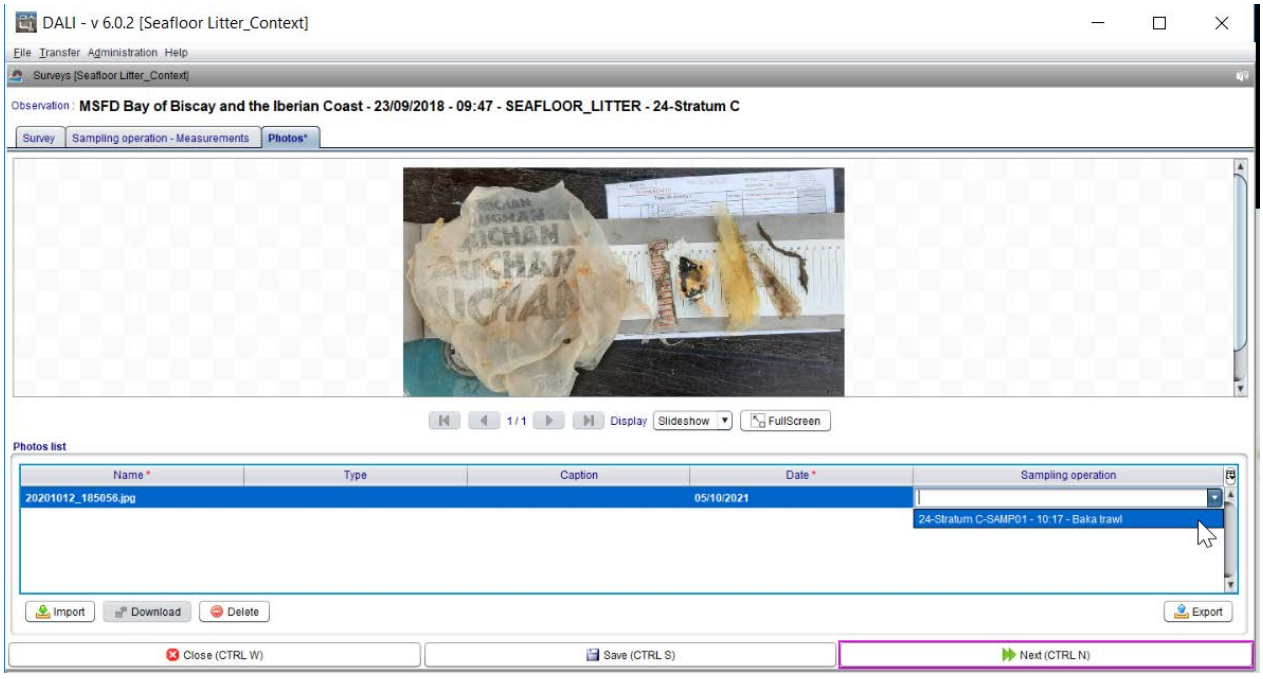


Figure 23: Data entry screen – tab Photos

Photos are stored **locally** in a directory managed by the DALI system. They are not synchronized on the central system and stay only on the local computer.

Note: You will know at saving time if all control rules are fulfilled. On the contrary, problematic fields are surrounded by red dots.

4. Generalities on data entry & Tips

a. Symbology

Mandatory fields are followed by a red asterisk *. Data saving is impossible if one of these fields is not filled.

When saving new information, as long as any information is missing, the Save button will be shaded. If the data saving action cannot be completed (error message), the software will surround in red the incorrectly entered information (i.e., that doesn't correspond to the required format. For example: text instead of numbers or a value greater than the one imposed by a control rule). Finally, the small flag present in the taskbar, on the bottom-right corner of the window will be green  as long as there is nothing to report and will be red  when the data entry is not finished or when a problem is encountered. In this case, clicking on this flag lets you display the control report that indicates the state of the ongoing data entry.

The orange flag  indicates an anomaly but it is not blocking (for example, a control rule is applied but does not block data saving).

The orange row shows that some information is missing. The exclamation mark  on the top-right confirms this, and clicking on the red flag on the bottom-right in the taskbar also provides information about elements that prevent you from saving.

b. Facilitate the data entry

When entering data, using the **tabulation** 

key on the keyboard lets you move from one field to another and the up  and down  arrows enable you to scroll within drop-down lists.

Within a **drop-down list,** the keyword search can be facilitated by directly entering an "*". The character * searches for any character string.

For example, you search the list of marine litter typologies:

- You can enter "Fi*" to limit the selection to words starting with "Fi", e.g., "Fibre" or "Film"
- You can enter "*fish*" to search for fishing lines and nets.

However, do not use this escape character (*) when doing a word search within a **text zone.**

The search is not case sensitive.

A survey can be duplicated by right clicking on it. It is possible to do a **complete duplication** (survey + sampling operations) or a **simple duplication** (survey only) to avoid having to retype everything.

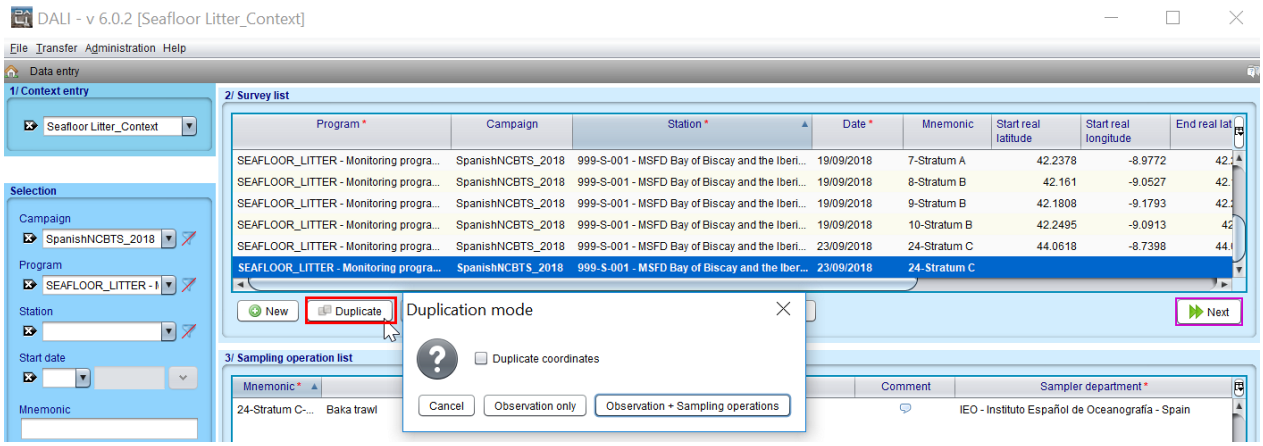


Figure 24: Duplication choice

Extraction

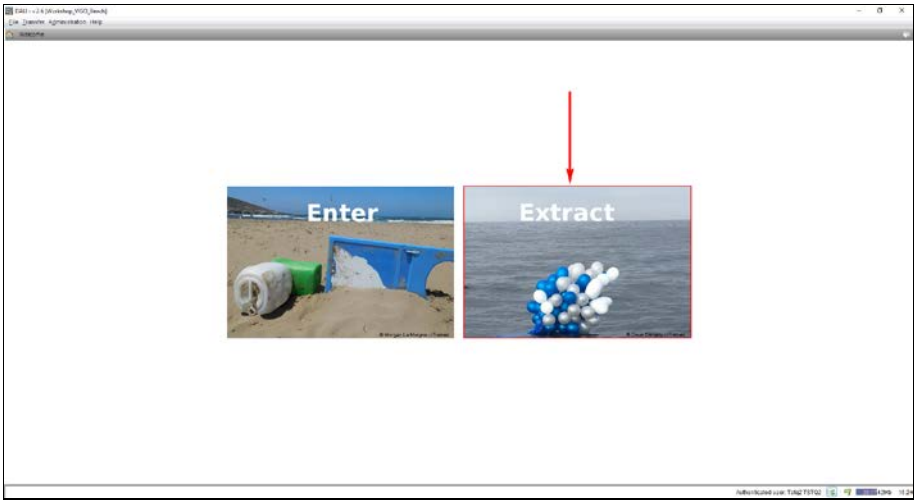


Figure 25: Extraction Home page

Access to the extraction is done through a single screen: this gives access to the different extraction parameters. From this screen, you can choose a type of extraction already registered or create a new one depending on specific criteria.

These extraction criteria can be related to:

- The programme (one or more possible programmes),
- A period (one or more possible periods),

- A monitoring station (one or more possible stations),
- A survey (one or more possible surveys),
- A sampling device (one or more possible sampling devices),
- A data entry person service (one or more possible services),
- A PMFMU quintuplet (one or more possible PMFMUs).

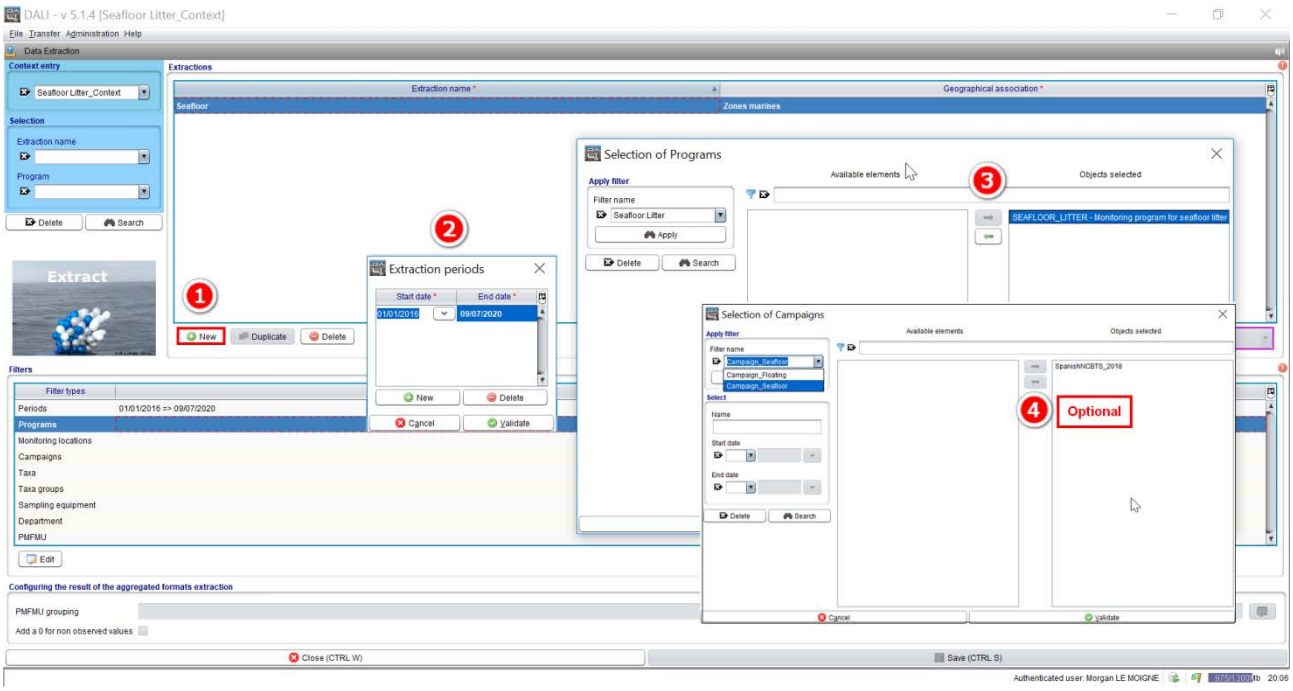


Figure 26: Data Extraction screen

In order to perform an extraction, you need to create either an extraction or to use an existing one. Next, you need to create an extraction filter, at least specifying the target period and programme.

These filters enable you to define the programme, surveys, sampling operation devices, monitoring stations, parameters and the period of data to extract.

These different criteria are then applied using **an "AND" type request** in the local database.

Once the filter is chosen, various extraction formats are possible:

- The **Simple Format** lets you get result fields by parameter for each monitoring station/date (=survey) and sampling operation. This extraction does not make it possible to get all metadata, but can suffice, depending on needs.
- The **Full format** allows you to extract all fields contained in the database. This format enables you to obtain all metadata associated with the data and to have the most extensive extraction possible.
- The **Aggregated simple format** lets you aggregate information according to defined groups. This extraction does not make it possible to get all metadata, but can be sufficient, depending on needs. Results are summed according to defined groups.
- The **Aggregated full format** allows you to aggregate information according to defined groups. This format enables you to obtain all metadata associated with the data and to have the most extensive extraction possible. Results are summed according to defined groups.

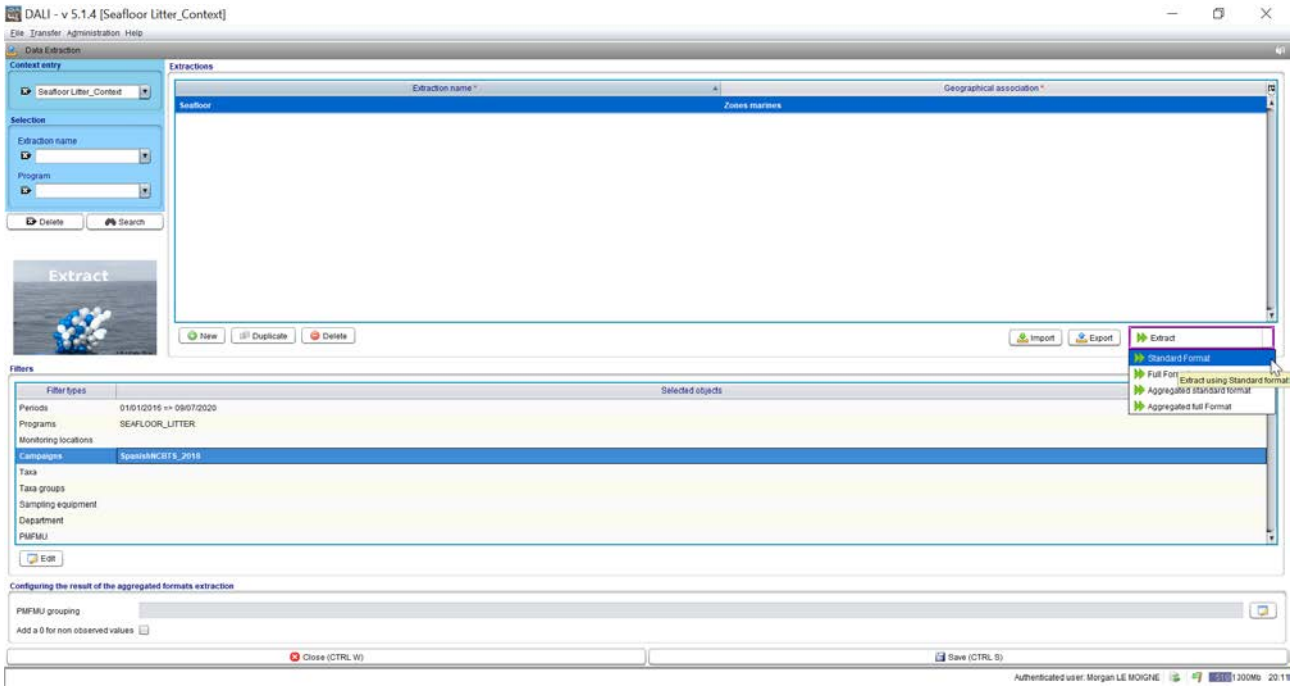


Figure 27: Extraction formats

It is necessary to choose PMFMUs groups:

1- The list or lists of PMFMU(s) used for grouping

2- The list or lists of quantitative PMFMU(s) to sum according to grouping.

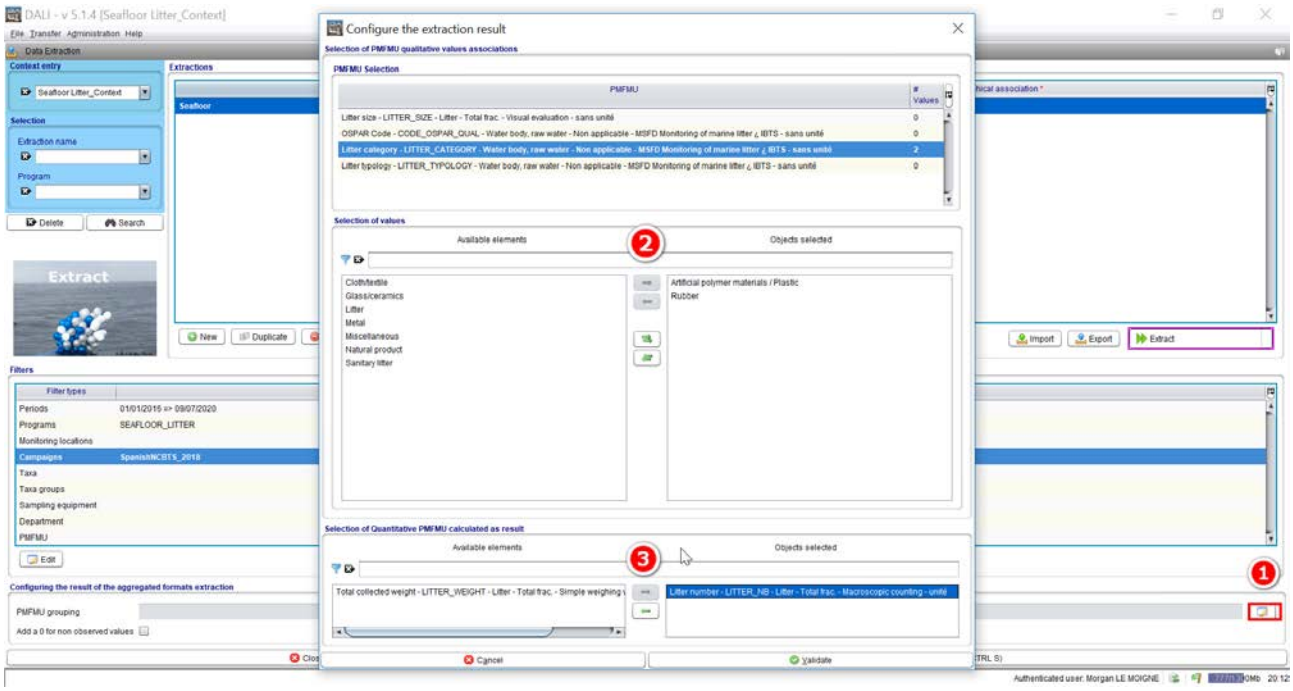
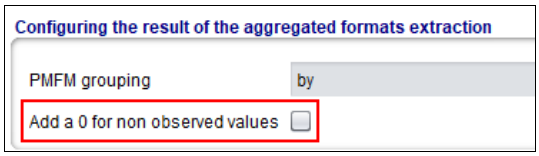


Figure 28: Selection of qualitative values by PMFMU and choice of the grouping PMFMU

Aggregations can be very useful for checking the entries.

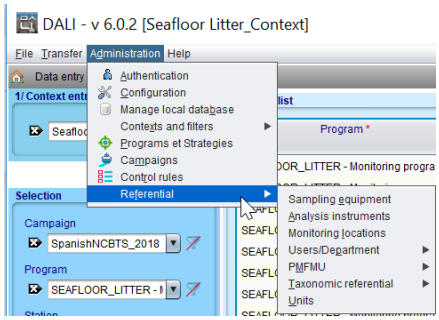
It is also possible to '**Add 0 for unobserved values**' to have a file with all the associations present in the software:



Administration and complementary information

1. REFERENTIALS

Referentials are available in the menu.



The elements managed are:

- Sampling operation devices
- Analysis devices
- Monitoring stations
- Persons and services
- PMFMUs: parameter/matrix/fraction/method/unit
- Taxa/Group of taxa
- Units

Referentials are synchronized with the central system and managed by the database administrator.

a. PERSONS / SERVICES

Any user who accesses the database with credentials is identified as **person** and is associated with a **service** in the referential. The administrator can ask the administration unit to create a new person and service in the referential in order to use it in DALI after synchronization.

A user is granted privileges, this information can be found in the tab "**Persons**" :

- Data entry entry person,
- Validator: can validate data,
- Qualifier: can qualify a validated datum,
- Programme officer: can create control rules and administrate his/her programme and strategies.
- Reference data administrator.

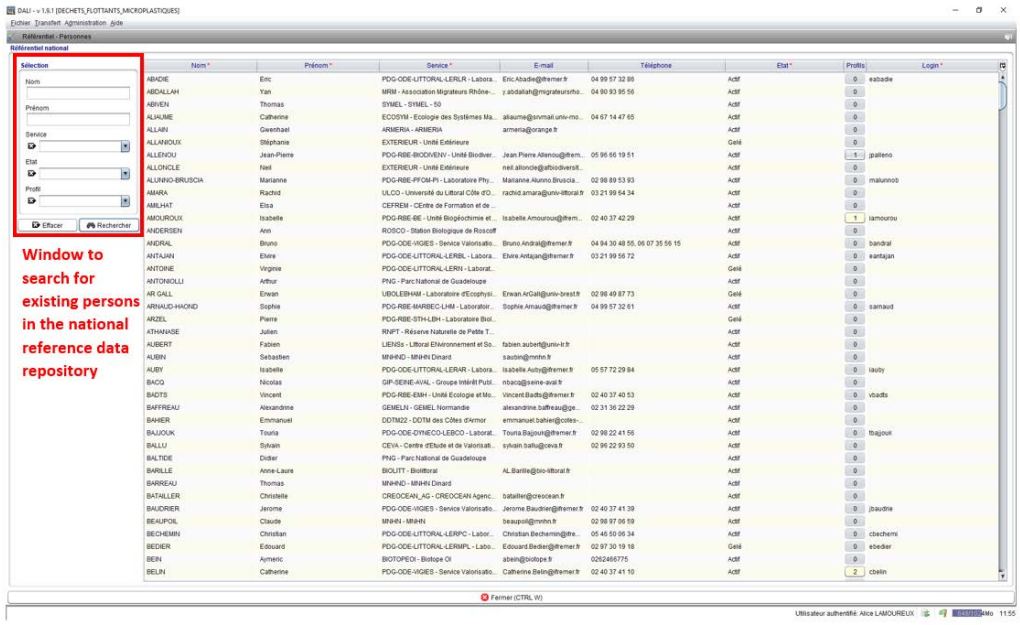


Figure 29: Administration/Reference data/Persons-Services/Persons screen

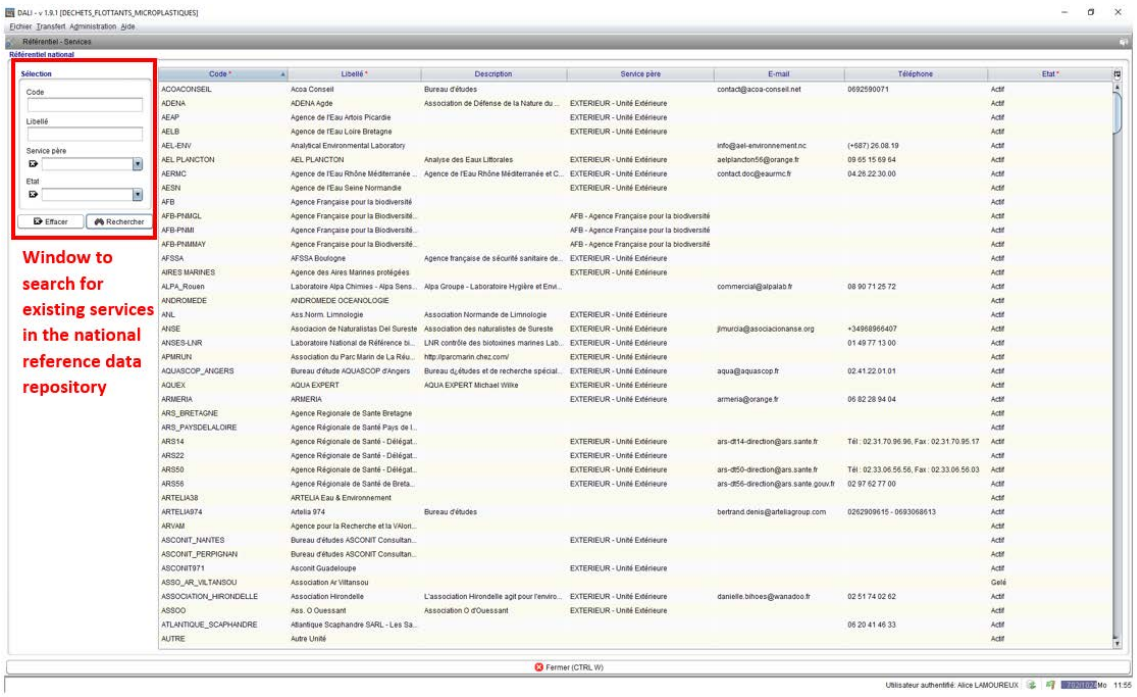


Figure 30: Administration/Reference data/Persons-Services /Services screen

b. PMFMUs

PMFMUs correspond to Parameters/Matrix/Fractions/Methods/Units that are measured. In a first step, each element is managed independently from the others before they are linked up to generate quintuplets that are associated with strategies.

Quintuplet/PMFMU:

A PMFMU quintuplet is constituted by the association of five elements: Parameter – Matrix – Fraction – Method – Unit. The PMFMU quintuplet defines analysis results. The unit of measurement is associated with the PMFM itself, and not to the result (there can be one and only one unit of measurement per quintuplet).

Before requesting the creation of PMFMUs by the administration unit, it is necessary to first consult the existing quintuplets in the list of reference datasets and verify that the needed quintuplet does not already exist in the database.

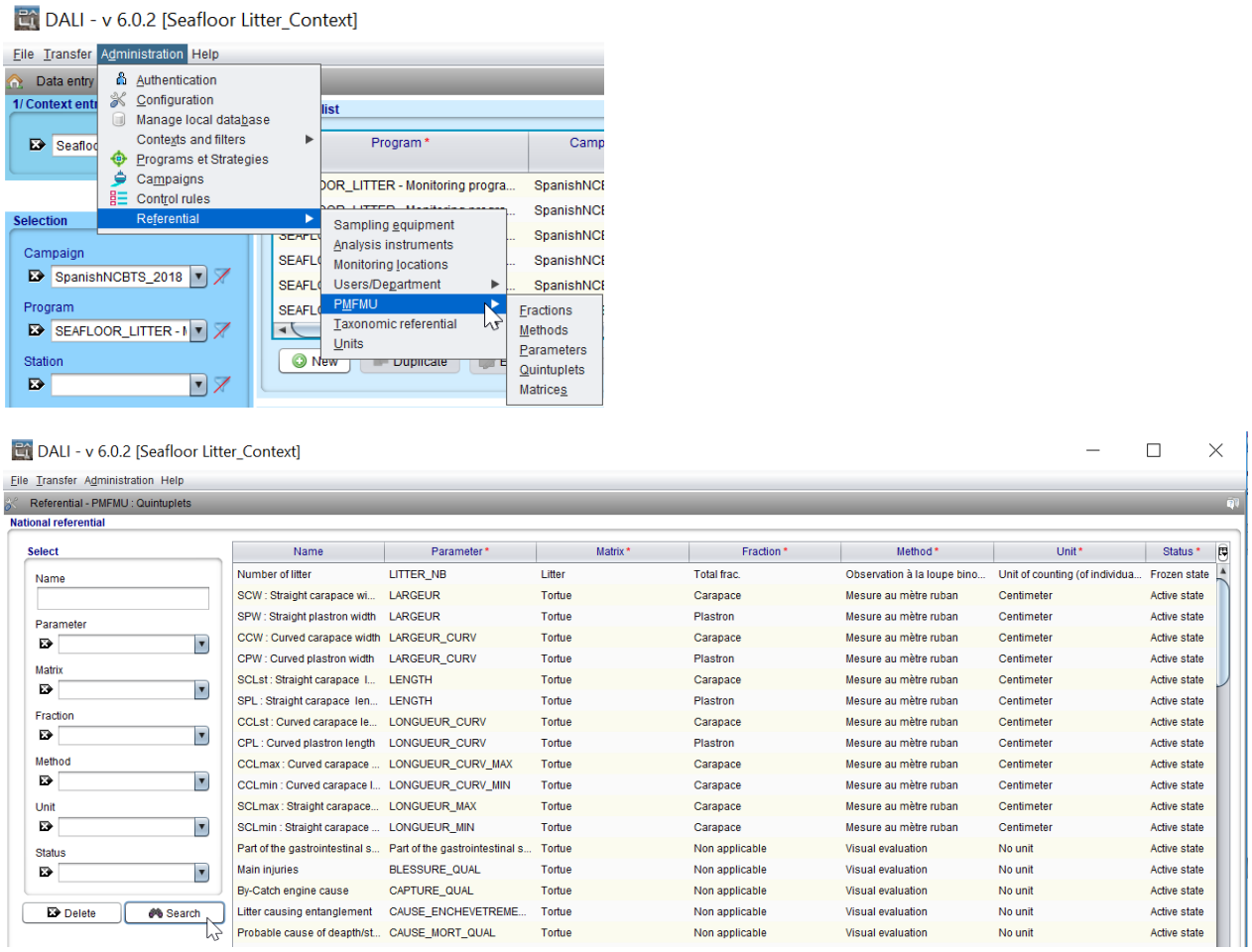


Figure 31: Administration/Reference data/PMFMUs/Quintuplets screen

The screen above shows that a parameter can be associated with various types of protocols.

Searching for an existing PMFMU can also be based on the matrix. This raises the question of the parameters measured on marine litter, for example:

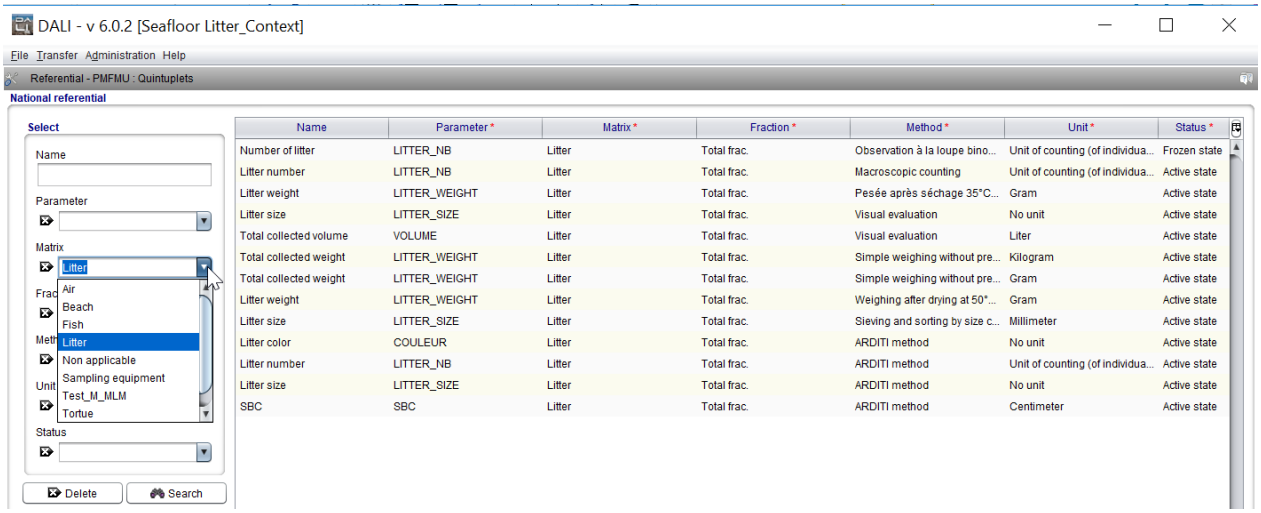


Figure 32: Search of existing PMFMUs measured on marine litter (matrix = litter)

Once you have taken note of the existing PMFMUs, there are two possible solutions to enter a type of data:

- The PMFMU already exists

- The PMFMU does not exist exactly as you would like it. The parameter, matrix, fraction, method and unit exist but not as a PMFMU as such: simply request it at national level and synchronize DALI.

Parameter:

Before requesting the creation of a parameter from the administration unit, you need to ensure that the search parameter does not already exist in the national reference data referential. To search for the existence of a parameter, it is possible to search by its code, its label, as well as by "group of parameters".

A parameter can be quantitative or qualitative. The quantitative type refers to numerical parameters, countable (number, size, etc.). The qualitative type refers to non-numerical parameters (type of means of acquisition, etc.) or by numerical class (size class, depth class) taking into account only a limited number of predefined values for each class.

If the parameter is qualitative, the checkbox associated with the qualitative column is checked and the column qualitative value must be specified with the number of values that the parameter can take.

Remember: if one of the PMFMU elements is new, you need to create the corresponding quintuplet.

c. Stations or Monotoring Locations

The national reference data referential contains all the monitoring stations contained in the database. They can be searched based on multiple criteria: depending on the programme they are associated with, depending on the marine zone, etc.

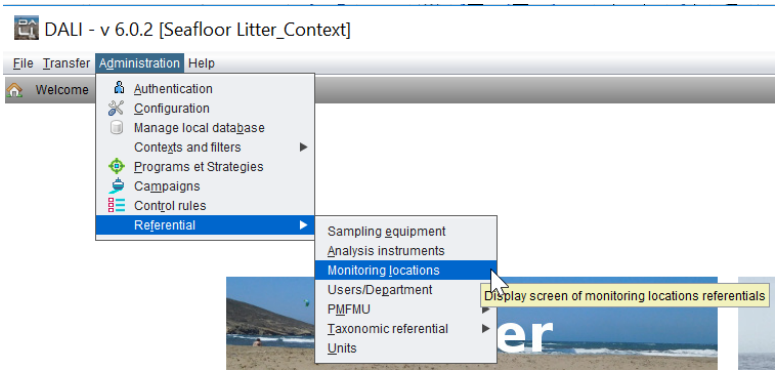
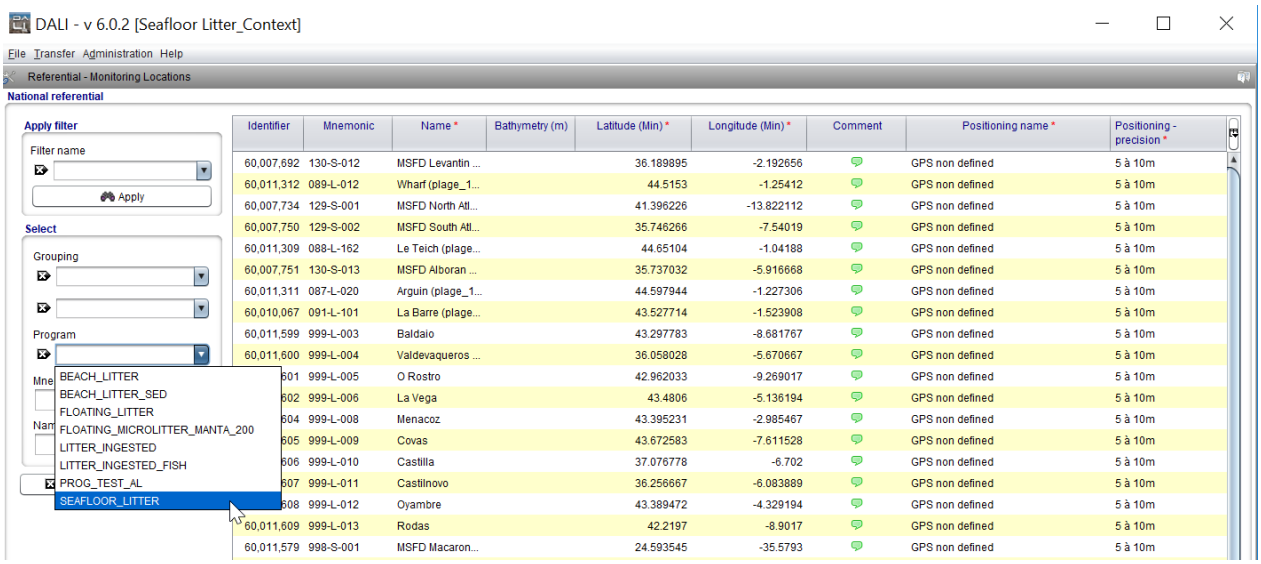


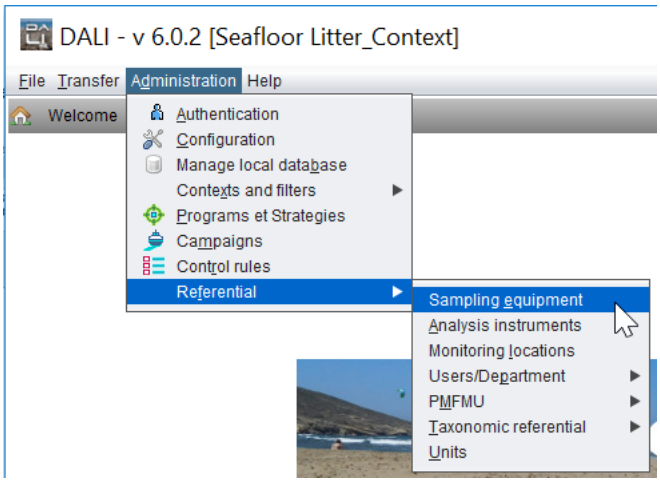
Figure 33: Administration/Reference data/Stations screen

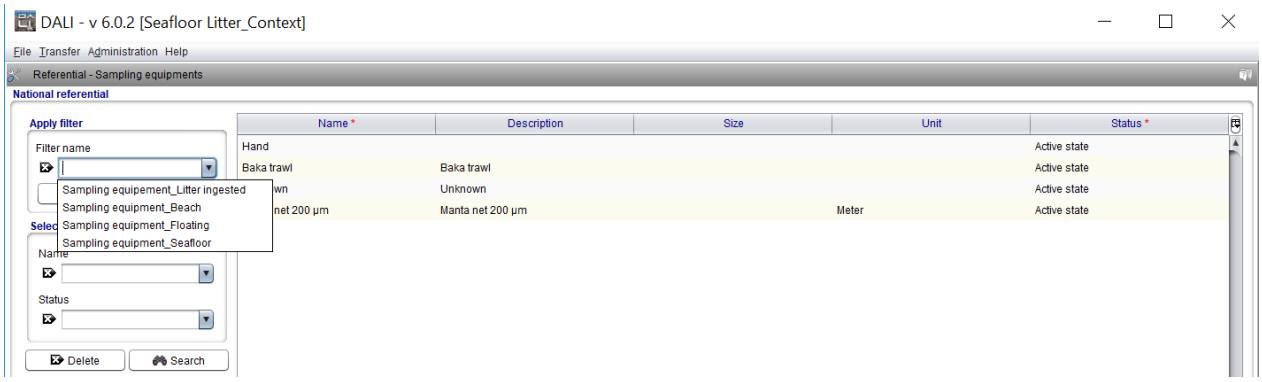
The creation of a new monitoring station involves at least attributing a name, a label, a latitude, a longitude (in decimal degrees WGS84), and the means used to obtain these coordinates.



d. SAMPLING EQUIPMENT

Sampling equipment groups the tools used to observe the environment or to sample material that will be analyzed.





e. Analysis intruments

Analysis devices group the tools used to analyze the sampled material.

2. Contexts and filters

The principle of creating filters and contexts is not mandatory. It facilitates data entry and at the same time makes it possible to reduce the reference datasets used to the elements required for programmes/strategies that you want to put in place.

a. Filters

The filter enables you to create a selection of elements of a referential, for example a set of stations, of PMFMUs, of services. Thereafter, using filters lets you simplify the data entry interface by creating drop-down lists that are limited (i.e., to the filter).

Filters are always built in the same way for all elements of referentials for which a filter can be created:

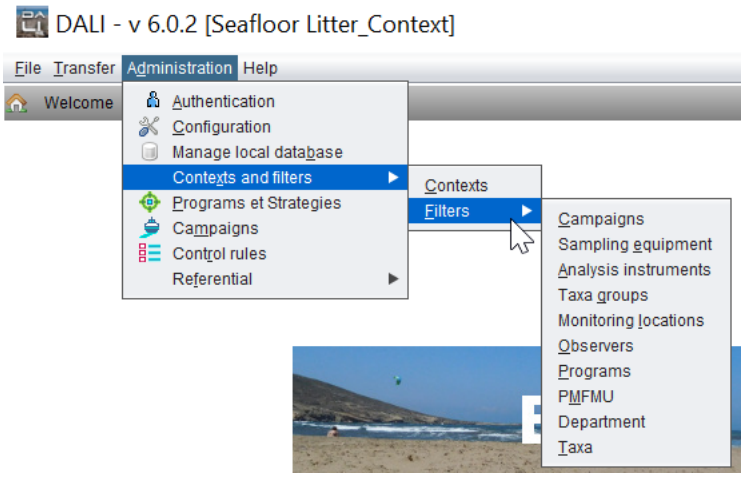


Figure 34: List of referentials for which filters are possible

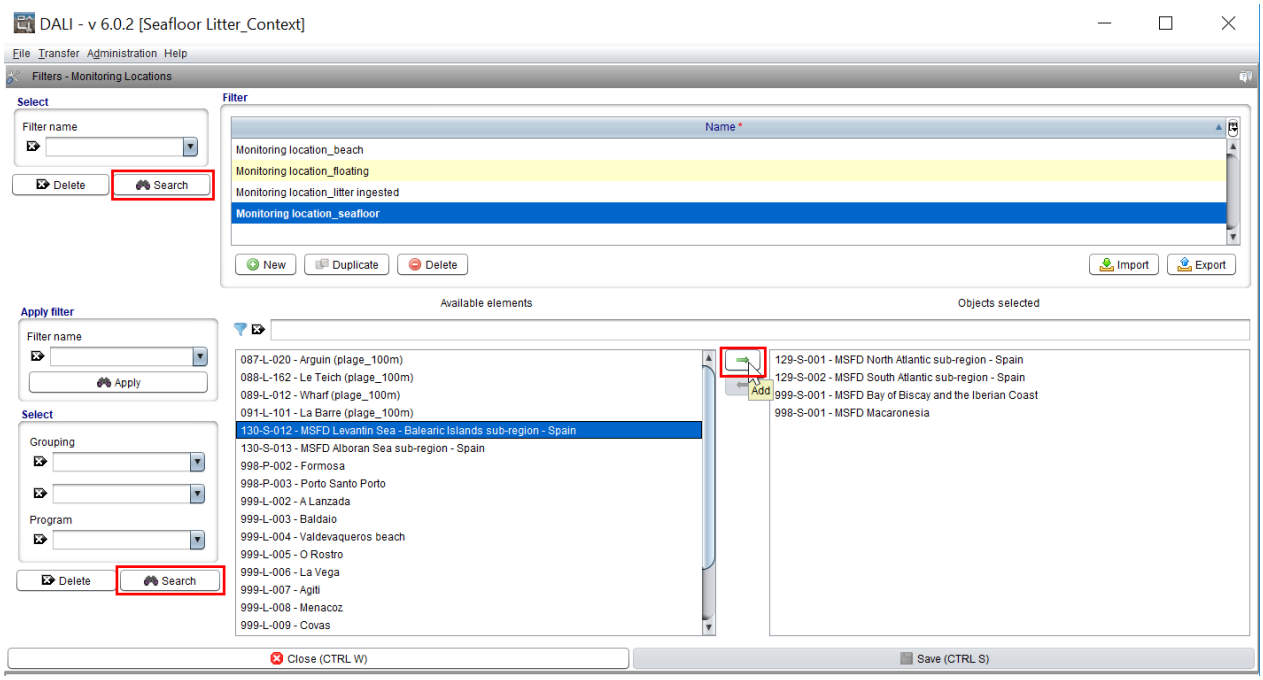
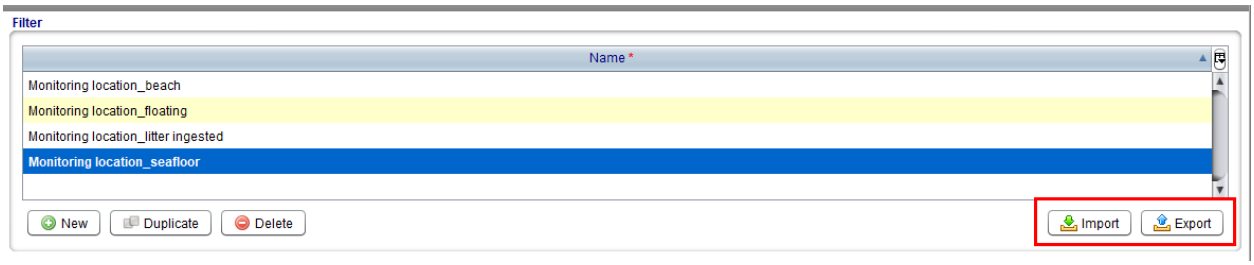


Figure 35: Administration/Filters and Contexts/Filters/Stations – filter creation steps

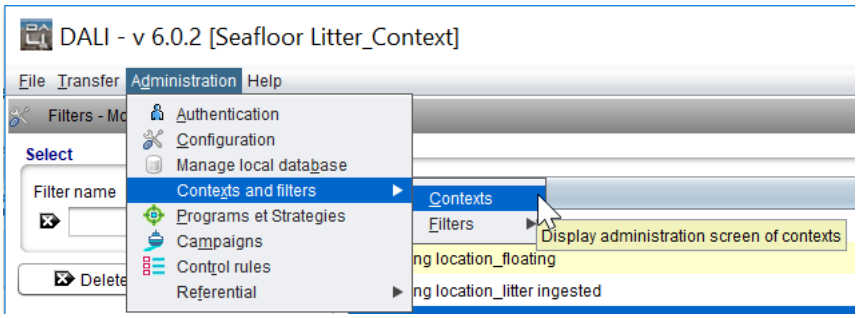
This is a filter on monitoring stations for seafloor monitoring surveys.

Filters, as well as contexts, can be **exchanged** between users thanks to the import/export buttons.



b. CONTEXT

The context groups a set of filters: it is a set of preferences. The default context is created by the programme responsible.



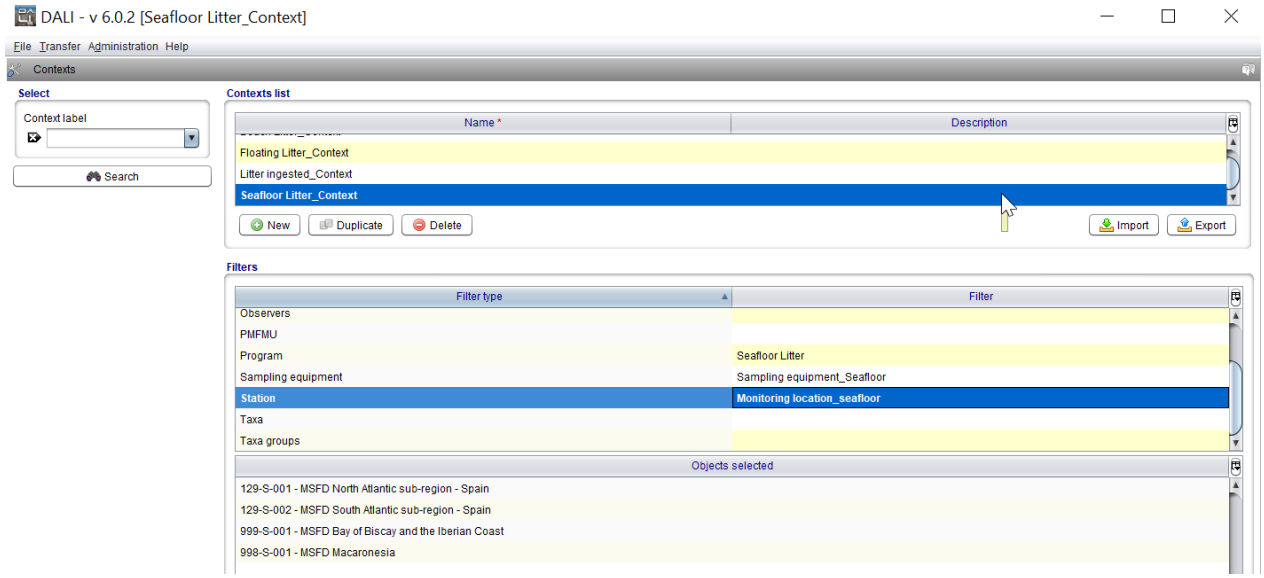


Figure 36: Administration/Filters and Contexts/Contexts screen

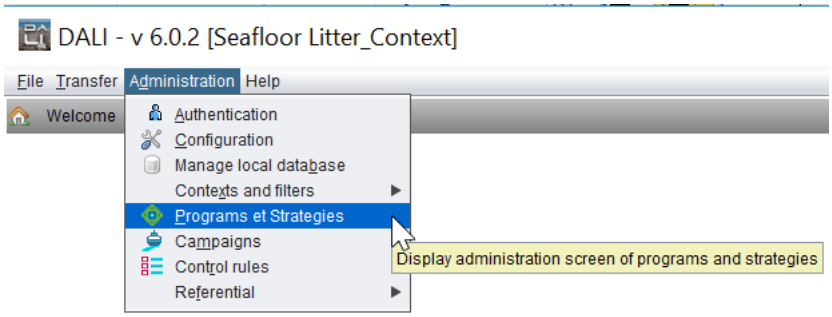
Since the context is based on existing filters, **a filter needs to be created before creating a context**.

The data entry person can create as many contexts as necessary. The "active" context is the last context used by the data entry person. Its name is always visible in the title of the data entry window.

3. PROGRAMMES AND STRATEGIES

The programme can also correspond to monitoring programmes over a long duration or to more time-specific programmes such as impact assessments or exceptional surveys.

A strategy corresponds to a list of parameters to be measured at one or more stations. It creates a framework for data entry by customizing screens and makes it easier and faster to consult the base. Thus, the definition of a strategy is based on setting up the referential to be associated.



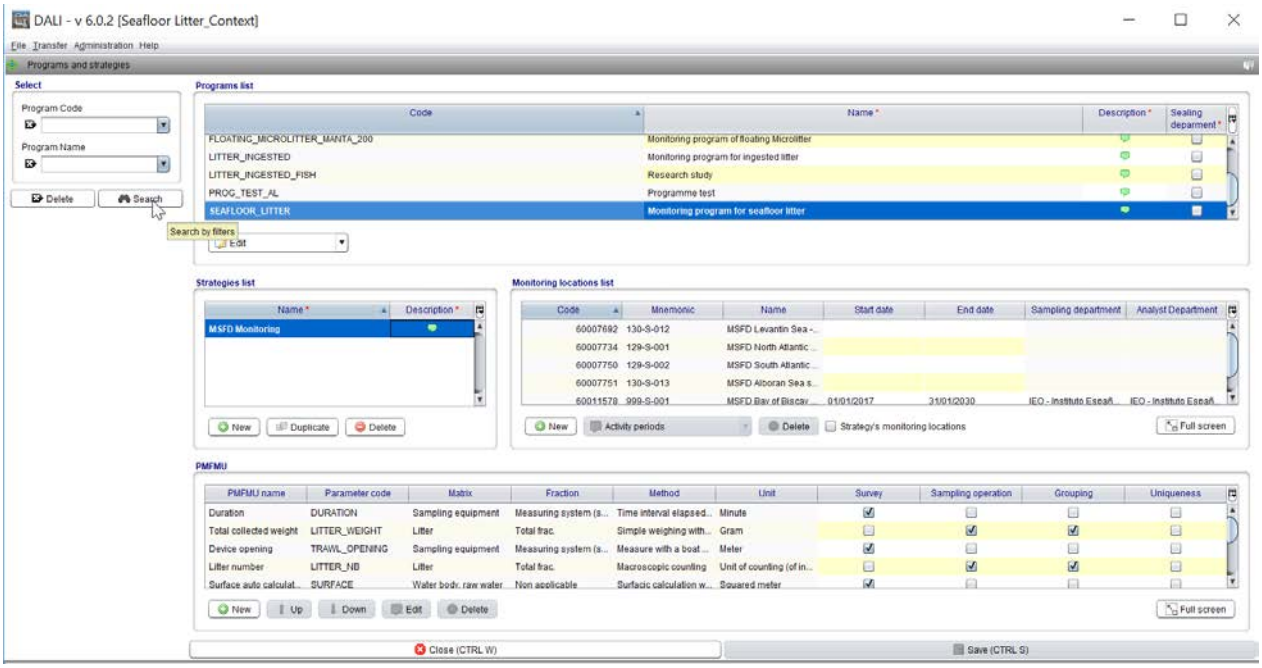


Figure 37: Administration/Programmes and Strategies screen

Through this screen (Figure 37), you can see the importance of creating stations and PMFMUs (Parameters/Matrix/Fractions/Methods/Units) before creating a strategy. These elements are part of the referential.

a. PROGRAMMES

A programme designates the activities which have led to the collection of a consistent dataset, either for monitoring networks or for studies limited over time. The amount of data attached to a programme can vary, depending on whether it is a long or intense activity, or a more short-term operation (study) but will always be implemented according to a protocol decided beforehand.

Note: the creation of a new programme requires a request to the administrator.

b. STRATEGIES

The strategy defines *a priori* what data should be present in the base depending on the programme at the origin of the data collection. It is the list of parameters to be measured at each sampling operation station, as well as the methods recommended for each of these parameters. Therefore, the strategy helps in entering data at a station by personalizing screens and facilitates quick consultation of the theoretical content of the base.

Programmes and strategies are managed on the same screen.

The steps for creating a strategy are:

1. Open Administration/Programmes and Strategies
2. Click on the programme to select it for adding new strategies

3. Click on  in the strategies panel

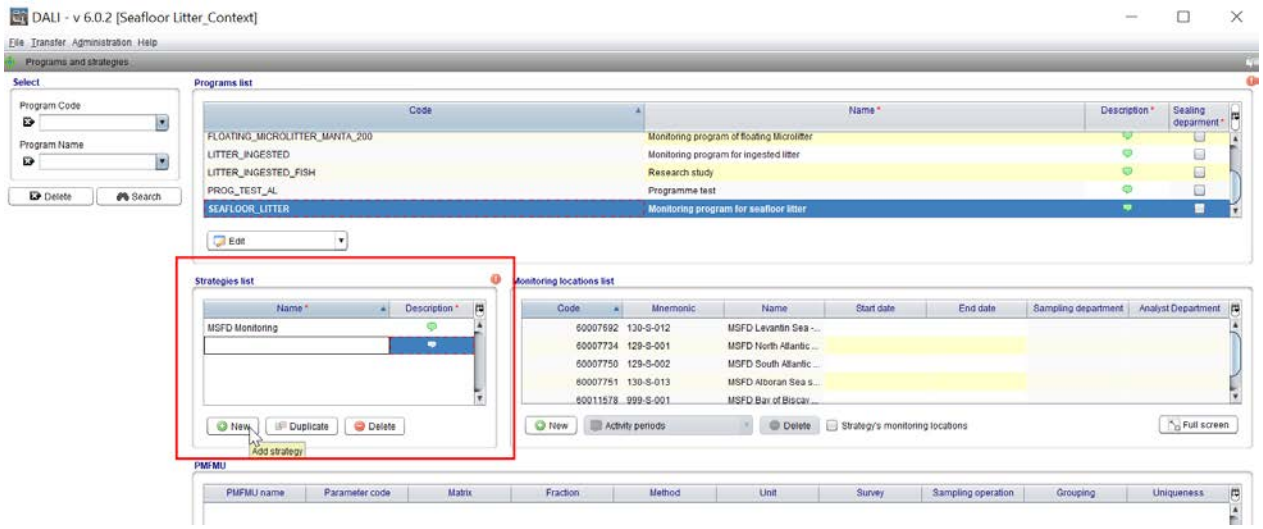


Figure 38: Administration/Programmes and Strategies – List of strategies

4. Define a strategy name and complete the description
5. Choose the monitoring stations associated with the strategy. It is **mandatory** to give the period of application of this strategy on stations (start/end dates) as well as sampler and analyst services.

Note: a monitoring station cannot be active on two strategies of the same programme at the same time.

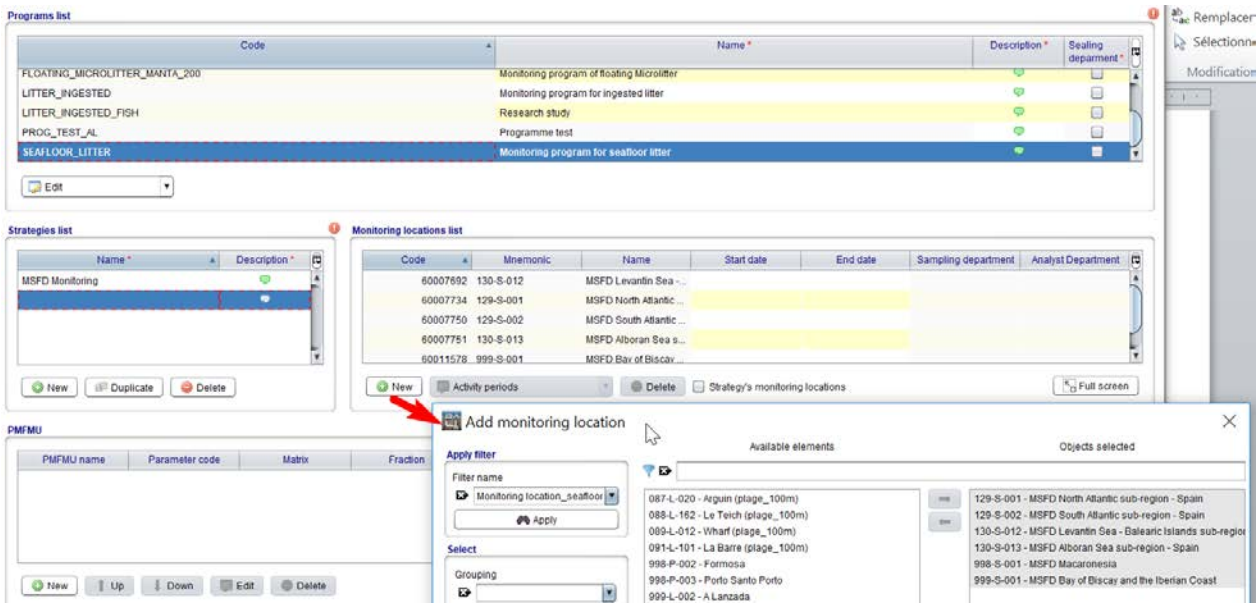


Figure 39: Administration/Programmes and Strategies – Choice of stations associated with the strategy

6. Choose the PSFMUs

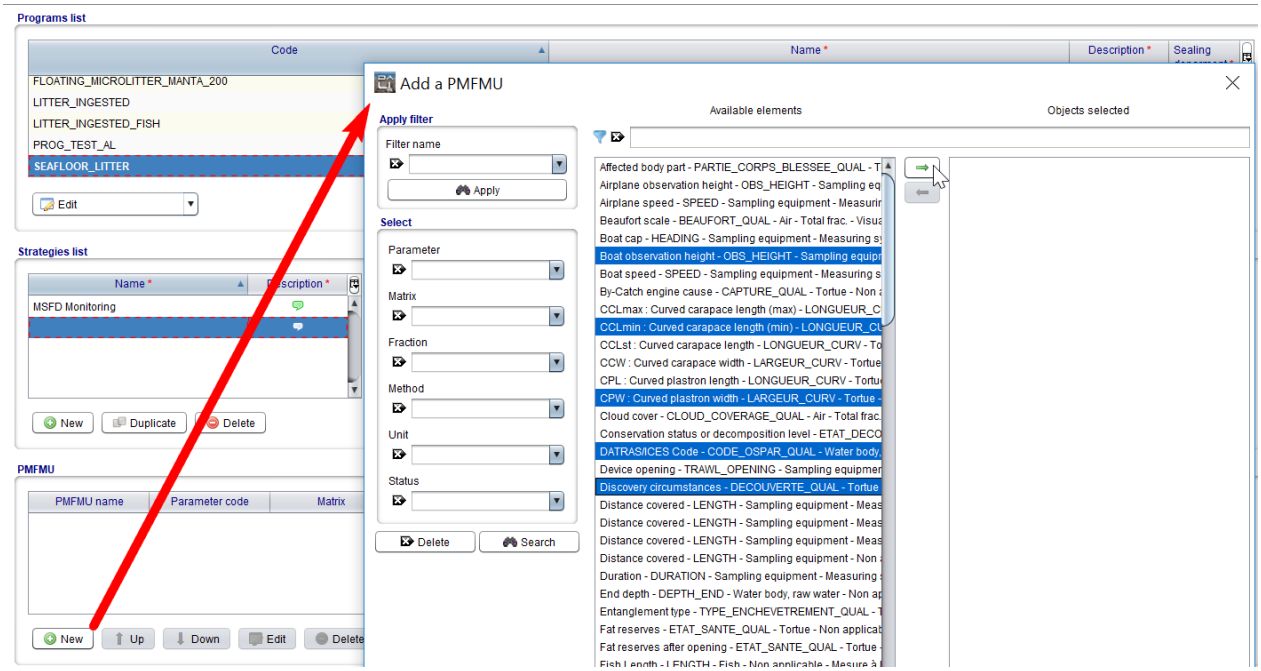


Figure 40: Administration/Programmes and Strategies – List of PMFMUs

For each parameter, you need to know whether it is associated with the survey or with the sampling operation. To do so, check the corresponding checkbox.

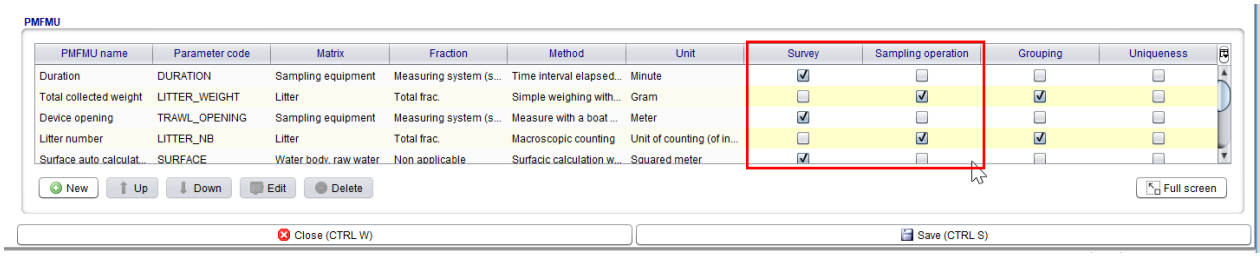


Figure 41: Administration/Programmes and Strategies – List of PSFMUs – data entry levels

The grouping checkbox lets you enter results in tabular form, i.e. several rows of results are possible for the same sampling operation.

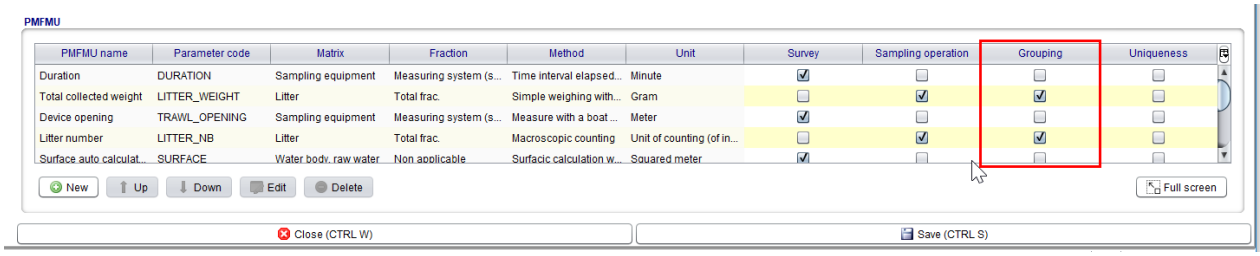


Figure 42: Example of parameters definition for seafloor litter

In the example, the parameters associated with the survey are parameters describing survey conditions. They are parameters whose result is unchanged during the survey (regardless of the sampling operation).

When entering data, parameters associated with the sampling operation and for which the grouping checkbox is checked, are displayed in a tabular layout.

Non-grouped parameters correspond to the results of a single measurement for a sampling operation. These parameters are entered at the level of sampling operation metadata.

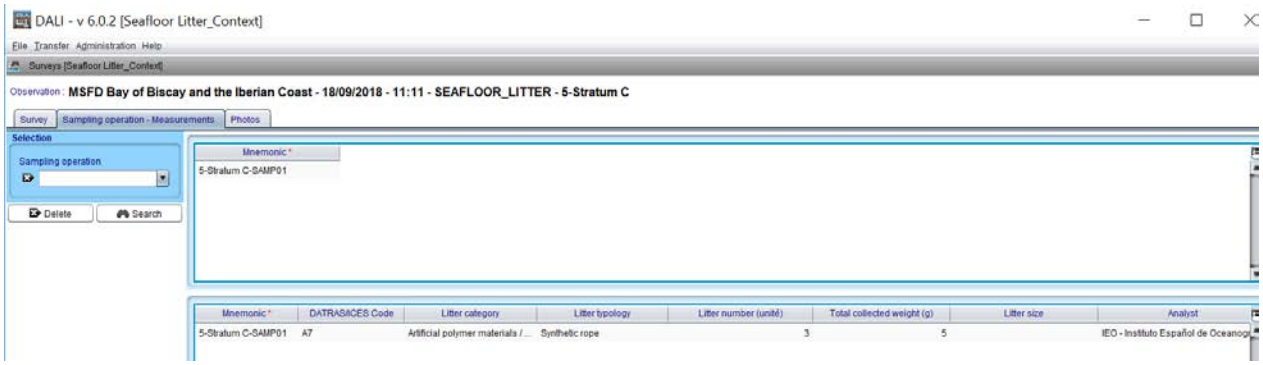


Figure 43: Data entry screen – example of data entry for grouped and non-grouped parameters

4. CAMPAIGNS

The campaign needs to be created before entering results.

Click on  and specify a survey label. Insofar as possible, consistency with preceding surveys should be maintained

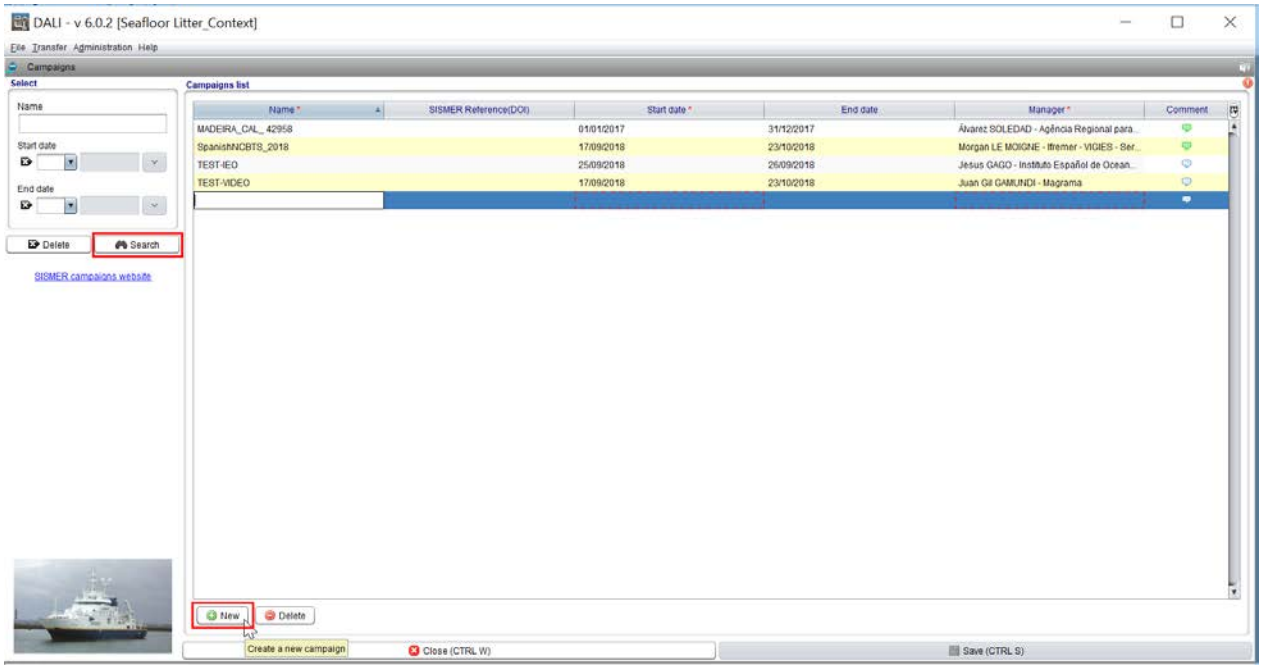
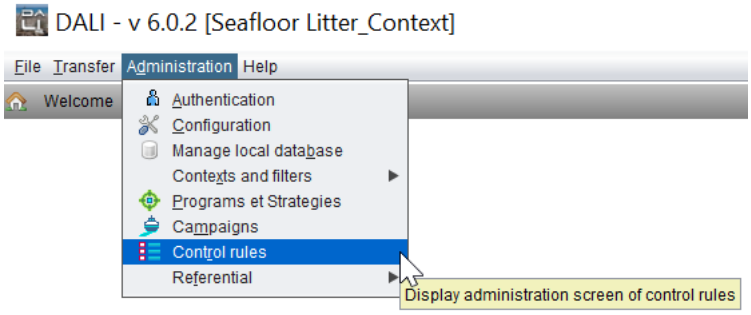


Figure 44: List of surveys

5. CONTROL RULES



Control rules correspond to rules that you want to apply when entering data. The programme officer manages these rules. It is at saving time that the application will verify that rules are fulfilled. Therefore, be careful to impose only the necessary rules, since the more rules there are, the longer the saving operation will take.

The rule can be blocking or not (checkbox).

If it is blocking, it will not be possible to save the record and the error message will be the one written in the insert provided for this purpose.

If the rule is not blocking, the warning message will appear at saving time but will not block the saving operation.

The programme officer chooses to set up these rules either because a parameter (for example, a weight) does not make sense if it is negative or equal to zero or to avoid typing errors.

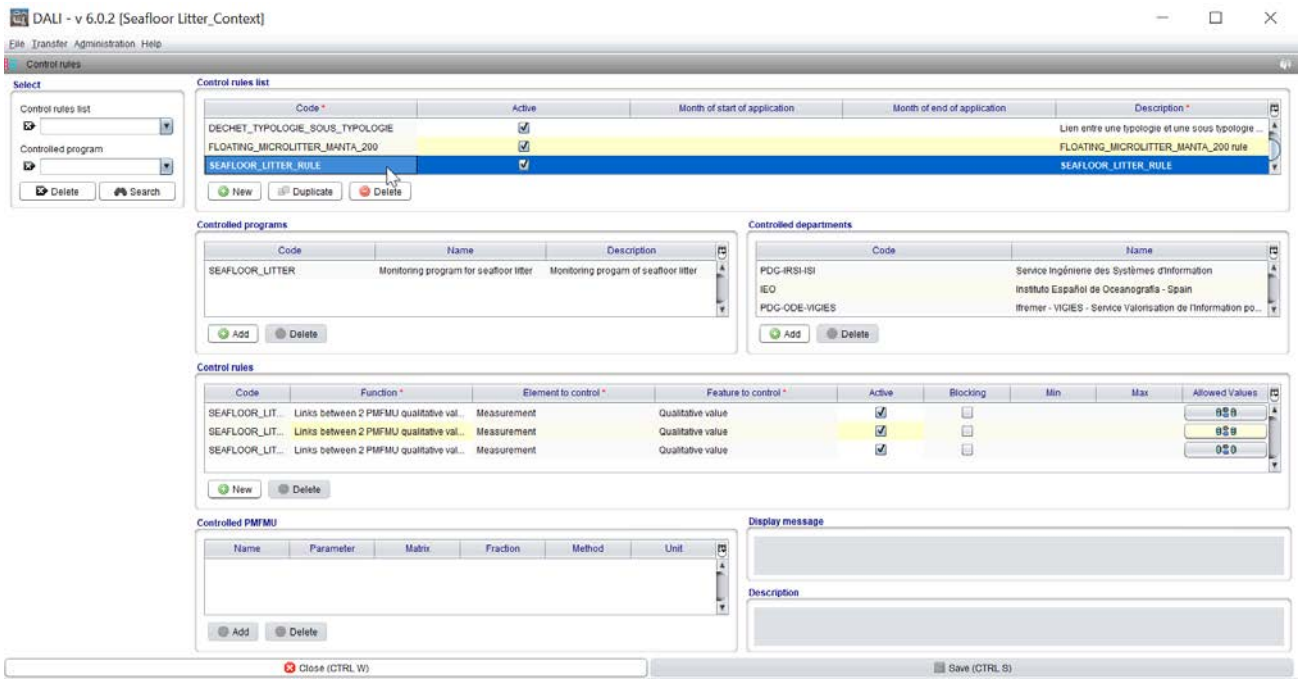


Figure 45: Administration/Control rules screen

Control / Validation

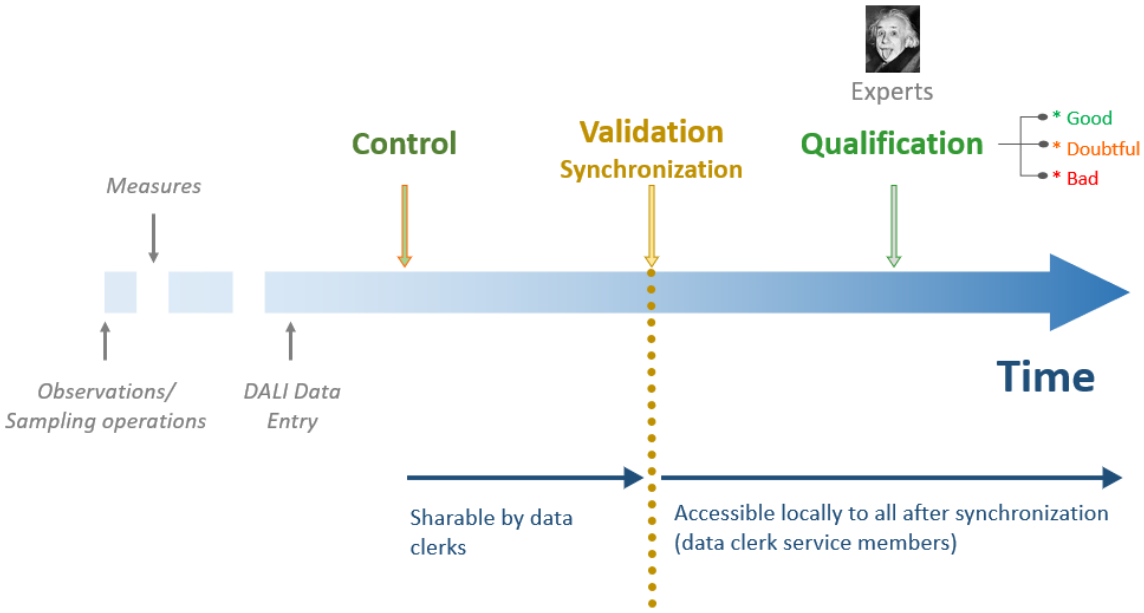


Figure 46: Data lifecycle mapping

1. CONTROL

The control is carried out by the data entry person. This control check is performed after the data entry, verifying the consistency between entered data in the base and field sheets. Any errors detected must be corrected immediately in the base. This step can be traced when entering data or importing a file (for example, when subcontracting).

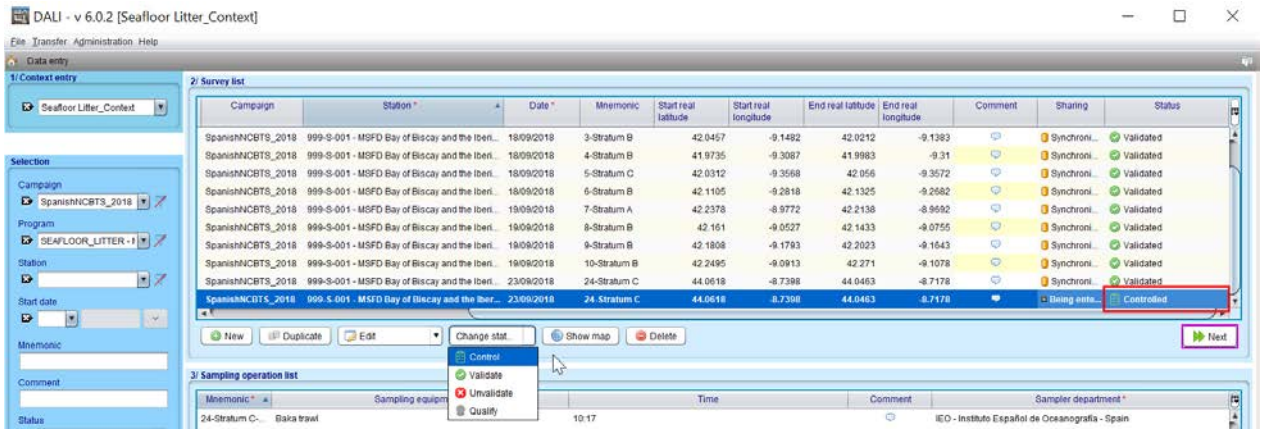


Figure 47: Data entry screen / Insert Surveys - Data control

It is possible to control several surveys at the same time. To do so, press the keyboard control key 

while selecting surveys. The Data control allows you to make the data spreadable by file (Figure 47).

2. VALIDATION

The validation is the action carried out by the validator, who must be recognized by the application as having the validator profile (see §3.1). The validation certifies that the control operation has been carried out.

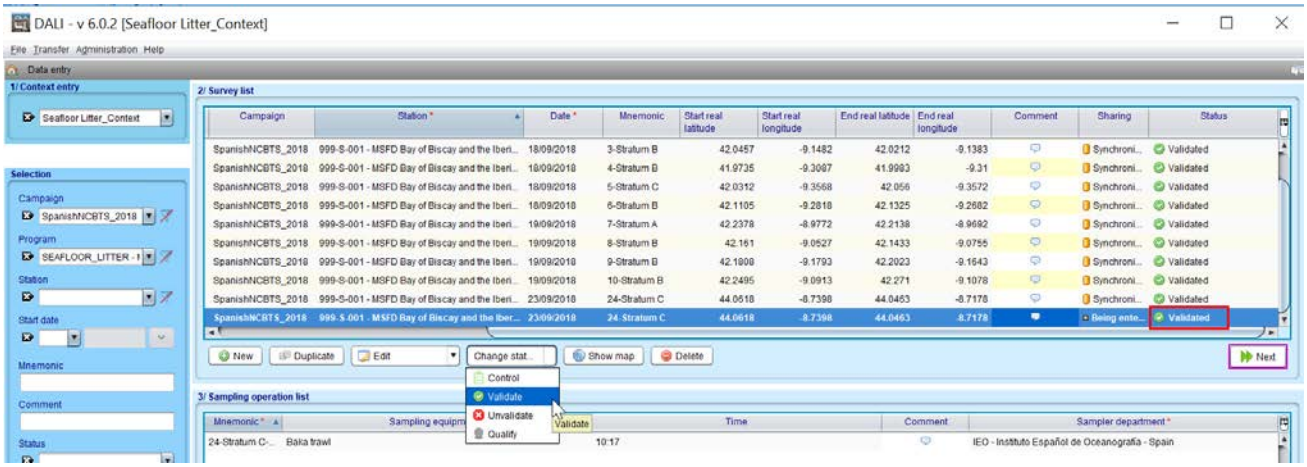


Figure 48: Data entry screen / Insert Surveys– Data validation

Validated data is accessible to all people in the data entry person service. As long as the data has not been validated, it is only accessible to the data entry person. Its validation is also a condition to allow synchronization with the national level for data belonging to national programmes.

As for control, it is possible to validate several surveys at the same time. To do so, press the keyboard control key 

while selecting the surveys.

A validated data is not modifiable. To be modified, data should first be unvalidated.

3. QUALIFICATION

The qualification concerns data synchronized in the central system. It is carried out *a posteriori* by a person holding the qualifier profile, along with experts from the field in question. This attributes a level of quality to the results. Data qualification can rely on several operations, for example, an expert's input, an automatic pre-qualification, statistical tests, conformity with the Statement of Work, etc. The qualification can lead to data modification while conserving the original data. A history of qualifications (nature, reason) is maintained by the system.

Export

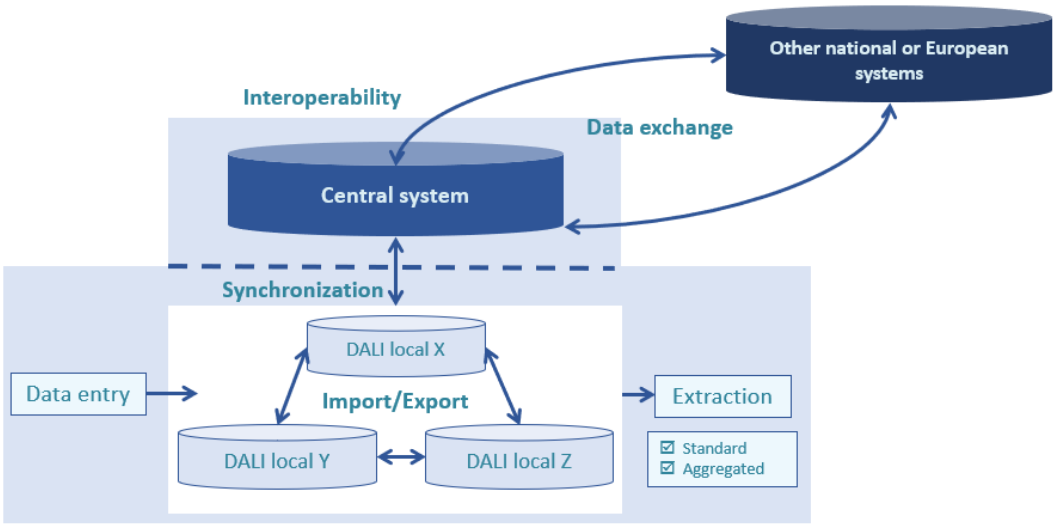


Figure 49: Mapping of the different levels of data exchange

1. LOCAL SHARING

Different people can take part in the data entry of a same programme. There is an exchange system in DALI to facilitate this sharing.

The process to transfer data from one computer to another meets several needs:

- Allow various actors to carry out simultaneous data entries on distinct local bases, following surveys made on the same day at the same station,
- Allow the implementation of the Control/Validate process between different actors (data entry persons, validators) working on distinct local bases.
- Allow the compilation of entered data on different computers into a single computer.

The transfer from one computer to another is managed through a simple exchange of files between users.

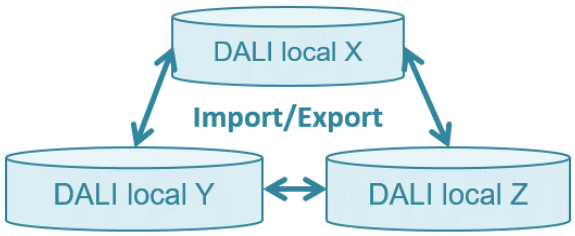


Figure 50: Computer by computer exchange

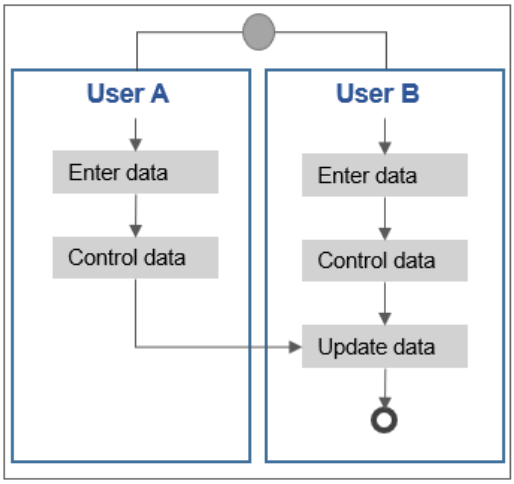


Figure 51: Simplified scheme of local data sharing on the same programme

Data entered on a computer A can be exported to a computer B through the menus File/Export to and File/Import from. The exported data correspond to surveys (and associated sampling operations) that are transferred. For that, the survey must have been controlled beforehand.

From the computer A: Data entry, control and export

In the surveys screen:

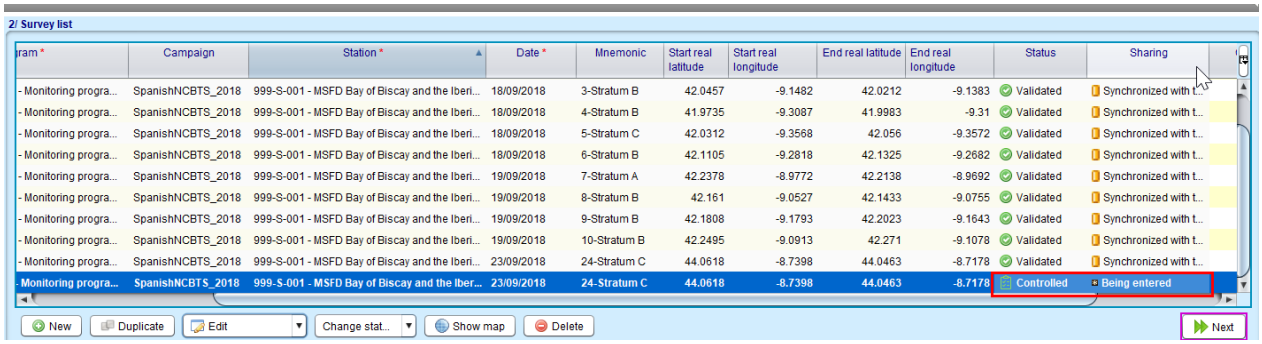
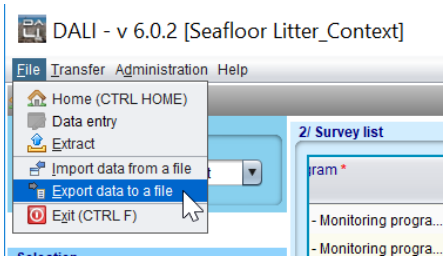


Figure 52: Date state

Once a survey has been controlled, it can be transferred. In the export screen, choose the programme for which you want to share data, then you can choose to transfer only data with the state “Being entered”.



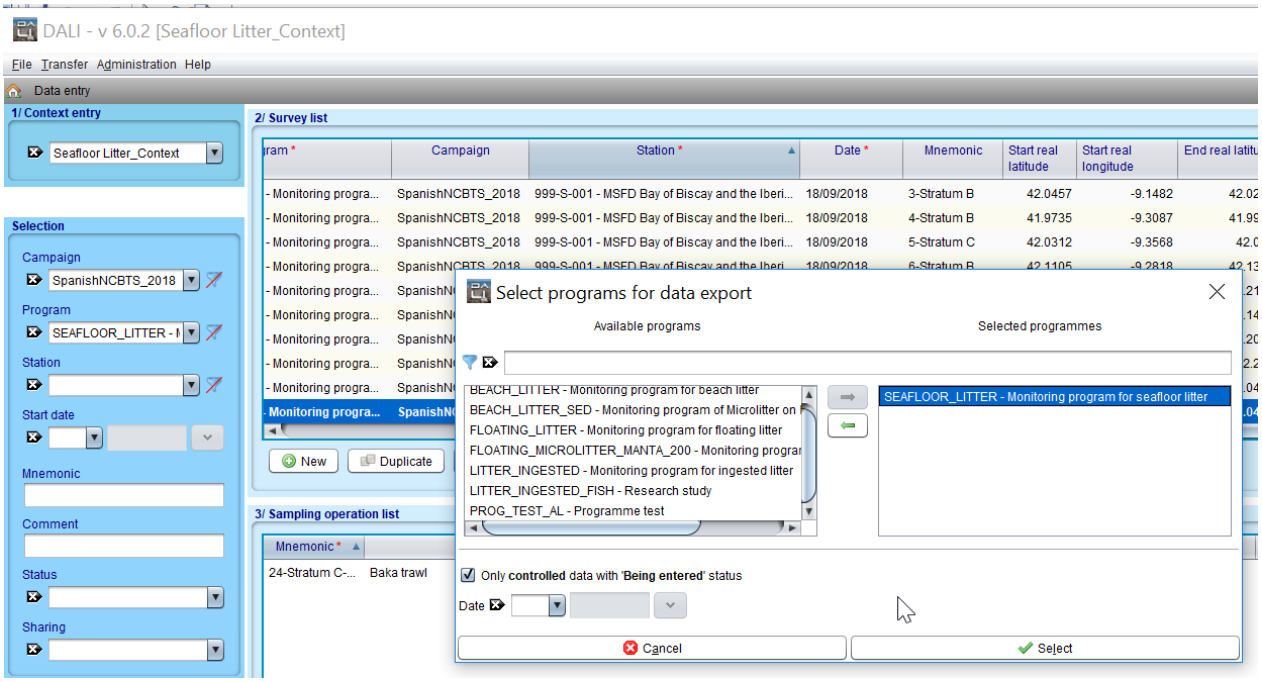


Figure 53: File/Export to/File-Data screen

A zipped folder is saved, to be imported on the computer B; Once the data is transferred, the field "Sharing" indicates that the survey is synchronized with a file:

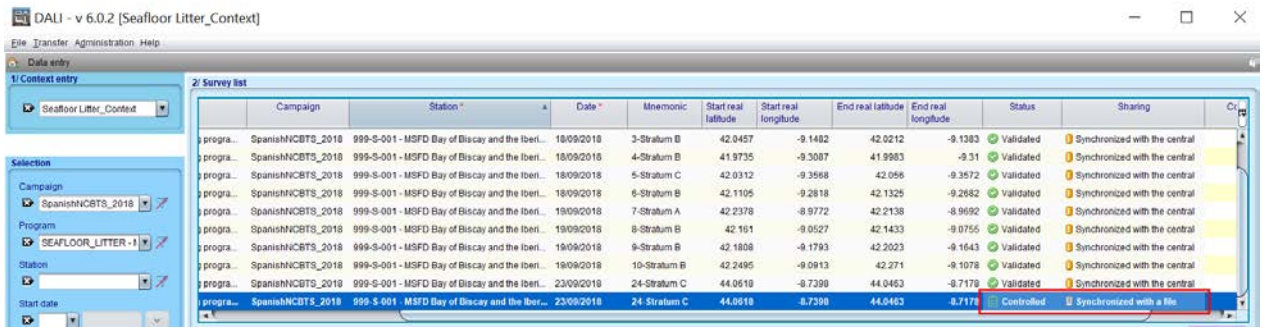


Figure 54: Data sharing

From the computer B: Data Import

You need to search for the zipped folder exported from the computer A, in File/Import from/File-Data. A window opens to indicate the number of surveys added:

In case of duplicates (survey already existing on computer B = same station, same date, same programme), the application informs the user of the presence of duplicates.

The user can visualize duplicated surveys and select those to import.

Note: Concomitant data entry by various users on same programme is possible in the case of data attached to a national programme through the process of data synchronization with the central system. But the data need to be validated beforehand.

Do not confuse:

1/ The Transfer/Import or Export menu that enables you to synchronize with the central system and to push surveys up to the national level, with

2/ The File/Import from or Export to menu that allows surveys to be transferred computer by computer.

In both cases, the "synchronization log file" informs the user of the latest transfer, imports and export carried out.

2. CENTRAL SYNCHRONIZATION

The synchronization consists in pushing data from the local system (local database) to the central system.

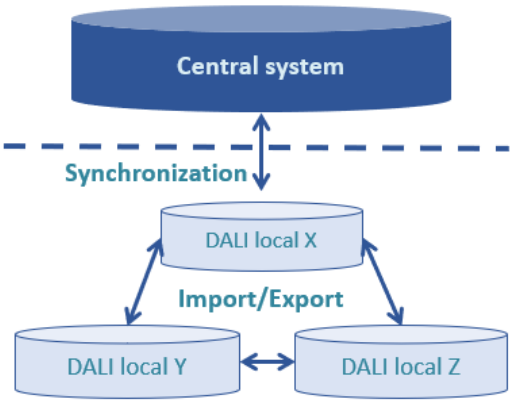
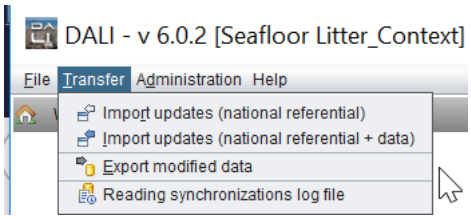


Figure 55: Synchronization with the central system

Conversely, it is the way for users and data producers to get feedback from the national level, such as the level of quality associated with the results (See qualification process §8.3).

Data entered on a computer can be synchronized with the central system through the Transfer/Import or Export menu.



- Import: Surveys (and associated sampling operations) are updated on the user's computer with the last modifications carried out in the central base since the last import.
- Export: Surveys previously **validated** (and associated sampling operations) that have been added or modified since the last export are exported to the central system.

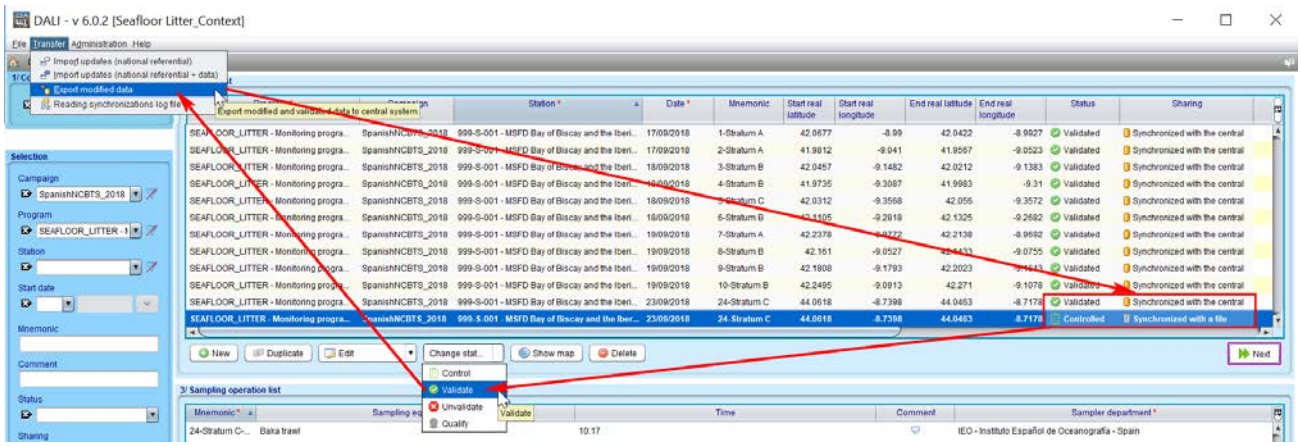


Figure 56 : Sharing when synchronizing with the central system

When data is exported, the field "Sharing" indicates that the survey is synchronized with the central system.

If a survey has been modified simultaneously in the central base and on the user's computer, then the survey export is not done. The application will suggest:

- To replace user modifications with data from the central system and consequently to lose these modifications,
- Or to conserve user modifications and to replace data from the central system at the next export,
- Or to decide later.

Annex

Minimum requirements for a DALI computer:

- Operating System:
  - Microsoft Windows XP (Family Edition, Professional Edition, Media Center Edition and for Tablet-PC) with Service Pack 2 (SP2 or higher)
  - Microsoft Windows Vista
  - Microsoft Windows 7
  - Microsoft Windows 8
  - Microsoft Windows 10
- Internet connection (minimum bandwidth required):
  - 2 Mbp/s (reception)
  - 1 Mbp/s (emission)
- Material:
  - PC with at least 2GHz processor (at least Dual Core processor)
  - RAM: 6 Gb
  - Hard disk space available: 1.1 Gb (600 Mb for the installation and use + 500 Mb of space for data storage) – SSD disk recommended
  - Screen size: at least 17 inches (recommended: 21 inches)
  - Screen resolution:
    - Minimum vertical resolution: 1,024 pixels
    - Minimum horizontal resolution: 1,280 pixels

ANNEX 5 – Data entry instructions

CleanAtlantic

Tackling Marine Litter in the Atlantic Area

Instructions for entering Beach Litter data in Data Litter software connected to a PostGreSQL Database

WP 5.1.3 : IT Developments

Ifremer
Interreg Atlantic Area European Regional Development Fund
EUROPEAN UNION
Clean Atlantic

WP	5
Action	1.3
last updated	25/08/2020
version	1
authors	Morgan Le Moigne – ODE/VIGIES Ifremer
participants	Alice Lamoureux & Arnaud Rouilly – ODE/VIGIES Ifremer, Stéphane Bocandé (ISI/IRSI) Ifremer,

Disclaimer

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Foreword

DAta LItter is a software developed to enter data on Marine Litter topic. This software is connected to a PostGreSQL database to enable **harmonised and sustainable data storage**.

This document specifies instructions for entering Beach litter data collected *via* MSFD Beach litter Monitoring Program, from Guideline TSG_ML 2013 which is itself based on the OSPAR protocol for surveying 100 m stretches of beach.

Two data sources have been tested :

1. An extraction from OSPAR BEACH DATABASE – ***Spain_Extraction_2018-2019.xls file*** - Data from A Lanzada (2018 & 2019) and Agiti (2019) have been entered
2. Two field sheets sent by Juan Gil Gamundi from Miteco – ***A Lanzada – Winter 2020 & Rodas – Winter 2020***

They are both provided with the database.

Installation / Launch

Unzipped the **dali_val_postgresql.zip** folder on your computer and double-click on the two other folders. Then, you can launch **Dali.exe** every time.

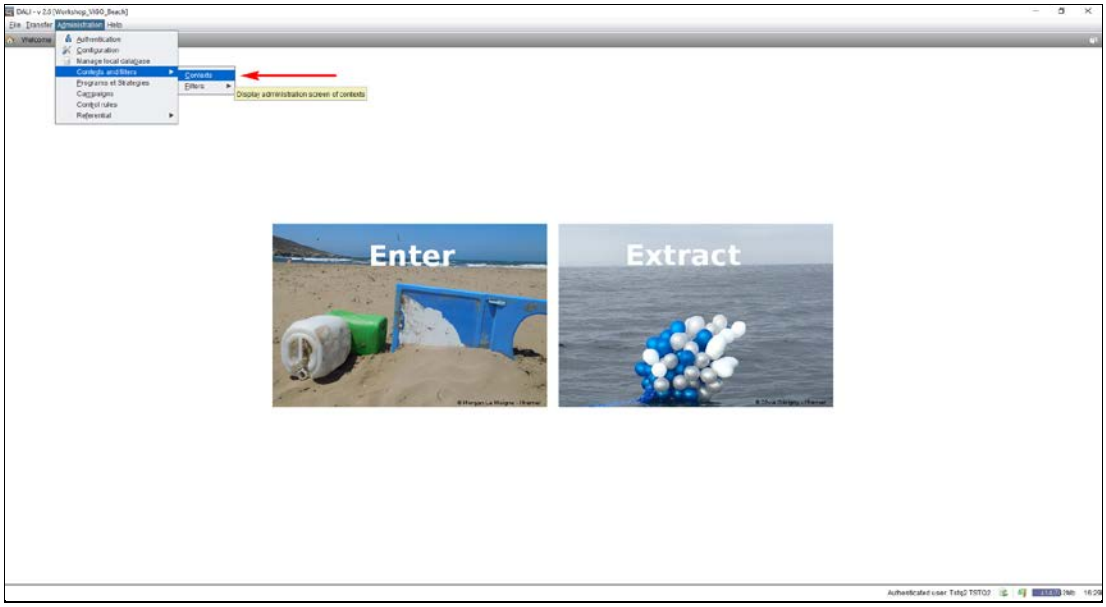
Enter your **login** and **password** sent by **assistance@ifremer.fr on 24/08/2020**.

Prerequisite for data entry

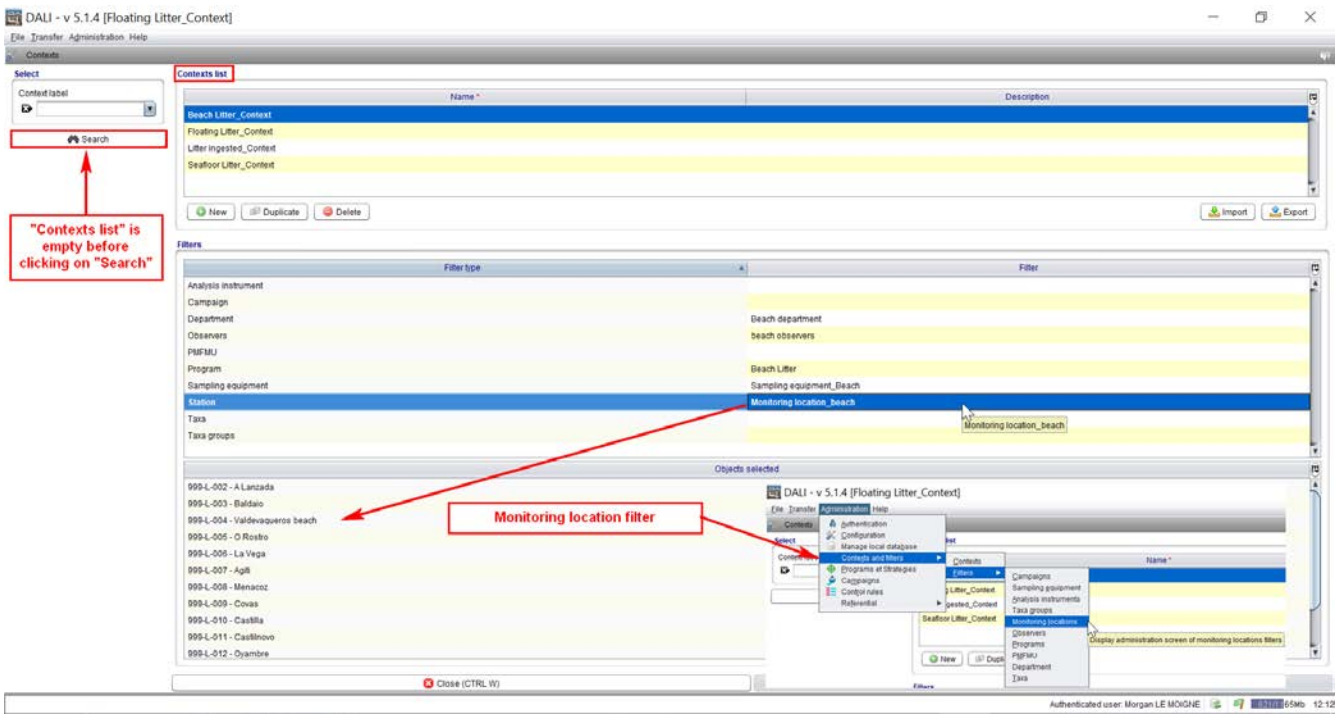
In order to enter data in the software, the user needs to refer to the proper **program** and the associated **strategy**. For beach litter, the program is **BEACH_LITTER - Monitoring program for beach litter** and the strategy is **MSFD Monitoring.**

1. CONTEXT / FILTERS

To facilitate data entry **user can create a "user context"**. This context is obtained by applying several filters targeting the metadata & data to be entered (monitoring location, data responsible, service,…). **To facilitate this test phase, the user context *Beach Litter_Context* is provided in this software**:



The different available contexts are displaying by following the steps below :



The content of the filters can be consulted by clicking on one of them.

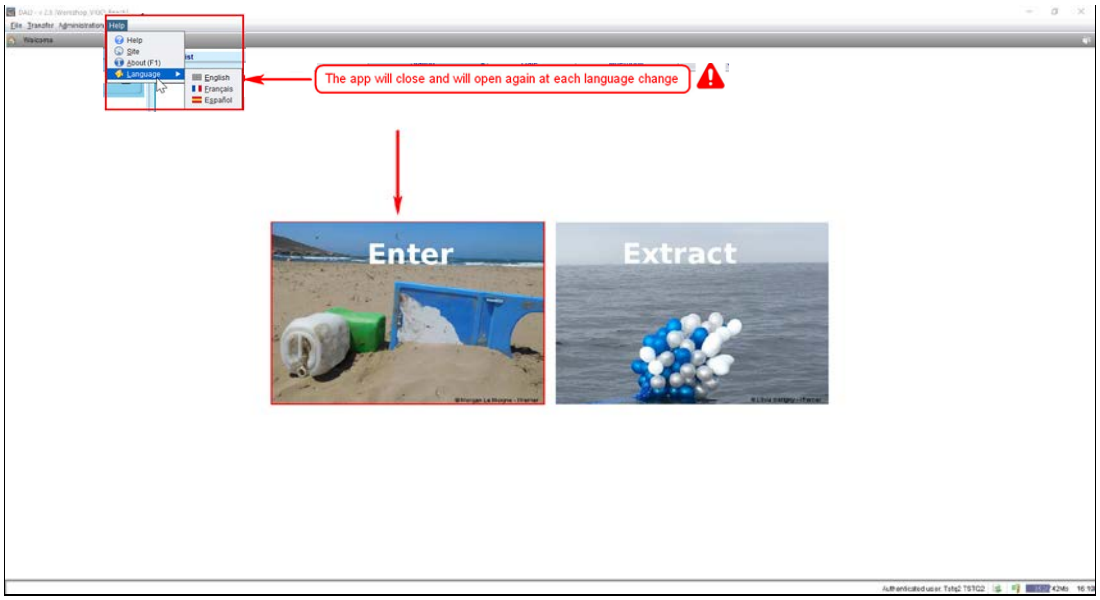
As the referential management functionalities are not developed yet, the filters modification is limited to add or delete existant values from the referential to the filter's list.

This feature will be available at the beginning of 2021.

The referential contents are based on historical datas and current protocols. You can create your own filters using the tab "Administration">"Filters"

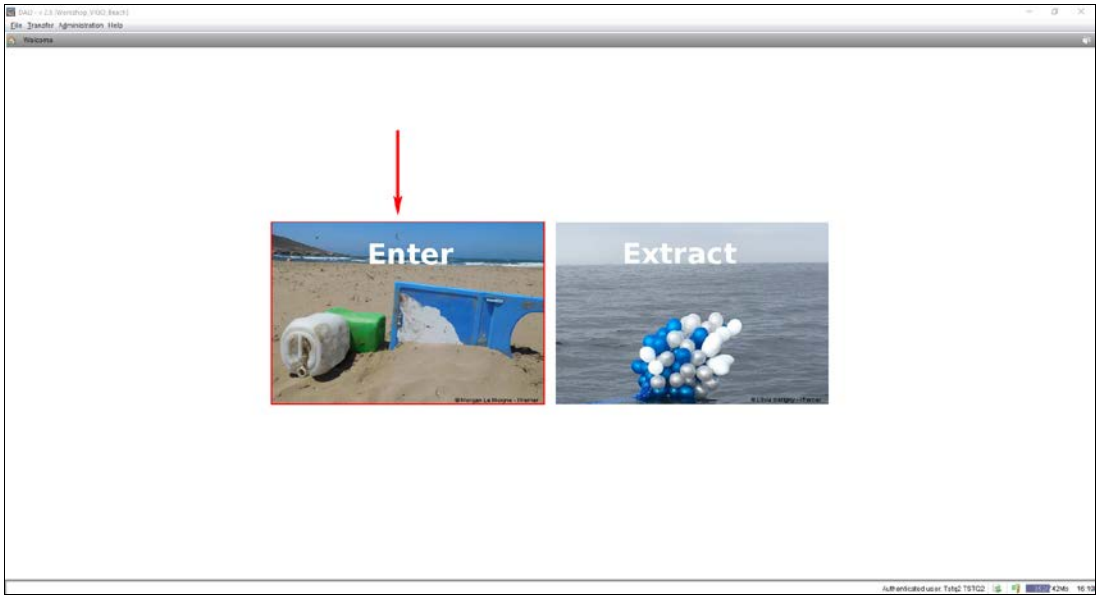
2. DATA ENTRY WINDOW

You can select your language (English, French or Spanish) in the **Help** tab :

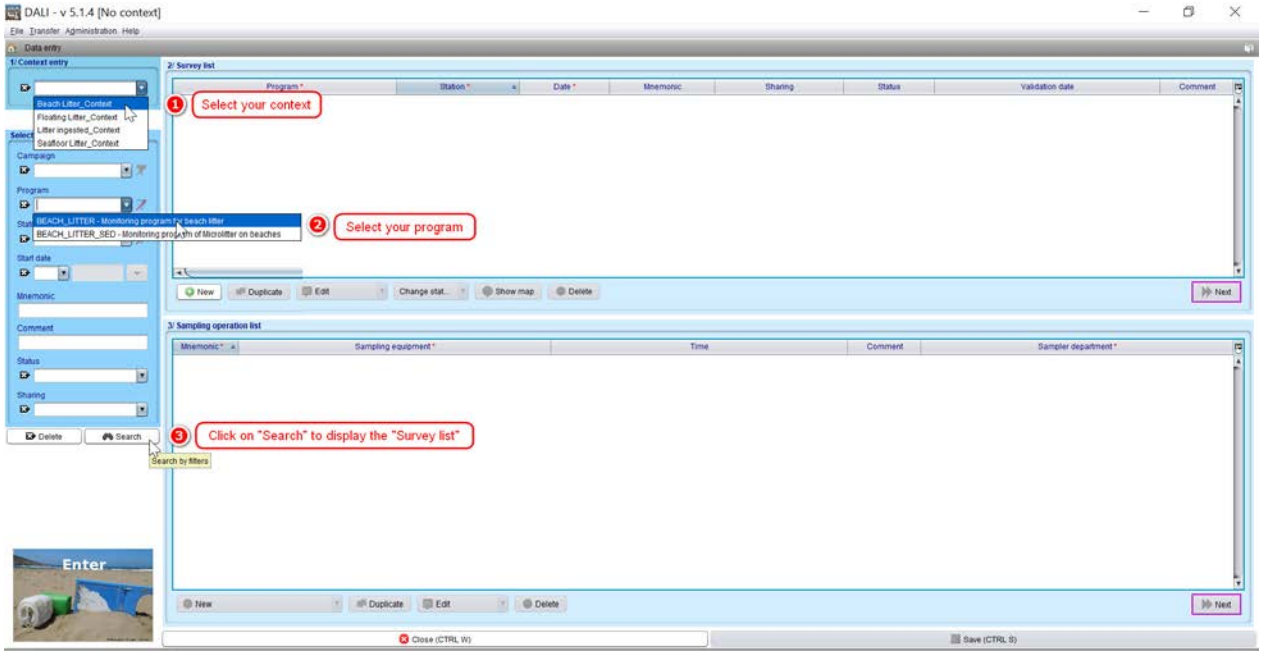


In this test phase, you may encounter different traduction or traduction missing due to the difference between traduction of the software and traduction of the data enter. Don't hesitate to let us know.

Open the entry window by clicking on the picture:

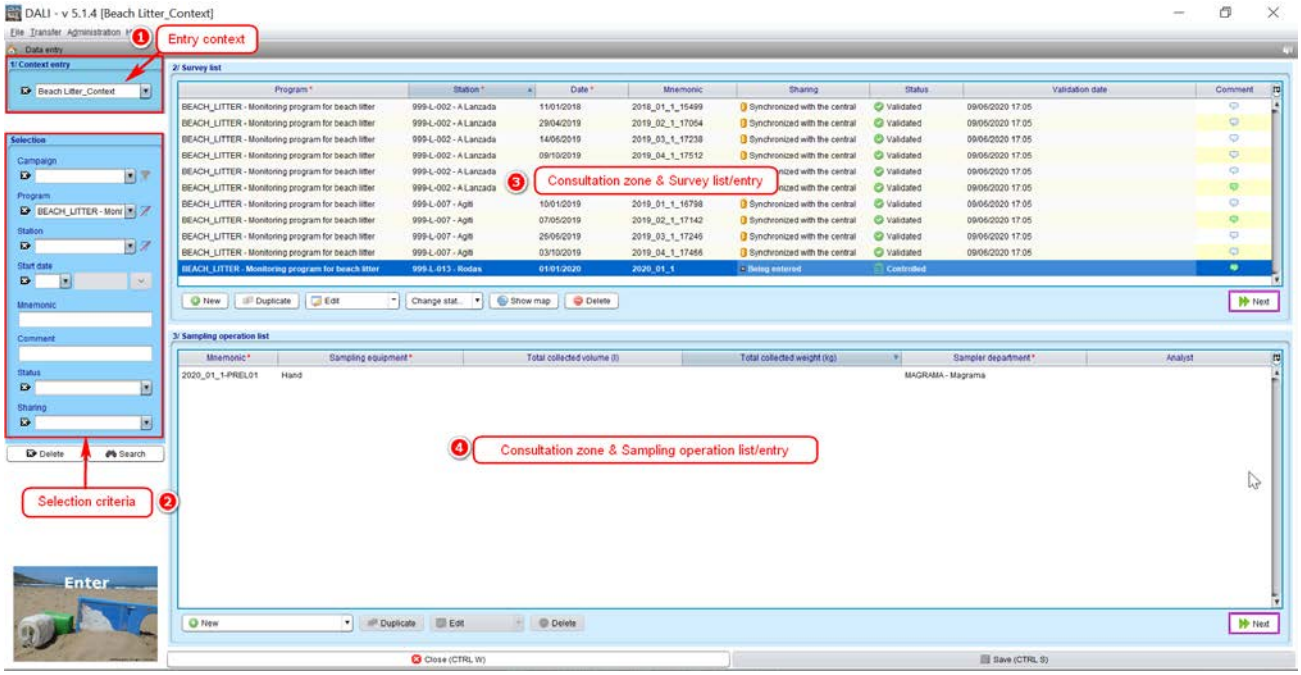


Then, to display your data, select the properly context and click on **Search**:



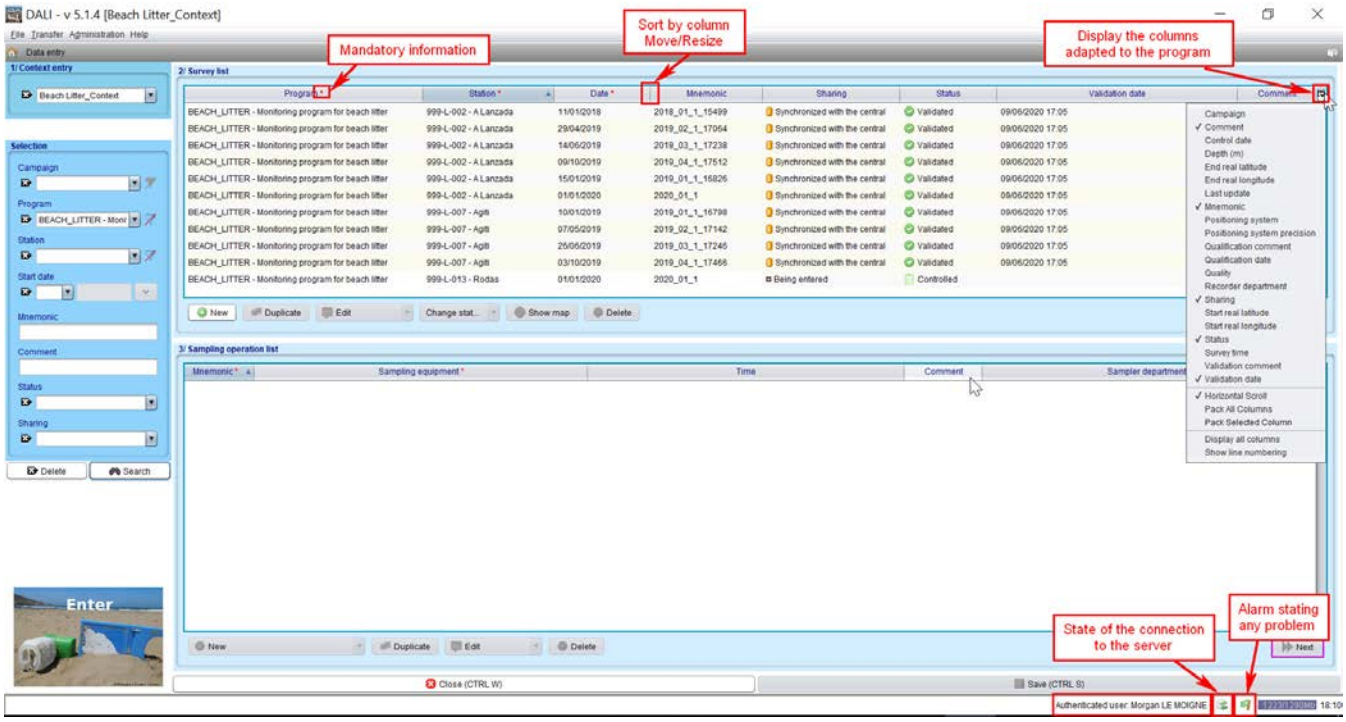
The main data entry window in the software is organized into four parts:

1) The choice of entry context is located at the top left
2) Beneath, the search window which can be used to refine which data is displayed according to filters
3) The list of survey at the top right
4) Beneath, the list of sampling operations



3. TIPS AND HINTS

The screenshot below shows the functions you need to enter data & metadata.



Important to notice : the order of the columns can also be changed by clicking and draging the column from its original place to the desired position. To sort the rows of the table according to a column, click on the column name : first click cross sorting, second click: descending sorting.

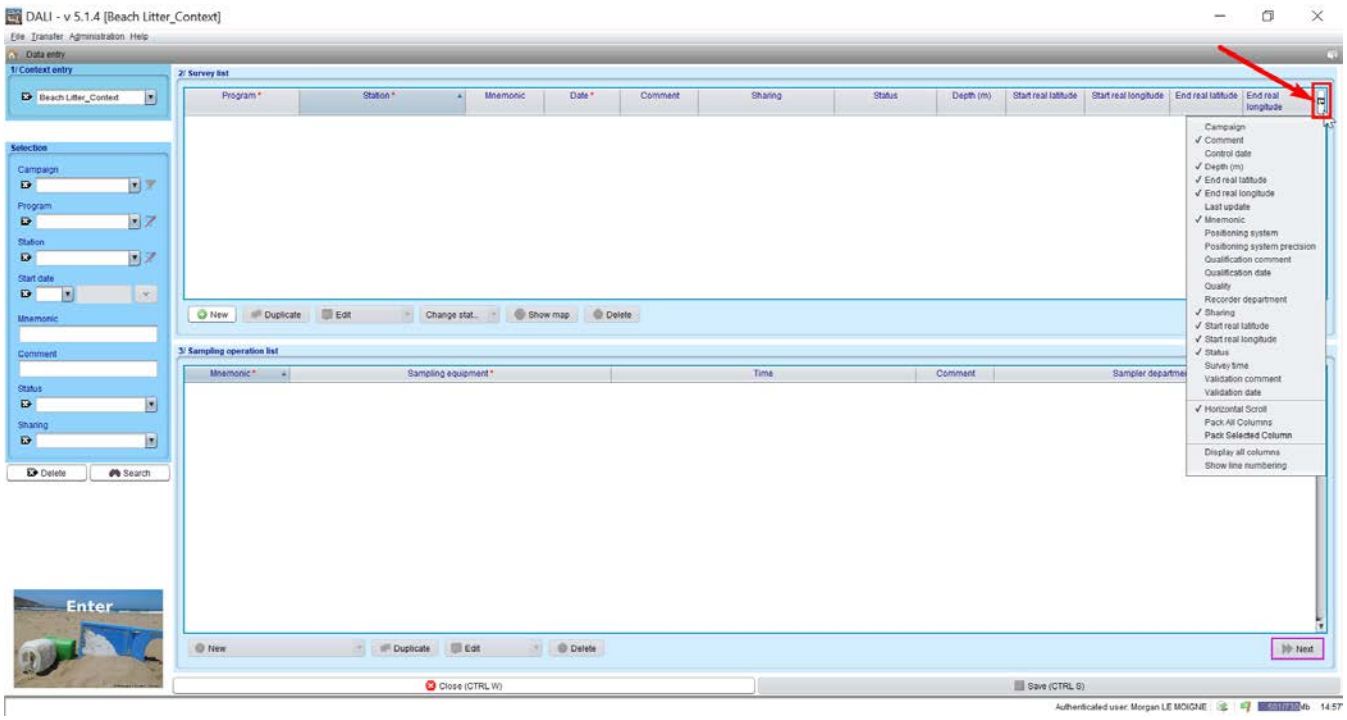
4. MAPPING TABLE

The mapping table below shows in the **left column**, the fields and parameters used in BEACH_LITTER monitoring program and in the **right column**, the originating fields from the source file.

This will help to understand how data have been entered in this test phase.

DALI Database Fields	Fields from OSPAR Beach Database extraction & Field Sheets from MITECO	
1st Tab - *Survey list*		
Program	DALI adding	
Station	Beach name	
Mnemonic	YYYY_Period_NB surveys_Survey ID	
Date	Survey date	
Comment	Comment (if any)	
Sampling operation list		
Mnemonic	Survey Mnemonic-PREL Nb	
Sampling equipment	DALI adding	
Comment	Comment (if any)	
Sampler department - ***Field automatically completed from strategy information***	MAGRAMA	
2nd Tab - *Survey*		
Comment	From Period column (-1) + anything else	
Observer(s)	Survey entered by	
3rd Tab - *Sampling operation - Measurements*		
Mnemonic	Sampling operation Mnemonic	
OSPAR Code	OSPAR Codes	Fields refering to Cedre correspondance xls file with TG-ML List 2019
MSFD Code - ***Field automatically completed from OSPAR Code***	TG-ML Codes	
Litter category - ***Field automatically completed from MSFD Code***	Level_1_ Materials from 2019 TG-ML list	
Litter typology - ***Field automatically completed from MSFD Code***	General type from Cedre xls file	
Litter sub-typology - ***Field automatically completed from MSFD Code***	Specific type from Cedre xls file	
Litter size - ***Field automatically completed from MSFD Code***	Size	
Litter number	N_items	
Comment	Survey: Remarks [999] (if any)	
Analyst - ***Field automatically completed from strategy information***	MAGRAMA	

Before starting any entering action, pay attention to make sure that all the fields of the surveys are correctly displayed on the screen matching with the survey fields described above. The display is done using the button at the top right of the screen.



Entering Surveys

Surveys are entered in the upper part of the software screen.

To create a new survey, click on 

. An empty survey line is created. The columns displayed in the list of surveys make up the basic elements which can be entered.

For each survey to enter, perform the following operations:

- Select the **Station** (previously included in the referential)
- **Specify the date of the Survey** *via* the calendar or manually
- **Select the program** (BEACH_LITTER – Monitoring program for beach litter)
- **Specify a survey mnemonic code**. The mnemonic code can follow the following writing convention **YYYY_S_N_SURVEY ID** where:
  - YYYY is the year of the survey, *e.g.: 2017*
  - S is the number of the season* preceded by 0, *e.g.: 01, 02, 03 or 04*
  - N is a survey number to be incremented in the case where several observations have been made during the same season
  - SURVEY ID is the number indicated in OSPAR Beach litter database.

For example: During the second quarter (April to June) of the year 2017, two surveys have been made on the same beach. They are identified by the mnemonic codes 2017_02_1 and 2017_02_2.

- **Make a comment** (optional). This comment will provide information about the general conditions during the survey, or about issues related to the survey data.

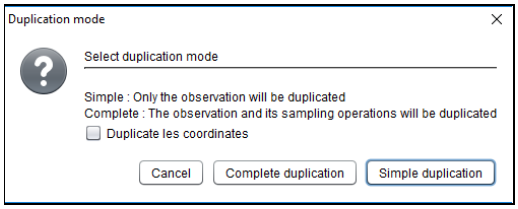
Once the survey has been entered, click on 

to create a sampling operation.

To delete a survey, click on: 

A survey can also be **duplicated**. Select the survey to duplicate and click on: 

A **simple duplication** or a **complete duplication** of the survey is posible. The complete duplication means that you will duplicate the survey **and** its sampling operation.



Entering sampling operations

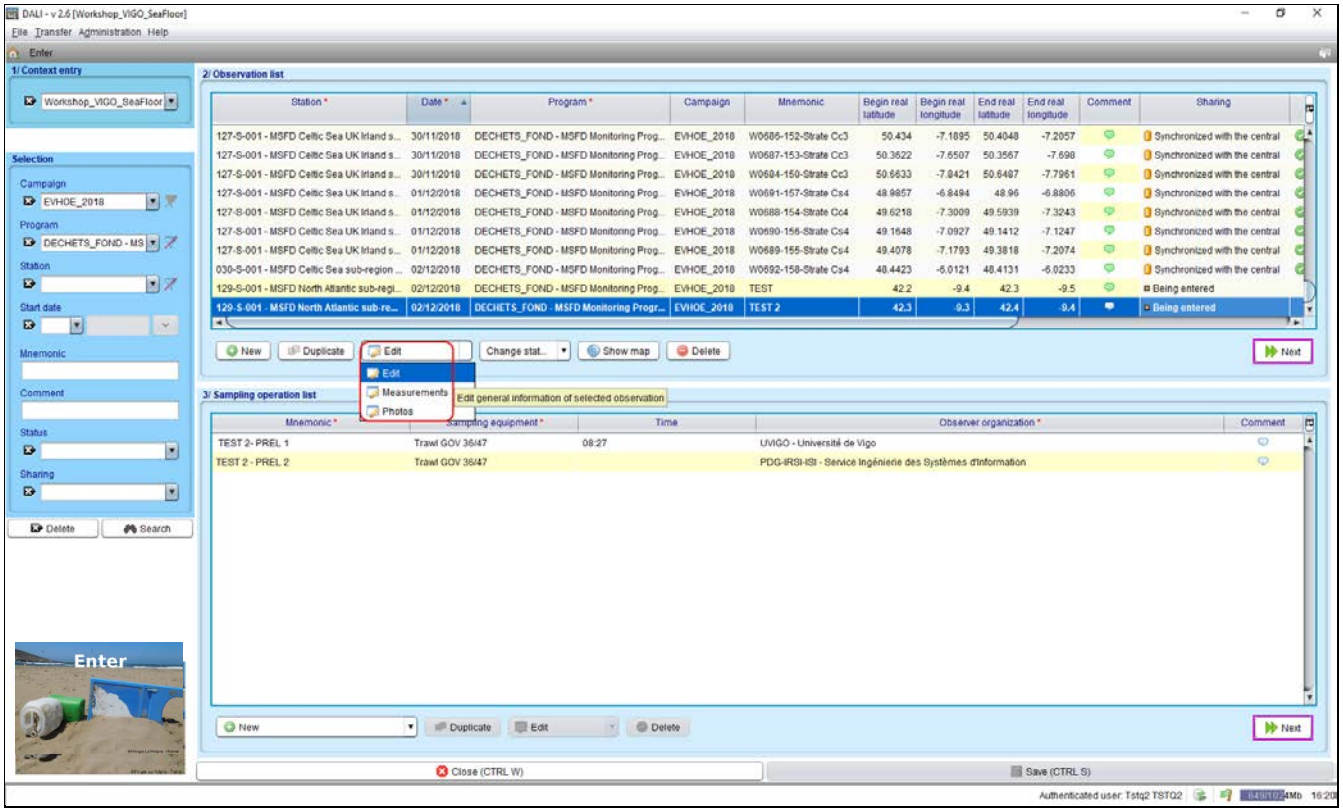
After clicking on Next in the survey list or New in the sampling operation insert, you will create sampling operations.

For **each sampling operation** to be entered, carry out the following operations:

- Specify the **sampling operation mnemonic code**. A suggestion is to use the following writing convention: **<Survey Mnemonic>-PREL 0N** where: : **<Survey Mnemonic>** is the mnemonic code of the corresponding survey & N is the number of the sampling operation for the corresponding survey (e.g.: 2017_01_1-PREL 01)
- The **Sampling equipment (**Hand)
- Specify the **time** corresponding at the end of the survey (if any)
- If Total Volume and/or Total Weight of the sample have been collected fill in these fields
- Specify the **Sampler department** and verify the analyst service
- A **comment** on the sampling operation can be entered at this step.

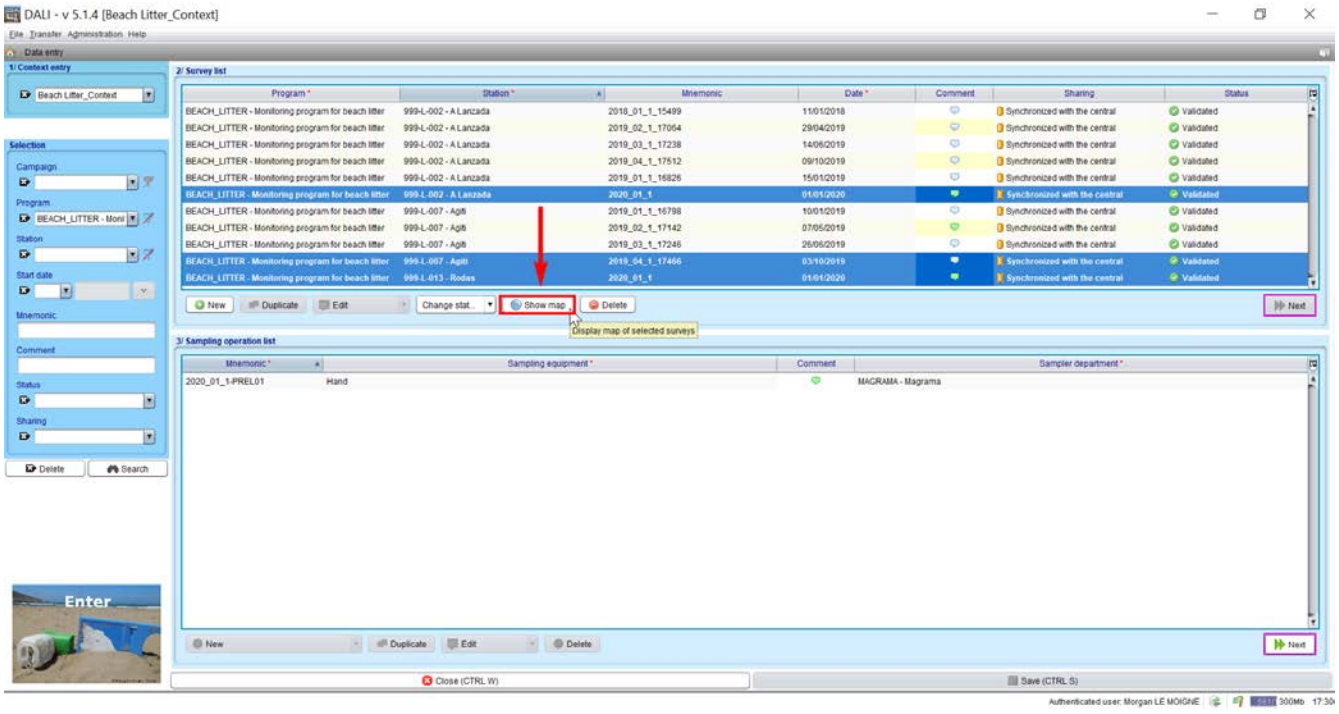
Then click on: Save (CTRL S)

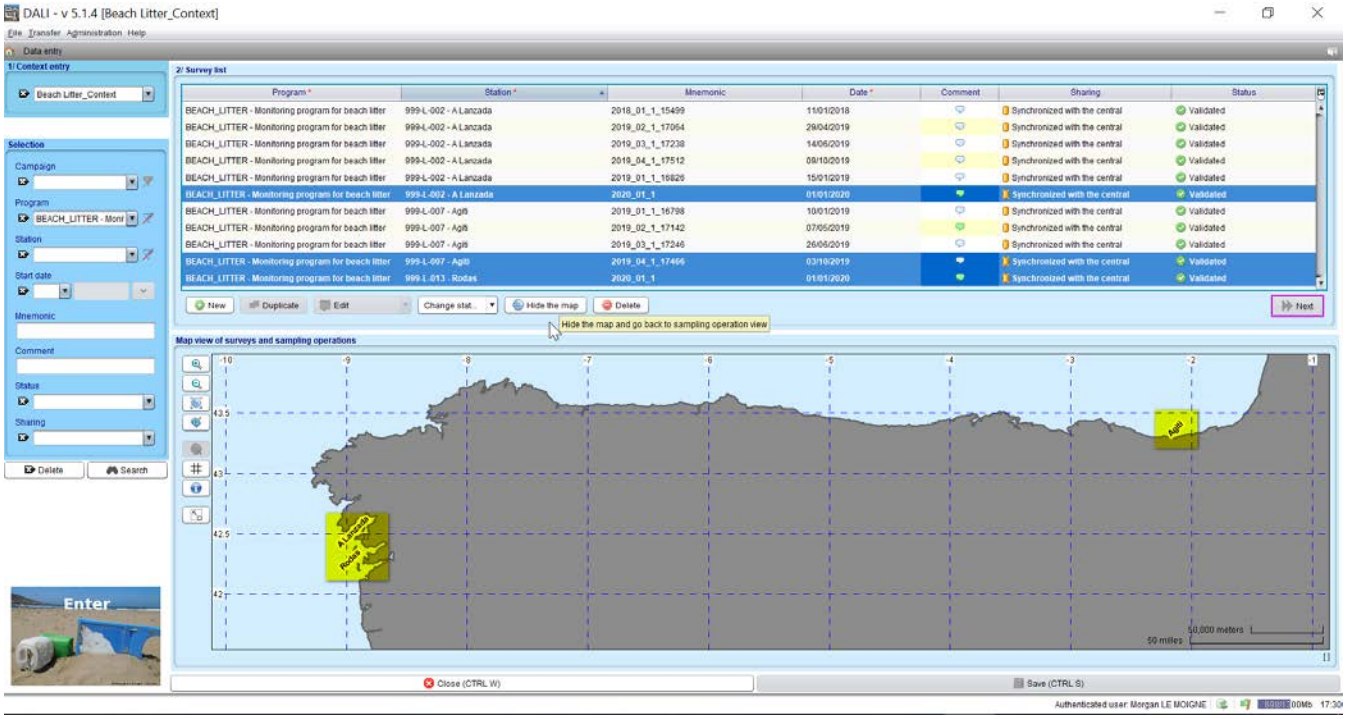
To display the screen to enter additional information on the survey (e.g., the person in charge of the observation/entry/duration), click on Next at the bottom-right of the screen or Edit in the middle of the screen:



Map control

A location Map can be displayed in order to control and detect any errors on the coordinates entered. This function can not be use to fill data in the base.

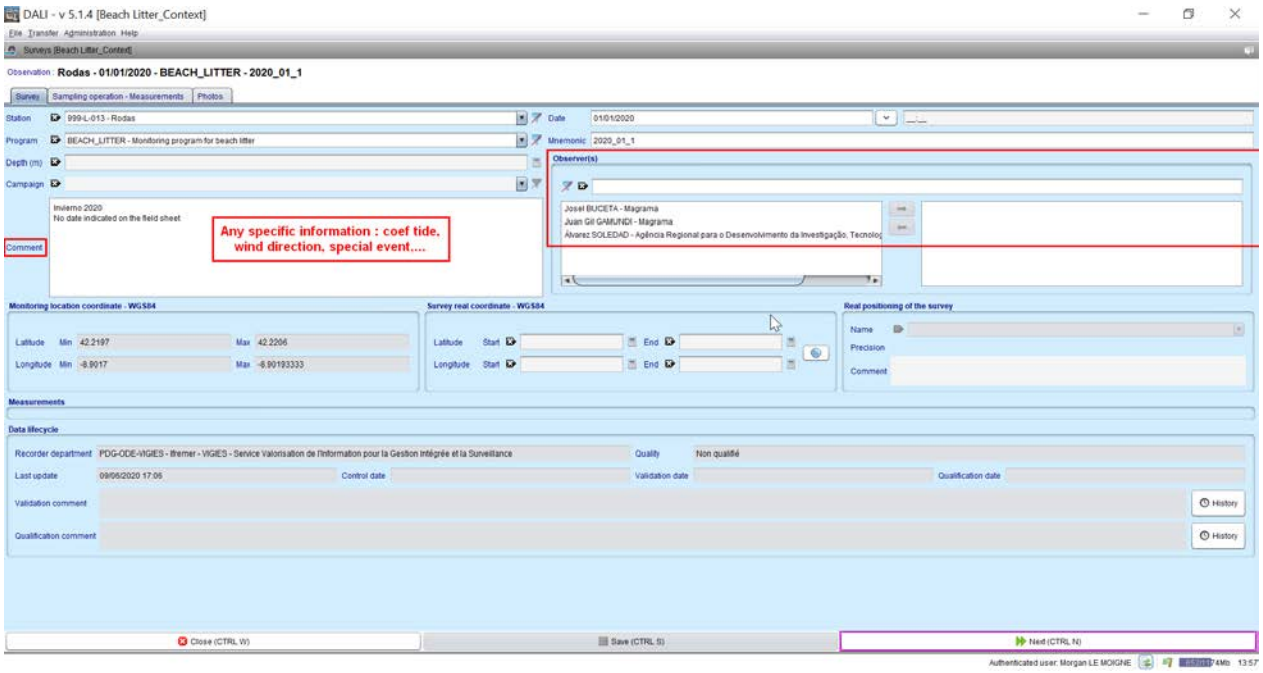




Entering Survey Measurements

Any specific information about the survey can be entered in the comment field: environmental conditions, any events happened on the beach,…

The name of the observer(s) can also be entered. A quick search is run by adding a special character **"*"** before the name or the service to indicate. This person should have been created previously in the User Referential.

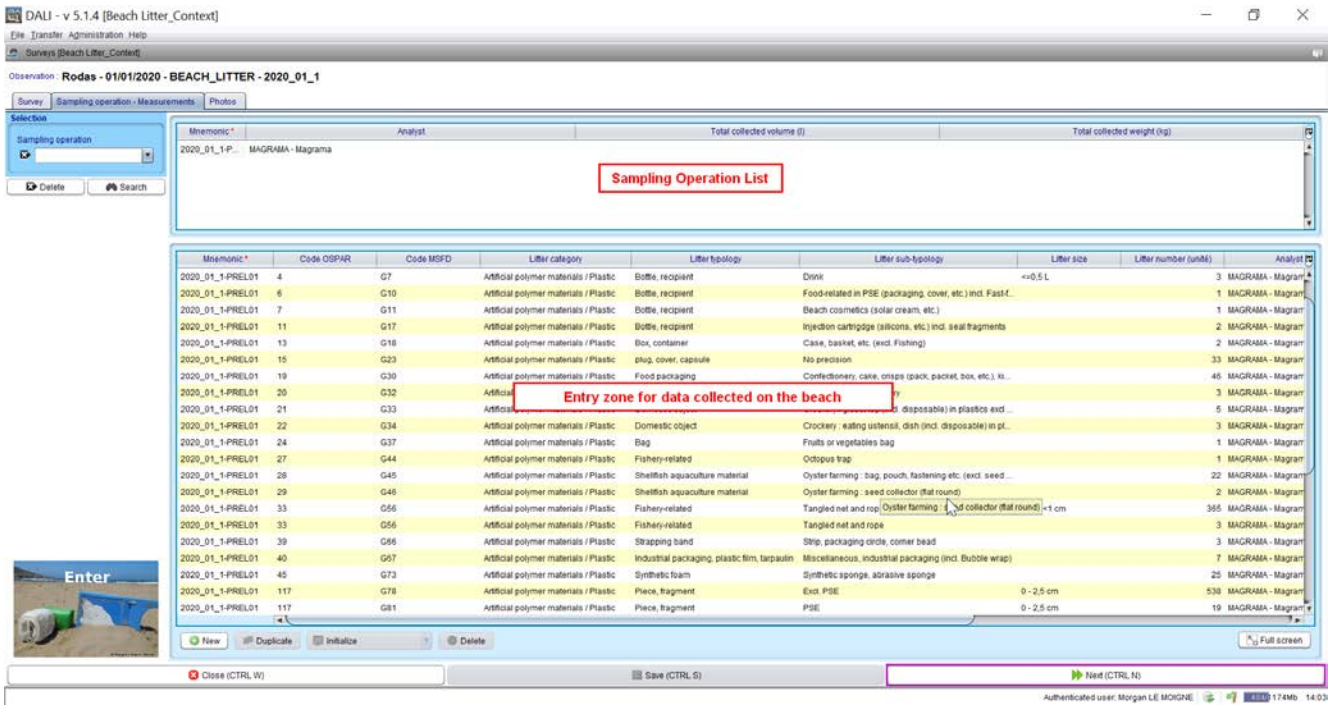


Then, click on Next (CTRL N) to display the screen to enter results for the sampling operation(s).

Entering sampling operation(s) measurements

The Sampling operation - Measurement tab is organized into two parts:

- the top insert to select the sampling operation on which data is entered
- the bottom part is for entering the measurements related to this sampling operation



For each sampling operation, one or several parameter is (are) measured.

As for the survey list, the results lines can be duplicated to make faster the enter of similar lines which have only one or two different informations".

Two types of entry can be made:

1. Data entered line by line
2. Entering using initialization of the data entry grid

1. Entry line by line

As far as possible, use keyboard shortcuts that facilitate data entry, particularly *via*:

- the **Tab** (tabulation) **key :** to move from one column to another

- the **Up/Down arrows** : to select an element from a drop-down list, or to move from one line to another.

In order to avoid errors, the user enter the measurements from the field sheet and the OSPAR code.

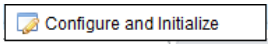
Two cases may occur when entering line by line:

1. The user selects the OSPAR code **which allows the other fields to be filled in automatically** : MSFD code, category, typology, sub-typology and size. The number is the only field to be completed.
2. The data entry operator selects an OSPAR code **which doesn't allow the other fields to be filled in automatically**. In most cases, the "sub-typology" field will need to be filled by choosing in the drop-down list. The associations refer to the ***CEDRE Beach litter file.***

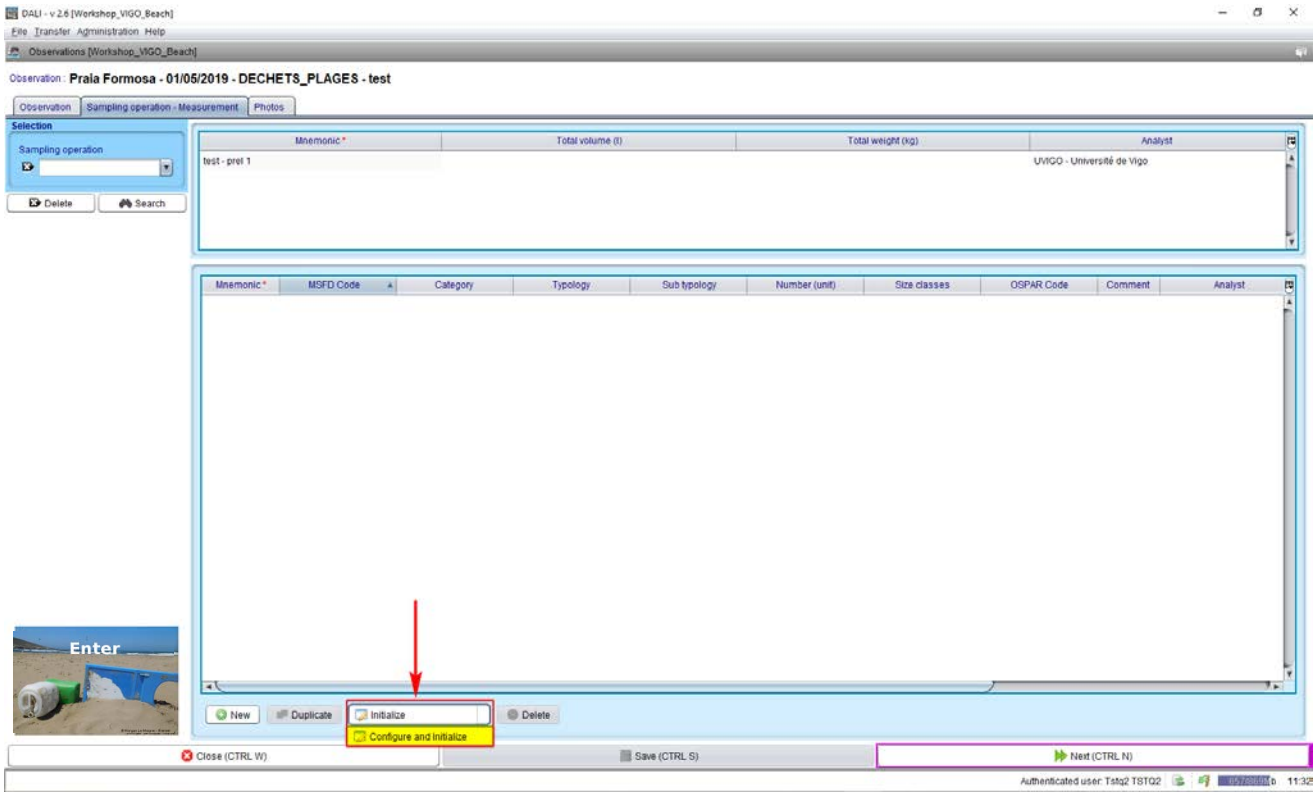
A comment can be filled in if information or a specification about the item is indicated on the field sheet.

Weight of a category (Polymer/plastic material, Metal, Rubber, etc.) can be entered in creating a specific sampling operation to this category.

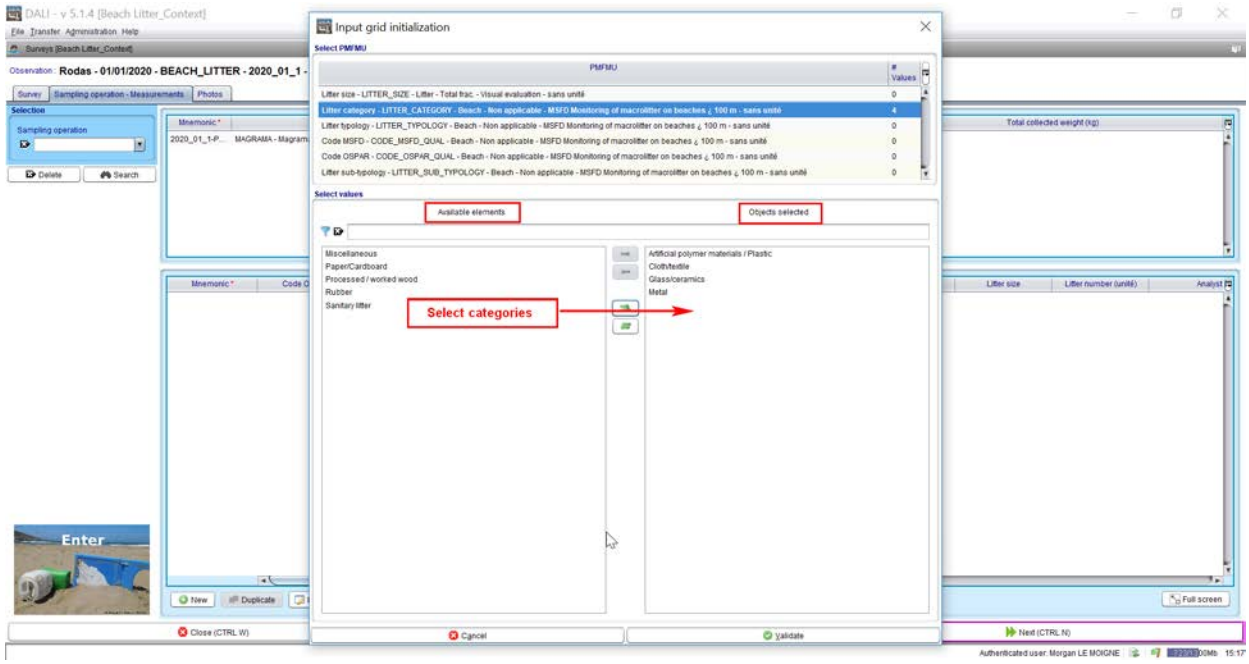
2. INITIALIZING THE DATA ENTRY GRID

Data entry grid initialization is performed before the first measurement thanks to 

button :

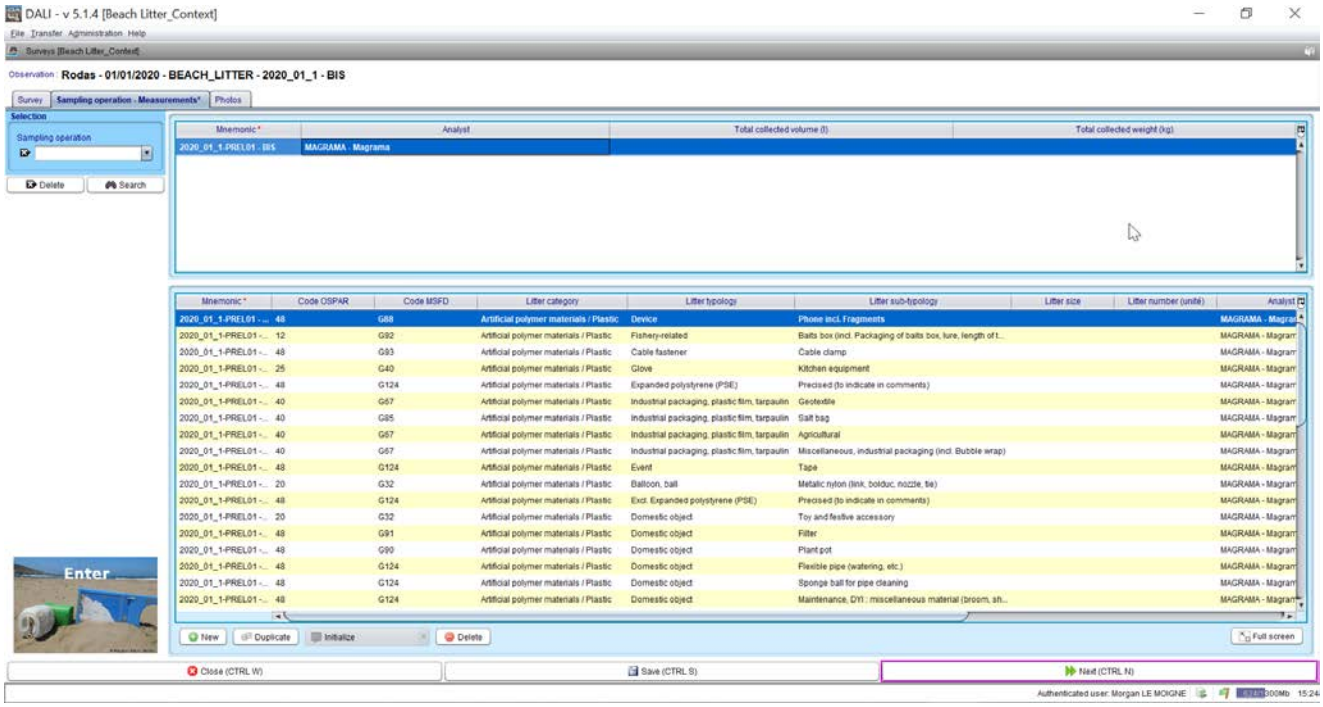


The initialization screen open and the qualitative values of each parameter can be selected in the data entry grid.



A maximum of 3 or 4 parameters (PMFMU above for the Quintuplet : Parameter-Matrix-Fraction-Method-Unit) can be configured.

Once the selections made, the entry grid is displayed and the results can be entered.

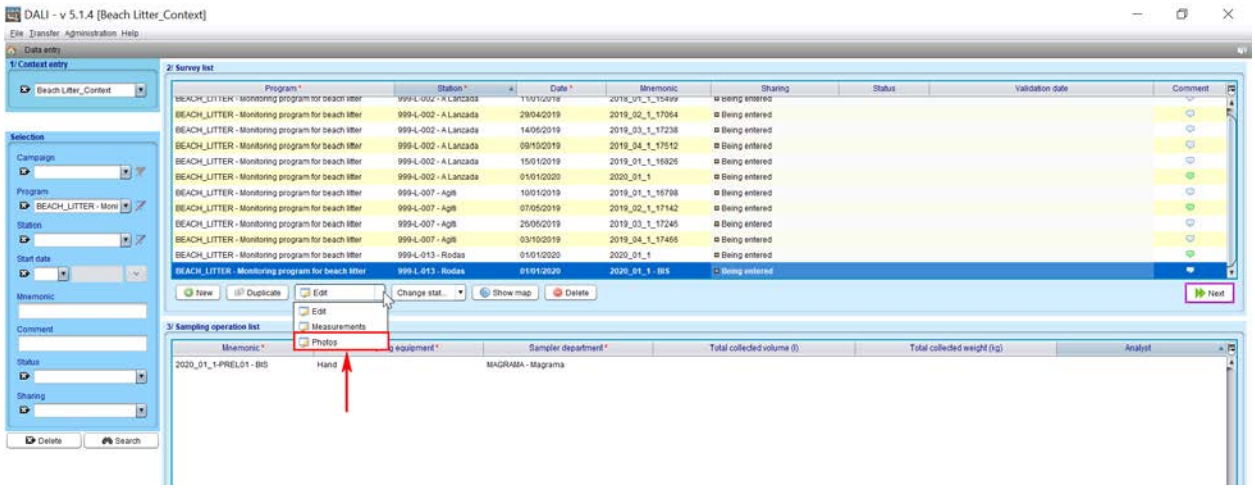


When entries have been done, save them, and click on Next (CTRL N) to save photos if any (see next chapter). Otherwise, move to a new survey.

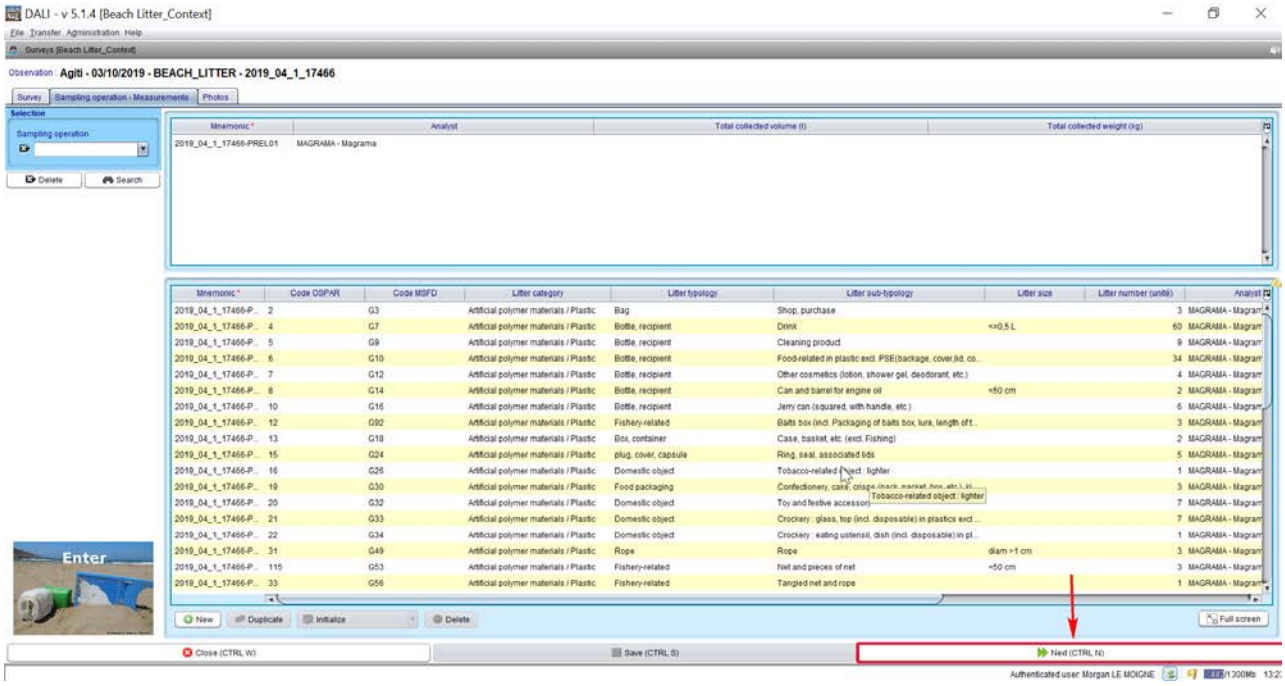
Saving photos

Two ways to display the photo tab :

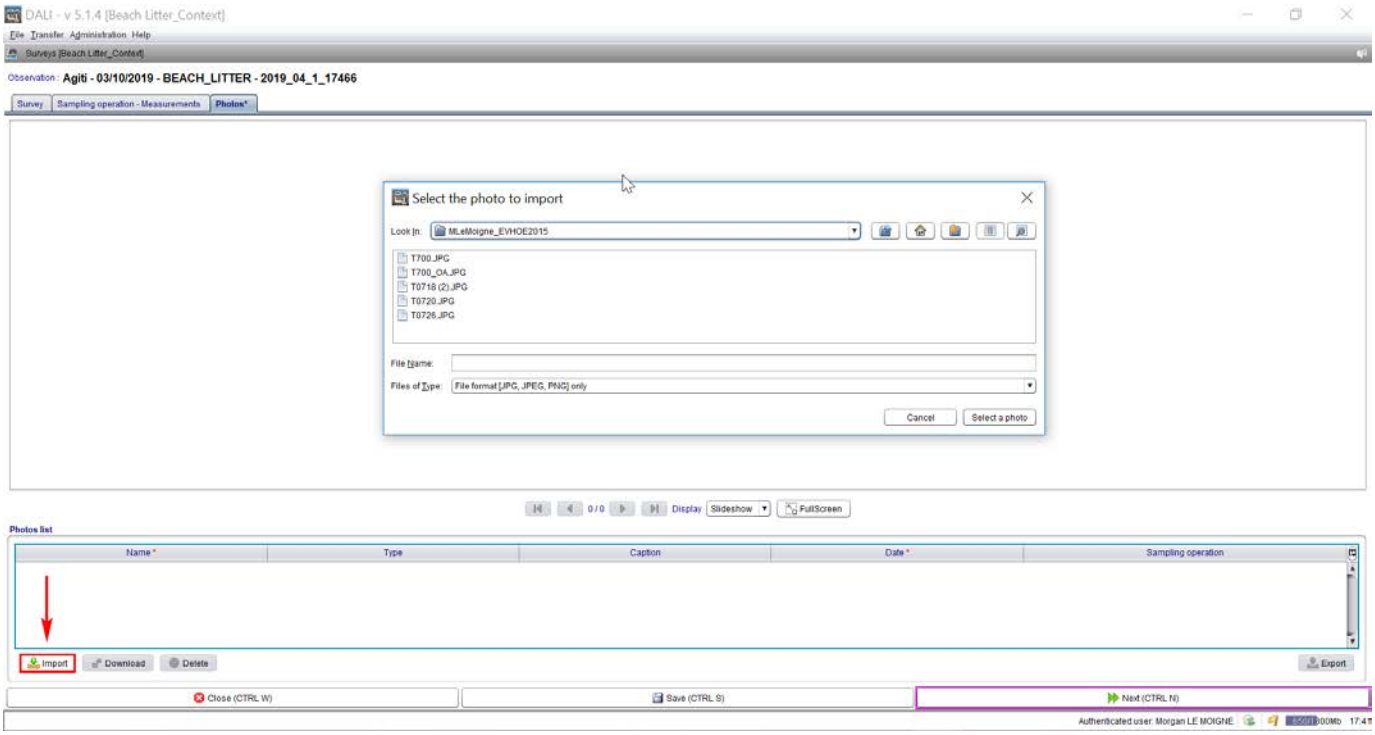
1) From the “Enter” menu



2) From the Sampling operation - Measurements tab



This 3rd tab of this software is used to import photos. The only mandatory field is the **Name** of your photo. The use of survey mnemonic or the sampling operation mnemonic is recommended to facilitate the link between photos and results.

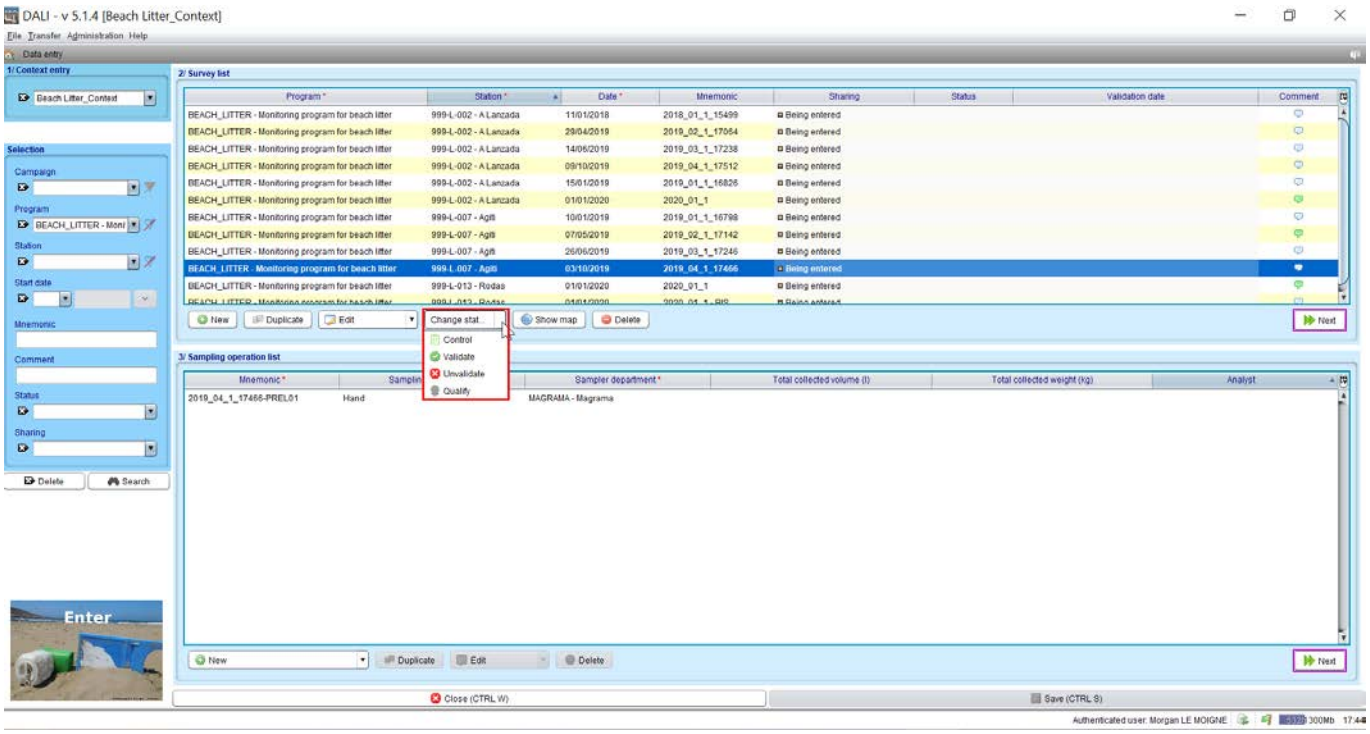


Then, fill the name of the photo and the date when this picture has been taken. You can enter more information in the field Caption.

Then save your entry.

Control and validation

Once the survey and the associated sampling operations are entered, a status need to be specified for these data *via* the menu C**hange state** located below the list of surveys (1st Tab).



Synchronizing data with the central database (next chapter) requires that the steps to **control** and **validate** data have been successively performed. To modify data which have already been validated, an **unvalidated** action with a comment explaining the reason why will be required.

The control check aims to ensure that data have been correctly entered in DALI. The following series of control checks are the minimum to be run:

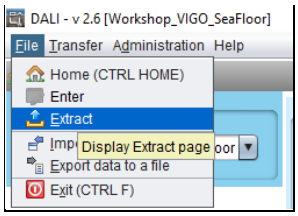
a- Manual and visual checks, per sampling operation, of the sets of codes for litter + associated measurements (as indicated in the previous section).
b- Control checks based on data extracted from DALI beforehand using the extraction module.

Extraction

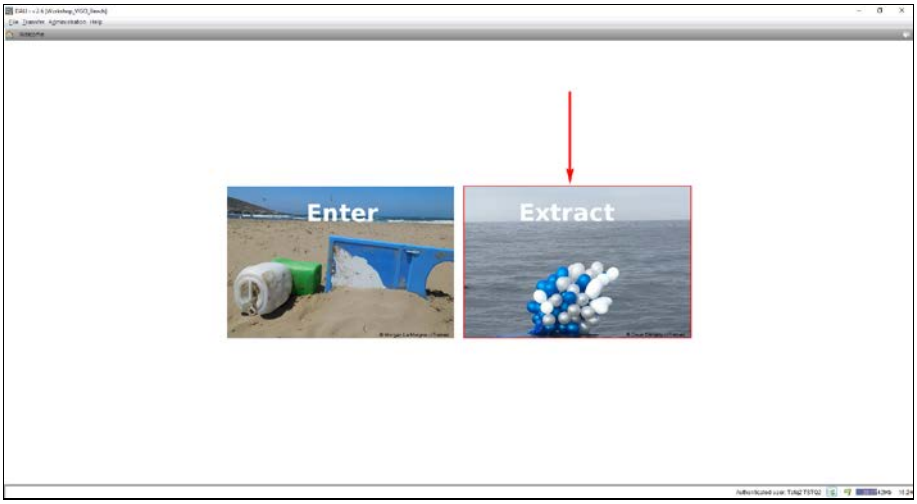
Extraction is useful to make some analysis or to control over data.

Two ways to access to the extraction:

1. Select **Extract** in the **File** tab

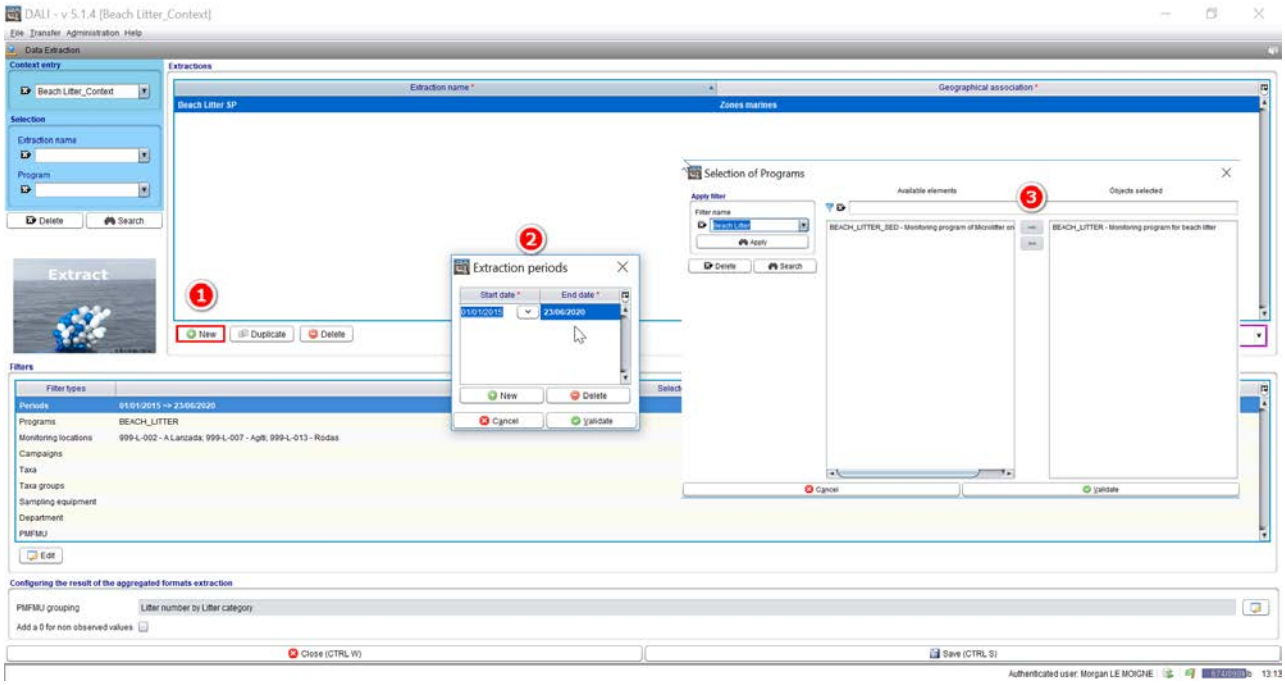


2. After closing the data entry window, open the extraction window by clicking on the picture:

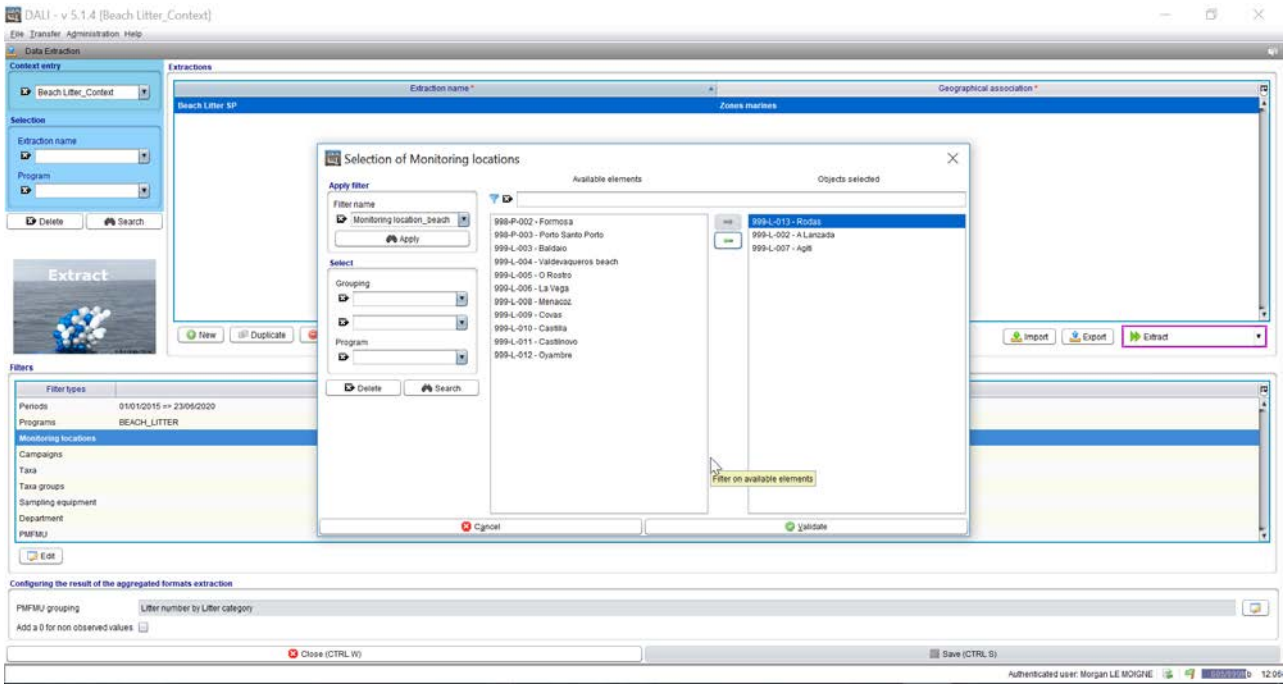


To perform an extraction, click on New and give a name to the extraction.

The extraction periods and programs fields need to be completed, whereas the other fields are optional.



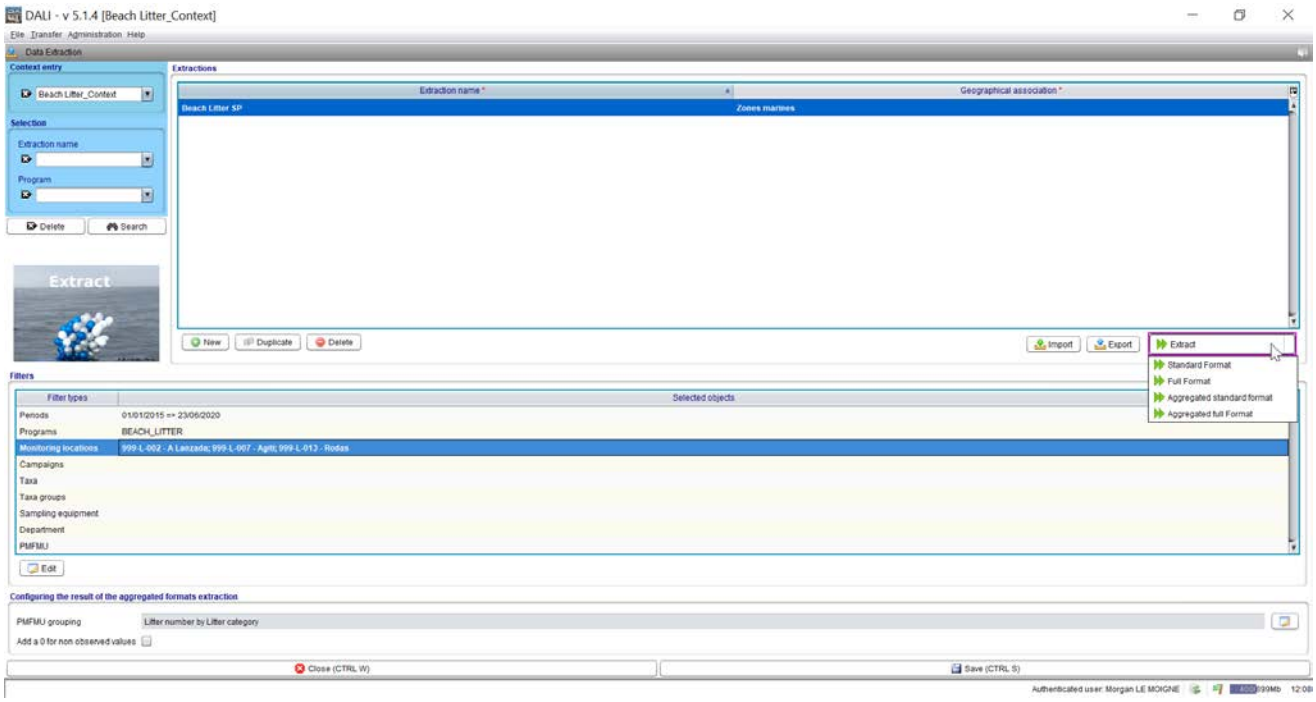
If the extraction concerns a single location, this can be chosen in the location list filter:



Several extraction formats are then possible:

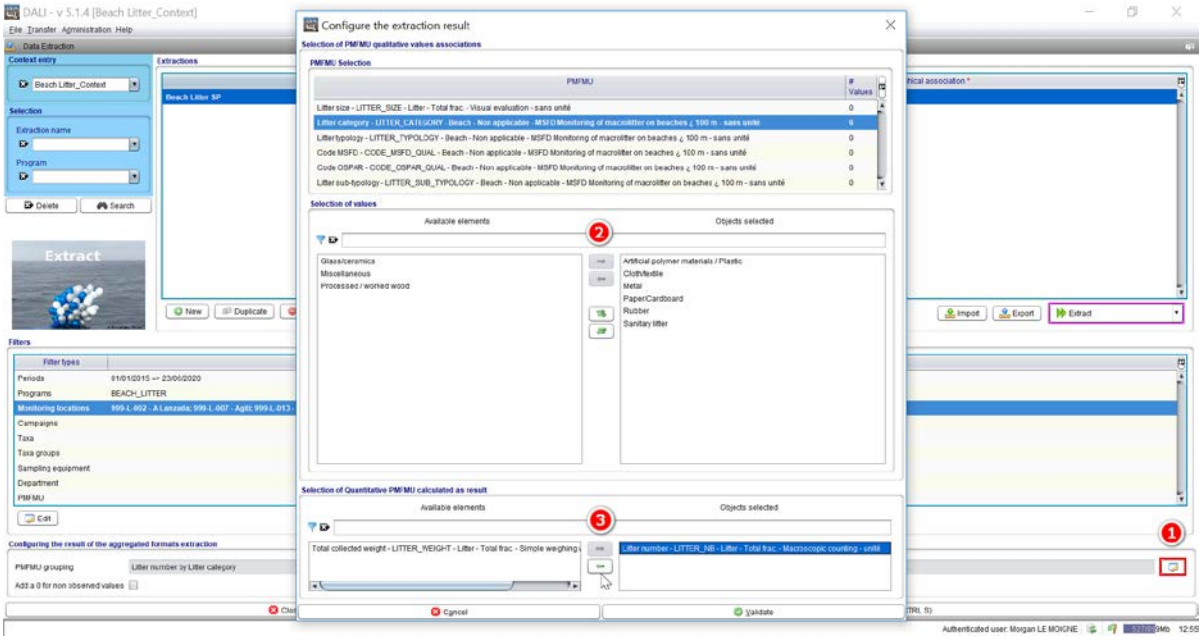
- simple format,
- full format,
- simple aggregated format and
- full aggregated format.

The **simple and full formats** can be obtained without any further parametrization. The **full format** extracts all the DALI fields whereas the **simple format** extracts a selection of fields parametrized in the software.



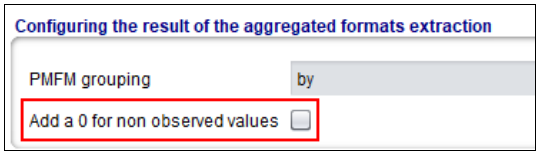
The simple aggregated and full aggregated formats require specific aggregations to find out different parameters in the same column.

In the example below, the aggregation was performed to obtain the number of litter items for each litter category in the same column:



Aggregations can be very useful for checking the entries.

It is possible to '**Add 0 for unobserved values**' to have a file with all the associations present in the software:


Configuring the result of the aggregated formats extraction
PMFM grouping
by
Add a 0 for non observed values

Data sharing

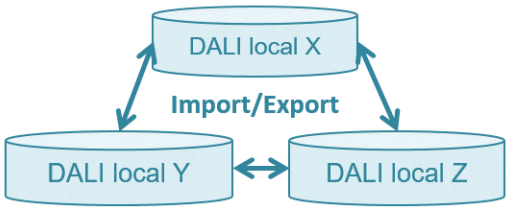
1. LOCAL SHARING

Different people can take part in the data entry of a same programme. There is an exchange system in DALI to facilitate this sharing.

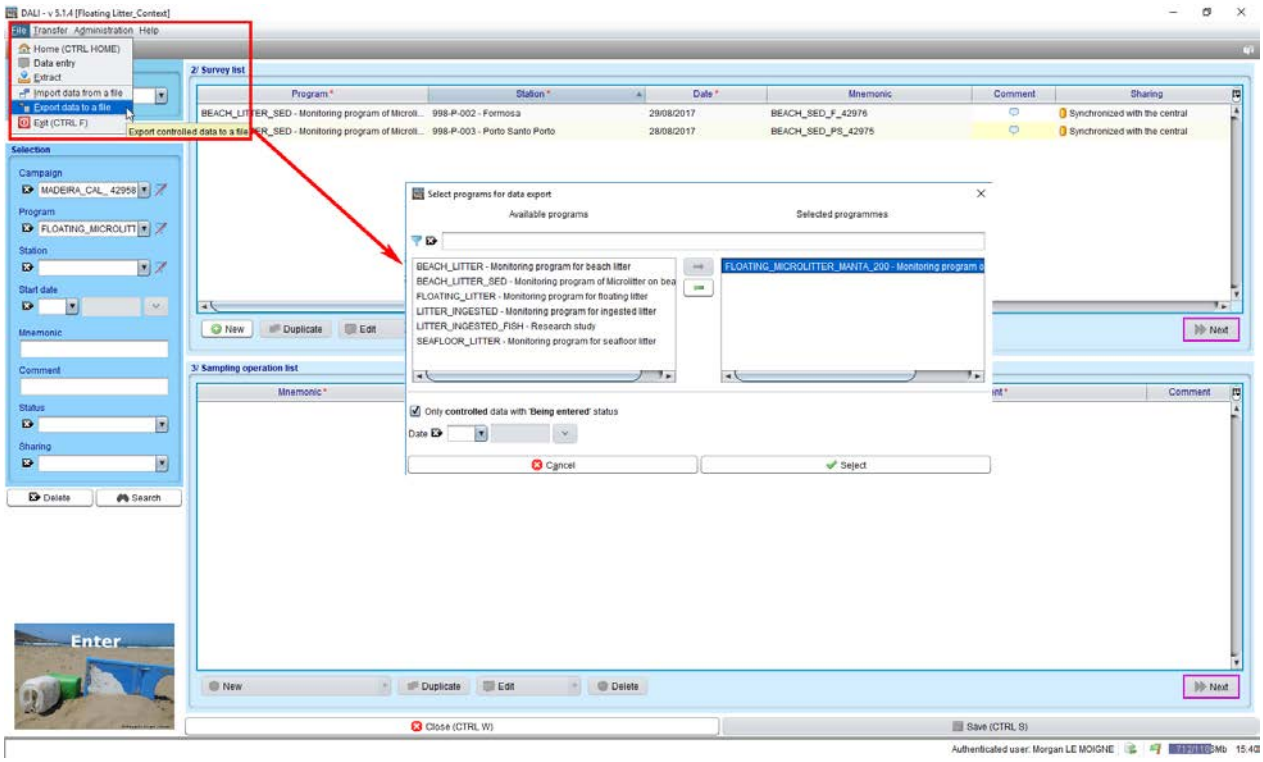
The process to transfer data from one workstation to another meets several needs:

- Allow various actors to carry out simultaneous data entries on distinct local bases, following observations made on the same day at the same location,
- Allow the implementation of the Control/Validate process between different actors (data responsibles, validators) working on distinct local bases.
- Allow the compilation of entered data on different workstations into a single workstation.

The transfer from one workstation to another is managed through a simple exchange of files between users.



Data entered on a workstation X can be exported to a workstation Y through the menus **File/Export data to a file** and **File/Import data from a file**. Surveys should have been **controlled beforehand**.



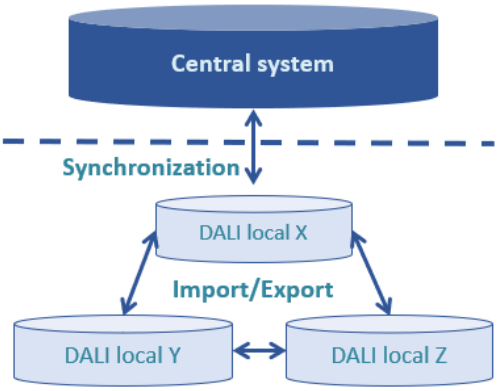
A zipped folder is saved, to be imported to the workstation Y. Once the data is imported, the field Sharing indicates that the surveys are synchronized with a file.

In case of duplications (surveys already existing on workstation Y = same location, same date, same programme), the application informs the user.

The user can visualize duplicated surveys and select those to import.

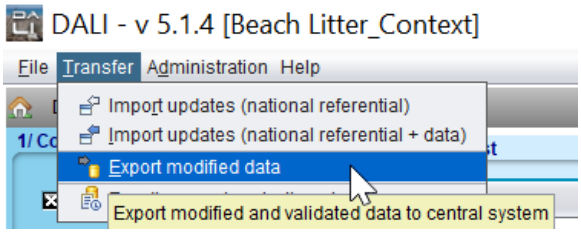
2. SYNCHRONIZATION WITH THE CENTRAL SYSTEM

The synchronization consists in exporting or importing data from the local system (local database) to the central system.

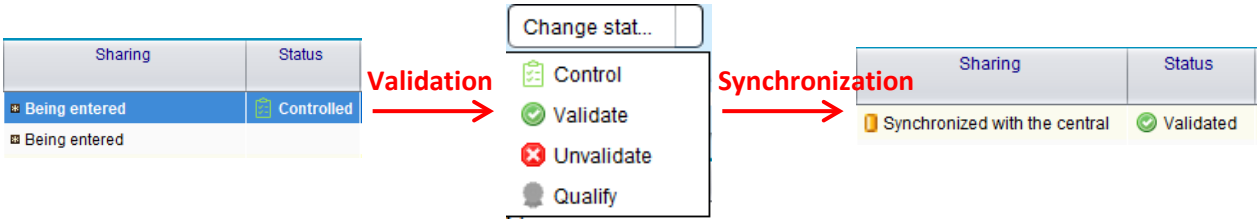


To export, surveys (and associated sampling operations) that have been added or modified since the last export, have to be **validated**.

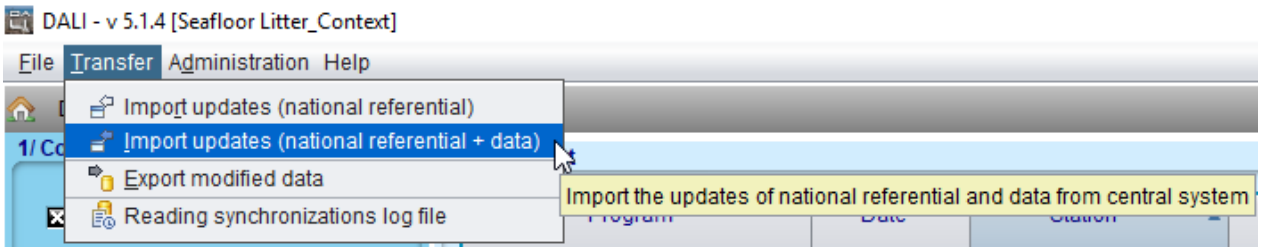
Use **Export modified data** in the **Transfer** tab:



When data have been exported, the **Sharing** field indicates that the survey has been S**ynchronized with the central system.**



To import updates, use **Import updates (national referential + data)** in the **Transfer** Tab **:**



CleanAtlantic

Tackling Marine Litter in the Atlantic Area

Instructions for entering Seafloor Litter in DAta LItter application connected to a PostGreSQL Database

WP 5.1.3 : IT Developments

Ifremer
Interreg Atlantic Area European Regional Development Fund
EUROPEAN UNION
Clean Atlantic

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participants	Alice Lamoureux & Arnaud Rouilly – ODE/VIGIES Ifremer, Stéphane Bocandé (ISI/IRSI) Ifremer

Disclaimer

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Foreword

DAta LItter is a software developed to enter data on Marine Litter topic. This software is connected to a PostGreSQL database to enable **harmonised and sustainable data storage**.

This document specifies instructions for entering Seafloor data.

ICES DATRAS database has been harvested to obtain dataset for testing. The file **Litter Exchange Data_2020-02-13 17_43_04.xlsx** contains those data.

Only data in green color in the file joined with this document have been included in this test.

Installation / Launch

Unzipped the **dali_val_postgresql.zip** folder on your computer and double-click on the two other folders. Then, you can launch **Dali.exe** every time.

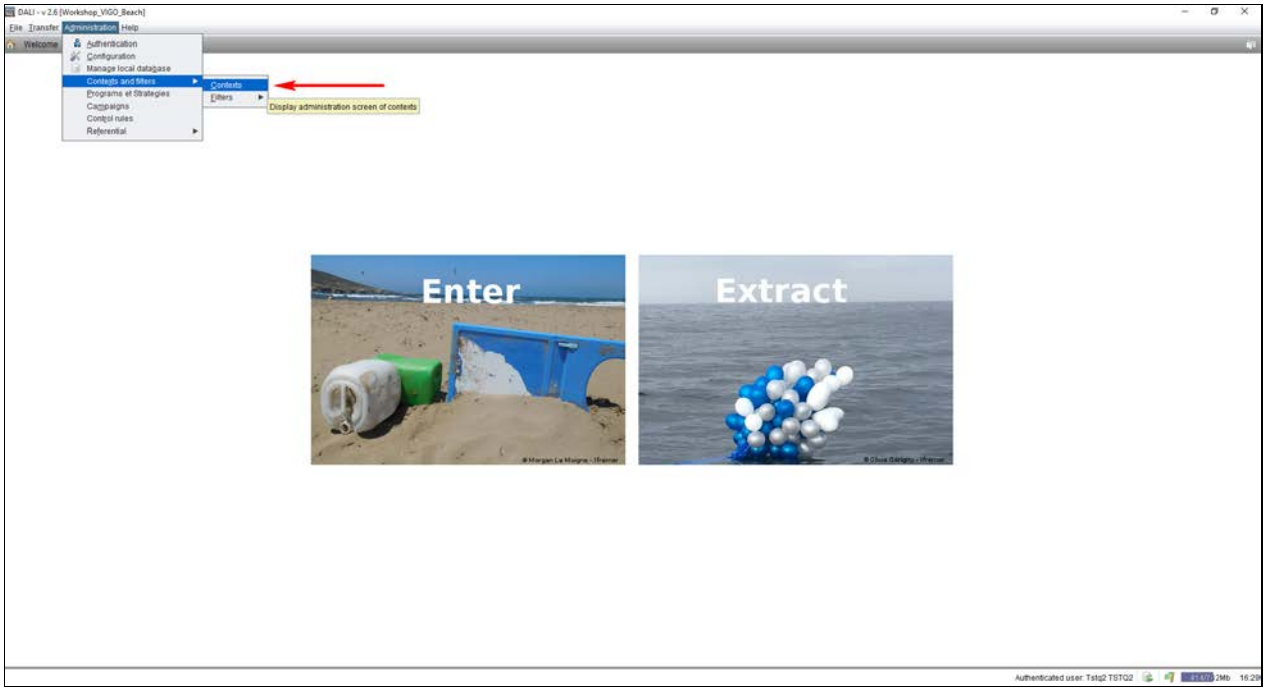
Enter your **login** and **password** sent by **assistance@ifremer.fr on 24/08/2020**.

Prerequisite for data entry

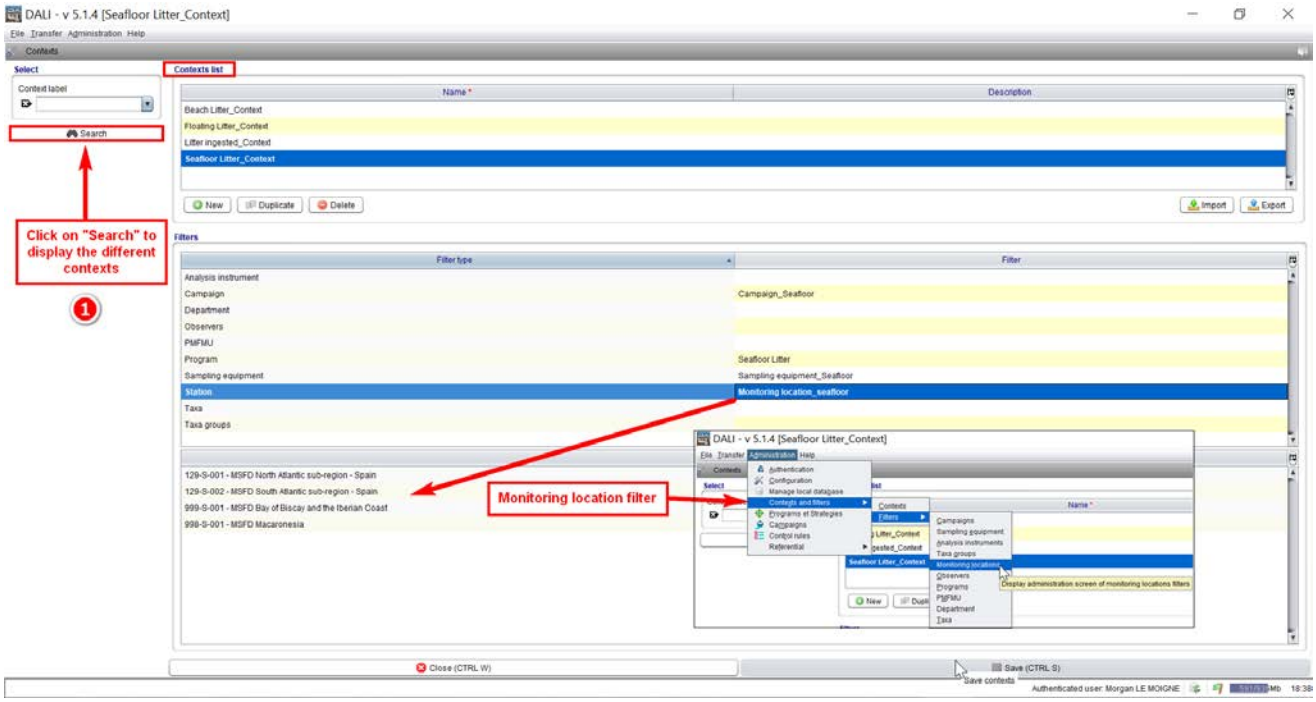
In order to enter data in the software, the user needs to refer to the proper program and the associated strategy. For Seafloor litter, the **program** is **SEAFLOOR_LITTER - Monitoring program for seafloor litter** and the strategy is **MSFD Monitoring**.

1. CONTEXT / FILTERS

To facilitate data entry, **user can create a "user context"**. This context is obtained by applying several filters targeting the metadata & data to be entered (monitoring location, data responsible, service,…). **To facilitate this test phase, the user context *Seafloor Litter_Context* is provided in this software.**



The different available contexts are displaying by following the steps below :



The content of the filters can be consulted by clicking on one of them.

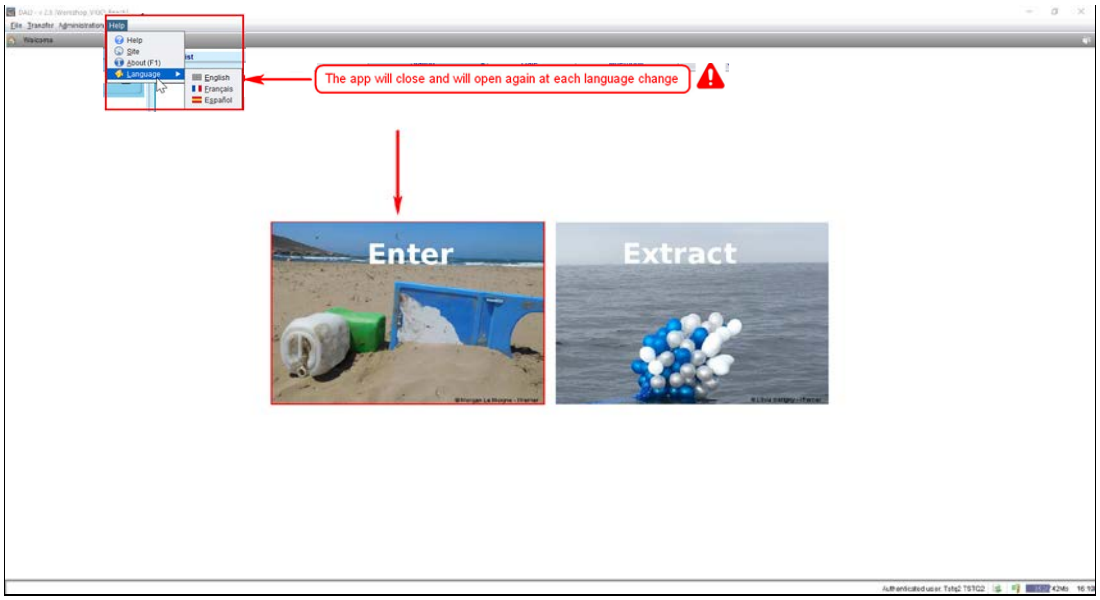
As the referential management functionalities are not developed yet, the filters modification is limited to add or delete existant values from the referential to the filter's list.

This feature will be available at the beginning of 2021.

The referential contents are based on historical datas and current protocols. You can create your own filters using the tab "Administration">"Filters"

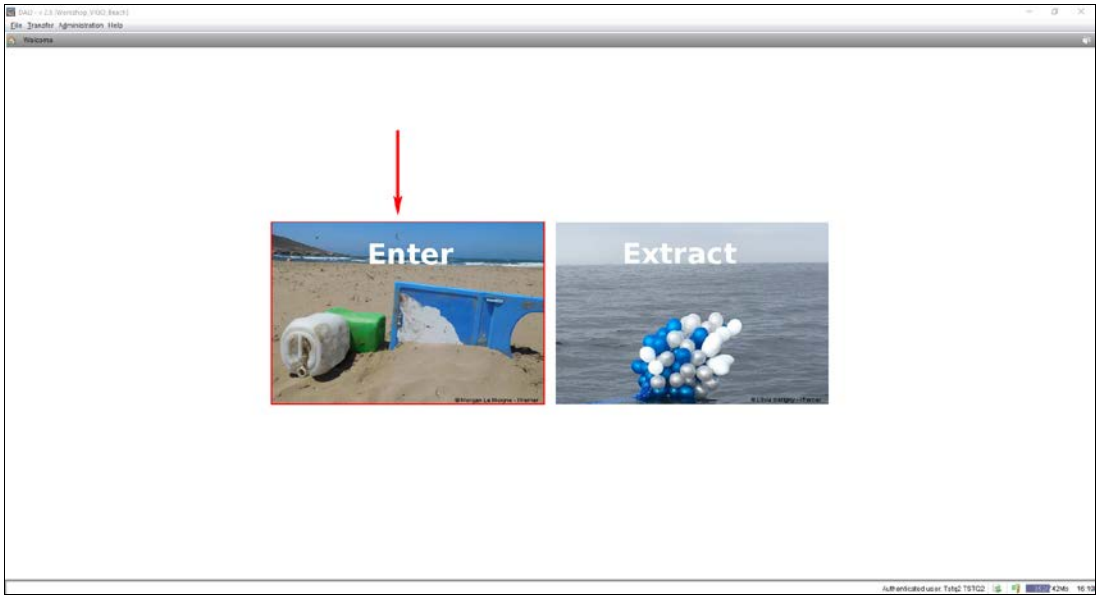
2. DATA ENTRY WINDOW

You can select your language (English, French or Spanish) in the **Help** tab :

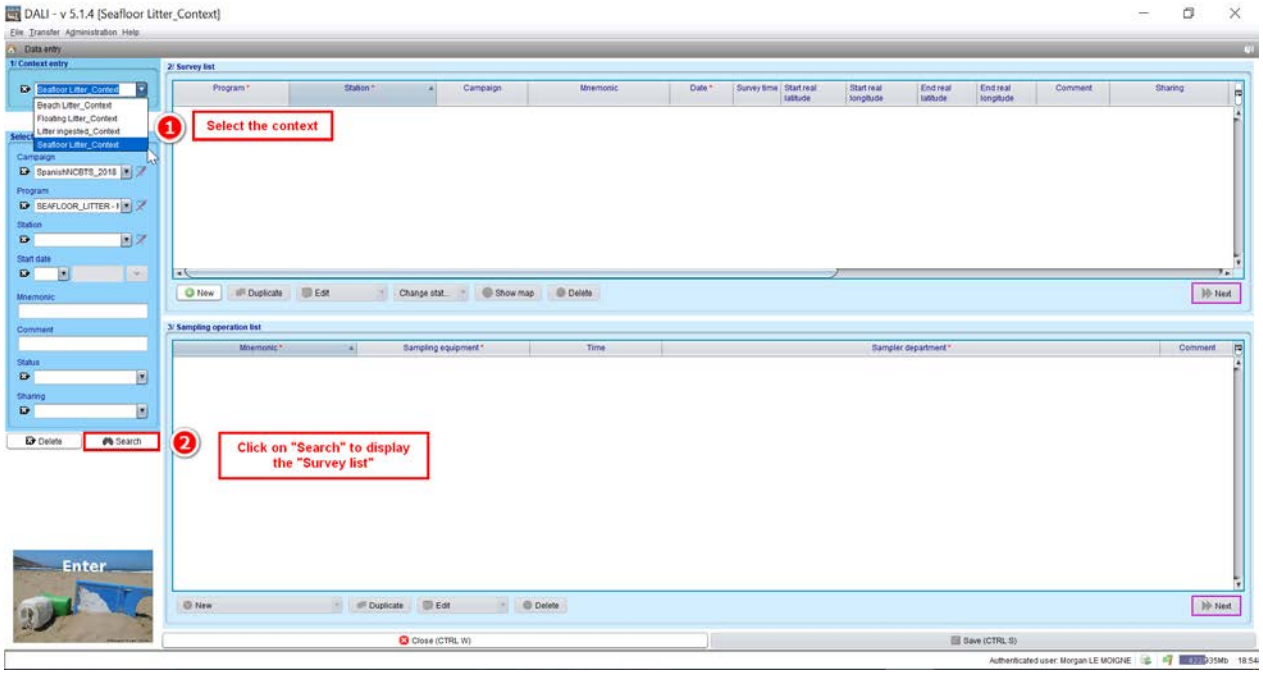


In this test phase, you may encounter different traduction or traduction missing due to the difference between traduction of the software and traduction of the data enter. Don't hesitate to let us know.

Open the entry window by clicking on the picture:

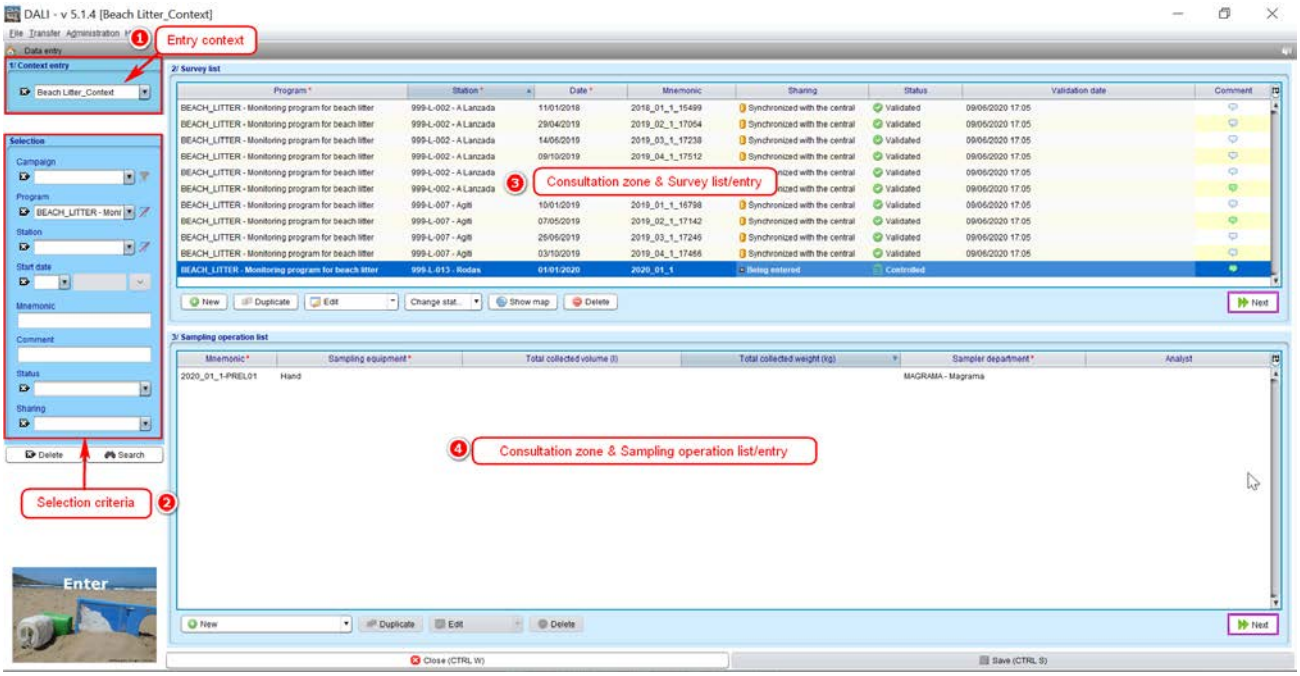


Then, to display your data, select the properly context and click on **Search**:



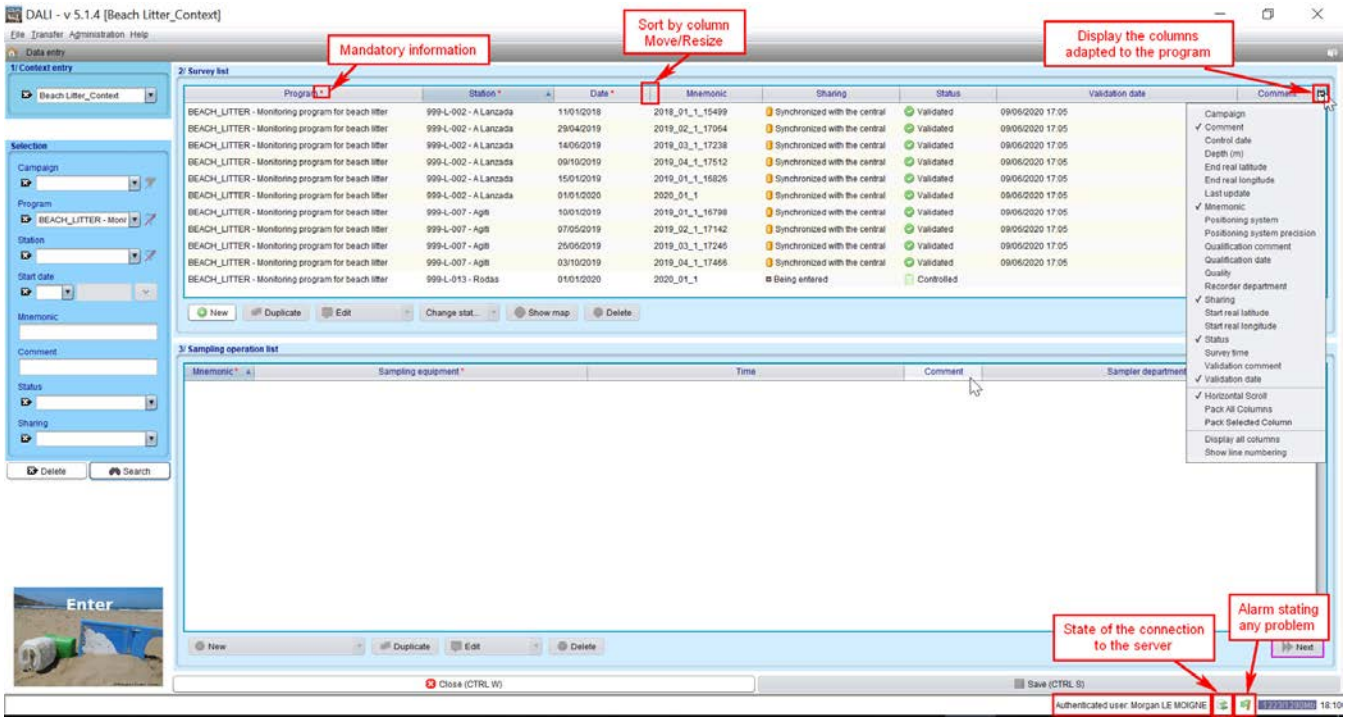
The main data entry window in the application is organized into four parts:

1) The choice of entry context is located at the top left
2) Beneath, the search window which can be used to refine which data is displayed according to filters
3) The list of survey at the top right
4) Beneath, the list of sampling operations



3. TIPS AND HINTS

The screenshot below shows the functions you need to enter data & metadata.



Important to notice : the order of the columns can also be changedby clicking and draging the column from its original place to the desired position. To sort the rows of the table according to a column, click on the column name : first click cross sorting, second click: descending sorting.

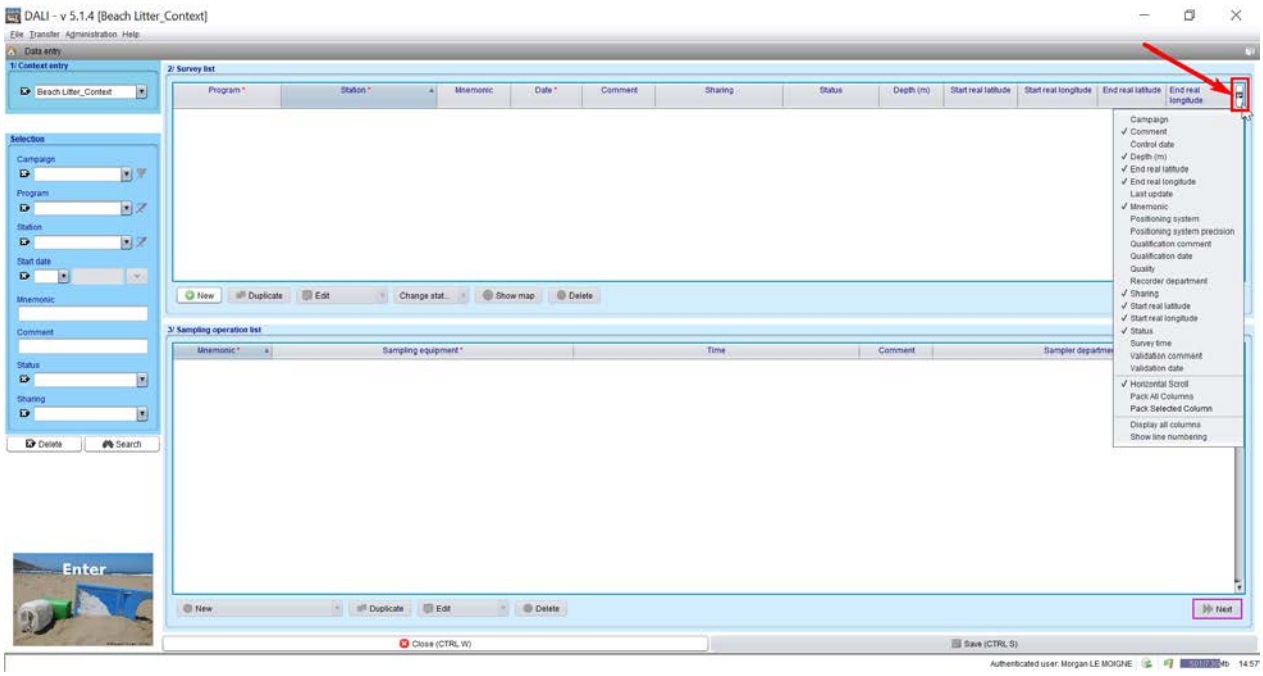
4. MAPPING TABLE

The mapping table below shows in the **left column**, the fields and parameters used in SEAFLOOR_LITTER program and in the **right column**, the originating fields from the source file.

This will help to understand how data have been entered in this test phase.

DALI Database Fields	Fields from "Litter Exchange Data.xlsx" file from DATRAS
1st Tab - *Survey list*	
Program	DALI adding
Station	MSFD Region
Campaign	DATRAS Survey Name_YYYY
Mnemonic	HaulNo-Stratum
Date	Day/Month/Year
Survey time	TimeShot
Start real latitude	ShootLat
Start real longitude	ShootLong
End real latitude	HaulLat
End real longitude	HaulLong
Comment	Comment (if any)
Sampling operation list	
Mnemonic	Survey Mnemonic-Sampling N°
Sampling equipment	Gear
Time	TimeShot + HaulDur
Comment	Comment (if any)
Sampler department - ***Field automatically completed from strategy information***	IEO
2nd Tab - *Survey*	
Comment	Comment (if any)
Duration	HaulDur
Distance Covered - ***Automatic calculated field with coordinates***	Distance
Device opening	WingSpread
Surface auto calculated - ***Automatic calculated field with Distance and Device opening***	
Analyst	IEO
3rd Tab - *Sampling operation - Measurements*	
Mnemonic	Sampling operation Mnemonic
OSPAR Code	PARAM
Litter size	LTSZC
Litter weight	LT_Weight
Litter number	LT_Items
Litter category - ***Field automatically completed from OSPAR Code***	
Litter typology - ***Field automatically completed from OSPAR Code***	
Analyst - ***Field automatically completed from strategy information***	IEO
Comment	Comment (if any)

Before starting any entering action, pay attention to make sure that all the fields of the surveys are correctly displayed on the screen matching with the survey fields described above. The display is done by using the button at the top right of the screen.



5. NEW CAMPAIGN

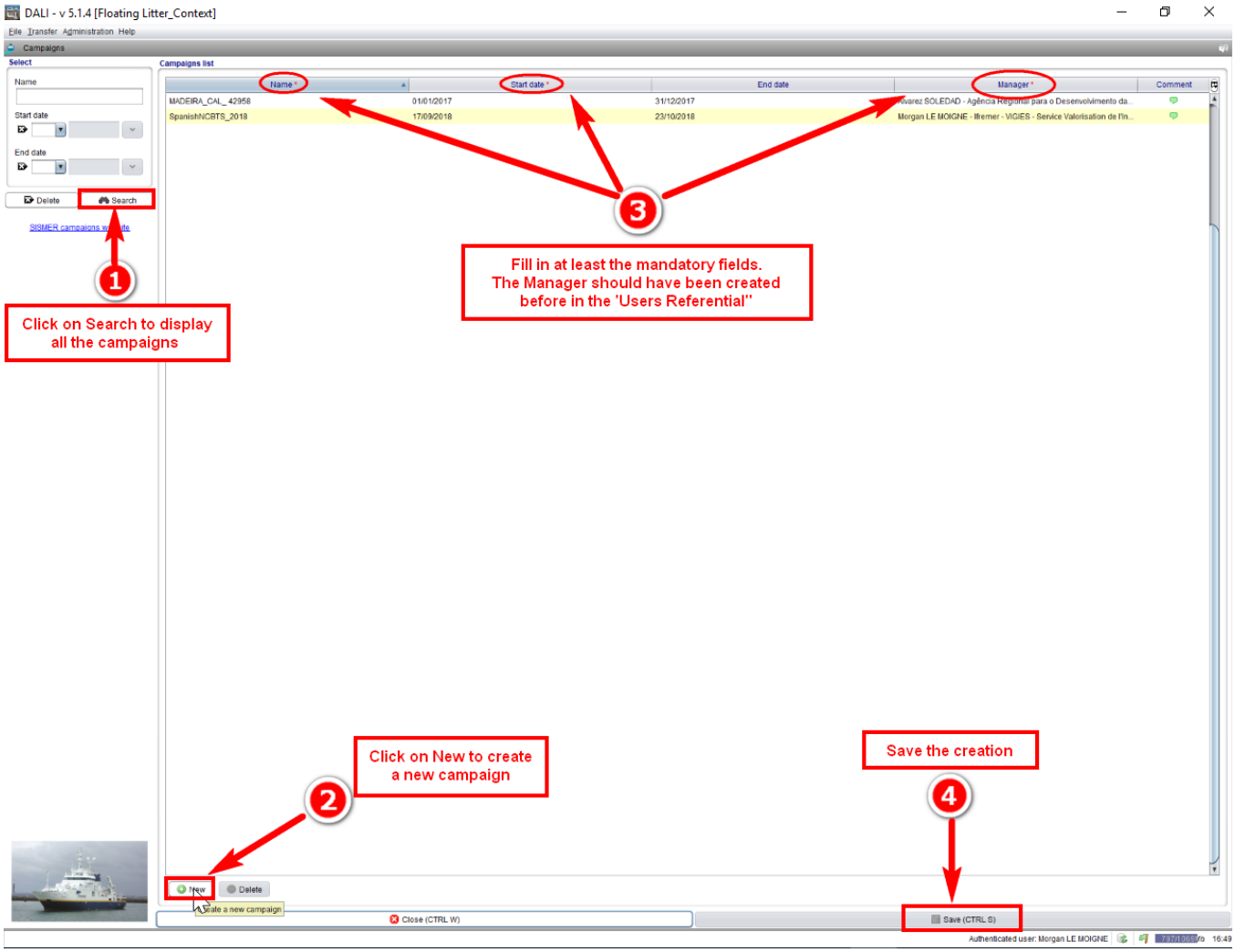
As a definition for this software, we consider a campaign as a set of field trips to a sector in a given period of time, over a continuous period and requiring specific logistic.

In this program, a new campaign will need to be created and to be added into the campaign filter before entering the dataset.

5.1. Creating a new campaign

Click on the **Administration** tab, then **Campaign** tab

Then, follow the 4 steps described below :

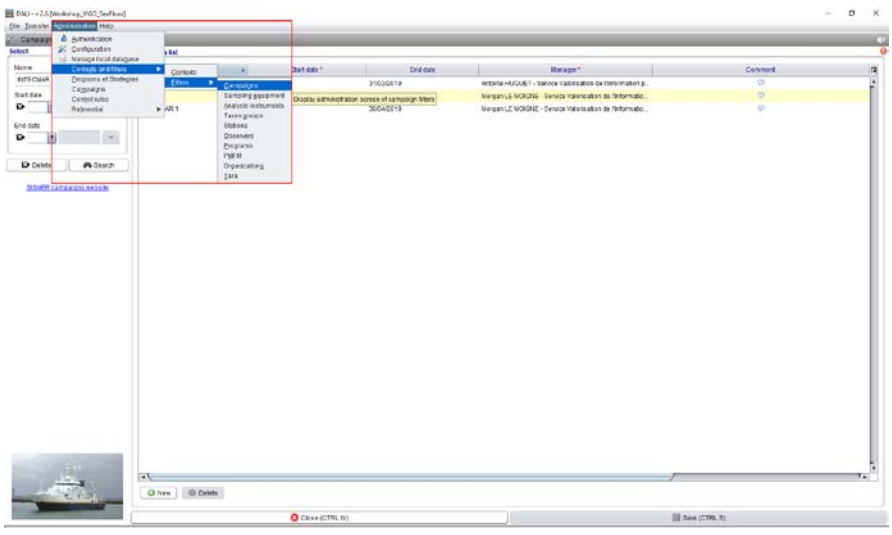


To come back to the entry window, click on **Close** button, or use the tab **File**->Entry

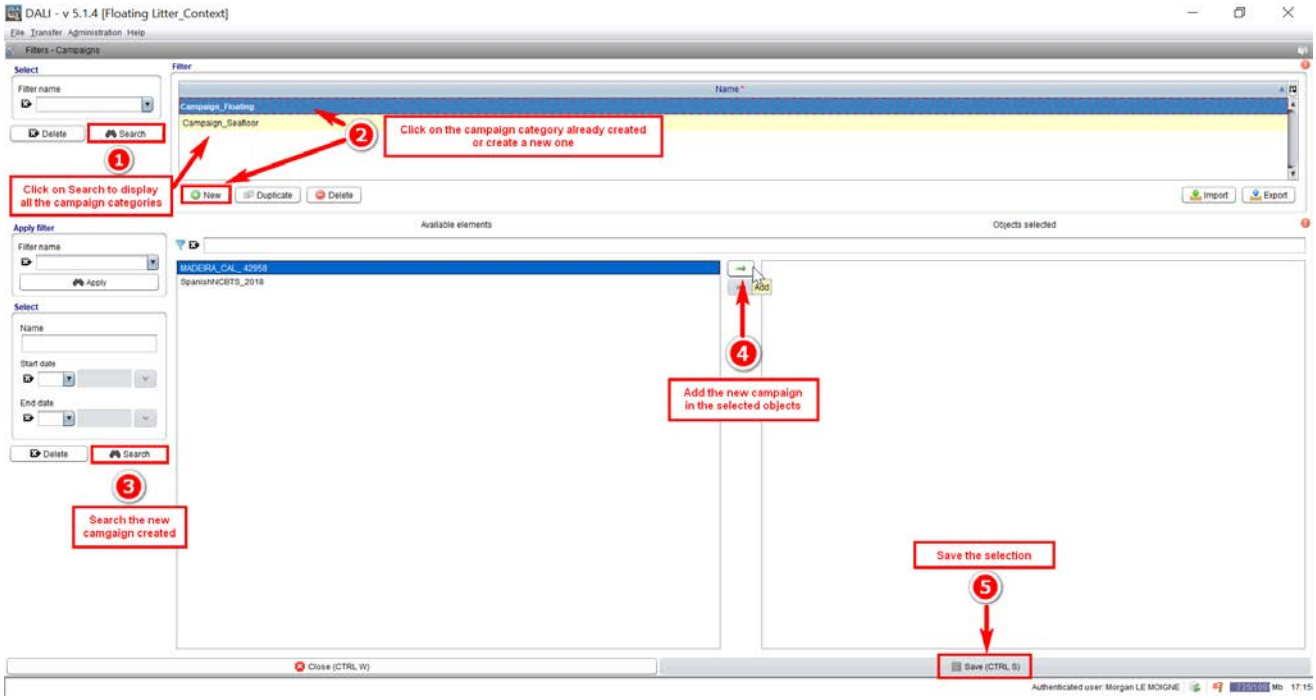
5.2. Adding the new campaign in the campaign filter

The new campaign need to be added to the campaign filter.

Go to the Administration tab → Contexts and filters →Filters→Campaigns



Then, make a research on the campaign created in order to add it to the “Objects Selected”.



Entering Surveys

Surveys are entered in the upper part of the sofware screen.

To create a new survey, click on 

. An empty survey line is created. The columns displayed in the list of surveys make up the basic elements which can be entered.

For each survey to enter, perform the following operations:

- Select the **program SEAFLOOR_LITTER**
- Select the **Station** corresponding to a MSFD marine sub-region (previously included in the referential)
- Select the **Campaign**
- Specify the Survey **Mnemonic** (confer to the mapping table above)
- **Specify the date of the survey** *via* the calendar or manually
- Enter the **Survey time**
- Enter **Start and End coordinates** of the survey
- Enter the **Depth** reached
- **Write a comment** (optional). This comment will provide information about the general conditions during the survey, or about issues related to the survey.

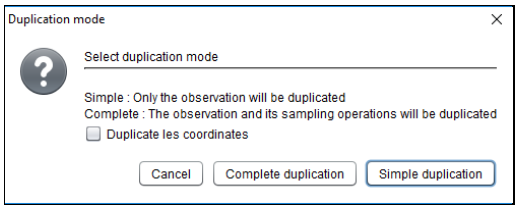
Once the survey has been entered, click on 

to create a sampling operation.

To delete a survey, click on: 

A survey can also be **duplicated**. Select the survey to duplicate and click on: 

A **simple duplication** or a **complete duplication** of the survey is posible. The complete duplication means that you will duplicate the survey **and** its sampling operation.



Entering sampling operations

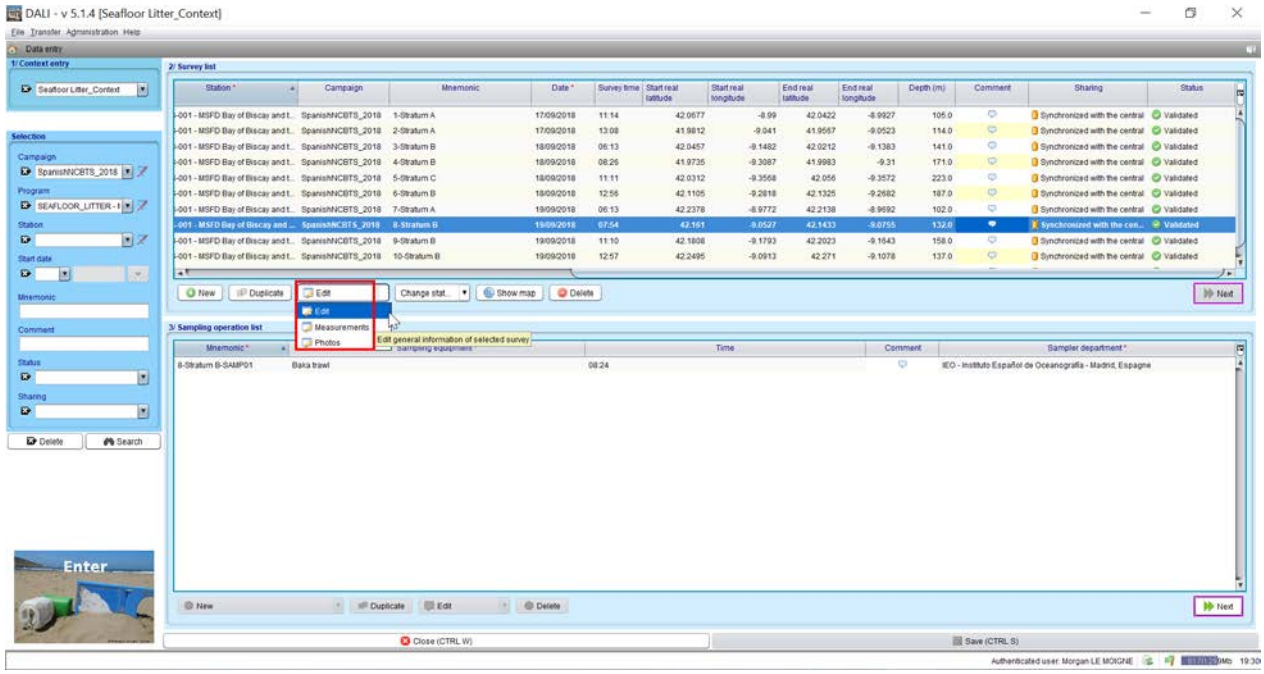
After clicking on Next in the survey list or New in the sampling operation insert, you will create sampling operations.

For each sampling operation to be entered in the same survey, specify:

- the **sampling operation mnemonic code**
- the **Sampling equipment**
- the **time** corresponding at the end of the survey (if any)
- the **Sampler department**
- A **comment** on the sampling operation can be entered at this step.

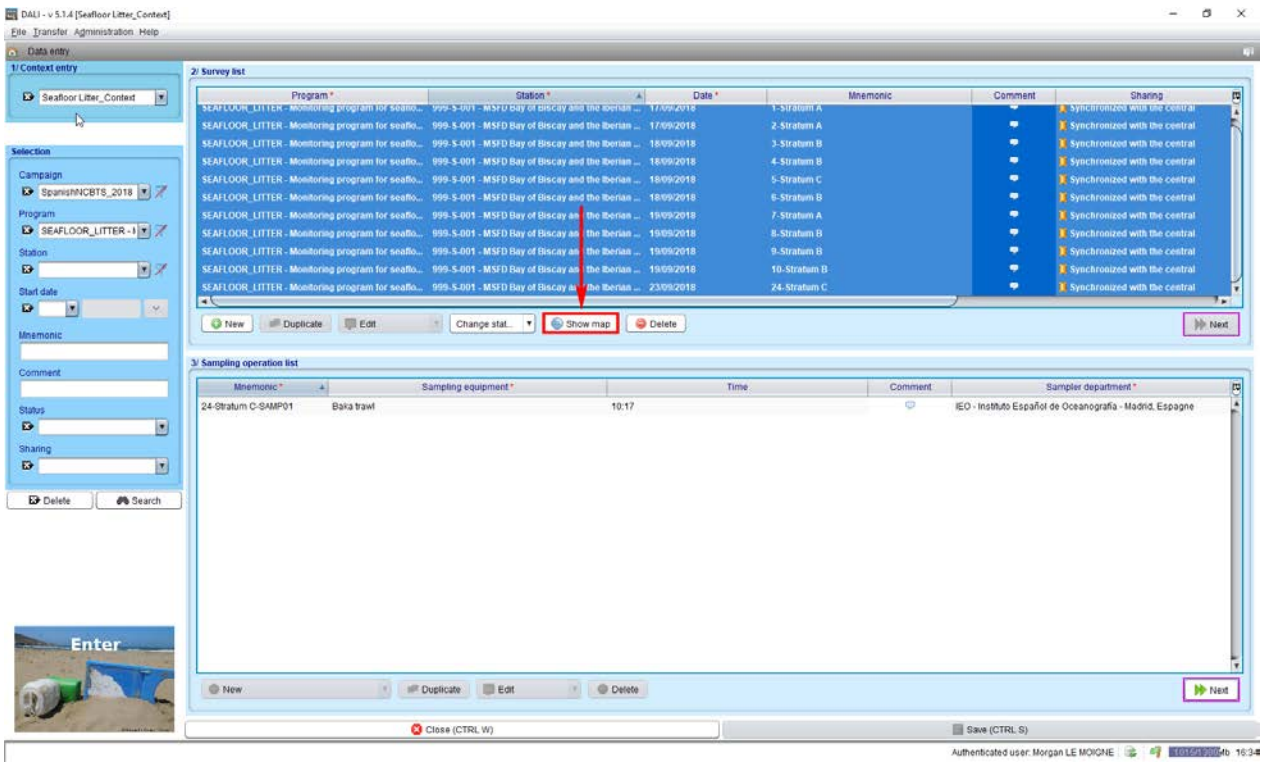
Then click on: Save (CTRL S)

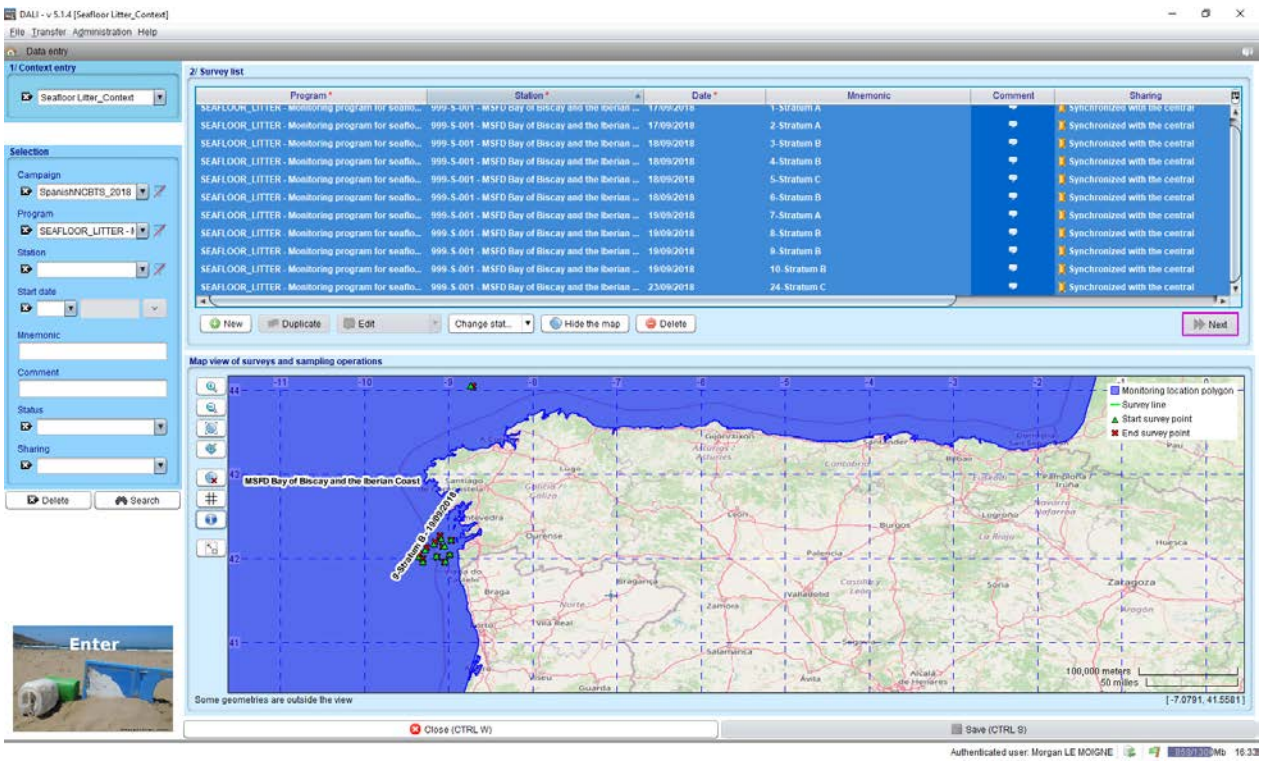
To display the screen to enter additional information of the survey (e.g., the person in charge of the survey/ duration), click on Next at the bottom-right of the screen or **Edit** in the middle of the screen:



Map control

A location Map can be displayed in order to control and detect any errors on the coordinates entered. This function can not be use to fill data in the base.



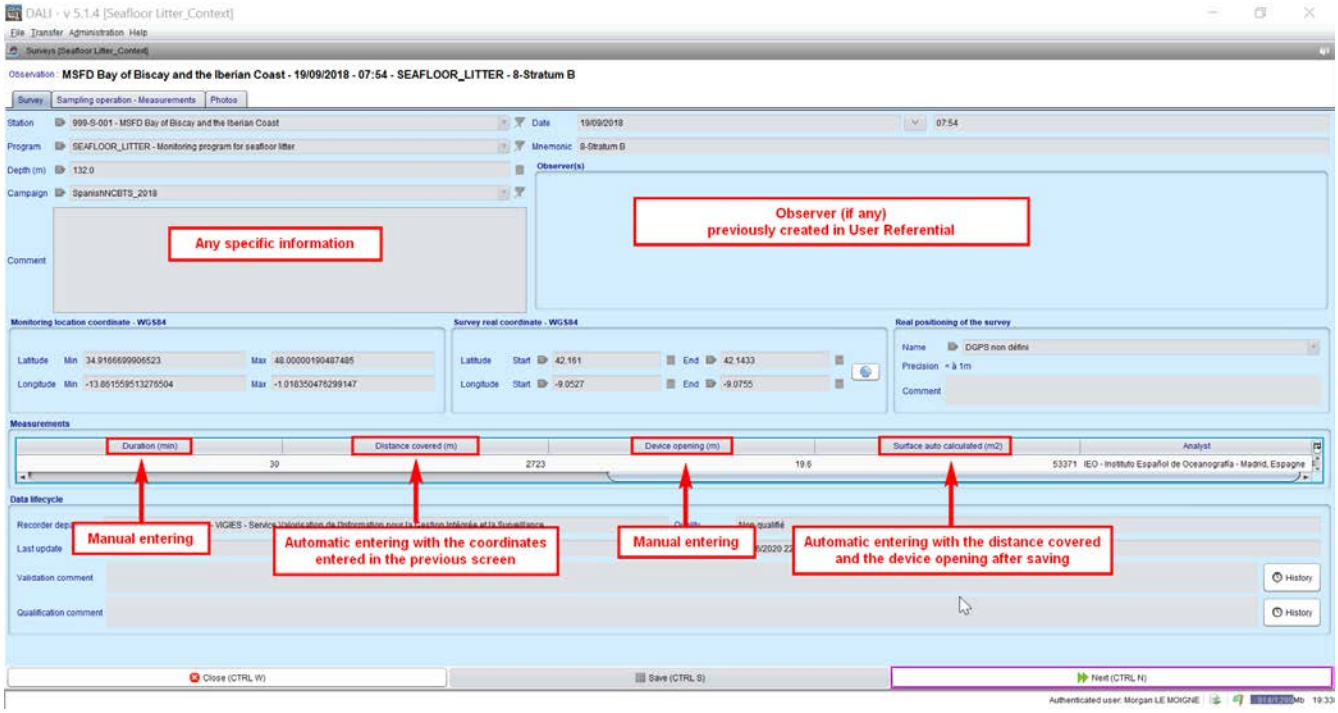


Entering Survey Measurements

Any specific information about the survey can be entered in the comment field: environmental conditions, any events happened during the survey,…

The name of the observer(s) can also be entered. A quick search is run by adding a special character **"*"** before the name or the service to indicate. This person should have been created previously in the User Referential.

The parameters below are entered manually or automatically.

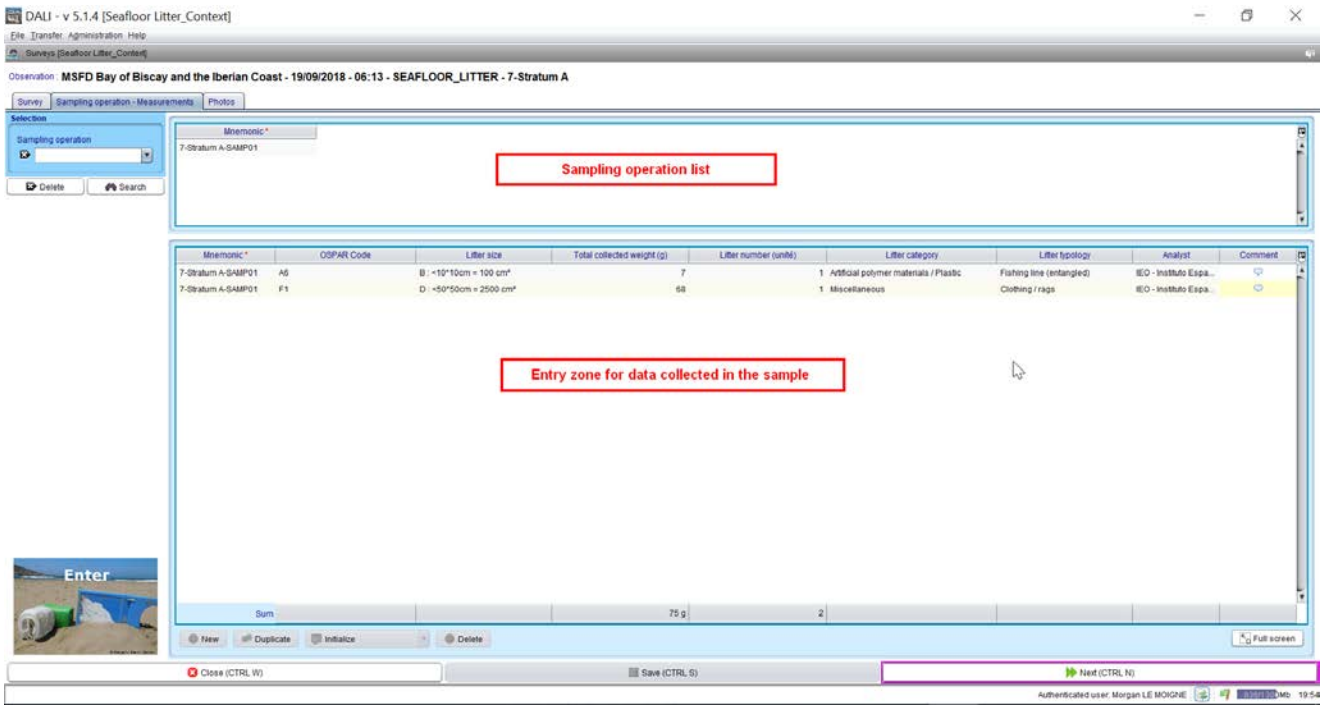


Then, click on Next (CTRL N) to enter the measurements of the sampling operation(s).

Entering sampling operation(s) measurements

The Sampling operation - Measurement tab is organized into two parts:

- the top insert to select the sampling operation on which data is entered
- the bottom part is for entering the measurements related to this sampling operation



For each sampling operation, one or several parameters is/are measured.

As for the survey list, the results lines can be duplicated to make faster the enter of similar lines which have only one or two different informations".

Two types of entries can be made:

1. Data entered line by line
2. Entering using initialization of the data entry grid

1. Entry line by line

As far as possible, use keyboard shortcuts that facilitate data entry, particularly *via*:

- the **Tab** (tabulation) **key :** let you move from one column to another

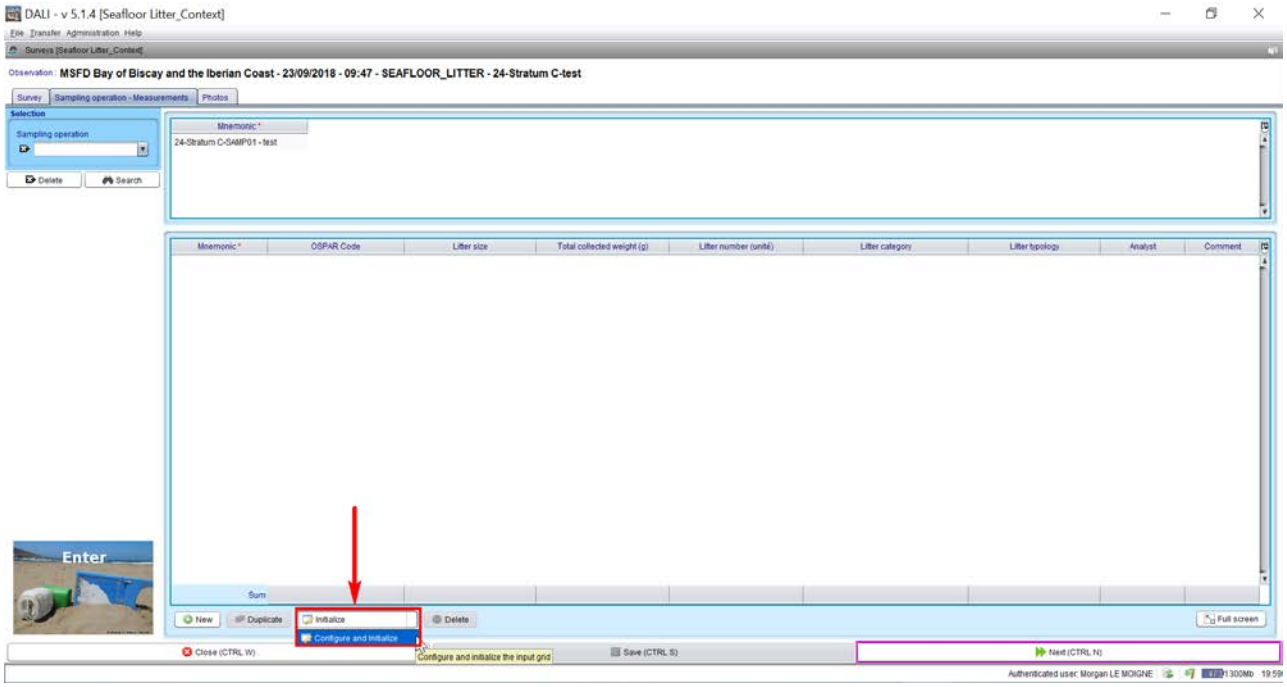
- the **Up/Down arrows** : to select an element from a drop-down list, or to move from one line to another.

The data entry operator selects a MSFD code **which induces the automatic filling of the** Litter category, and Litter typology **fields**. The other fields will be entered manually.

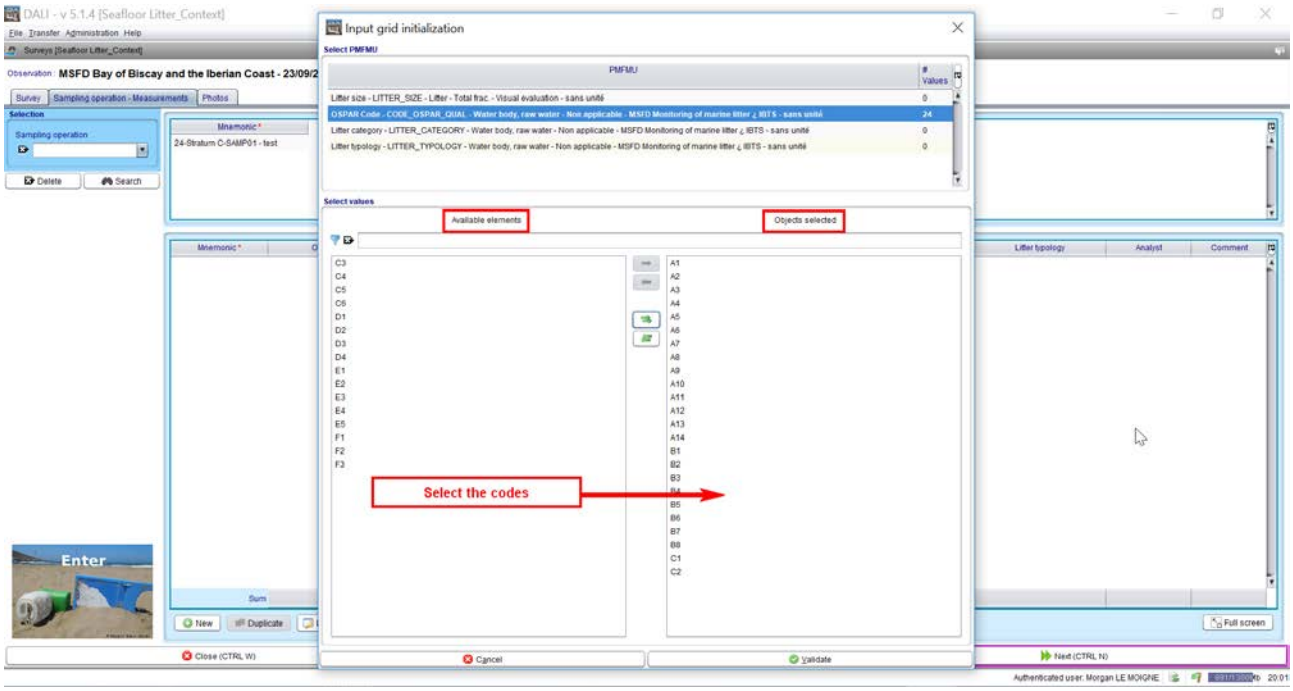
A comment can be filled in if information or specification about the item is indicated on the xls file.

2. INITIALIZING THE DATA ENTRY GRID

Data entry grid initialization is performed before entering the first measurement thanks to the Configure and Initialize button:

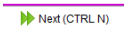


The initialization screen open and the qualitative values of each parameter can be selected in the data entry grid.



A maximum of 3 or 4 parameters (PMFMU above for the Quintuplet : Parameter-Matrix-Fraction-Method-Unit) can be configured.

Once the selections made, the entry grid is displayed and the results can be entered.

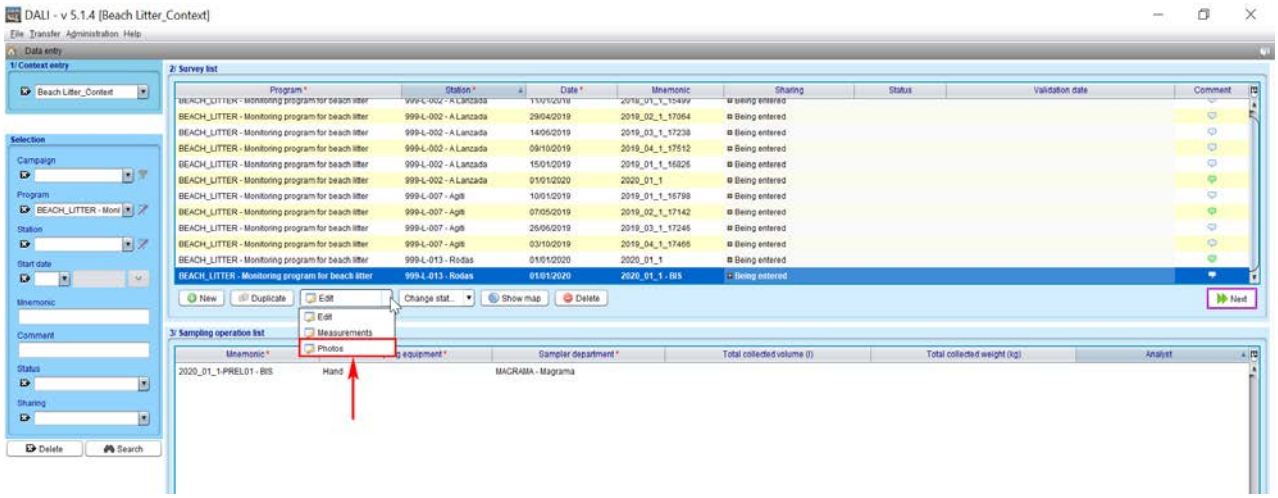
When entries have been done, save them, and click on 

to save photos if any (next chapter). Otherwise, move to a new survey.

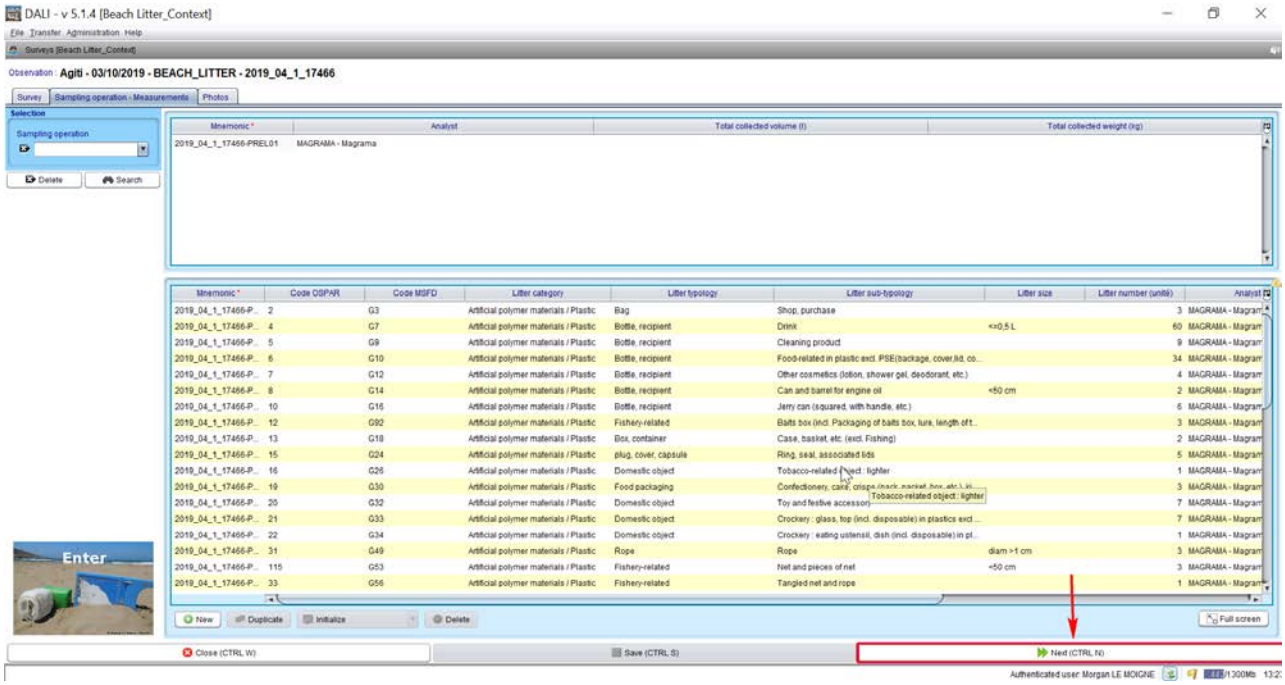
Saving photos

Two ways to display the photo tab :

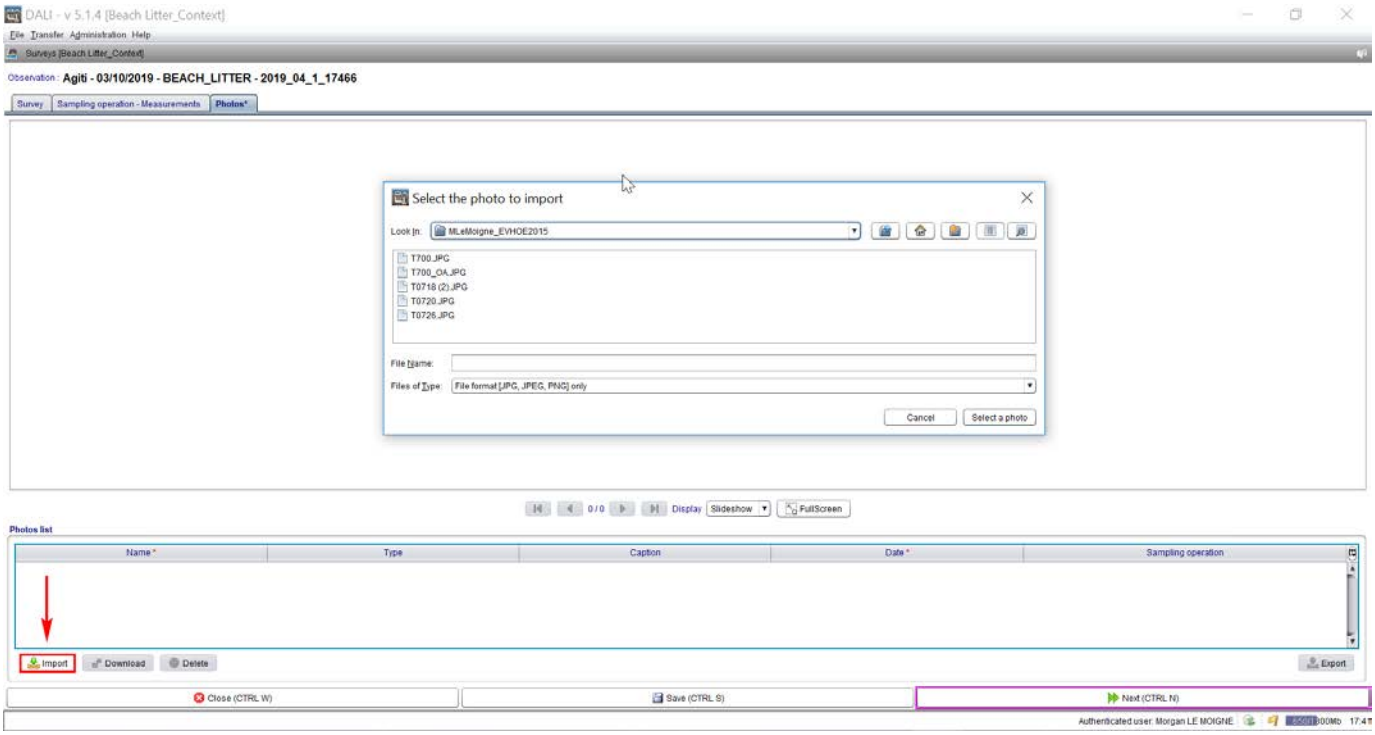
1) From the “Enter” menu



2) From the Sampling operation - Measurements tab



This 3rd tab of this software is used to import photos. The only mandatory field is the **Name** of your photo. The use of survey mnemonic or sampling operation mnemonic is recommended to facilitate the link between photos and results.

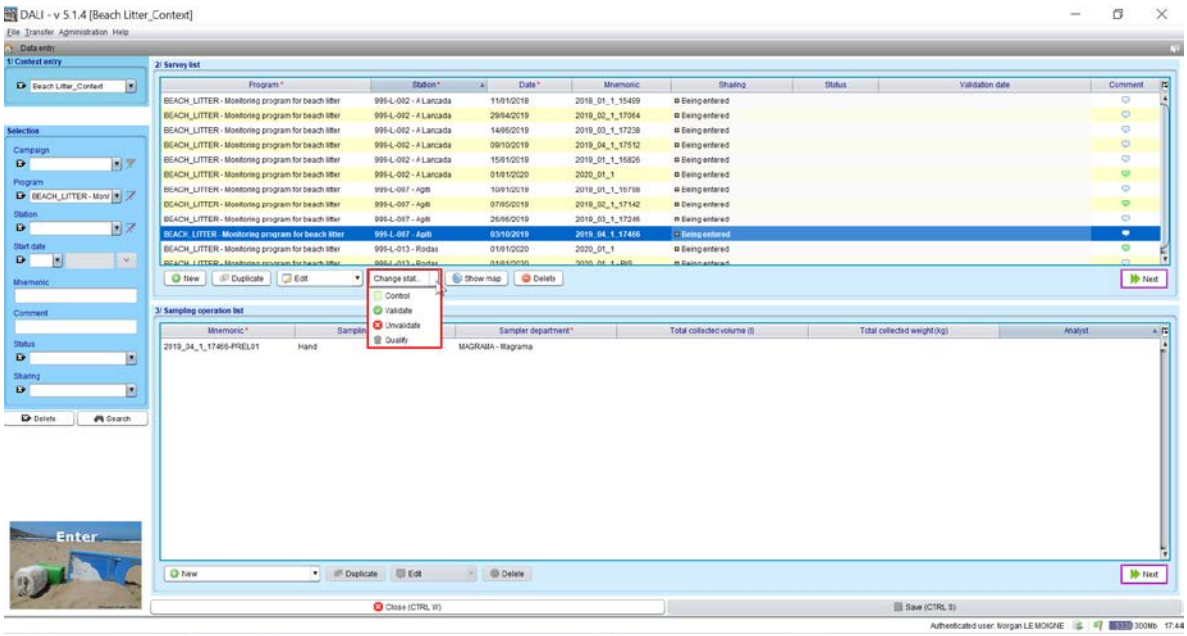


Then, fill the name of the photo and the date when this picture has been taken. You can enter more information in the field Caption.

Then save your entry.

Control and validation

Once the survey and the associated sampling operations have been entered, a status need to be specified for these data *via* the menu **Change state** located below the list of surveys (1st tab):



Synchronizing data with the central database (next chapter) requires that the steps to **control** and **validate** data have been successively performed. To modify data which have already been validated, an **unvalidated** action with a comment explaining the reason why will be required.

The control check aims to ensure that data have been correctly entered in DALI. The following series of control checks are the minimum to be run:

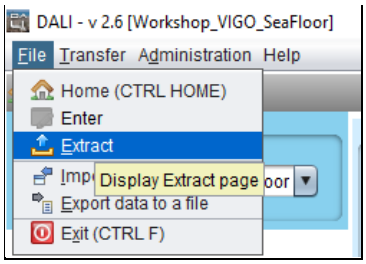
a- Manual and visual checks, per sampling operation, of the sets of codes for litter + associated measurements (as indicated in the previous section).
b- Control checks based on data extracted from DALI beforehand using the extraction module.

Extraction

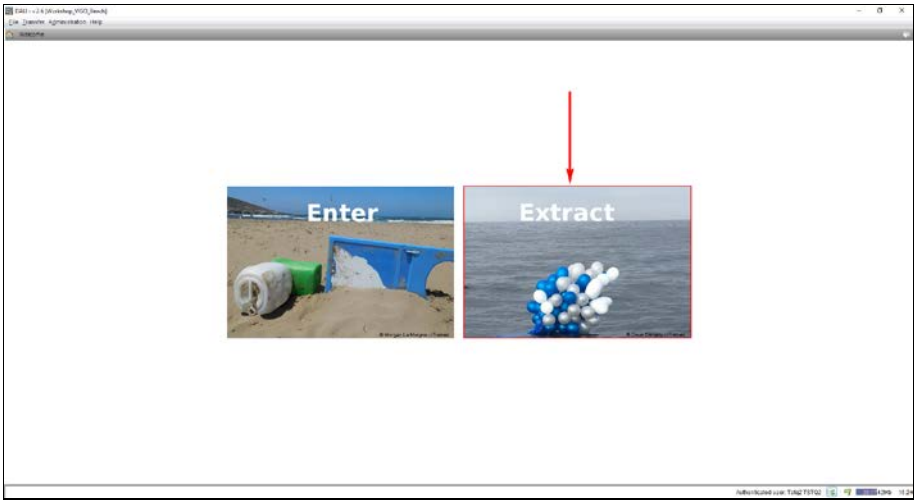
Extraction is useful to make some analysis or to control over data.

Two ways to access to the extraction:

1. Select **Extract** in the **File** tab

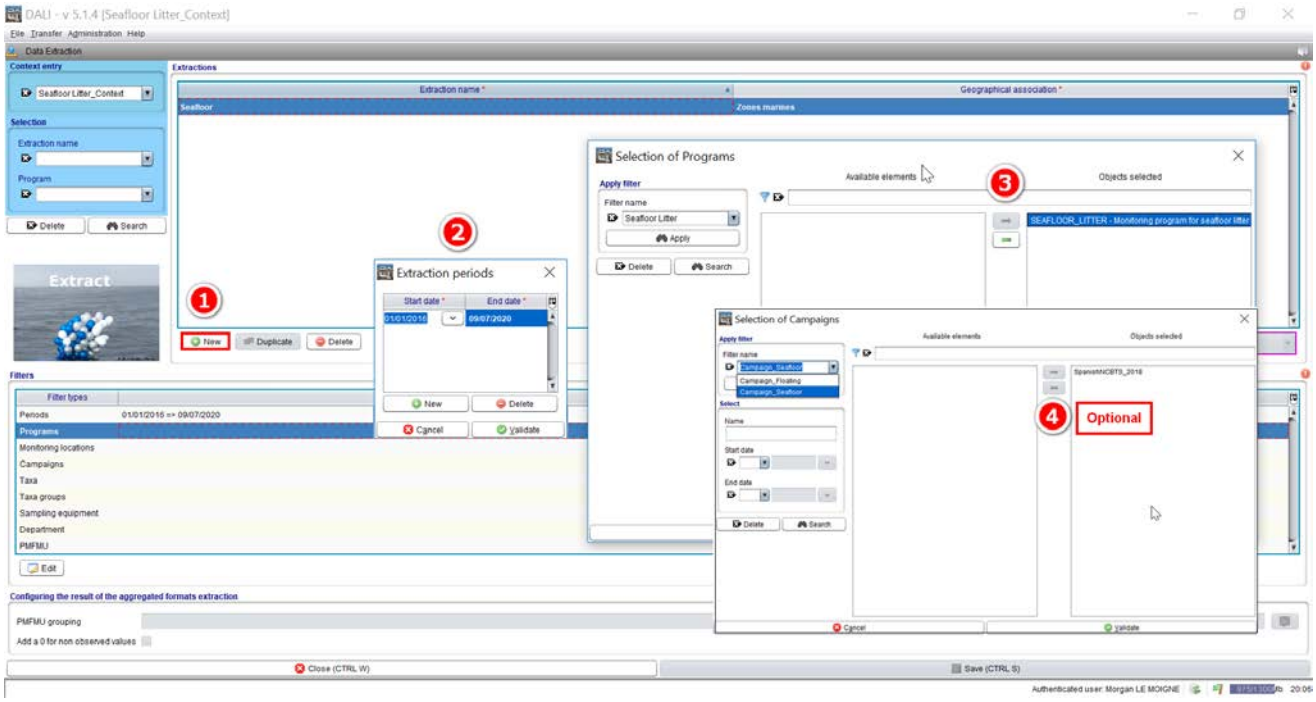


2. After closing the data entry window, open the extraction window by clicking on the picture:



To perform an extraction, click on  and give a name to the extraction.

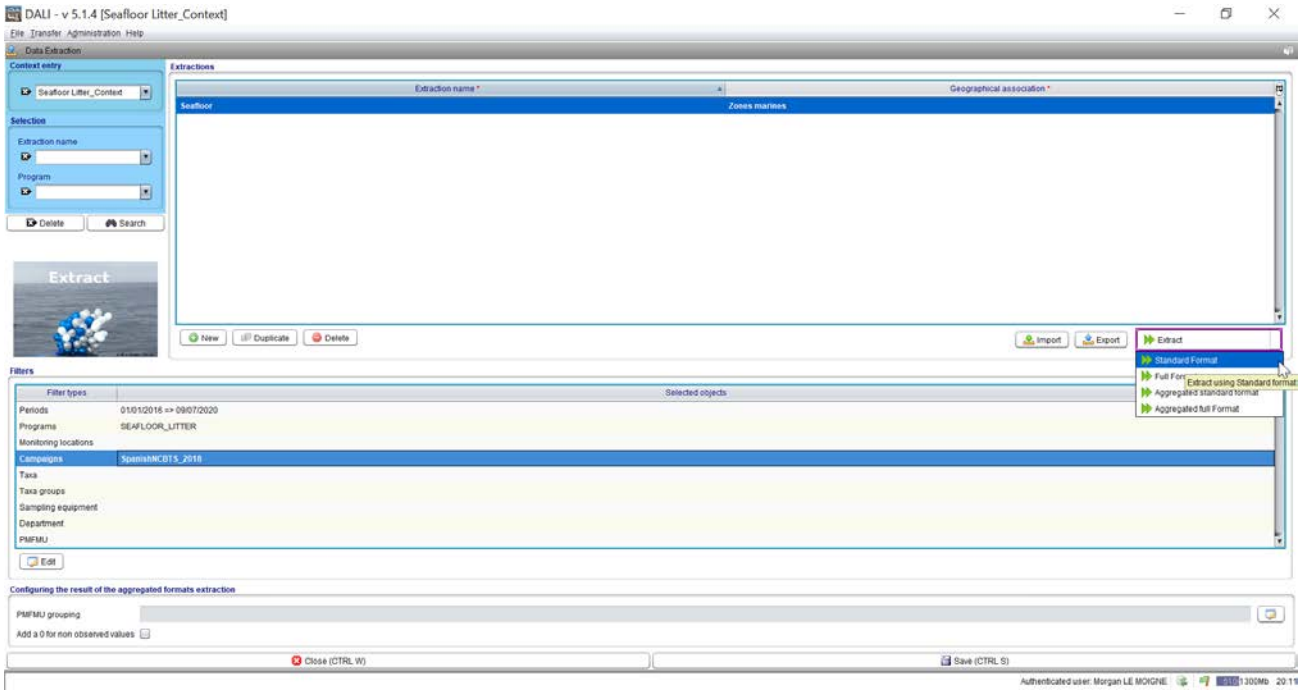
The extraction periods and programs fields are mandatory, whereas the other fields are optional.



Several extraction formats are possible:

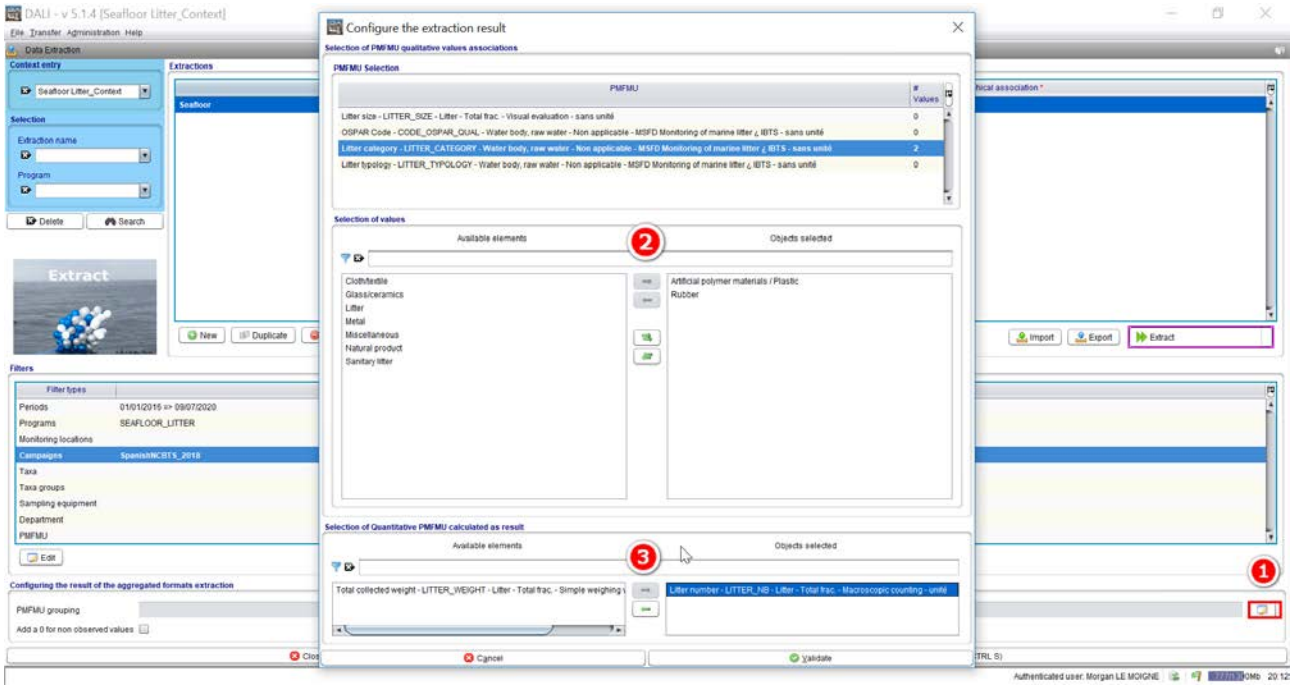
- simple format,
- full format,
- simple aggregated format and
- full aggregated format.

The **simple and full formats** can be obtained without any further parametrization. The **full format** extracts all the DALI fields whereas the simple format extracts a selection of fields parametrized in the software.



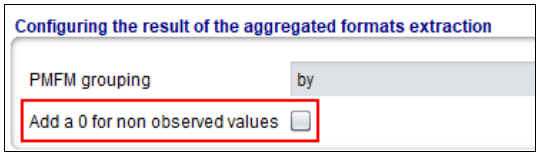
The simple aggregated and full aggregated formats require specific aggregations to find out different parameters in the same column.

In the example below, the aggregation was performed to obtain the number of litter items per MSFD Code :



Aggregations can be very useful for checking the entries.

It is also possible to '**Add 0 for unobserved values**' to have a file with all the associations present in the software:



Data sharing

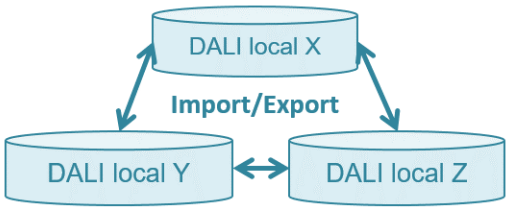
1. LOCAL SHARING

Different people can take part in the data entry of a same programme. There is an exchange system in DALI to facilitate this sharing.

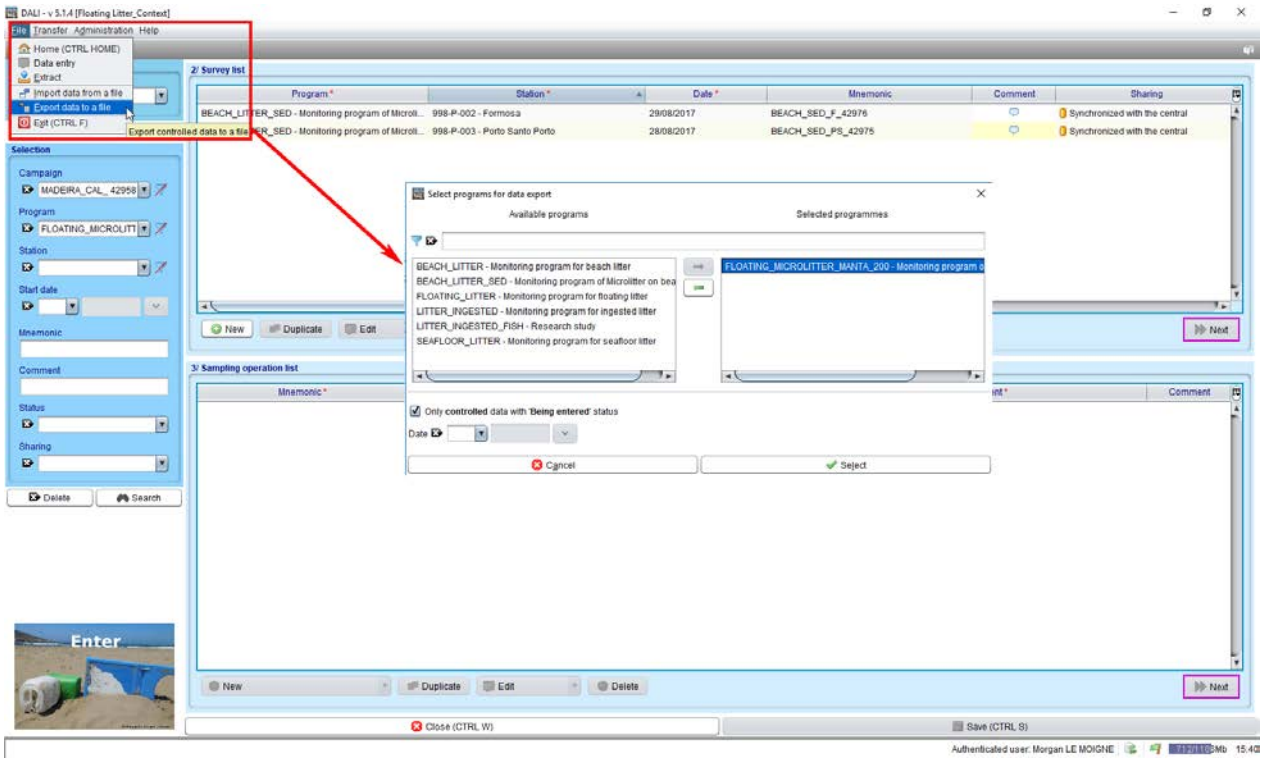
The process to transfer data from one workstation to another meets several needs:

- Allow various actors to carry out simultaneous data entries on distinct local bases, following observations made on the same day at the same location,
- Allow the implementation of the Control/Validate process between different actors (data responsibles, validators) working on distinct local bases.
- Allow the compilation of entered data on different workstations into a single workstation.

The transfer from one workstation to another is managed through a simple exchange of files between users.



Data entered on a workstation X can be exported to a workstation Y through the menus **File/Export data to a file** and **File/Import data from a file**. Surveys should have been **controlled beforehand**.



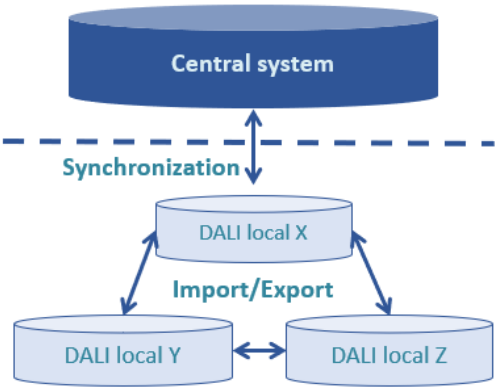
A zipped folder is saved, to be imported to the workstation Y. Once the data is imported, the field Sharing indicates that the surveys are synchronized with a file.

In case of duplications (surveys already existing on workstation Y = same location, same date, same programme), the software informs the user.

The user can visualize duplicated surveys and select those to import.

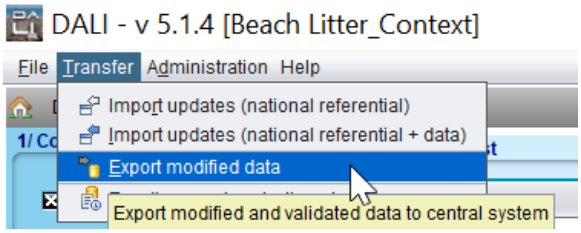
2. SYNCHRONIZATION WITH THE CENTRAL SYSTEM

The synchronization consists in exporting or importing data from the local system (local database) to the central system.

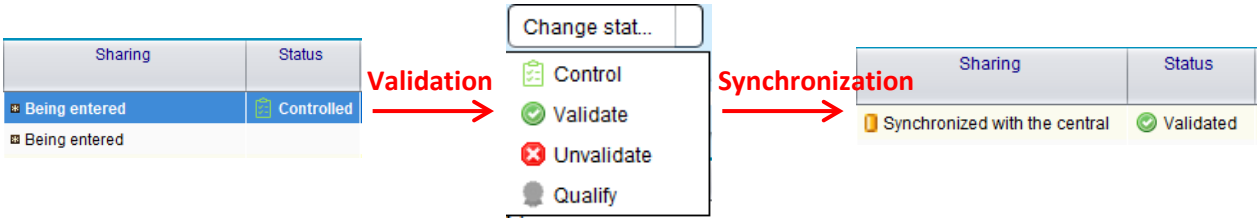


To export, surveys (and associated sampling operations) that have been added or modified since the last export, have to be **validated**.

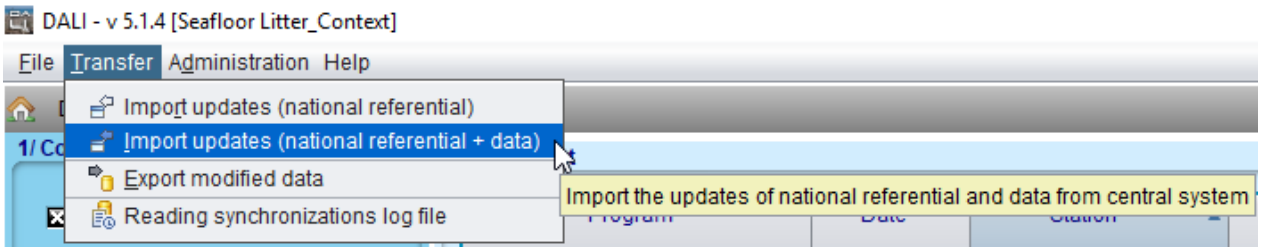
Use **Export modified data** in the **Transfer** tab:



When data have been exported, the **Sharing** field indicates that the survey has been S**ynchronized with the central system.**



To import updates, use **Import updates (national referential + data)** in the **Transfer** Tab**:**



CleanAtlantic

Tackling Marine Litter in the Atlantic Area

Instructions for entering Litter ingested by fish in DAta LItter software connected to a PostGreSQL Database

WP 5.1.3 : IT Developments

Ifremer
Interreg Atlantic Area European Regional Development Fund
EUROPEAN UNION
Clean Atlantic

WP	5
Action	1.3
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participants	Alice Lamoureux & Arnaud Rouilly – ODE/VIGIES Ifremer, Stéphane Bocandé (ISI/IRSI) Ifremer,

Disclaimer

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Foreword

DAta LItter is a software developed to enter data on Marine Litter topic. This software is connected to a PostGreSQL database to enable **harmonised and sustainable data storage**.

This document specifies instructions for entering data collected on Litter ingested by fish.

Dataset come from the scientific article ***Ingestion of plastic debris (macro and micro) by longnose lancetfish (Alepisaurus ferox) in the North Atlantic Ocean - J. Gago, S. Portela, A.V. Filgueiras et al. - Regional Studies in Marine Science 33 (2020) 100977***

The file ***20200519_Lanzon_tratamiento_estadistico.xlsx*** has been downloaded from the link: https://data.mendeley.com/datasets/rvzj2fy39j/1

Only data in red color in the file joined to this document have been included in this test.

Installation / Launch

Unzipped the **dali_val_postgresql.zip** folder on your computer and double-click on the two other folders. Then, you can launch **Dali.exe** every time.

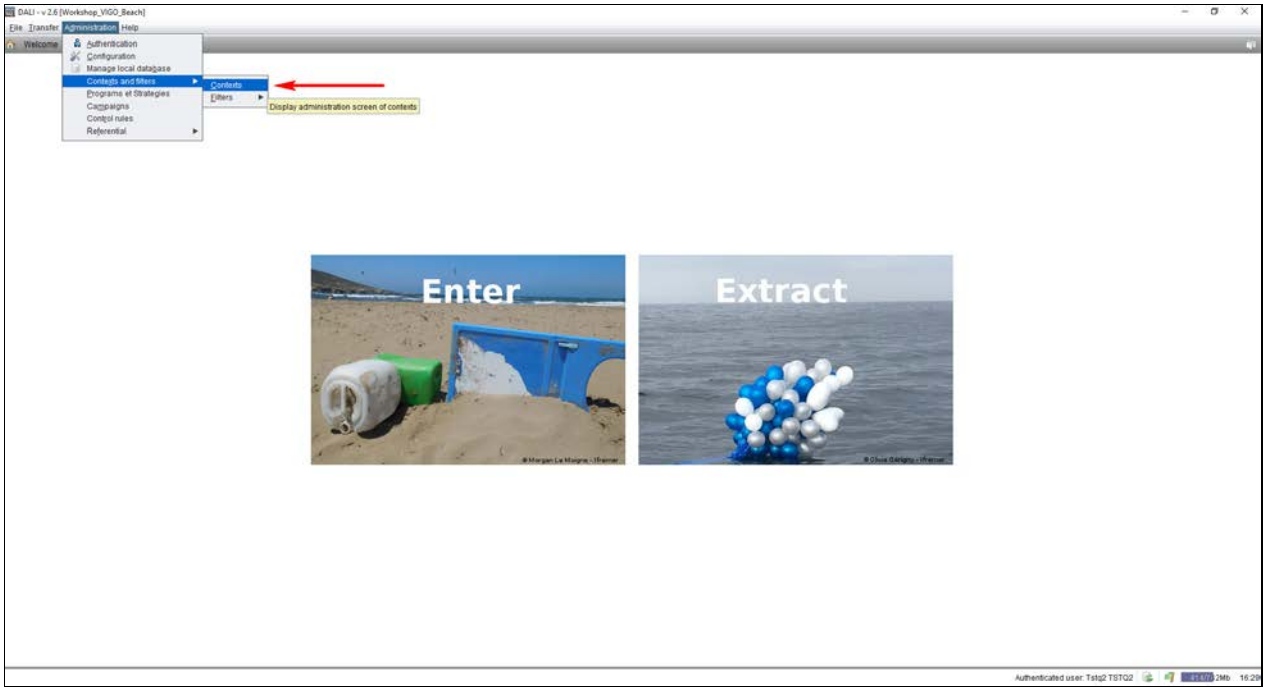
Enter your **login** and **password** sent by **assistance@ifremer.fr on 24/08/2020**.

Prerequisite for data entry

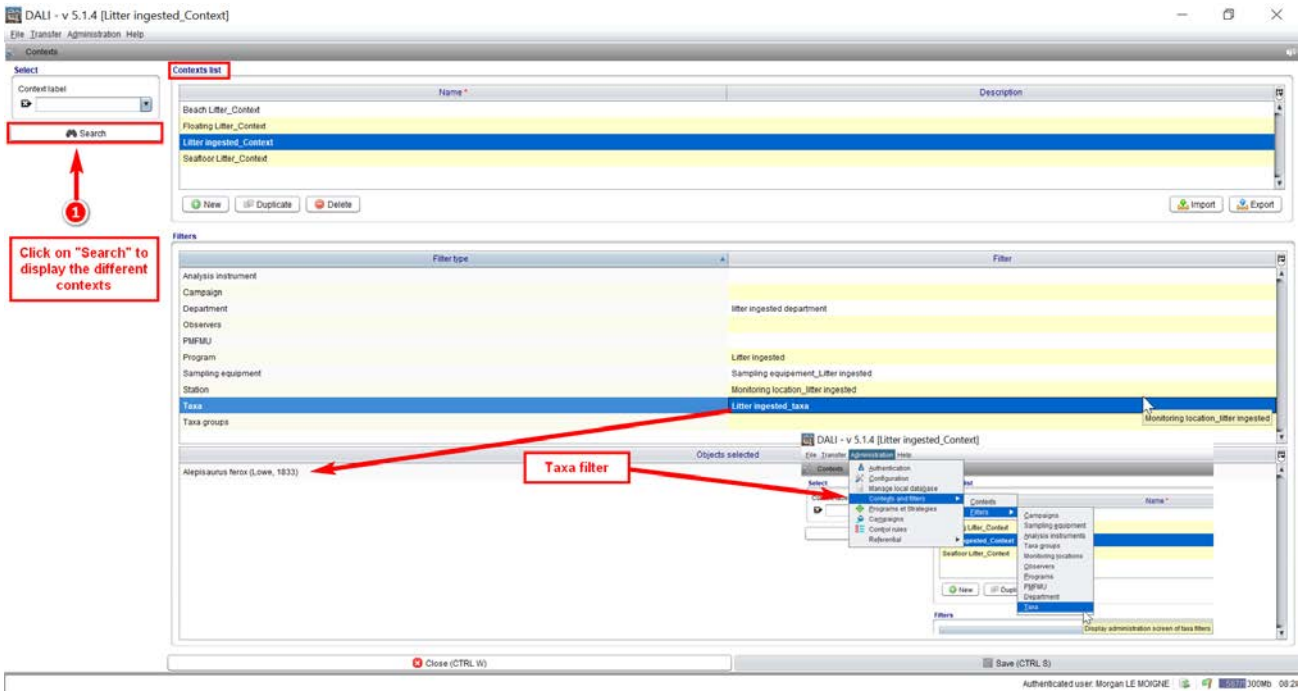
In order to enter data in the software, the user needs to refer to the proper program and the associated strategy. For Litter ingested by fish, the **program** is **LITTER_INGESTED_FISH – Research study** and the strategy is **Research Study**.

1. CONTEXT / FILTERS

To facilitate data entry, **user can create a "user context"**. This context is obtained by applying several filters targeting the metadata & data to be entered (monitoring location, data responsible, service,…). **To facilitate this test phase, the user context *Litter ingested_Context* is provided in this software.**



The different available contexts are displaying by following the steps below :



The content of the filters can be consulted by clicking on one of them.

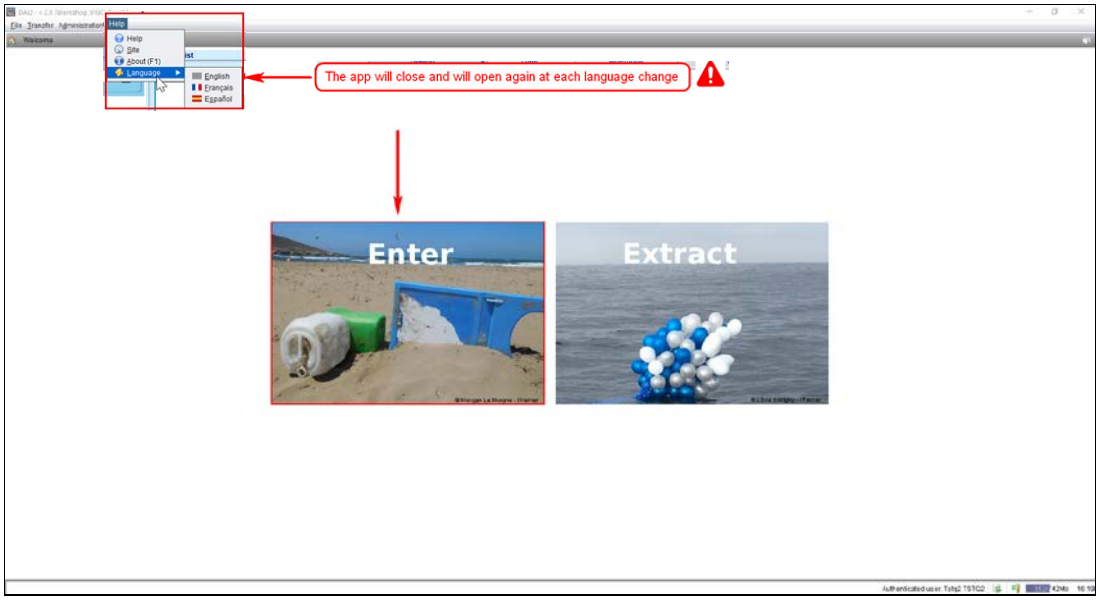
As the referential management functionalities are not developed yet, the filters modification is limited to add or delete existant values from the referential to the filter's list.

This feature will be available at the beginning of 2021.

The referential contents are based on historical datas and current protocols. You can create your own filters using the tab "Administration">"Filters"

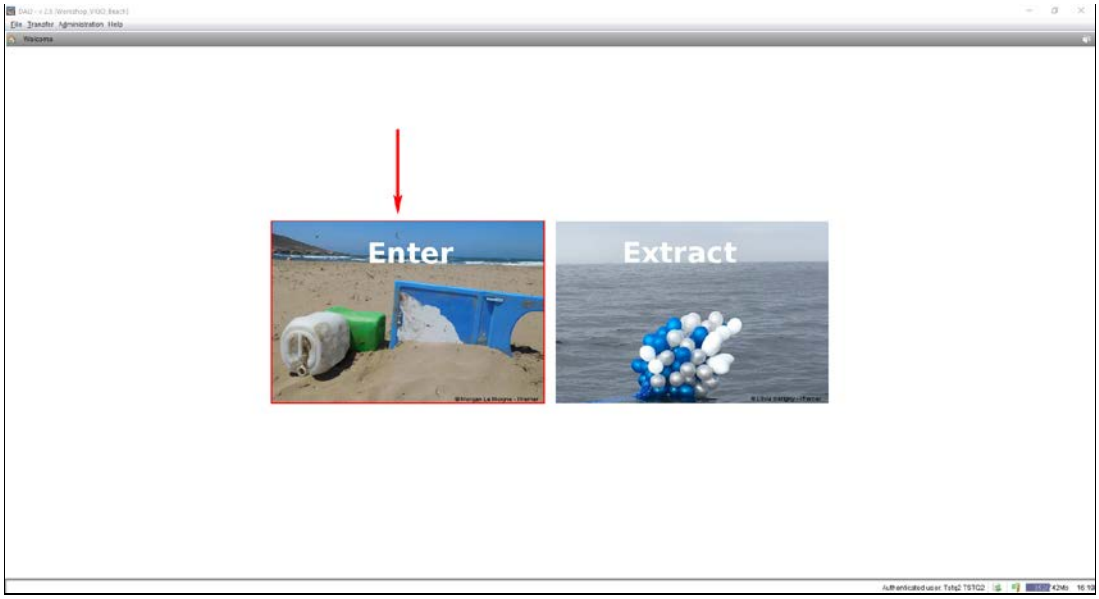
2. DATA ENTRY WINDOW

You can select your language (English, French or Spanish) in the “Help” tab:

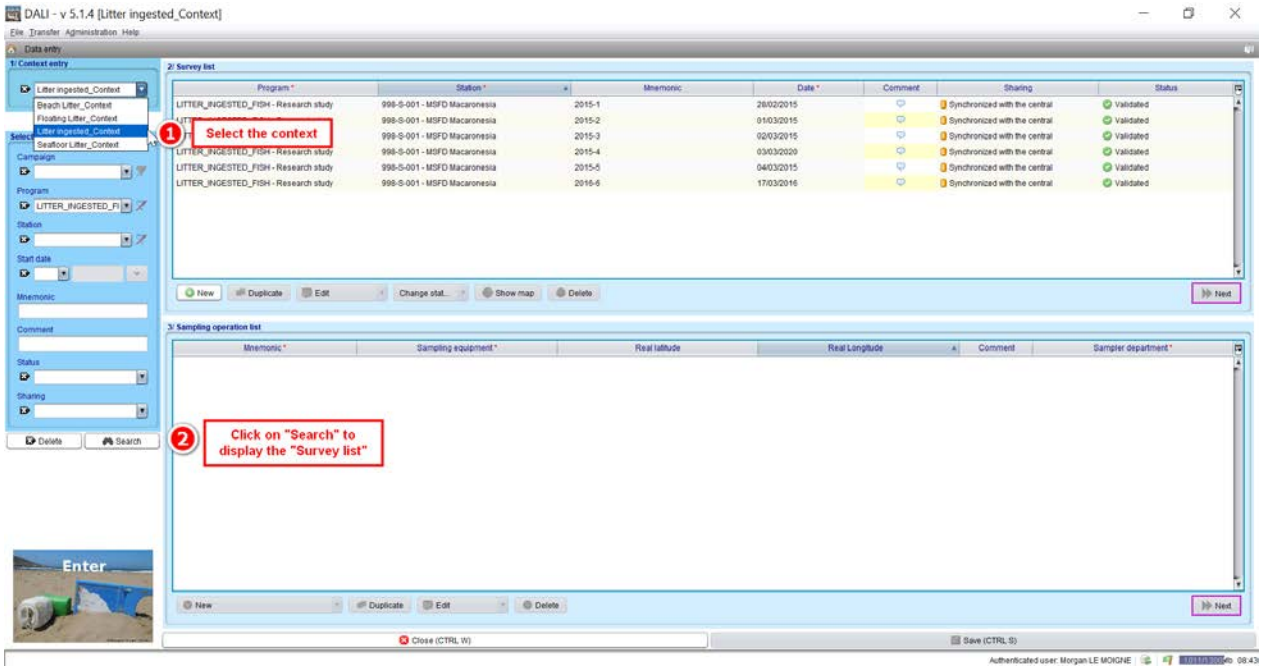


In this test phase, you may encounter different traduction or traduction missing due to the difference between traduction of the software and traduction of the data enter. Don’t hesitate to let us know.

Open the entry window by clicking on the picture:

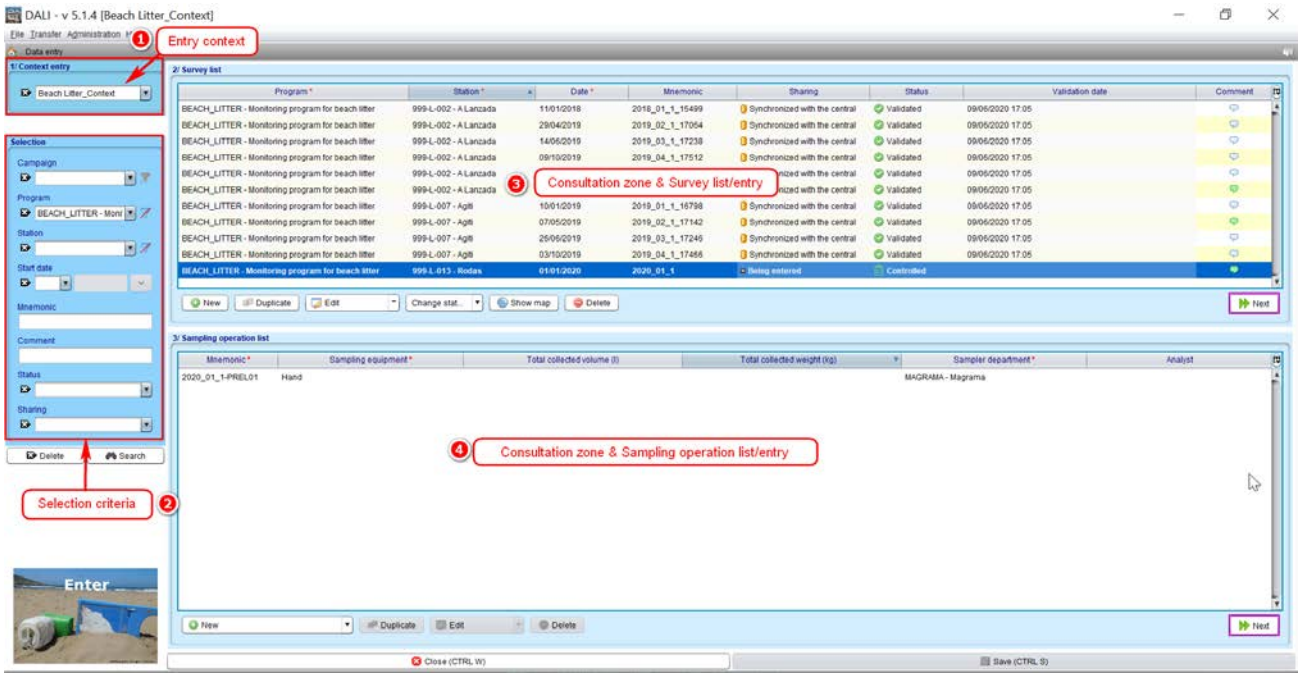


To display your data, select the properly context and click on Search :



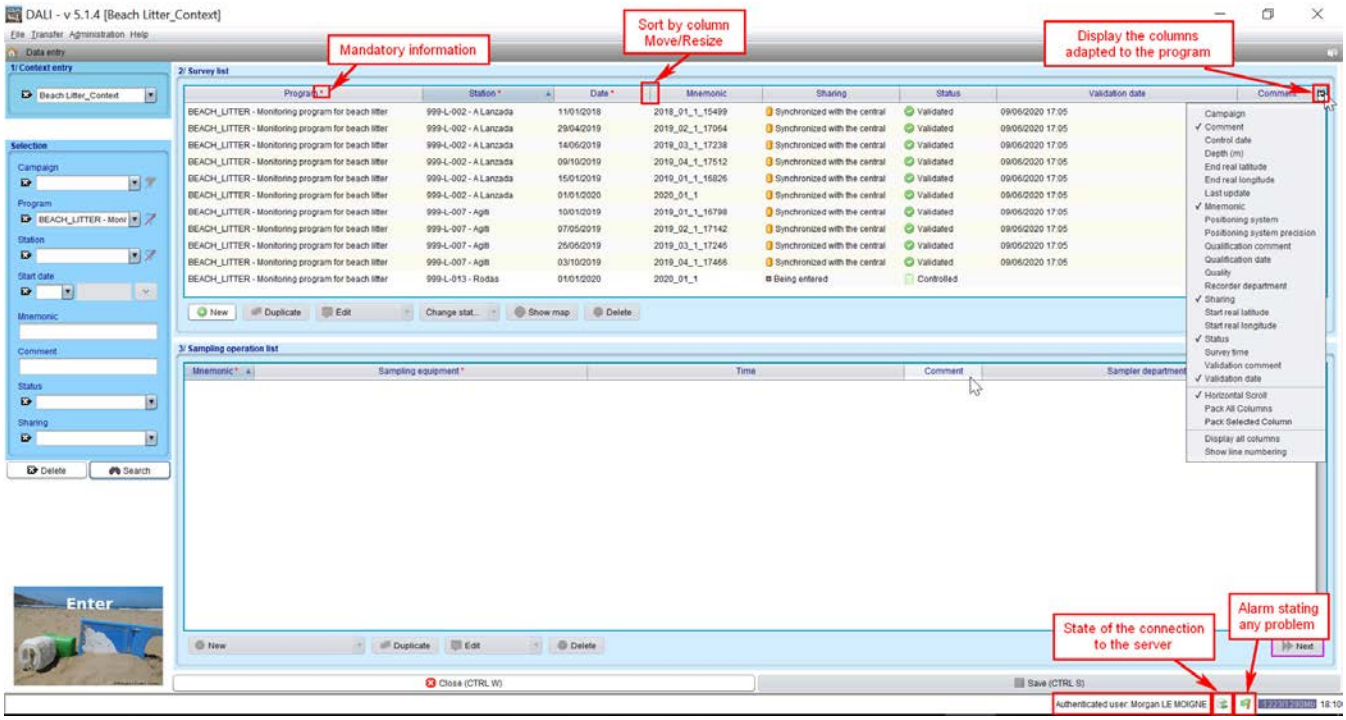
The main data entry window in the software is organized into four parts:

1) The choice of entry context is located at the top left
2) Beneath, the search window which can be used to refine which data is displayed according to filters
3) The list of survey at the top right
4) Beneath, the list of sampling operations



3. TIPS AND HINTS

The screenshot below shows the functions you need to enter data & metadata.



Important to notice : the order of the columns can also be changedby clicking and draging the column from its original place to the desired position. To sort the rows of the table according to a column, click on the column name : first click cross sorting, second click: descending sorting.

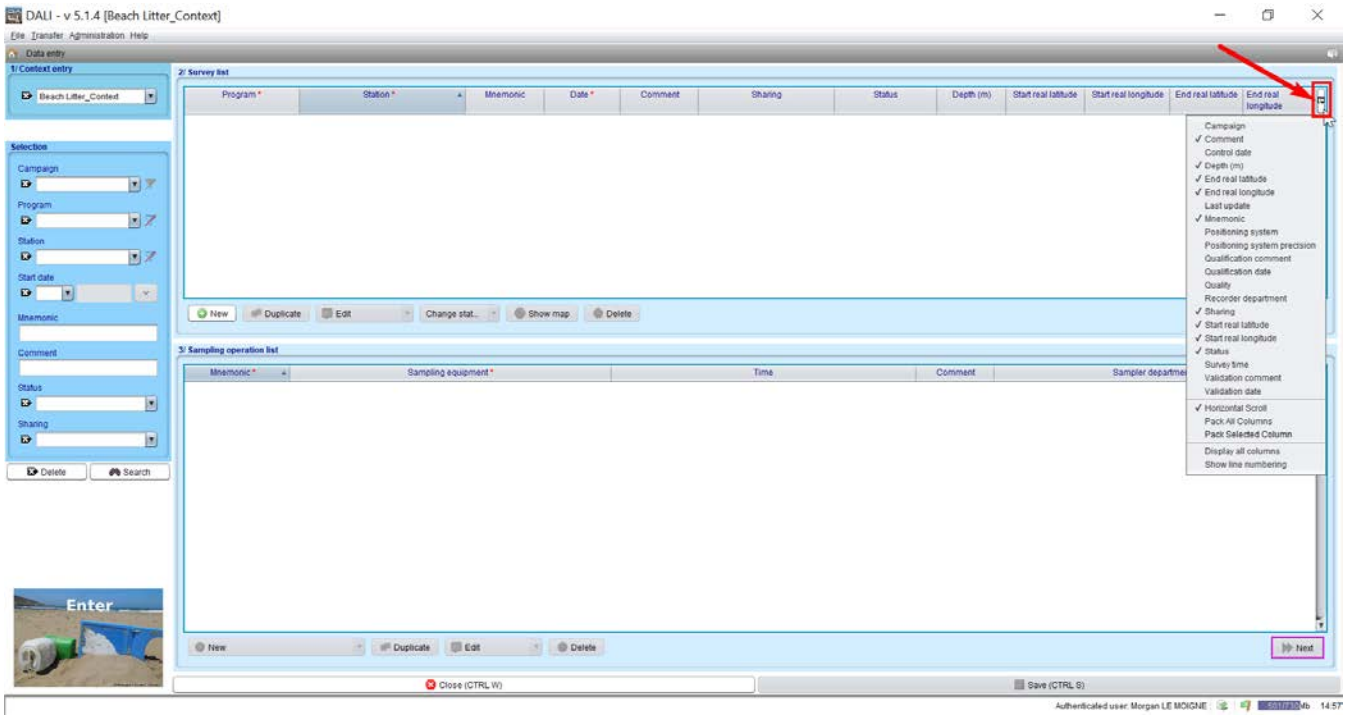
4. MAPPING TABLE

The mapping table below shows in the **left column**, the fields and parameters used in SEAFLOOR_LITTER program and in the **right column**, the originating fields from the source file.

This will help to understand how data have been entered in this test phase.

DALI Database Fields	Fields from "Lanzon_tratamiento_estadistico.xlsx" file from *Gago et al, 2020*
1st Tab - *Survey list*	
Program	DALI adding
Station	MSFD Region
Mnemonic	Year-Survey Number
Date	Date
Comment	Comment (if any)
Sampling operation list	
Mnemonic	Sample
Sampling equipment	DALI adding
Real latitude	Latitude
Real longitude	Longitude
Fish weight	Weight
Fish Length	Length
Comment	Comment (if any)
Analyst - ***Field automatically completed from strategy information***	IEO
Sampler department - ***Field automatically completed from strategy information***	IEO
2nd Tab - *Survey*	
Comment	Comment (if any)
3rd Tab - *Sampling operation - Measurements*	
Mnemonic	Sampling operation Mnemonic chosen from the drop-down list
Taxon	animal species (Worms referential)
Part of the gastrointestinal system	Part of the gastrointestinal system analyzed
Litter category	Level_1_ Materials from TG-ML List
Litter typology	Fibre, Fragment
Type of Polymer	Polymer
Litter number	No. Macroplastic or No Microplastic
Litter size	Macroplastic [5-20[mm or Microplastic [0-5[mm ***from DALI structuration***
Litter weight	Plastic weight
Comment	Description ; Color
Analyst - ***Field automatically completed from strategy information***	IEO

Before starting any entering action, pay attention to make sure that all the fields of the surveys are correctly displayed on the screen matching with the survey fields described above. The display is done using the button at the top right of the screen.



Entering Surveys

Surveys are entered in the upper part of the software screen.

To create a new survey, click on 

. An empty survey line is created. The columns displayed in the list of surveys make up the basic elements which can be entered.

For each survey to enter, perform the following operations:

- Select the **program LITTER_INGESTED_FISH**
- Select the **Station** corresponding to a MSFD marine sub-region (previously included in the referential)
- **Specify the date of the Survey** *via* the calendar or manually
- Specify a Survey **Mnemonic** (confer to the mapping table above)
- **Write a comment** (optional). This comment will provide information about the general conditions during the survey, or about issues related to the survey.

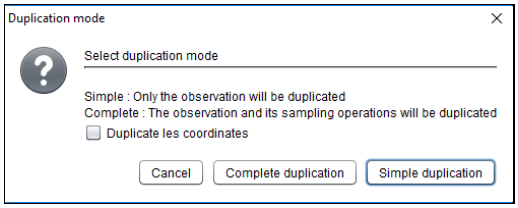
Once the survey has been entered, click on 

to create a sampling operation.

To delete a survey, click on: 

A survey can also be **duplicated**. Select the survey to duplicate and click on: 

A **simple duplication** or a **complete duplication** of the survey is posible. The complete duplication means that you will duplicate the survey **and** its sampling operation.



Entering sampling operations

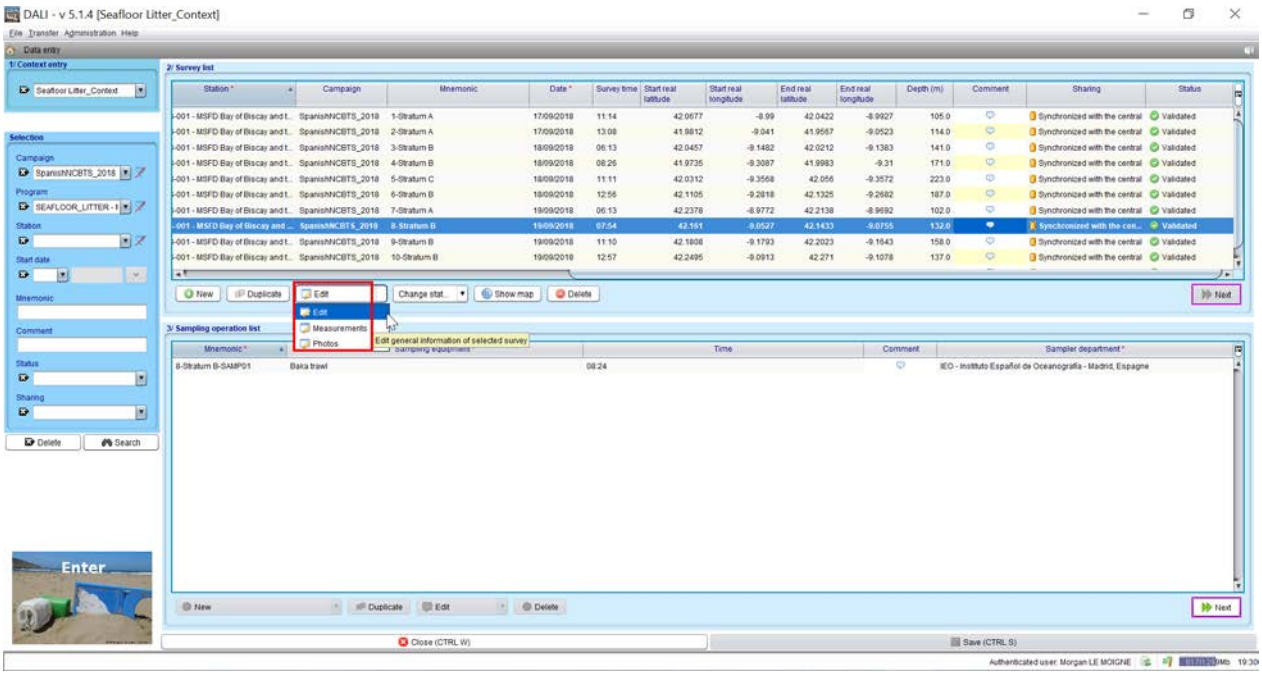
After clicking on Next in the survey list or New in the sampling operation insert, you will create sampling operations.

For each sampling operation to be entered in the same survey, specify:

- the **sampling operation Mnemonic code** (confer to the mapping table above)
- the **Sampling equipment**
- the **coordinates** of the sampling
- the **Positioning system** to choose in the drop-down list
- the **characteristics** of the fish (weight, length)
- the **Sampler department**
- the **Analyst** department of the sample treatment
- A **comment** on the sampling operation can be entered at this step.

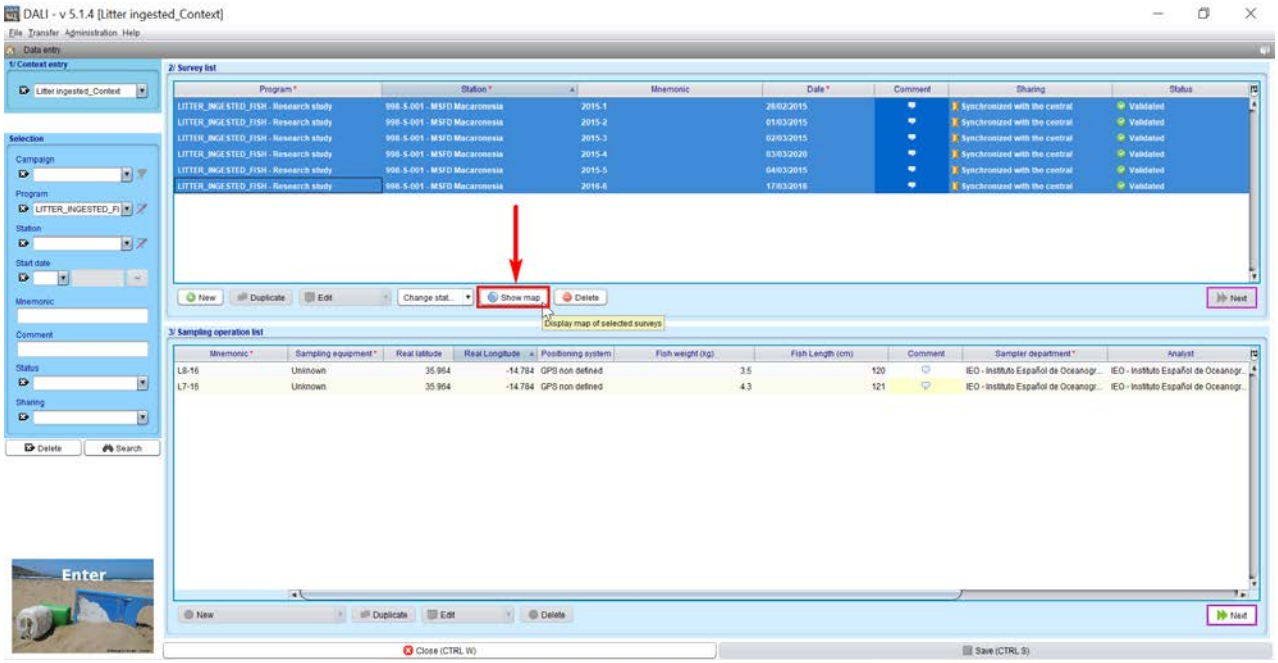
Then click on: Save (CTRL S)

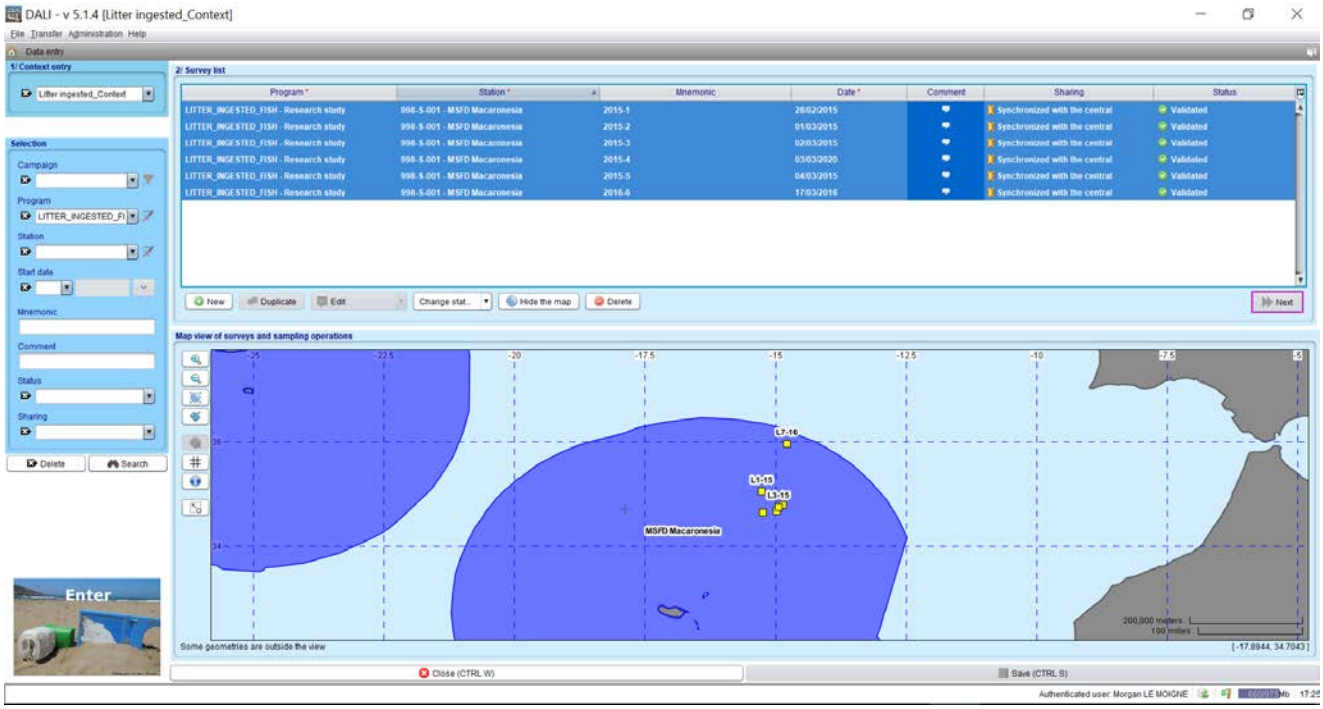
To display the screen to enter additional information of the survey (e.g., the person in charge of the survey/ duration), click on Next at the bottom-right of the screen or Edit in the middle of the screen:



Map control

A location Map can be displayed in order to control and detect any errors on the coordinates entered. This function can not be use to fill data in the base.



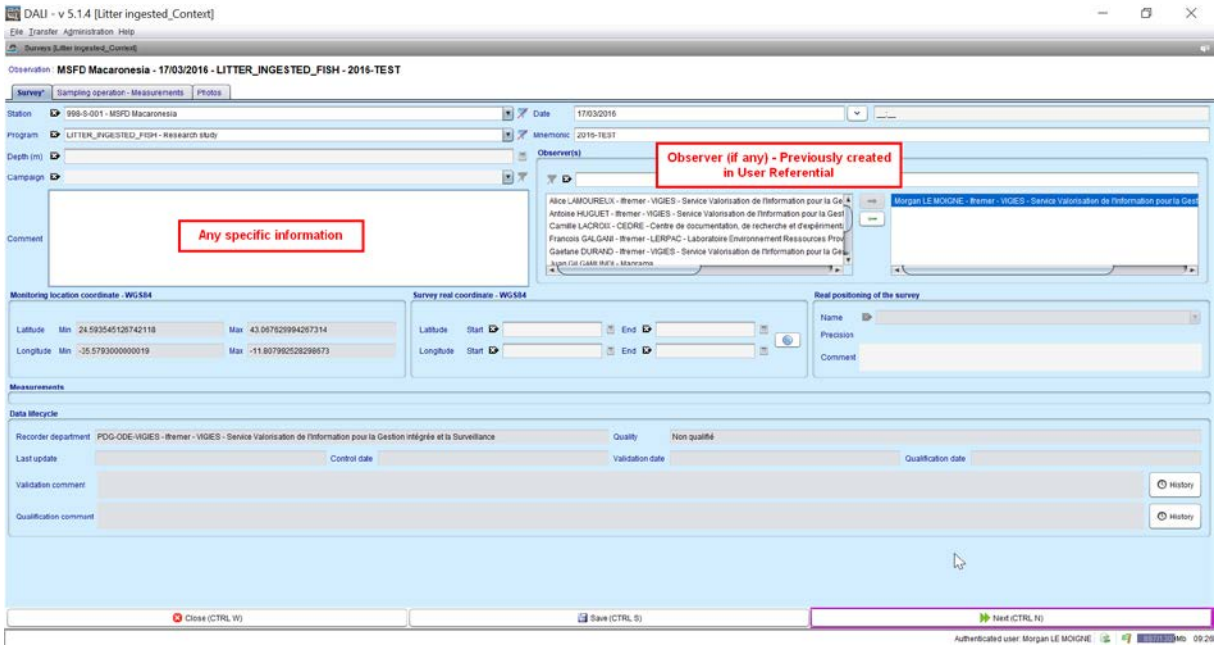


Entering survey Measurements

Any specific information about the survey can be entered in the comment field: environmental conditions, any events happened during the survey,…

The name of the observer(s) can also be entered. A quick search is run by adding a special character **"*"** before the name or the service to indicate. This person should have been created previously in the User Referential.

The parameters below are entered manually or automatically.

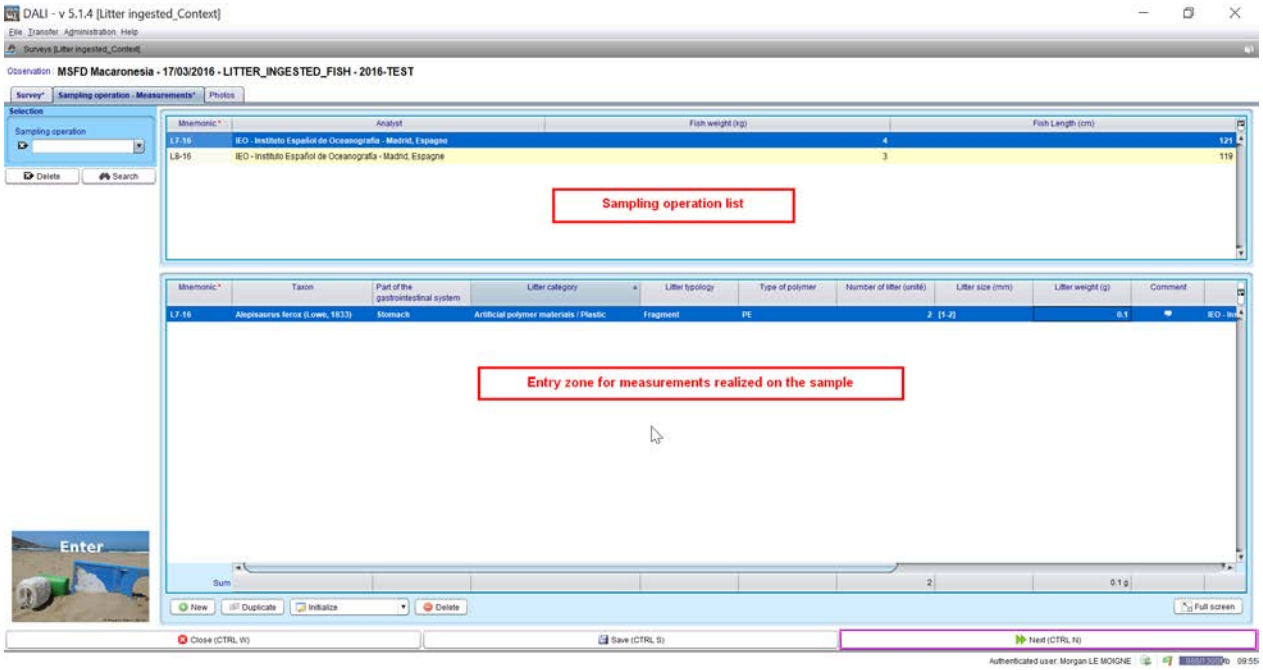


Then, click on Next (CTRL N) to enter the measurements of the sampling operation(s).

Entering sampling operation(s) measurements

The Sampling operation - Measurement tab is organized into two parts:

- the top insert to select the sampling operation on which data is entered
- the bottom part is for entering the measurements related to this sampling operation



For each sampling operation, one or several parameters is/are measured.

As for the survey list, the results lines can be duplicated to make faster the enter of similar lines which have only one or two different informations".

Two types of entries can be made:

1. Data entered line by line
2. Entering using initialization of the data entry grid

1. Entry line by line

As far as possible, use keyboard shortcuts that facilitate data entry, particularly *via*:

- the **Tab** (tabulation) **key :** to move from one column to another
- the **Up/Down arrows** : to select an element from a drop-down list, or to move from one line to another.

The data entry operator selects or enters:

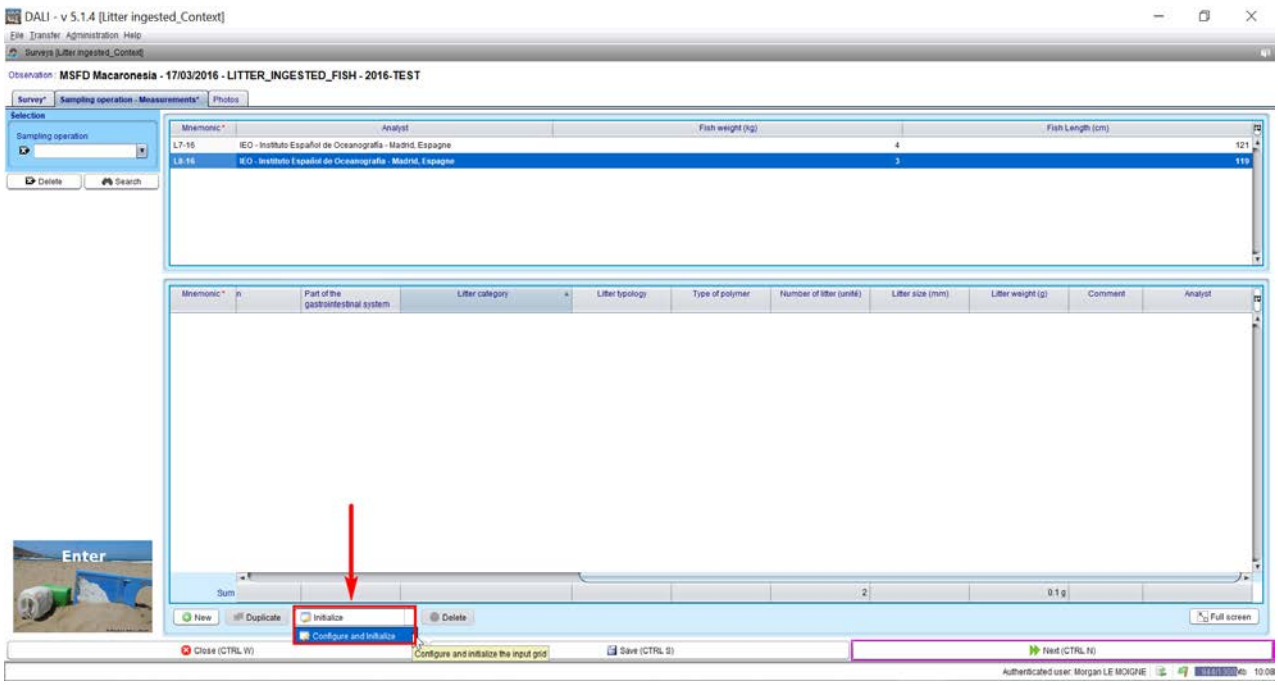
⇨ the proper **Mnemonic**

⇨ the taxon of the fish to be choosen in the drop-down list (here just one choice provided by the Taxa filter)

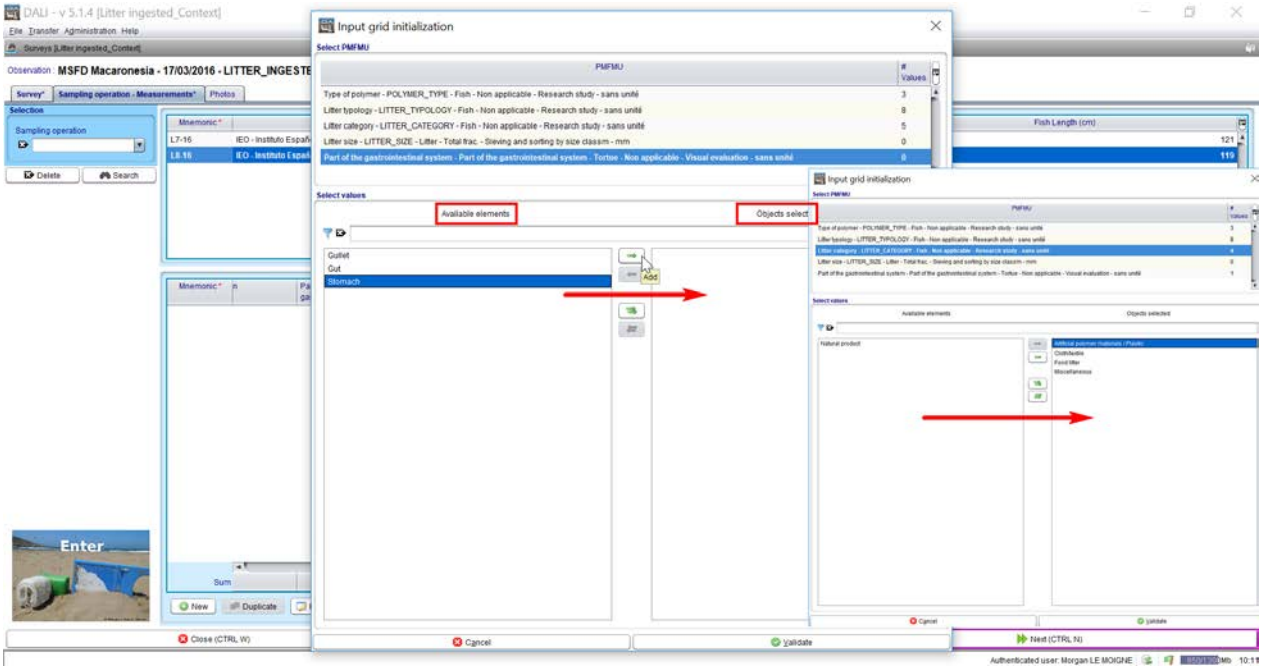
- ⇨ The Part of the gastrointestinal system to be choosen in the drop-down list
- ⇨ The Litter Category to be choosen in the drop-down list
- ⇨ The Litter typology to be choosen in the drop-down list
- ⇨ The Type of polymer to be choosen in the drop-down list
- ⇨ The number of litter
- ⇨ The size to be choosen in the drop-down list
- ⇨ **A comment** can be indicated if information or a specification about the item is noted on the xls file.

2. INITIALIZING THE DATA ENTRY GRID

Data entry grid initialization is performed before entering the first measurement thanks to the Configure and Initialize button:



The initialization screen open and the qualitative values of each parameter can be selected in the data entry grid.



A maximum of 3 or 4 parameters (PMFMU above for the Quintuplet : Parameter-Matrix-Fraction-Method-Unit) can be configured.

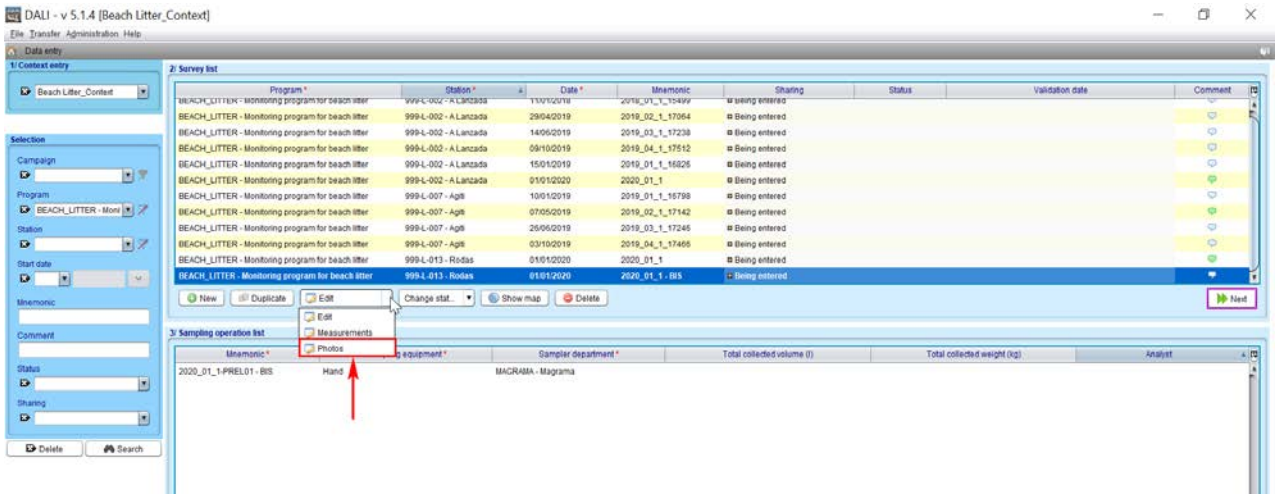
Once the selections made, the entry grid is displayed and the results can be entered.

When entries have been done, save them, and click on Next (CTRL N) to save photos if any (next chapter). Otherwise, move to a new survey.

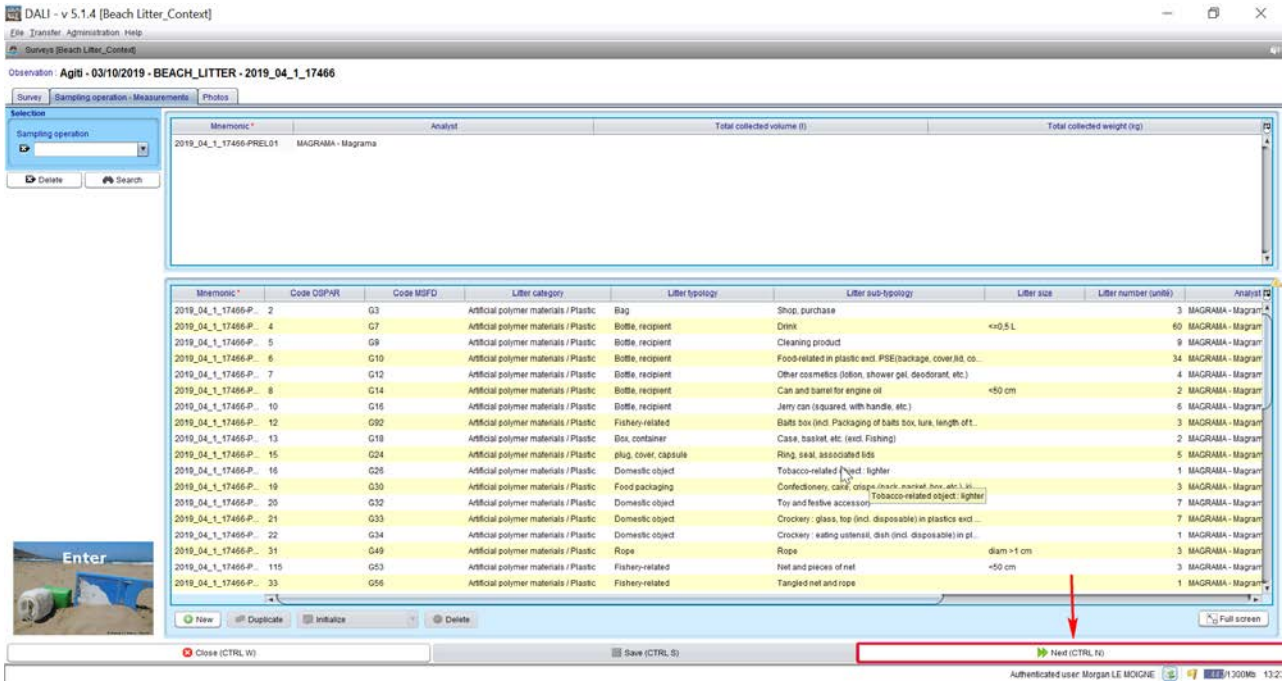
Saving photos

Two ways to display the photo tab :

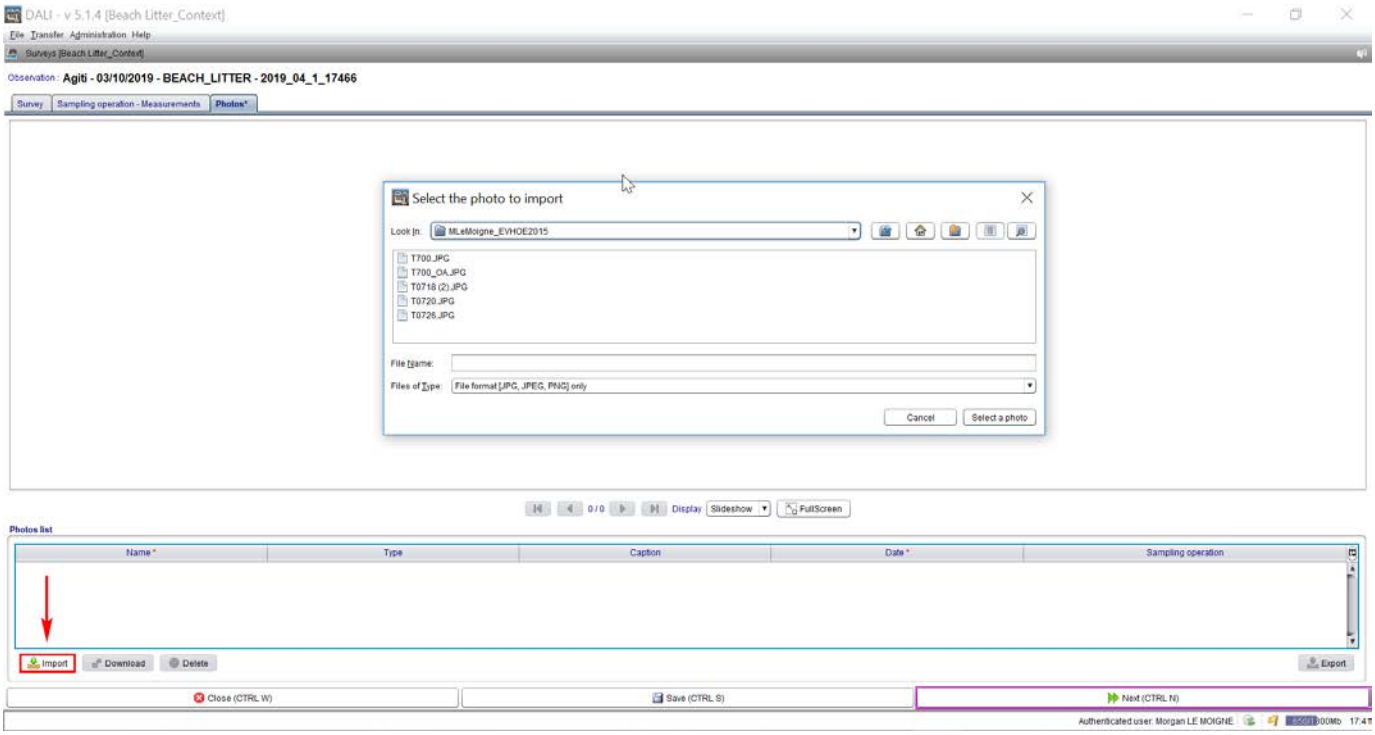
1) From the “Enter” menu



2) From the Sampling operation - Measurements tab



This 3rd tab of this software is used to import photos. The only mandatory field is the “Name” of your photo. The use of survey mnemonic or sampling operation mnemonic is recommended to facilitate the link between photos and results.

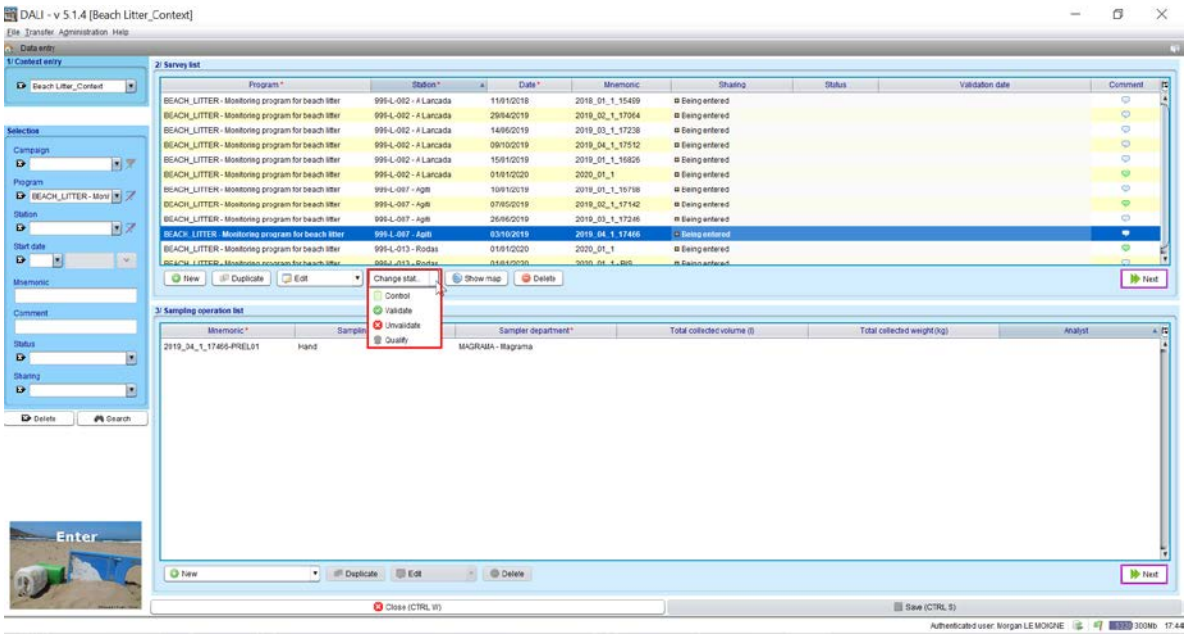


Then, fill the name of the photo and the date when this picture has been taken. You can enter more information in the field Caption.

Finally, save your entry.

Control and validation

Once the survey and the associated sampling operations have been entered, a status need to be specified for these data *via* the menu **Change state** located below the list of surveys (1st Tab)



Synchronizing data with the central database (next chapter) requires that the steps to **control** and **validate** data have been successively performed. To modify data which have already been validated, an **unvalidated** action with a comment explaining the reason why will be required.

The control check aims to ensure that the data have been correctly entered in DALI. The following series of control checks are the minimum to be run:

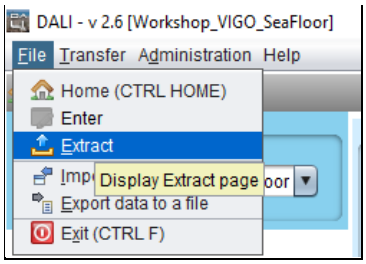
a- Manual and visual checks, per sampling operation, of the sets of codes for litter + associated measurements (as indicated in the previous section).
b- Control checks based on data extracted from DALI beforehand using the extraction module.

Extraction

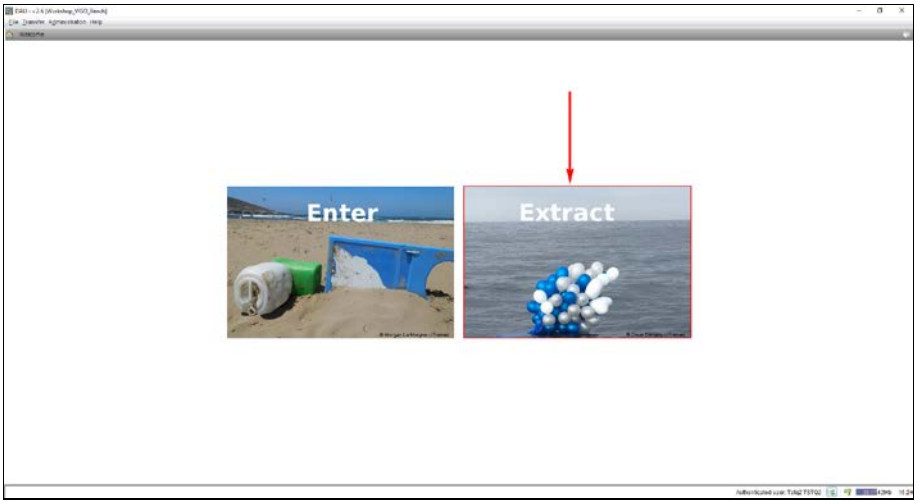
Extraction is useful to make some analysis or to control over data.

Two ways to access to the extraction:

1. Select **Extract** in the **File** tab

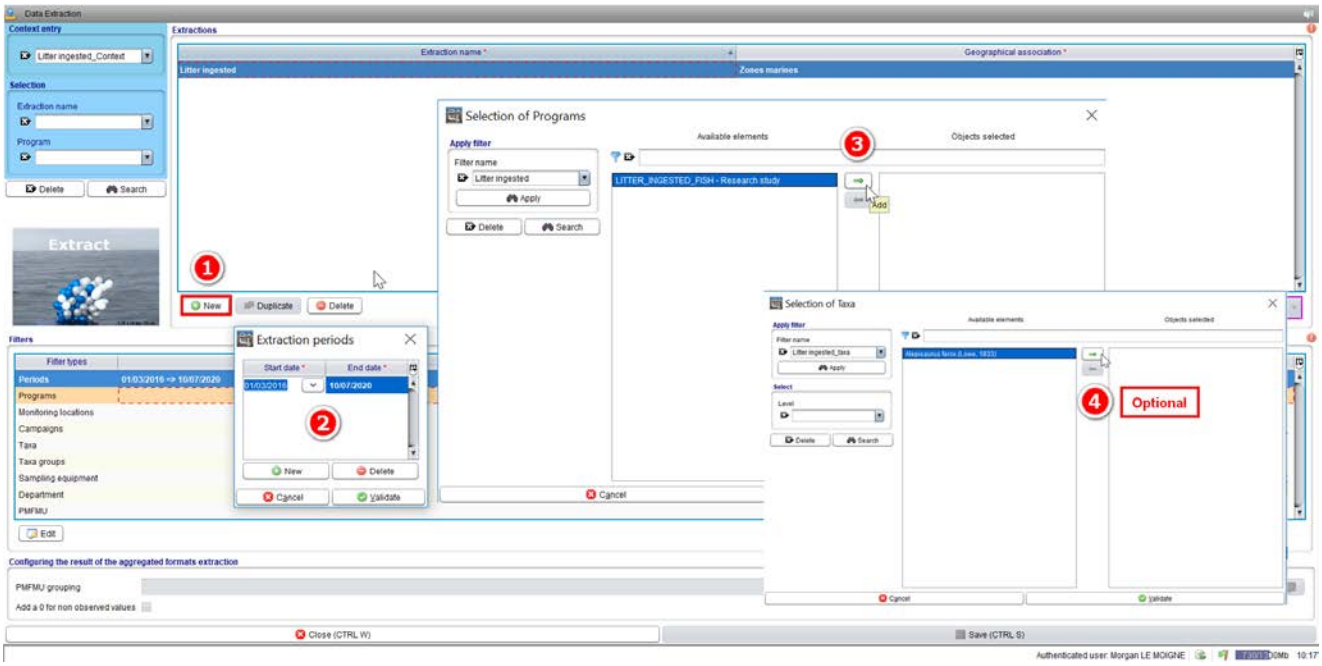


2. After closing the data entry window, open the extraction window by clicking on the picture:



To perform an extraction, click on  and give a name to the extraction.

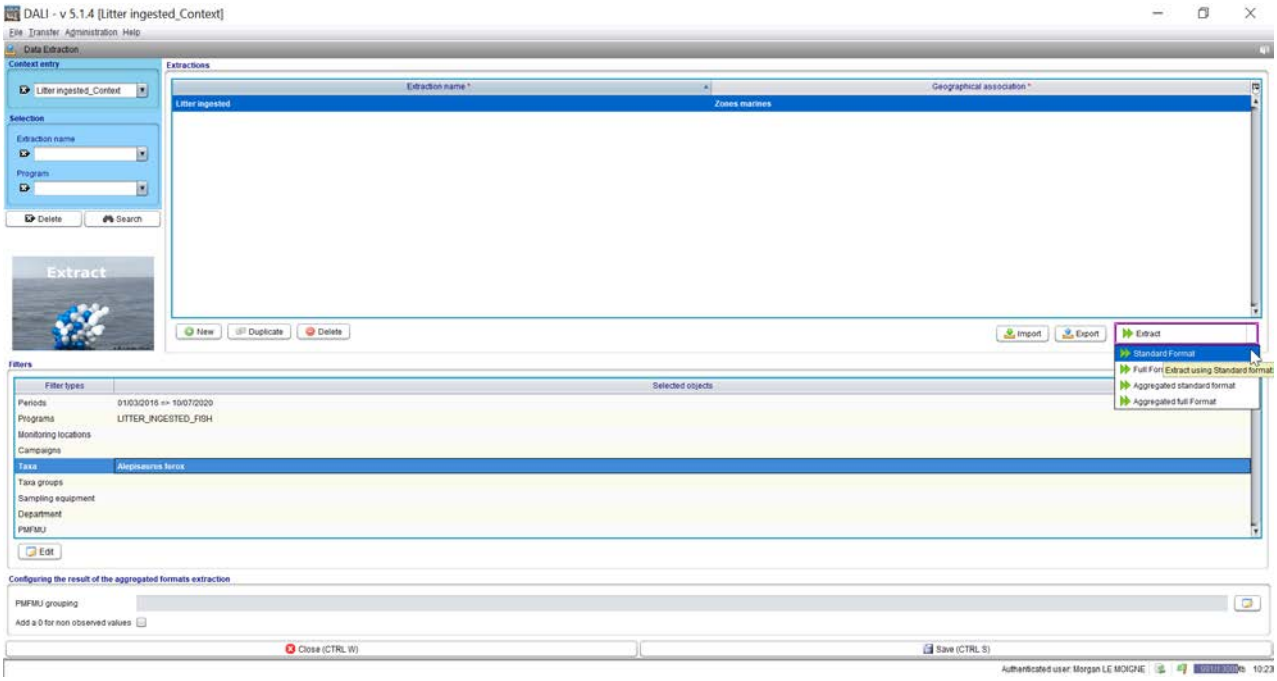
The extraction periods and programs fields are mandatory, whereas the other fields are optional.



Several extraction formats are possible:

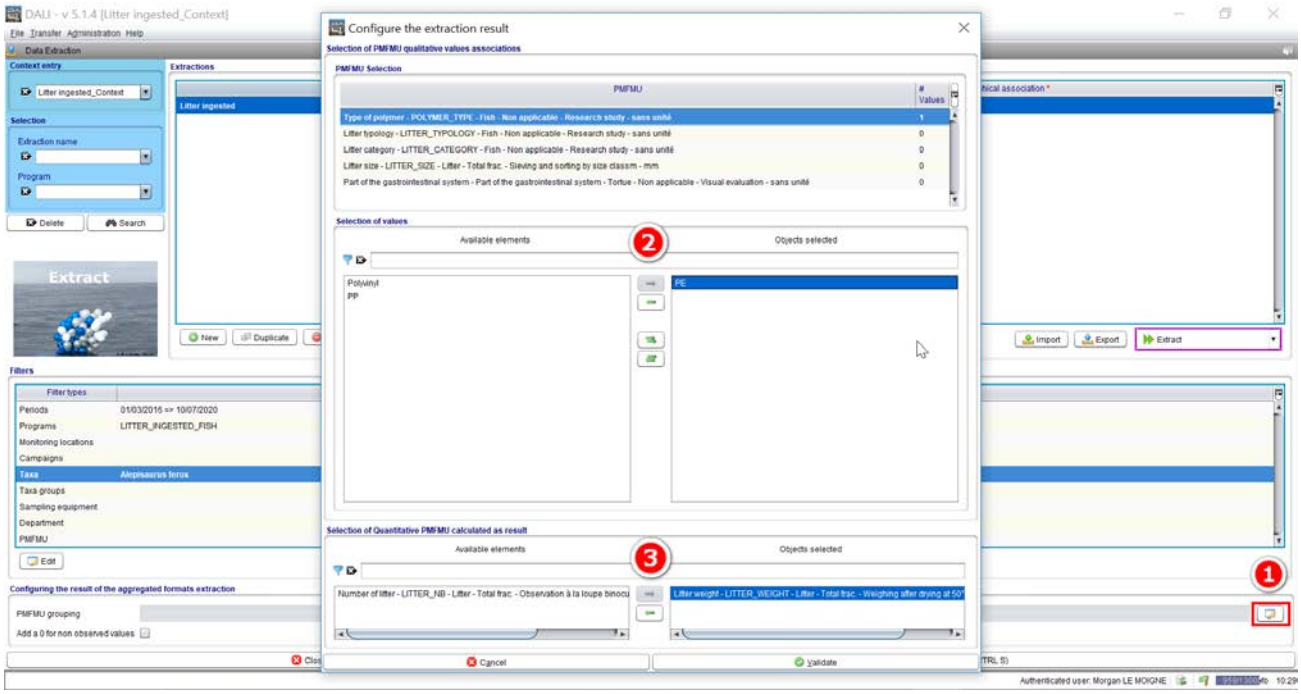
- simple format,
- full format,
- simple aggregated format and
- full aggregated format.

The **simple and full formats** can be obtained without any further parametrization. The **full format** extracts all the DALI fields whereas the **simple format** extracts a selection of fields parametrized in the software.



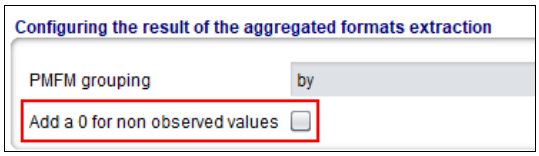
The simple aggregated and full aggregated formats require specific aggregations to find out different parameters in the same column.

In the example below, the aggregation was performed to obtain the number of litter items per PPE :



Aggregations can be very useful for checking the entries.

It is also possible to '**Add 0 for unobserved values**' to have a file with all the associations present in the software:



Data sharing

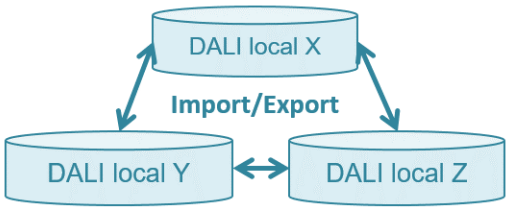
1. LOCAL SHARING

Different people can take part in the data entry of a same programme. There is an exchange system in DALI to facilitate this sharing.

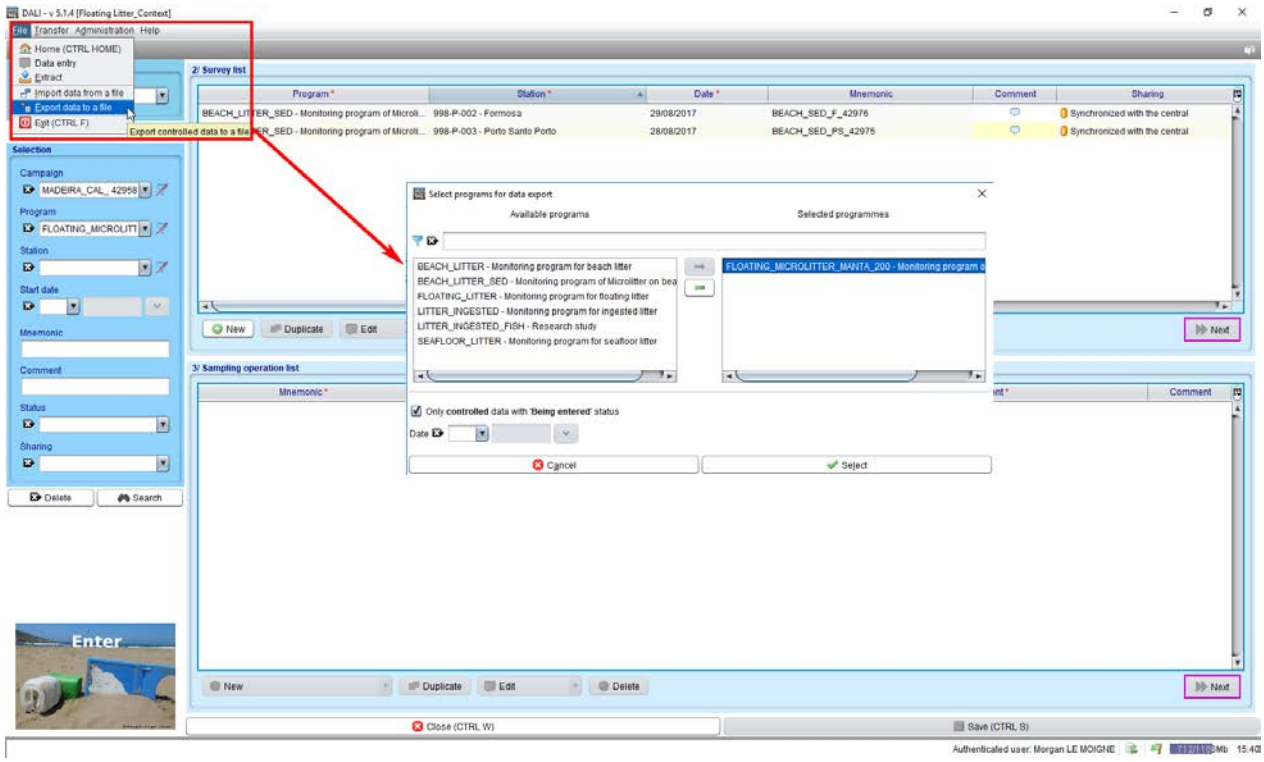
The process to transfer data from one workstation to another meets several needs:

- Allow various actors to carry out simultaneous data entries on distinct local bases, following observations made on the same day at the same location,
- Allow the implementation of the Control/Validate process between different actors (data responsibles, validators) working on distinct local bases.
- Allow the compilation of entered data on different workstations into a single workstation.

The transfer from one workstation to another is managed through a simple exchange of files between users.



Data entered on a workstation X can be exported to a workstation Y through the menus **File/Export data to a file** and **File/Import data from a file**. Surveys should have been **controlled beforehand**.



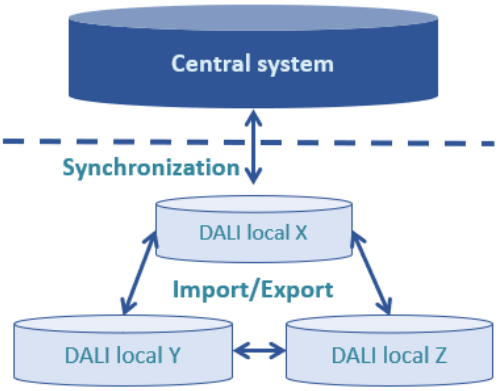
A zipped folder is saved, to be imported to the workstation Y. Once the data is imported, the field Sharing indicates that the surveys are synchronized with a file.

In case of duplications (surveys already existing on workstation Y = same location, same date, same programme), the application informs the user.

The user can visualize duplicated surveys and select those to import.

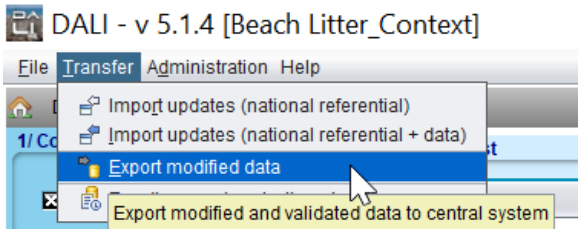
2. SYNCHRONIZATION WITH THE CENTRAL SYSTEM

The synchronization consists in exporting or importing data from the local system (local database) to the central system.

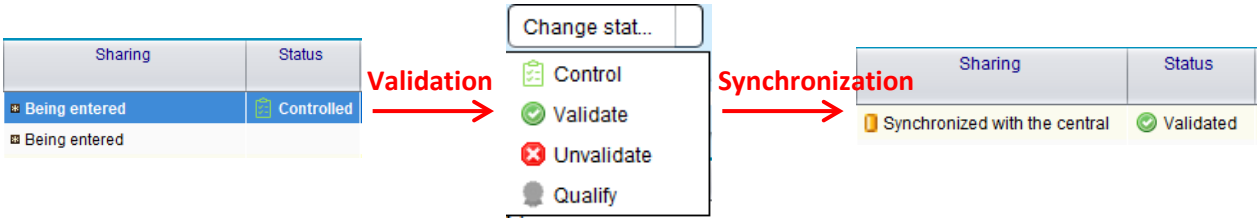


To export, surveys (and associated sampling operations) that have been added or modified since the last export, have to be **validated**.

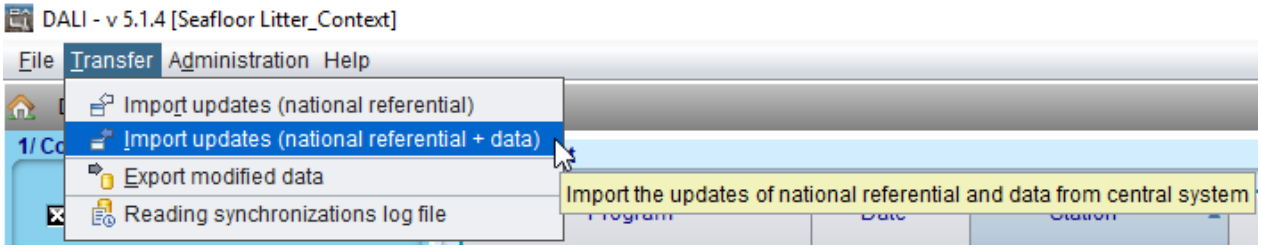
Use **Export modified data** in the **Transfer** tab:



When data have been exported, the **Sharing** field indicates that the survey has been **Synchronized with the central system.**



To import updates, use **Import updates (national referential + data)** in the **Transfer** Tab **:**



CleanAtlantic

Tackling Marine Litter in the Atlantic Area

Instructions for entering Microlitter data in Beach Sediment in Data Litter software connected to a PostGreSQL Database

WP 5.1.3 : IT Developments

Ifremer
Interreg Atlantic Area European Regional Development Fund
EUROPEAN UNION
Clean Atlantic

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Action	1.3
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authors	Morgan Le Moigne – ODE/VIGIES Ifremer
participants	Alice Lamoureux & Arnaud Rouilly – ODE/VIGIES Ifremer, Stéphane Bocandé (ISI/IRSI) Ifremer,

Disclaimer

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Foreword

DAta LItter is an software developed to enter data on Marine Litter topic. This software is connected to a PostGreSQL database to enable **harmonised and sustainable data storage**.

This document specifies instructions for entering microlitter data in Beach sediment collected *via* a Protocol developed and implemented by ARDITI (Madeira).

Data entered in this testing - Formosa - 29/08/2017 & Porto Santo Porta - 28/08/2017 - come from the xls file "**marine_litter_database_v2_SOLE_22_05_2020**" provided by J. Monteiro (ARDITI).

Installation / Launch

Unzipped the **dali_val_postgresql.zip** folder on your computer and double-click on the two other folders. Then, you can launch **Dali.exe** every time.

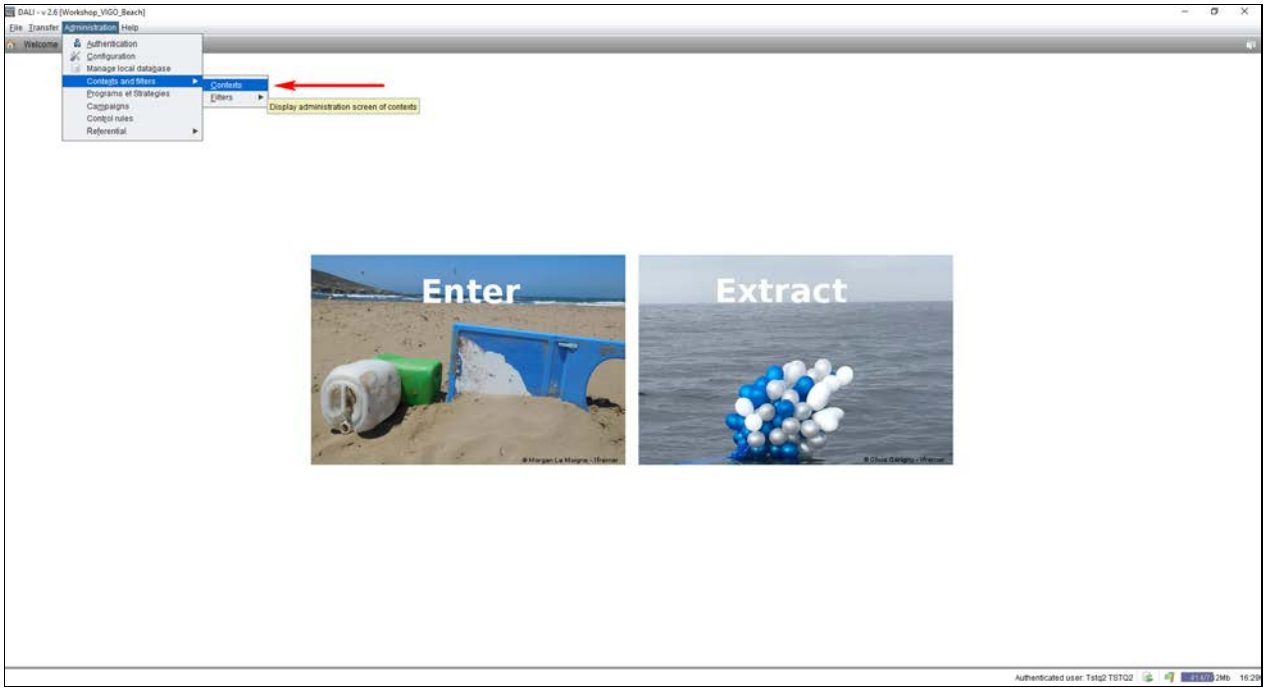
Enter your **login** and **password** sent by **assistance@ifremer.fr on 24/08/2020**.

Prerequisite for data entry

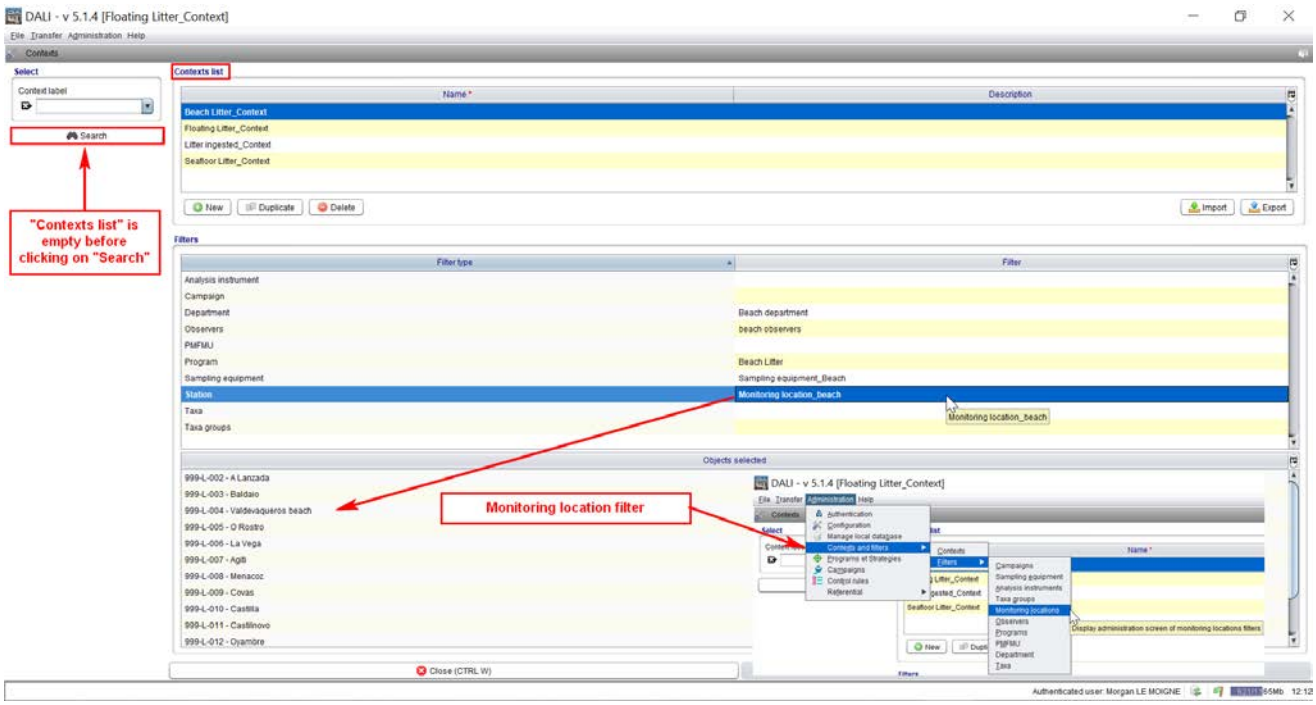
In order to enter data in the software, the user needs to refer to the proper **program** and the associated **strategy**. For beach litter, the program is **BEACH_LITTER_SED - Monitoring program of Microlitter on beaches** and the strategy is **MSFD Research Study of Microlitter on beaches.**

1. CONTEXT / FILTERS

To facilitate data entry **user can create a "user context"**. This context is obtained by applying several filters targeting the metadata & data to be entered (monitoring location, data responsible, service,…). **To facilitate this test phase, the user context *Beach Litter_Context* is provided in this software:**



The different available contexts are displaying by following the steps below :



The content of the filters can be consulted by clicking on one of them.

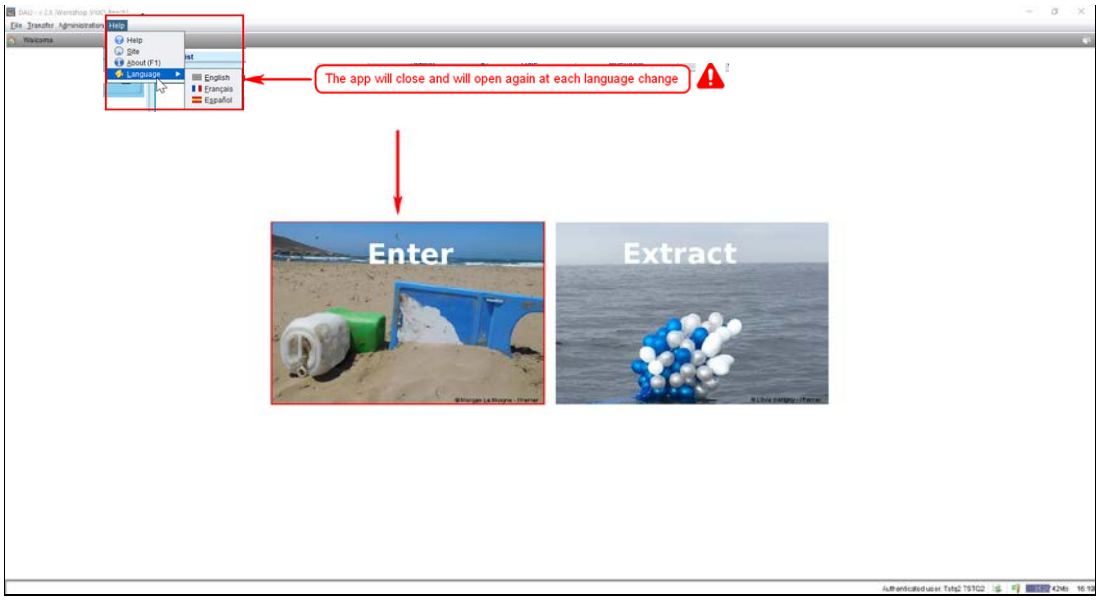
As the referential management functionalities are not developed yet, the filters modification is limited to add or delete existant values from the referential to the filter's list.

This feature will be available at the beginning of 2021.

The referential contents are based on historical datas and current protocols. You can create your own filters using the tab "Administration">"Filters"

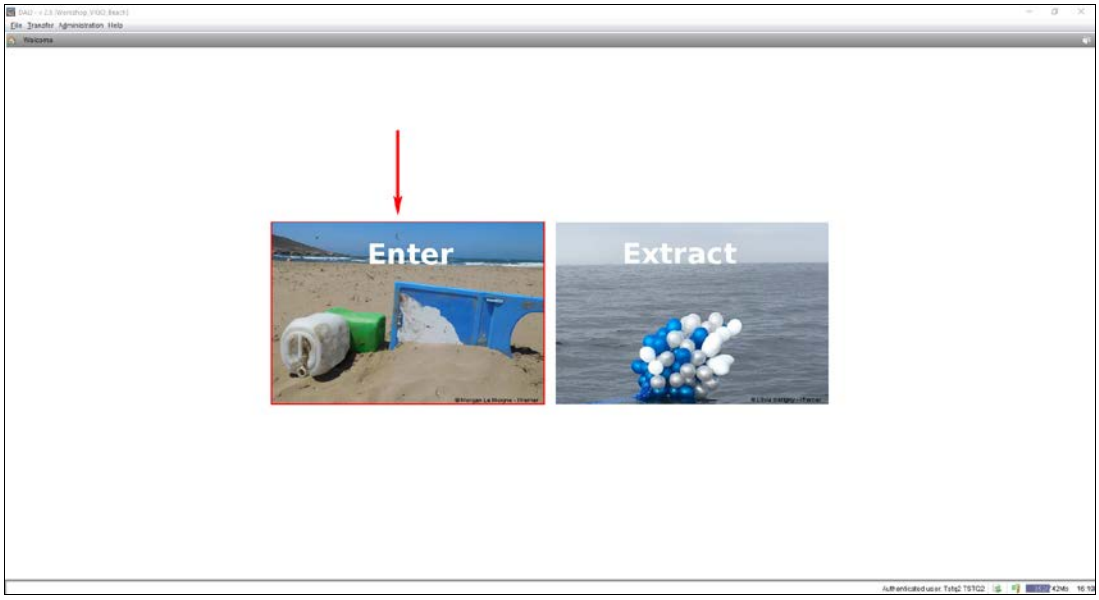
2. DATA ENTRY WINDOW

You can select your language (English, French or Spanish) in the **Help** tab :

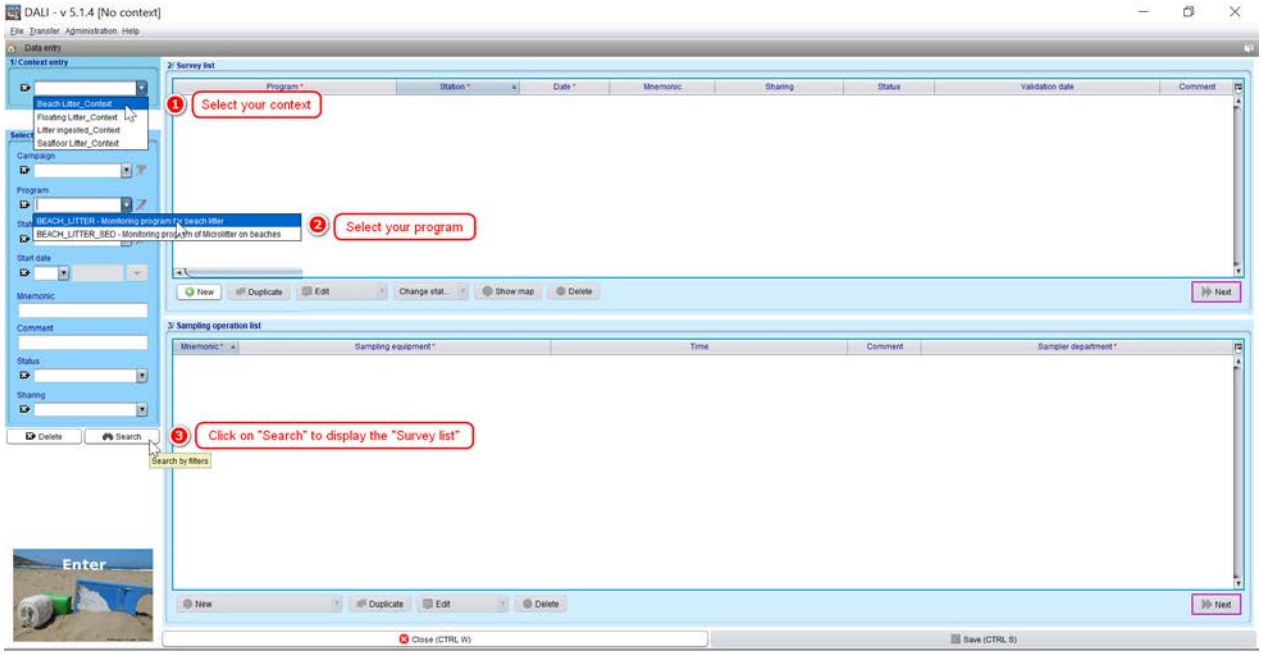


In this test phase, you may encounter different traduction or traduction missing due to the difference between traduction of the software and traduction of the data enter. Don't hesitate to let us know.

Open the entry window by clicking on the picture:

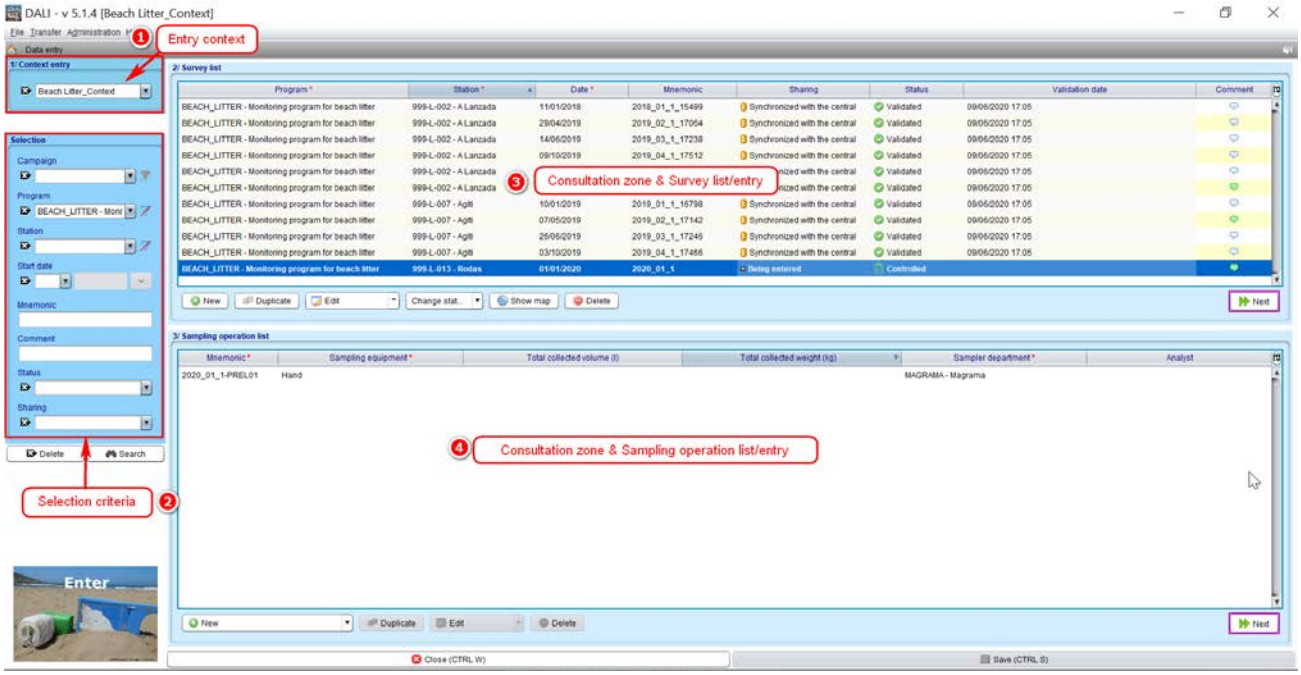


Then, to display your data, select the properly context and click on **Search**:



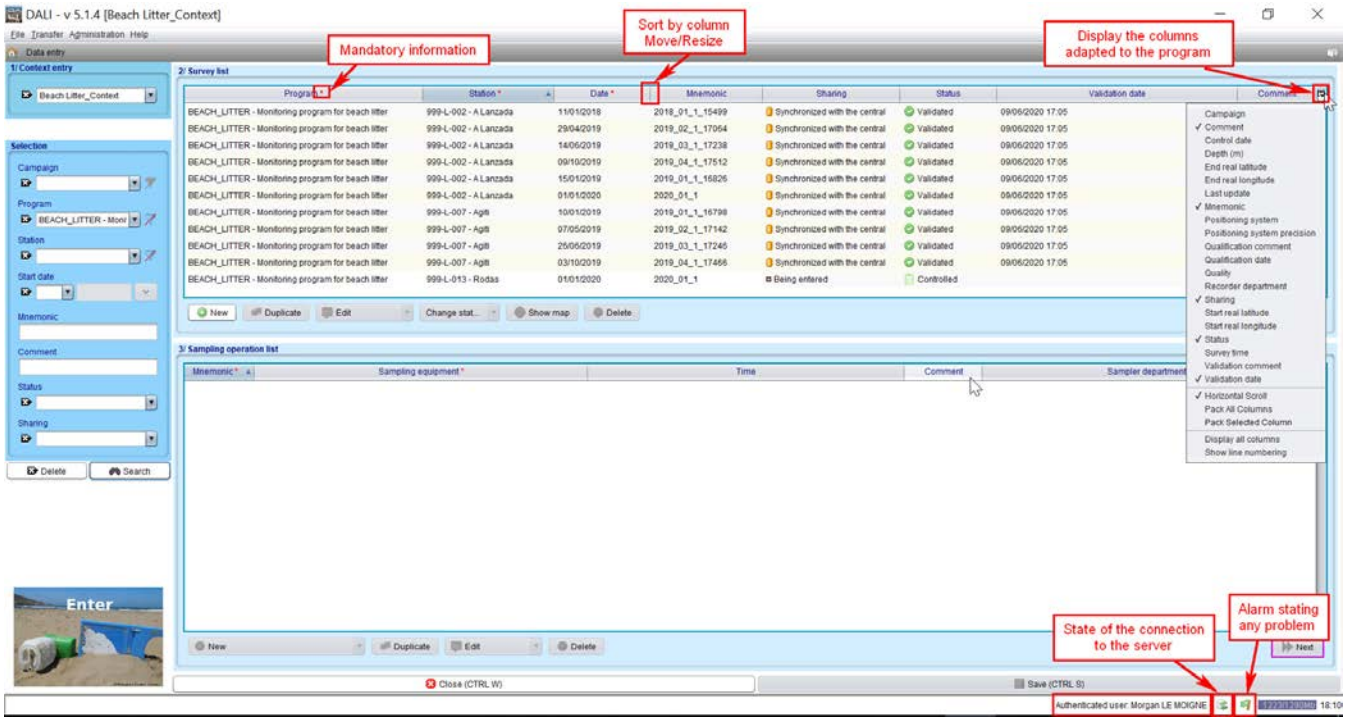
The main data entry window in the software is organized into four parts:

1) The choice of entry context is located at the top left
2) Beneath, the search window which can be used to refine which data is displayed according to filters
3) The list of survey at the top right
4) Beneath, the list of sampling operations



3. TIPS AND HINTS

The screenshot below shows the functions you need to enter data & metadata.



Important to notice : the order of the columns can also be changedby clicking and draging the column from its original place to the desired position. To sort the rows of the table according to a column, click on the column name : first click cross sorting, second click: descending sorting.

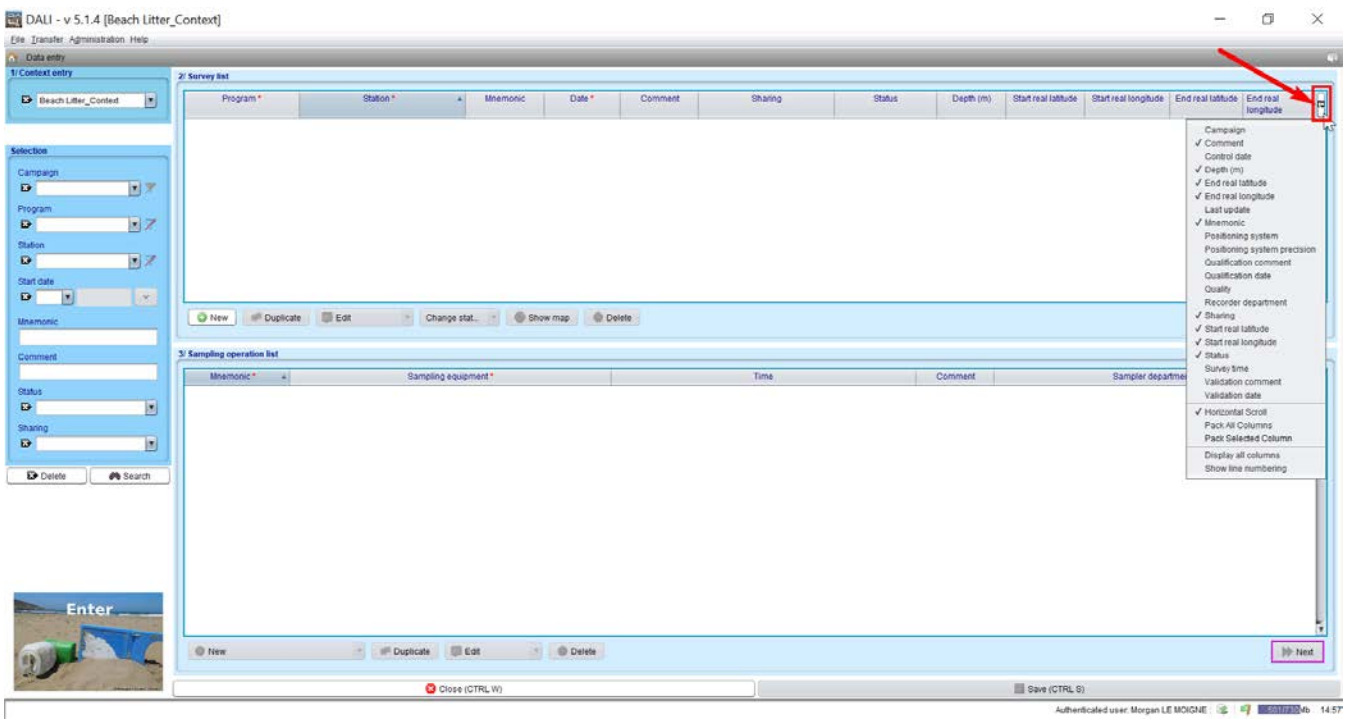
4. MAPPING TABLE

The mapping table below shows in the **left column**, the fields and parameters used in SEAFLOOR_LITTER program and in the **right column**, the originating fields from the source file.

This will help to understand how data have been entered in this test phase.

DALI Database Fields	Fields from ARDITI xls File
1st Tab - *Survey list*	
Program	Protocol_Code + DALI addings
Station	Site_Name
Mnemonic	Survey_Code
Date	Date
Start real latitude	Initial_Y_Latitude
Start real longitude	Initial_X_Longitude
Comment	Comment (if any)
Sampling operation list	
Mnemonic	Sample_Code
Sampling equipment	Unknown
Sampler department - ***Field automatically completed from strategy information***	ARDITI
Comment	Comment (if any)
2nd Tab - *Survey*	
Observer(s)	Lead_Surveyor
Analyst *(automatically completed from strategy information)*	ARDITI
Observer number	N_Surveyors
3rd Tab - *Sampling operation - Measurements*	
Mnemonic	Sampling operation Mnemonic chosen from the drop-down list
MSFD Code	TSG_ML_General_Code
Litter category - ***Field automatically completed from MSFD Code***	Level_1_ Materials
Litter typology - ***Field automatically completed MSFD Code***	General_Name
Litter color	Color
Litter size	Size
Litter number	N_items
Analyst - ***Field automatically completed from strategy information***	ARDITI

Before starting any entering action, pay attention to make sure that all the fields of the surveys are correctly displayed on the screen matching with the survey fields described above. The display is done using the button at the top right of the screen.



Entering Surveys

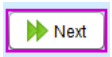
Surveys are entered in the upper part of the software screen.

To create a new survey, click on 

, an empty survey line is created. The columns displayed in the list of surveys make up the basic elements which can be entered.

For each survey to enter, perform the following operations:

- Select the **program** BEACH_LITTER_SED
- Select the **Station** (previously included in the referential)
- Specify the **Date** of the Survey *via* the calendar or manually
- **Specify a** Survey **Mnemonic** (confer to the mapping table above)
- **Write a comment** (optional). This comment will provide information about the general conditions during the survey, or about issues related to the survey data.

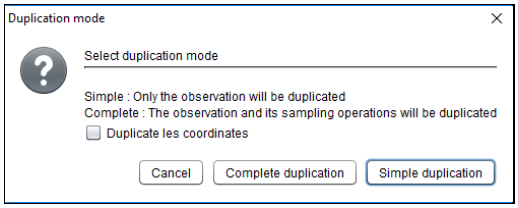
Once the survey has been entered, click on 

to create a sampling operation.

To delete a survey, click on: 

A survey can also be **duplicated**. Select the survey to duplicate and click on: 

A **simple duplication** or a **complete duplication** of the survey is posible. The complete duplication means that you will duplicate the survey **and** its sampling operation.



Entering sampling operations

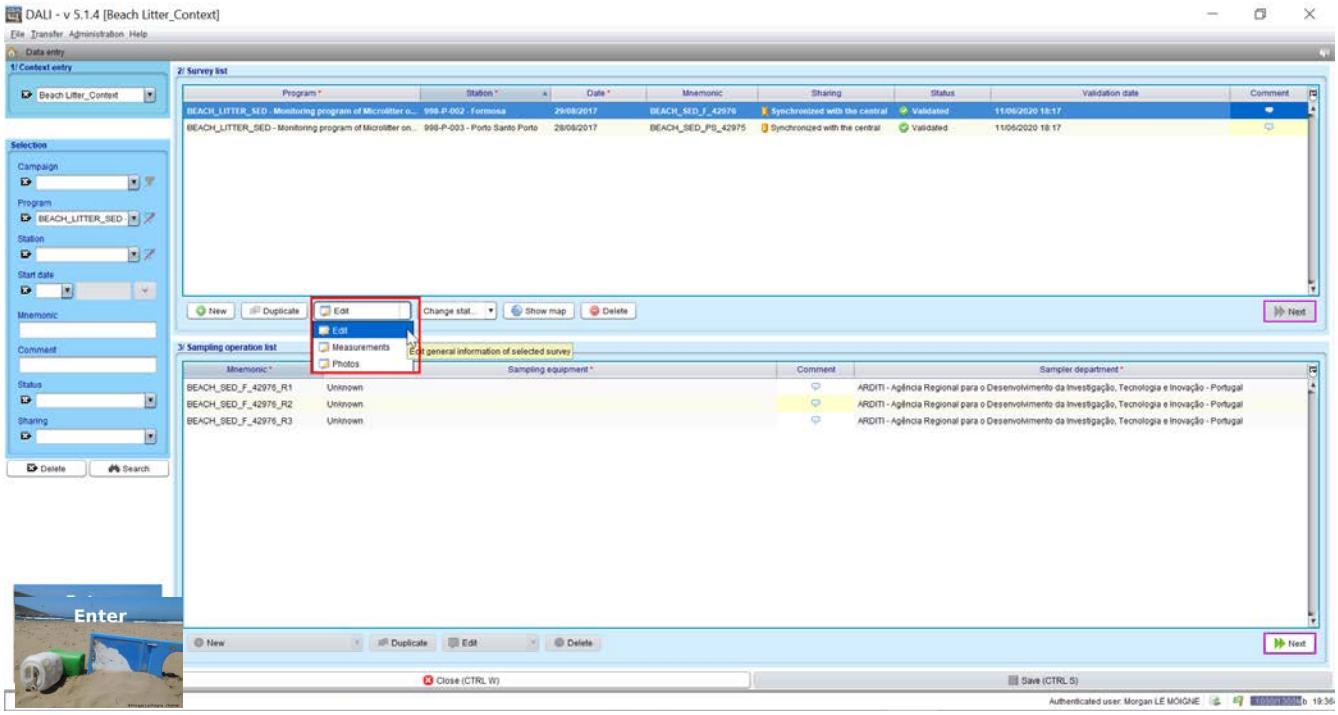
After clicking on Next in the survey list or New in the sampling operation insert, you will create sampling operations.

For each sampling operation to be entered in the same survey, carry out the following operations:

- Specify the **sampling operation mnemonic code**
- The **Sampling equipment**
- Specify the **time** corresponding at the end of the survey (if any)
- Specify the **Sampler department**
- A **comment** on the sampling operation can be entered at this step.

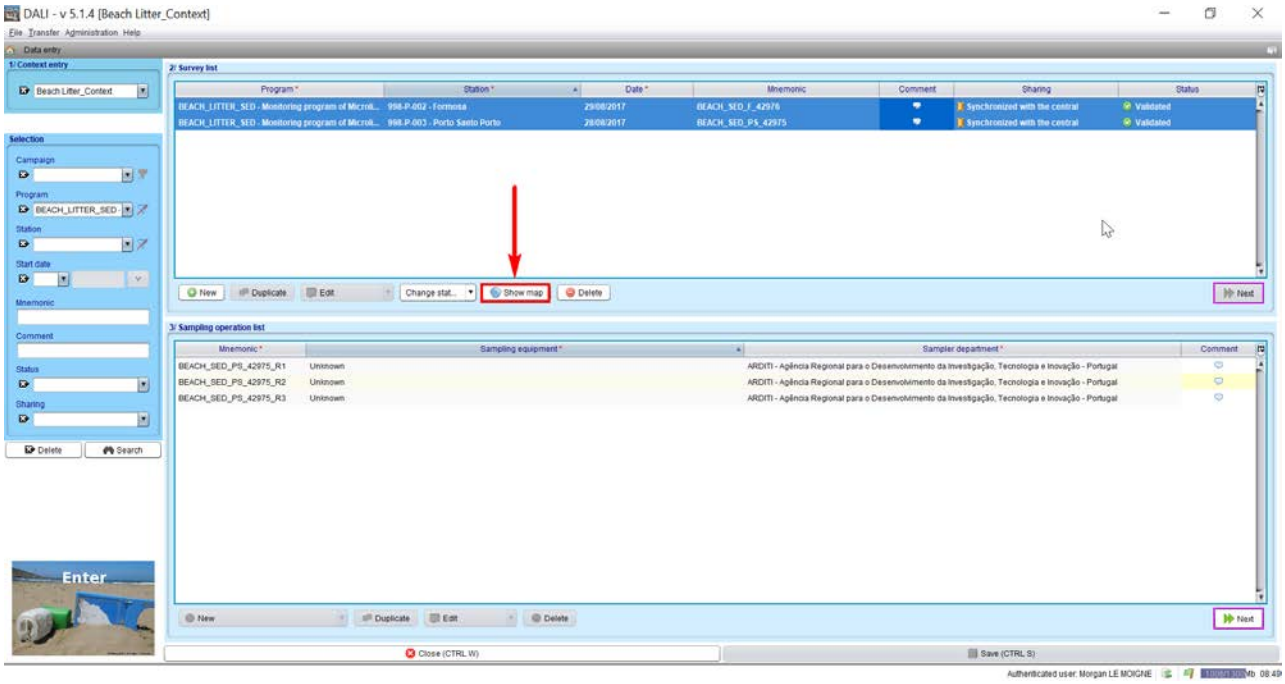
Then click on: Save (CTRL S)

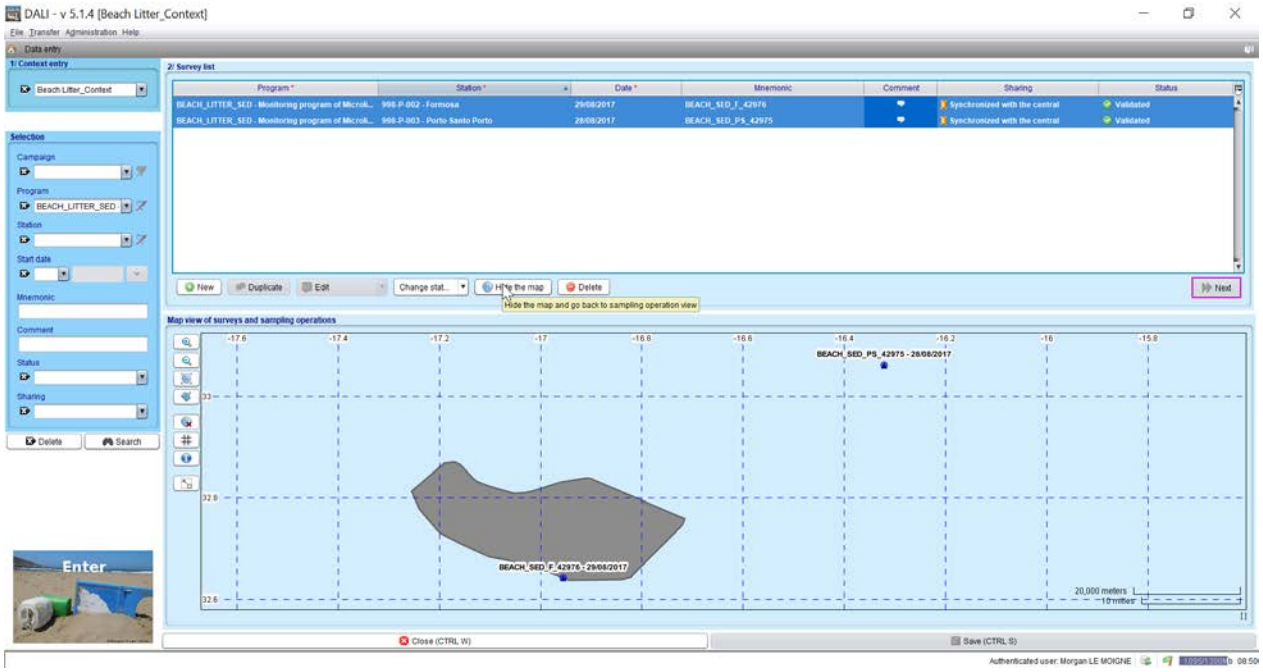
To display the screen to enter additional information of the survey (e.g., the person in charge of the observation/entry/duration), click on **Next** at the bottom-right of the screen or **Edit** in the middle of the screen:



Map control

A location Map can be displayed in order to control and detect any errors on the coordinates entered. This function can not be use to fill data in the base.



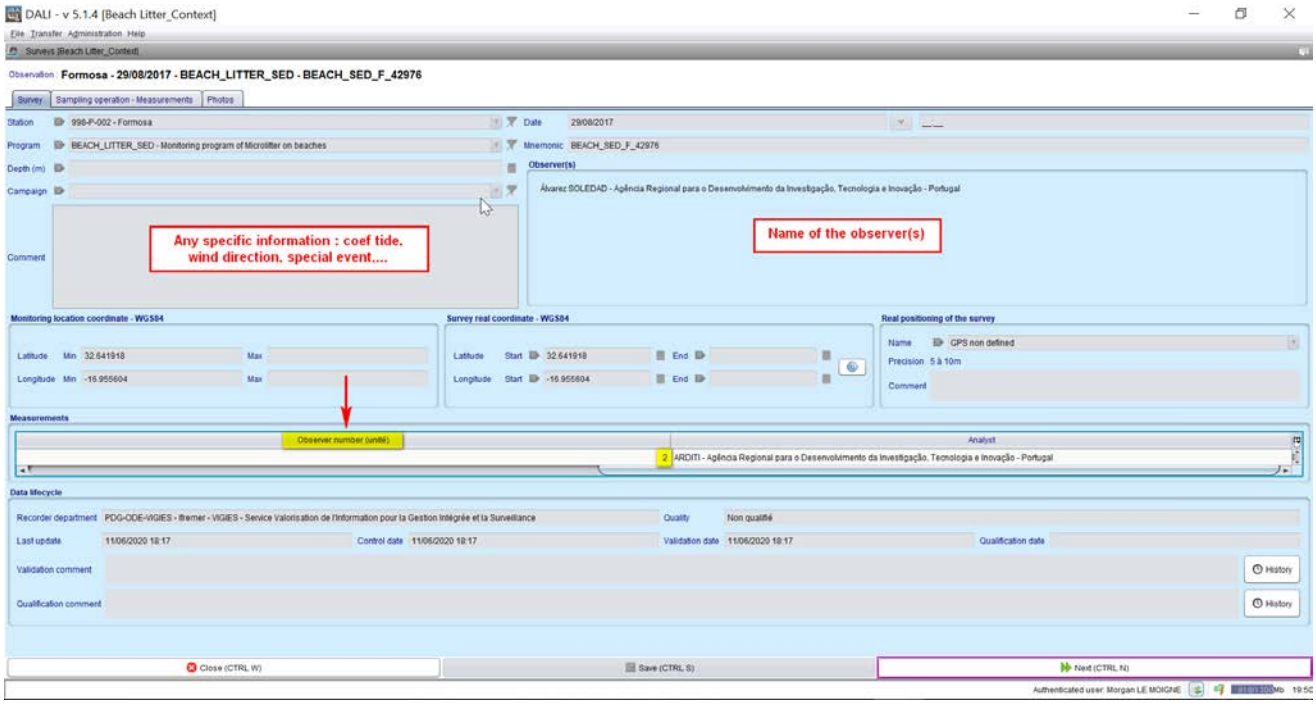


Entering survey Measurements

Any specific information about the survey can be entered in the comment field: environmental conditions, any events happened on the beach,…

The name of the observer(s) can also be entered. A quick search is run by adding a special character **"*"** before the name or the service to indicate. This person should have been created previously in the User Referential.

The parameters below are entered manually or automatically.

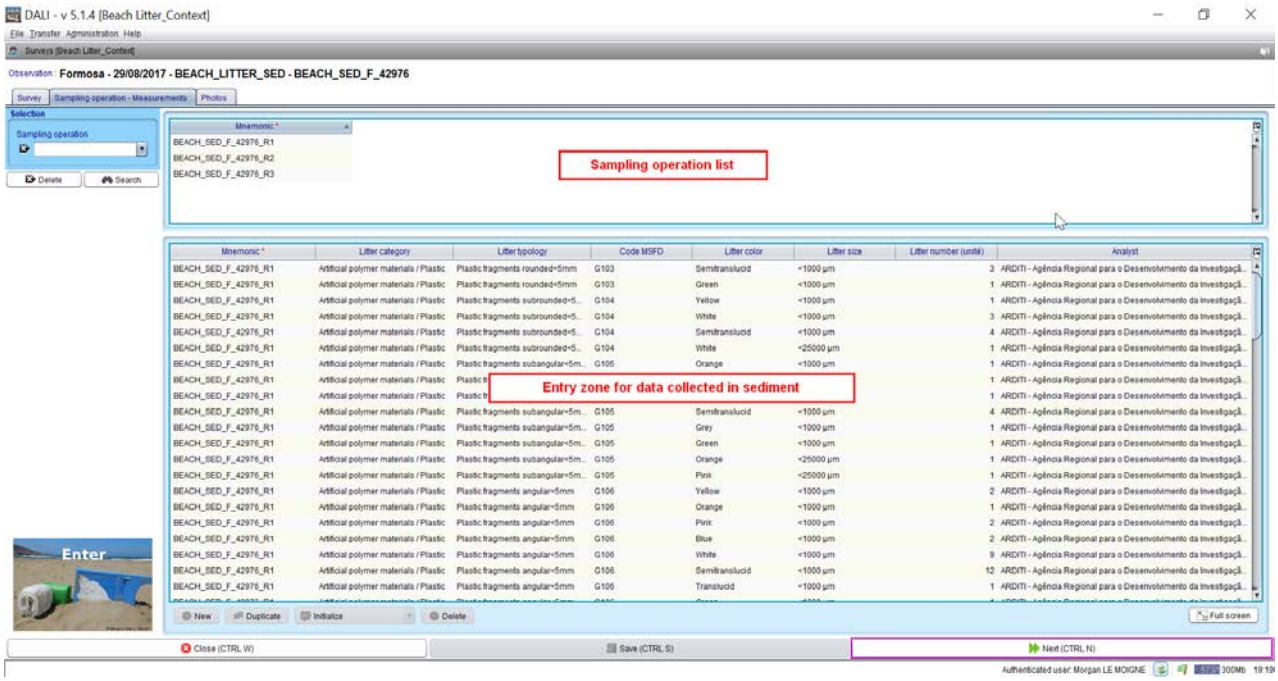


Then, click on Next (CTRL N) to enter the measurements of the sampling operation(s).

Entering sampling operation(s) measurements

The Sampling operation - Measurement tab is organized into two parts:

- the top insert to select the sampling operation on which data is entered
- the bottom part is for entering the measurement



For each sampling operation, one or several parameter(s) is (are) measured.

As for the survey list, the results lines can be duplicated to make faster the enter of similar lines which have only one or two different informations".

Two types of entries can be made:

1. Data entered line by line
2. Entering using initialization of the data entry grid

1. Entry line by line

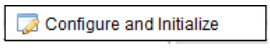
As far as possible, use keyboard shortcuts that facilitate data entry, particularly *via* :

- the **Tab** (tabulation) **key :** let you move from one column to another
- the **Up/Down arrows** : to select an element from a drop-down list, or to move from one line to another.

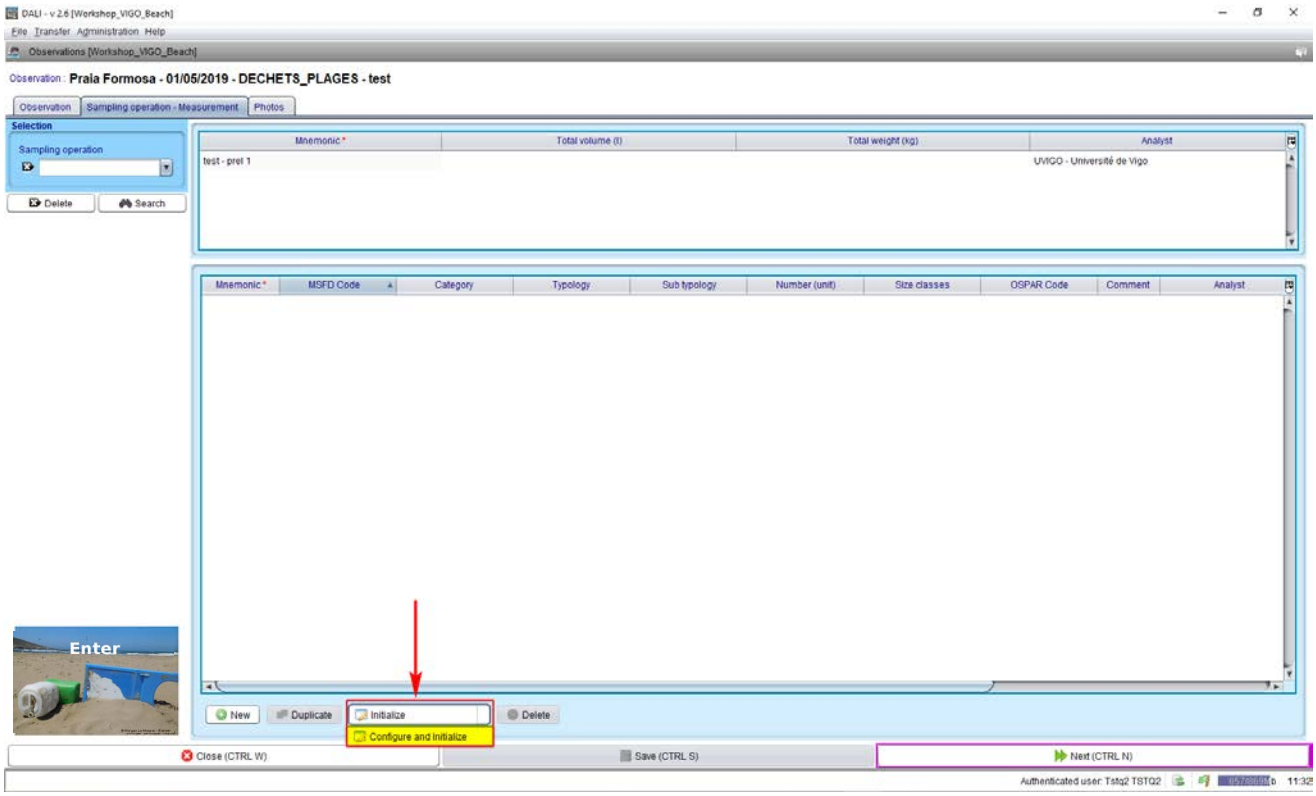
The data entry operator selects a MSFD code **which induces the automatic filling of the** Litter category, and Litter typology **fields**. The other fields will be entered manually.

A comment can be filled in if information or specification about the item is indicated on the xls file.

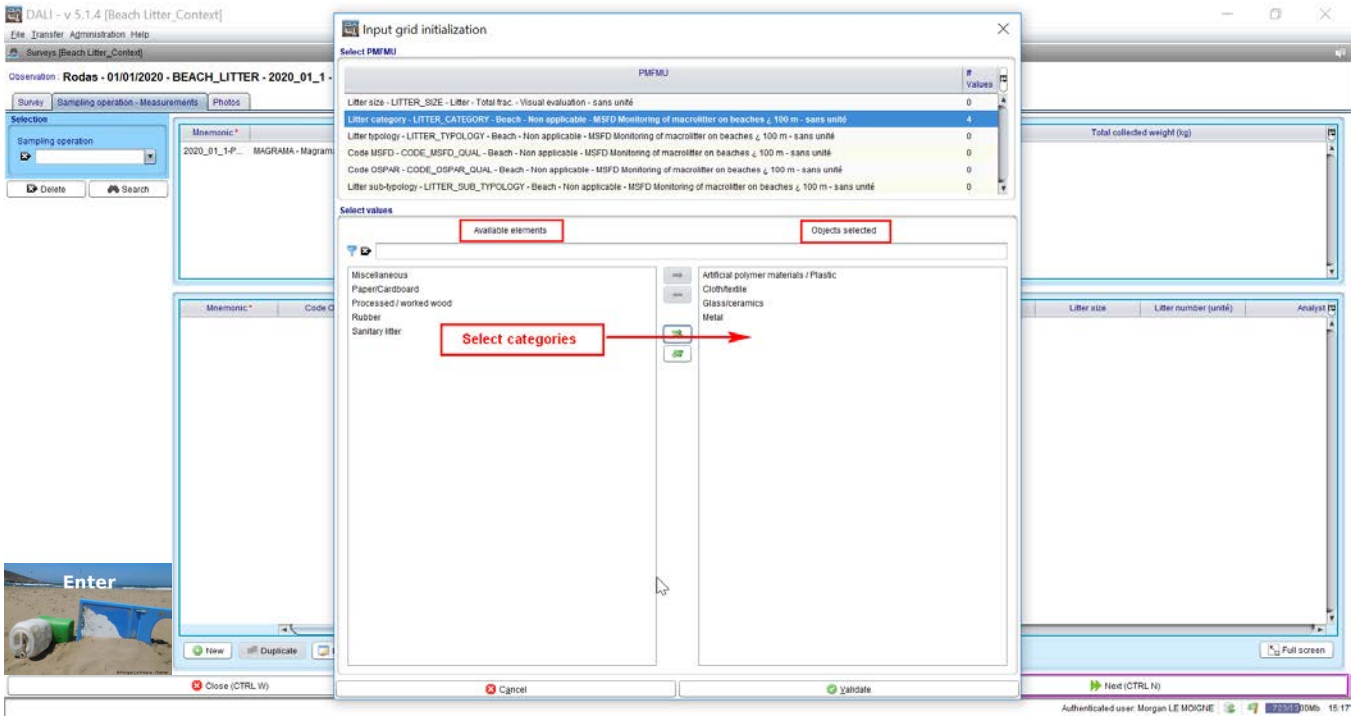
2. INITIALIZING THE DATA ENTRY GRID

Data entry grid initialization is performed before entering the first measurement thanks to 

button :



The initialization screen open and the qualitative values of each parameter can be selected in the data entry grid.



A maximum of 3 or 4 parameters (PMFMU above for the Quintuplet : Parameter-Matrix-Fraction-Method-Unit) can be configured.

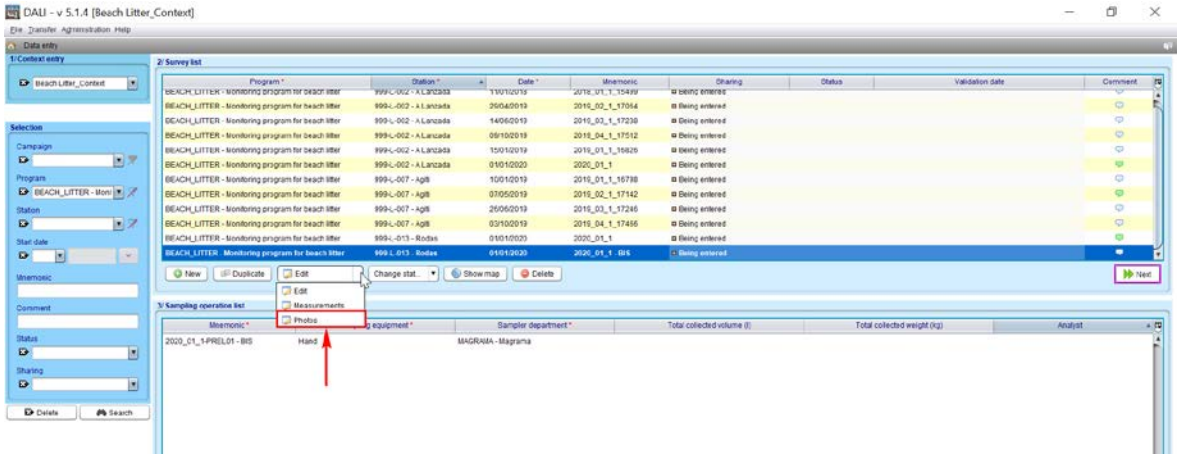
Once the selections made, the entry grid is displayed and the results can be entered.

When entries have been done, save them, and click on Next (CTRL N) to save photos if any (next chapter). Otherwise, move to a new survey.

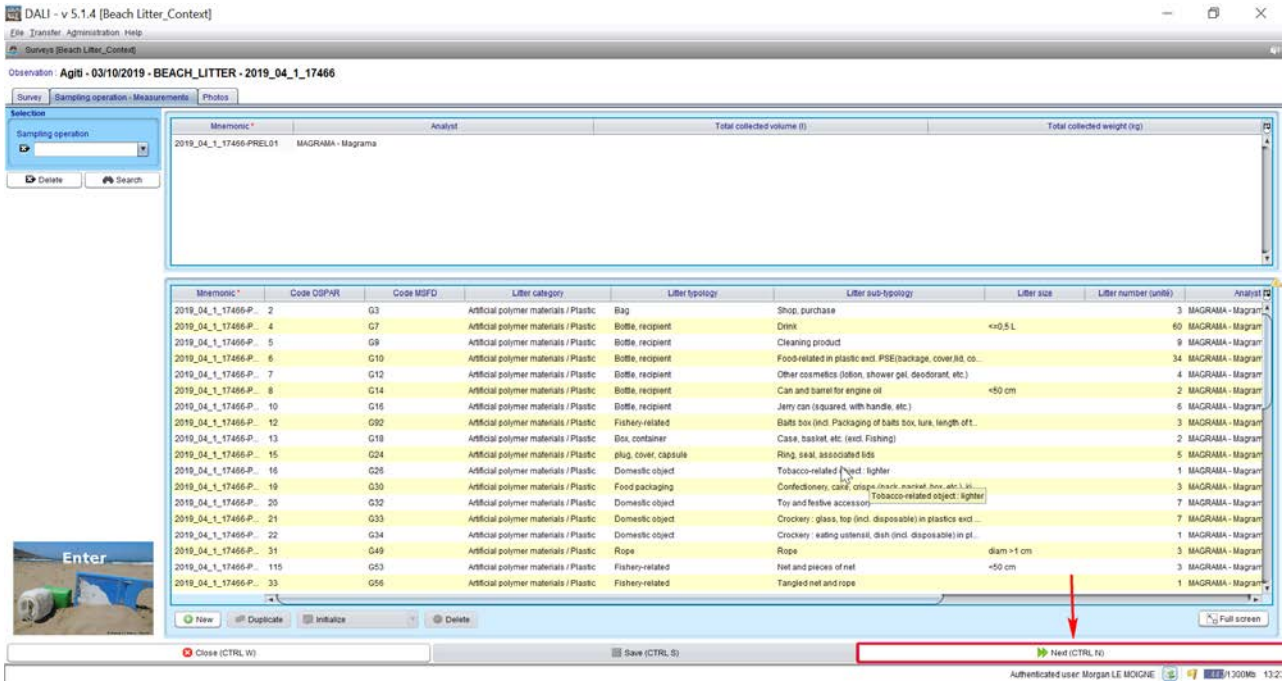
Saving photos

Two ways to display the photo tab :

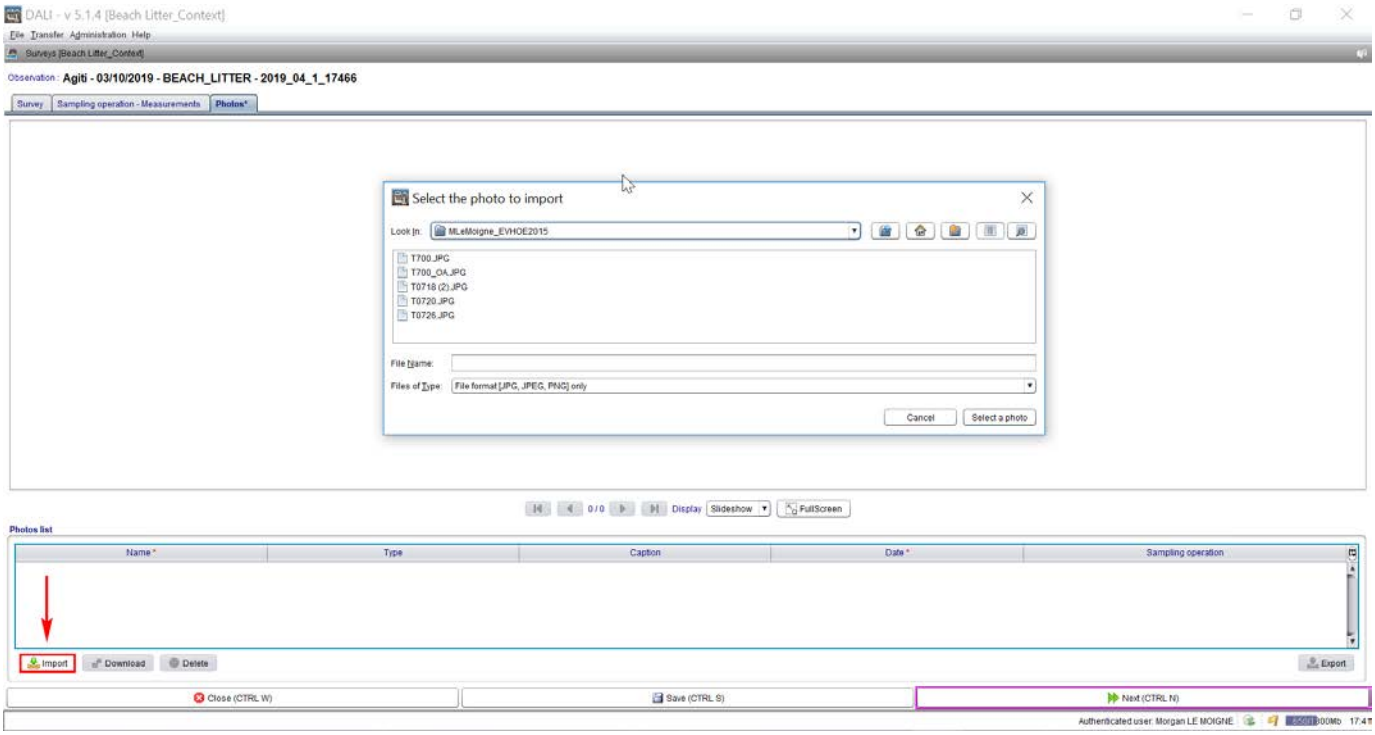
1) From the “Enter” menu



2) From the Sampling operation - Measurements tab



This 3rd tab of this software is used to import photos. The only mandatory field is the **Name** of your photo. The use of survey mnemonic or sampling operation mnemonic is recommended to facilitate the link between photos and results.

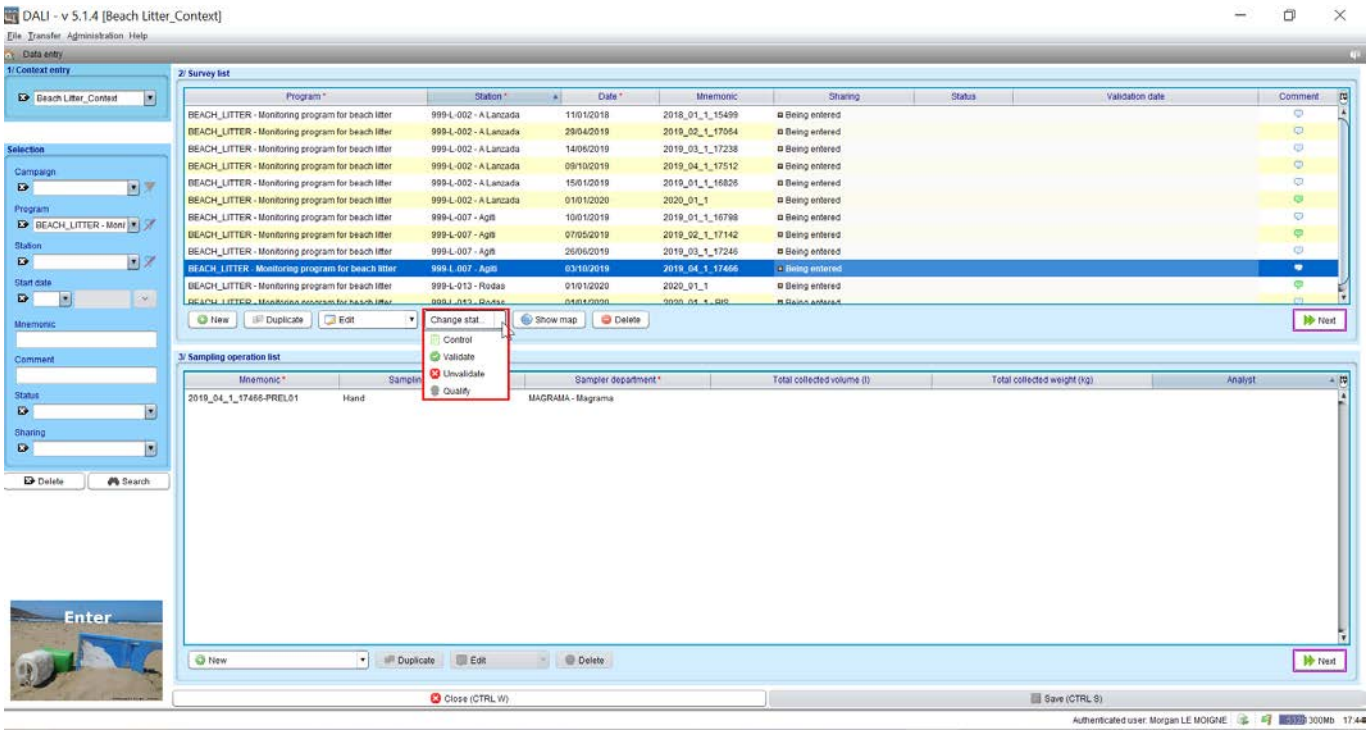


Then, fill the name of the photo and the date when this picture has been taken. You can enter more information in the field Caption.

Then save your entry.

Control and validation

Once the survey and the associated sampling operations are entered, a status need to be specified for these data *via* the menu **Change state** located below the list of surveys (1st tab).



Synchronizing data with the central database (next chapter) requires that the steps to **control** and **validate** data have been successively performed. To modify data which have already been validated, an **unvalidated** action with a comment explaining the reason why will be required.

The control check aims to ensure that data have been correctly entered in DALI. The following series of control checks are the minimum to be run:

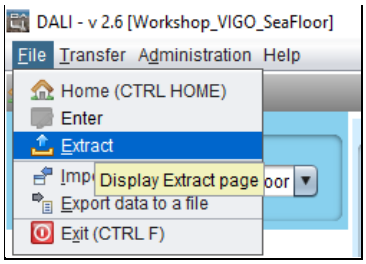
a- Manual and visual checks, per sampling operation, of the sets of codes for litter + associated measurements (as indicated in the previous section).
b- Control checks based on data extracted from DALI beforehand using the extraction module.

Extraction

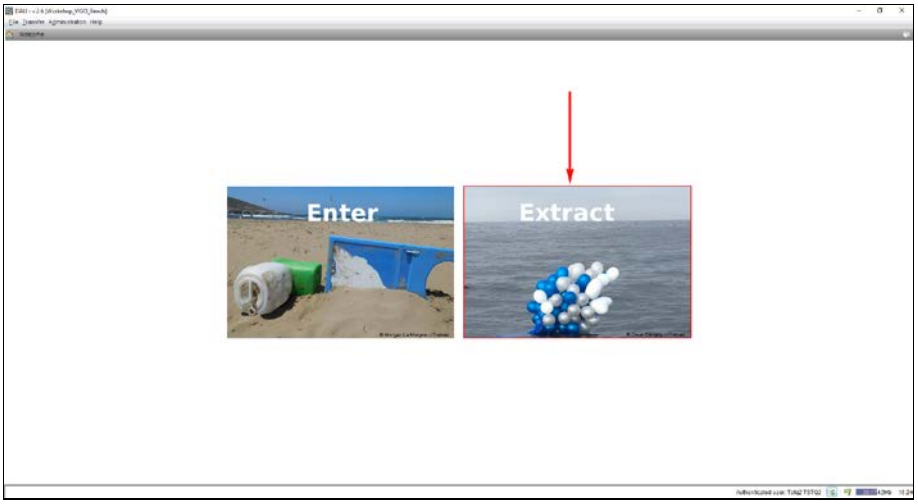
Extraction is useful to make some analysis or to control over data.

Two ways to access to the extraction:

1. Select **Extract** in the **File** tab

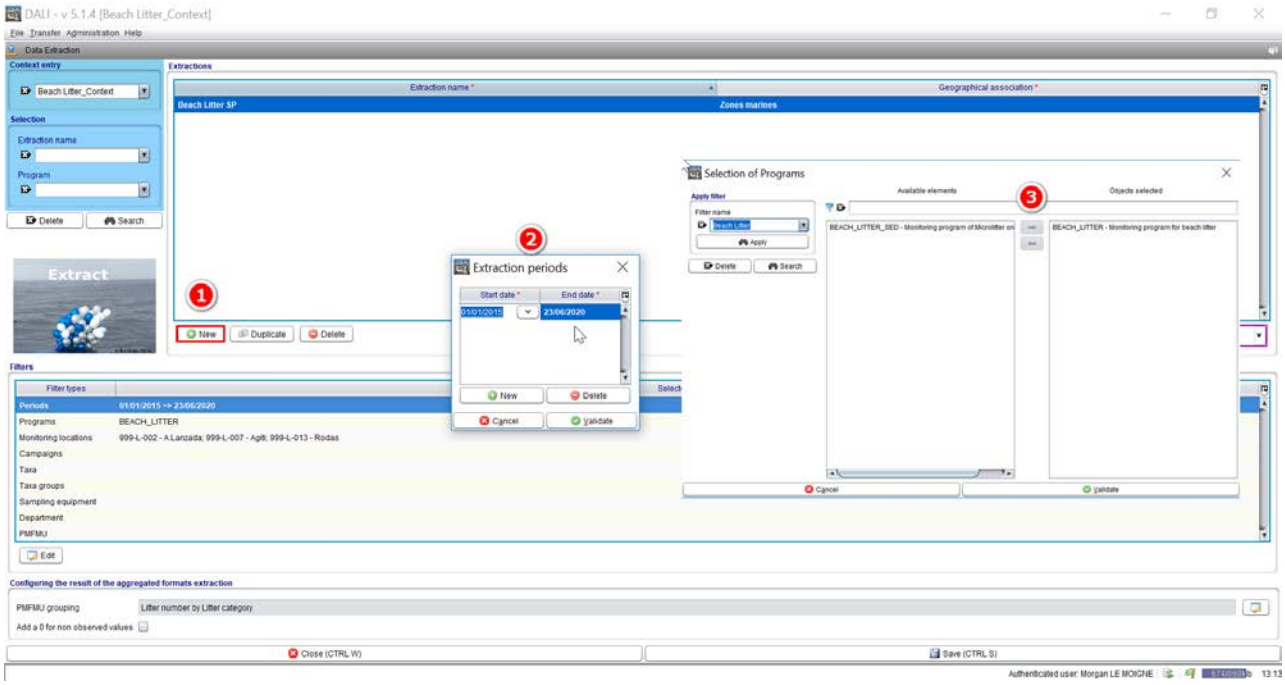


2. After closing the data entry window, open the extraction window by clicking on the picture:

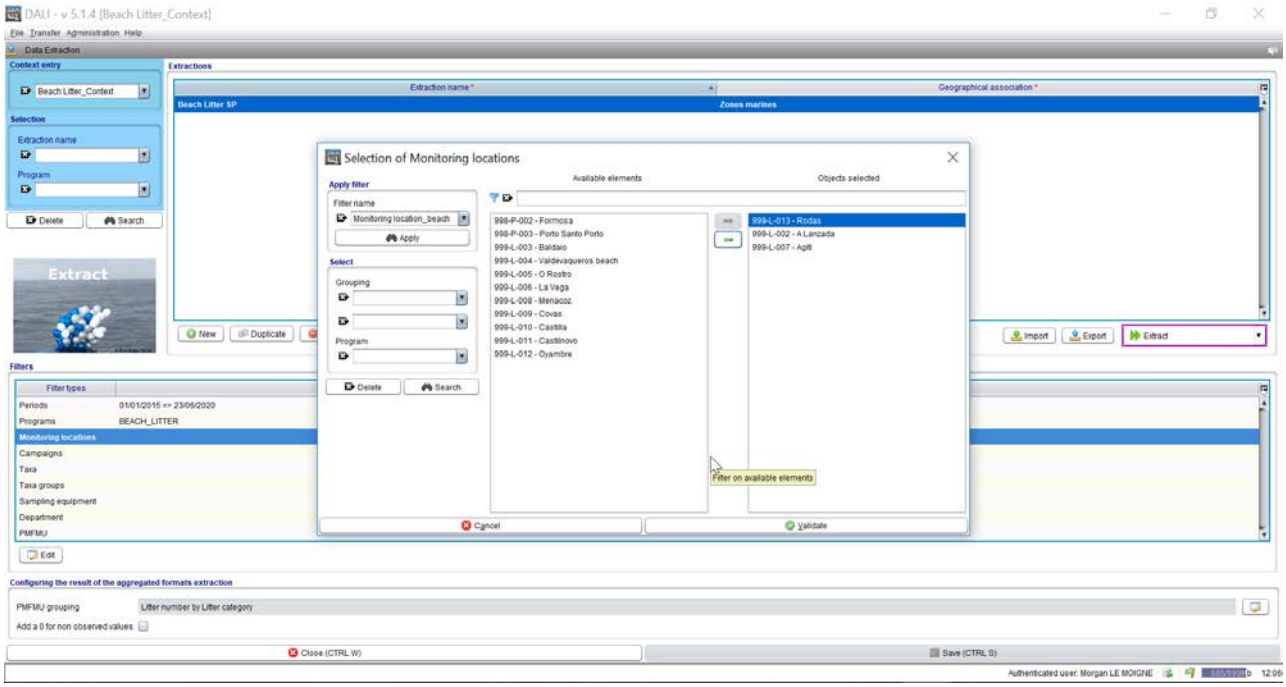


To perform an extraction, click on  and give a name to the extraction.

The extraction periods and programs fields are mandatory, whereas the other fields are optional.



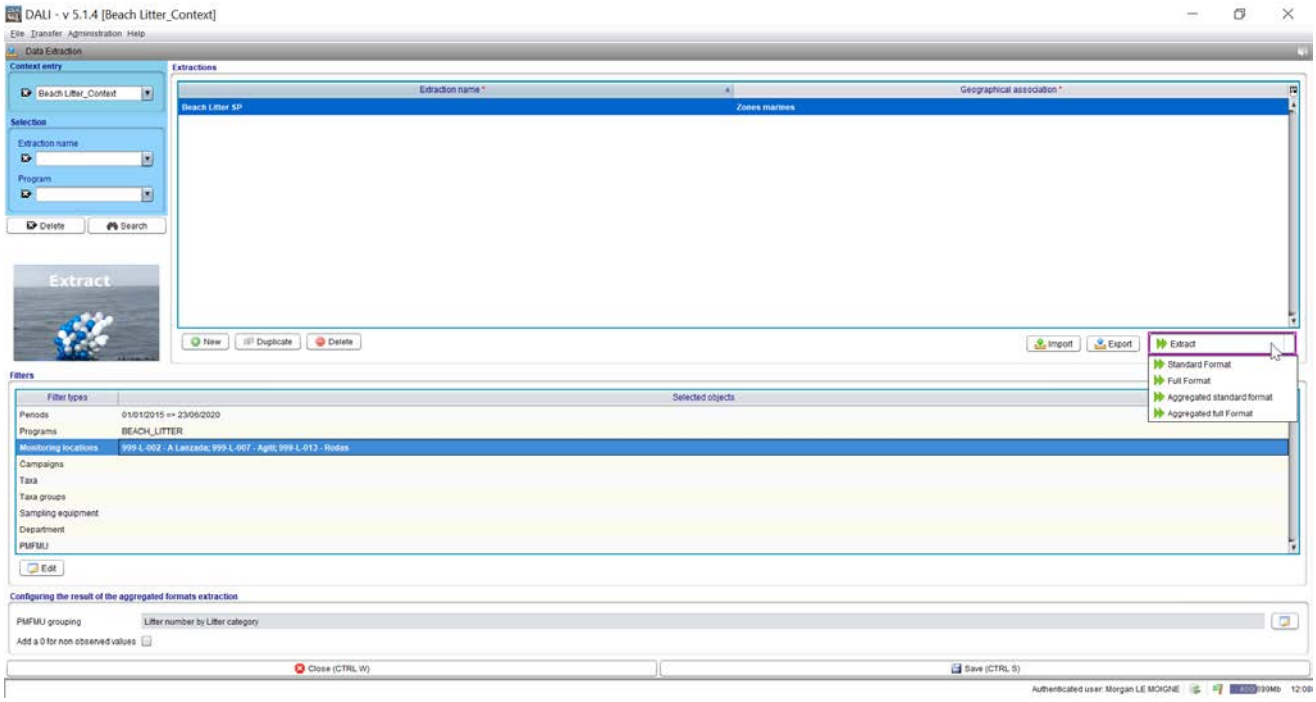
An extraction including the choice of a location can be chosen in the location list filter:



Several extraction formats are possible:

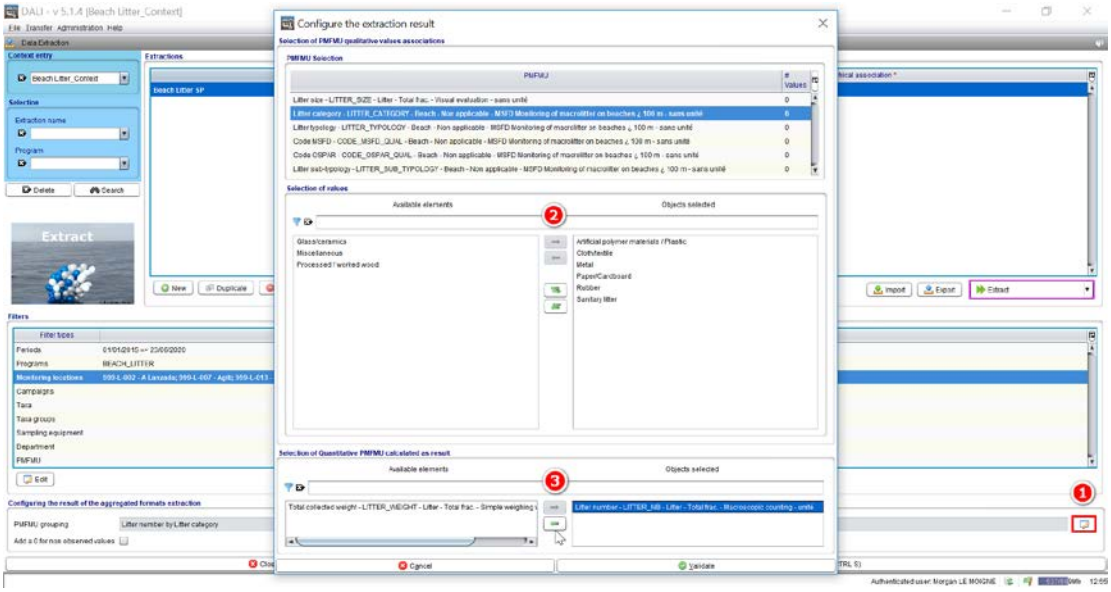
- simple format,
- full format,
- simple aggregated format and
- full aggregated format.

The simple and full formats can be obtained without any further parametrization. The **full format** extracts the fields whereas the **simple format** extracts a selection of fields parametrized in the software.



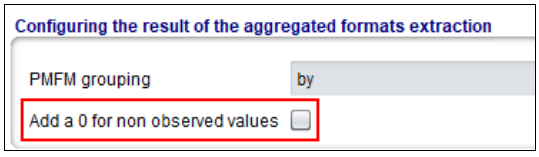
The simple aggregated and full aggregated formats require specific aggregations to find out different parameters in the same column.

In the example below, the aggregation was performed to obtain the number of litter items for each litter category in the same column:



Aggregations can be very useful for checking the entries.

It is possible to '**Add 0 for unobserved values**' to have a file with all the associations present in the software:



Data sharing

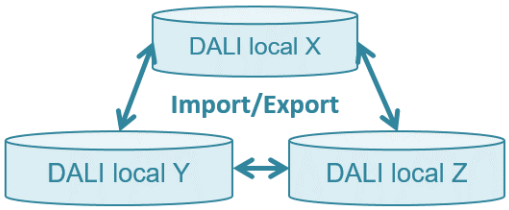
1. LOCAL SHARING

Different people can take part in the data entry of a same programme. There is an exchange system in DALI to facilitate this sharing.

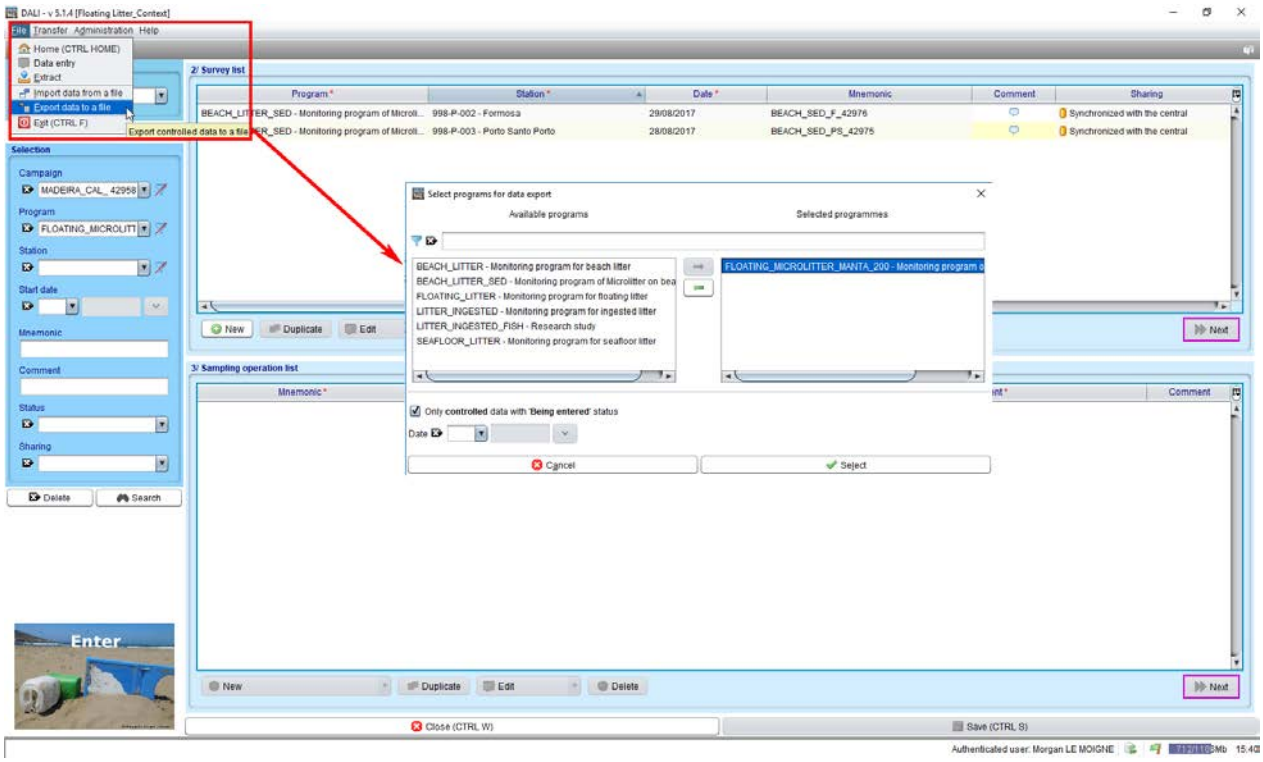
The process to transfer data from one workstation to another meets several needs:

- Allow various actors to carry out simultaneous data entries on distinct local bases, following observations made on the same day at the same location,
- Allow the implementation of the Control/Validate process between different actors (data responsibles, validators) working on distinct local bases.
- Allow the compilation of entered data on different workstations into a single workstation.

The transfer from one workstation to another is managed through a simple exchange of files between users.



Data entered on a workstation X can be exported to a workstation Y through the menus **File/Export data to a file** and **File/Import data from a file**. Surveys should have been **controlled beforehand**.



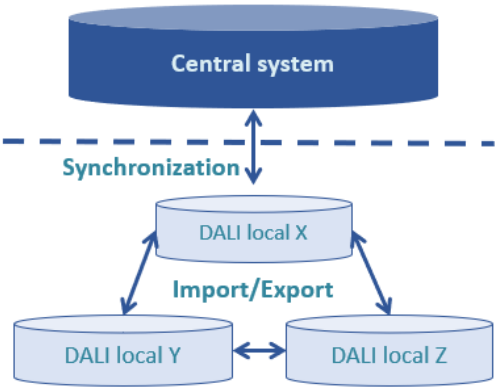
A zipped folder is saved, to be imported to the workstation Y. Once the data is imported, the field Sharing indicates that the surveys are synchronized with a file.

In case of duplications (surveys already existing on workstation Y = same location, same date, same programme), the software informs the user.

The user can visualize duplicated surveys and select those to import.

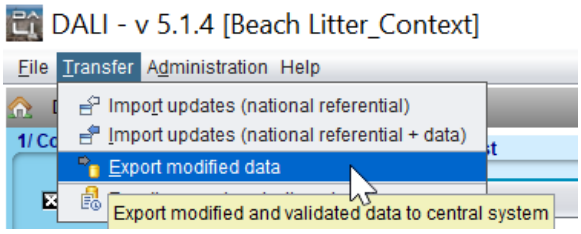
2. SYNCHRONIZATION WITH THE CENTRAL SYSTEM

The synchronization consists in exporting or importing data from the local system (local database) to the central system.

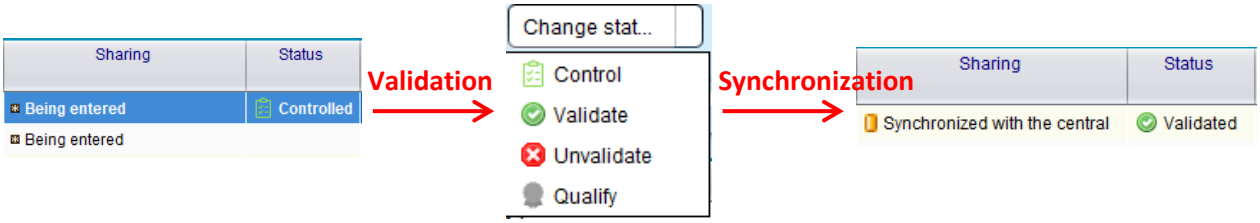


To export, surveys (and associated sampling operations) that have been added or modified since the last export, have to be **validated**.

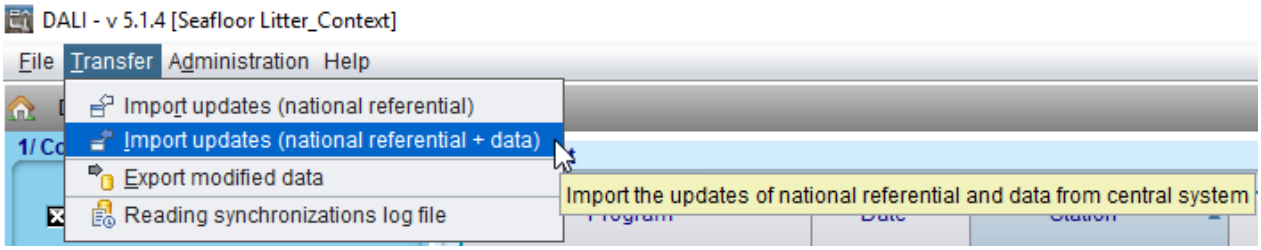
Use **Export modified data** in the **Transfer** tab:



When data have been exported, the **Sharing** field indicates that the survey has been S**ynchronized with the central system.**



To import updates, use **Import updates (national referential + data)** in the **Transfer** Tab **:**



CleanAtlantic

Tackling Marine Litter in the Atlantic Area

Instructions for entering Floating Microlitter data in DAta LItter software connected to a PostGreSQL Database

WP 5.1.3 : IT Developments

Ifremer
Interreg Atlantic Area European Regional Development Fund
EUROPEAN UNION
Clean Atlantic

WP	5
Action	1.3
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participants	Alice Lamoureux & Arnaud Rouilly – ODE/VIGIES Ifremer, Stéphane Bocandé (ISI/IRSI) Ifremer,

Disclaimer

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Foreword

DAta LItter is a software developed to enter data on Marine Litter topic. This software is connected to a PostGreSQL database to enable **harmonised and sustainable data storage**.

This document specifies instructions for entering floating microlitter data collected *via* a Protocol developed and implemented by ARDITI (Madeira).

Data entered in this testing come from the xls file "**marine_litter_database_v2_SOLE_22_05_2020**" provided by J. Monteiro (ARDITI).

Only data from MANTA_200_CAL_42958_R1, MANTA_200_CAL_42958_R2 and MANTA_200_CAL_42958_R3 have been intering in this test.

Installation / Launch

Unzipped the **dali_val_postgresql.zip** folder on your computer and double-click on the two other folders. Then, you can launch **Dali.exe** every time.

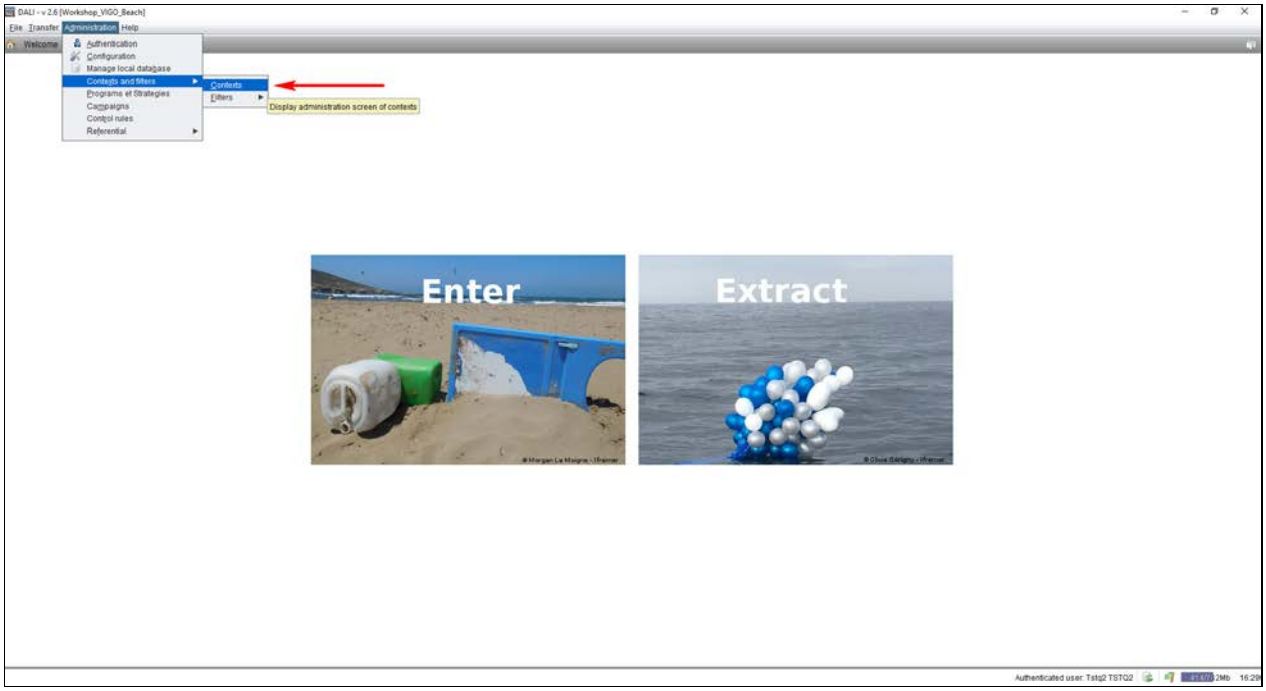
Enter your **login** and **password** sent by **assistance@ifremer.fr on 24/08/2020**.

Prerequisite for data entry

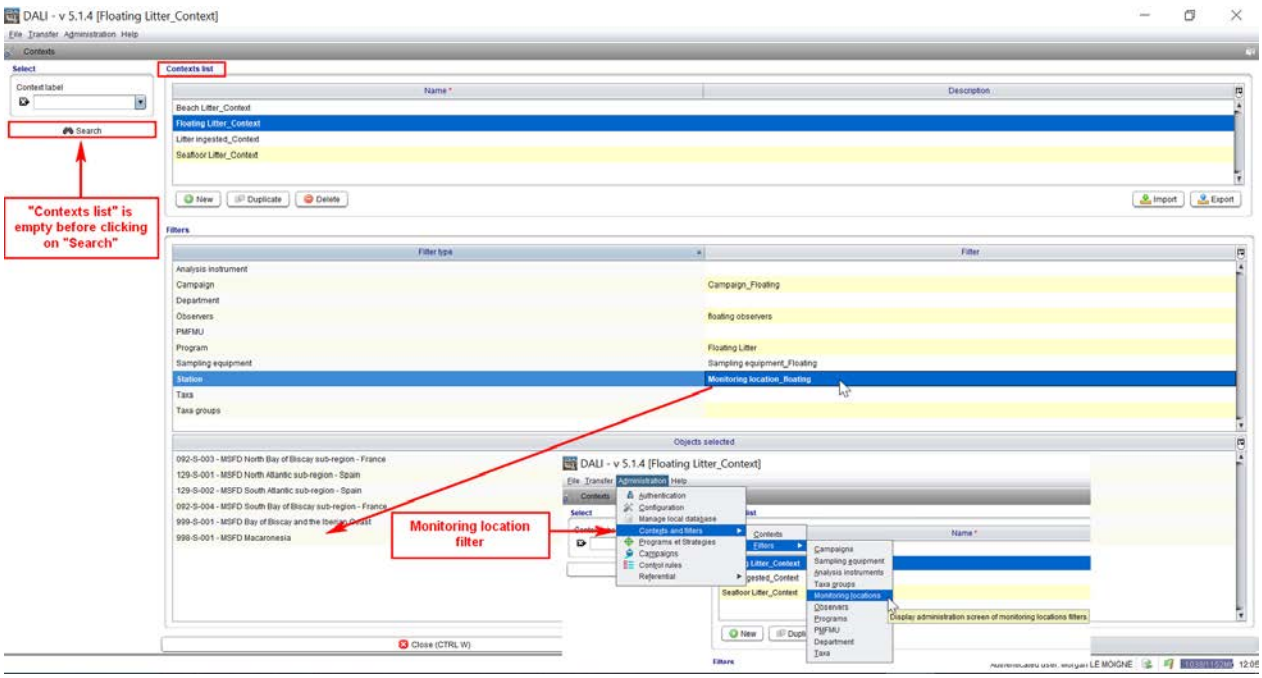
In order to enter data in the software, the user needs to refer to the proper program and the associated strategy. For floating microlitter, the **program** is **FLOATING_MICROLITTER_MANTA_200** - Monitoring program for floating microlitter and the strategy is **MSFD Research Study on Microlitter at sea**.

1. CONTEXT / FILTERS

To facilitate data entry **user can create a "user context"**. This context is obtained by applying several filters targeting the metadata & data to be entered (location, data responsible, service,…). **To facilitate this test phase, the user context Floating *Litter_Context* is provided in this software.**



The different available contexts are displaying by following the steps below :



The content of the filters can be consulted by clicking on one of them.

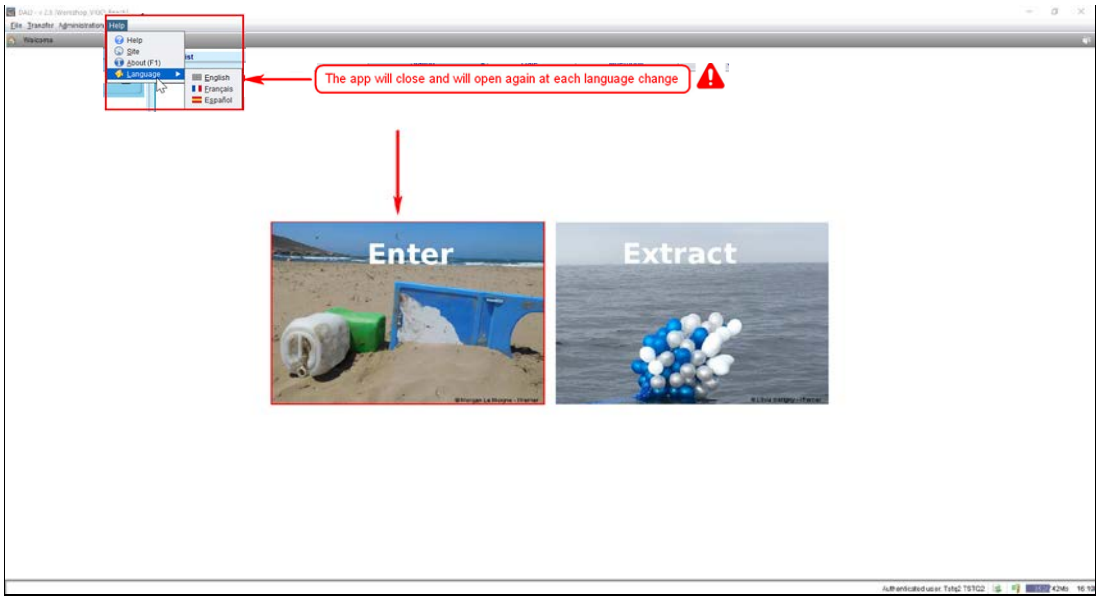
As the referential management functionalities are not developed yet, the filters modification is limited to add or delete existant values from the referential to the filter's list.

This feature will be available at the beginning of 2021.

The referential contents are based on historical datas and current protocols. You can create your own filters using the tab "Administration">"Filters"

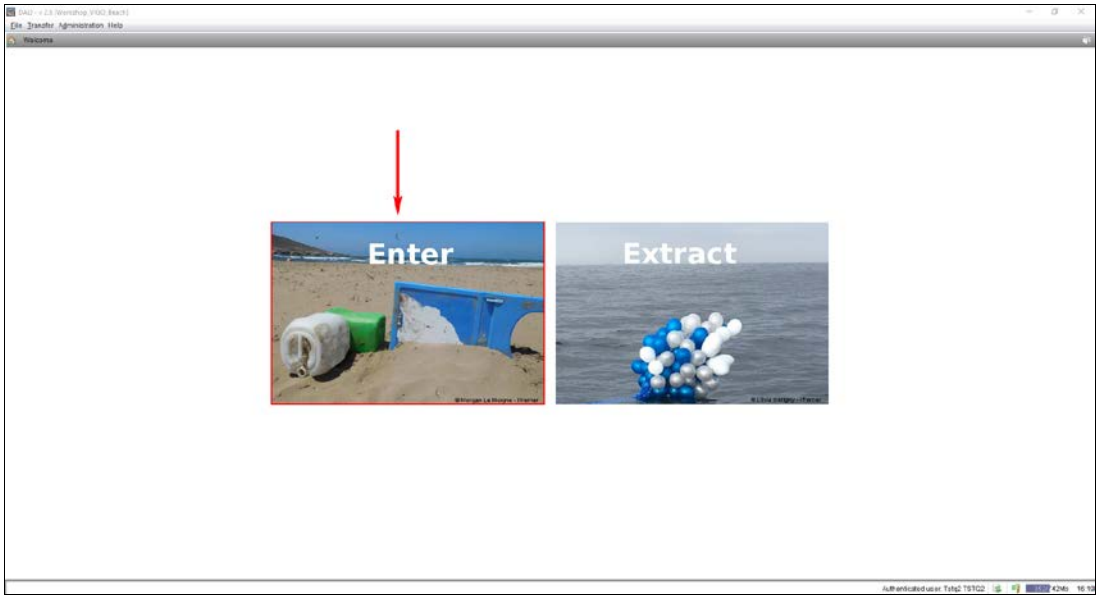
2. DATA ENTRY WINDOW

You can select your language (English, French or Spanish) in the **Help** tab :

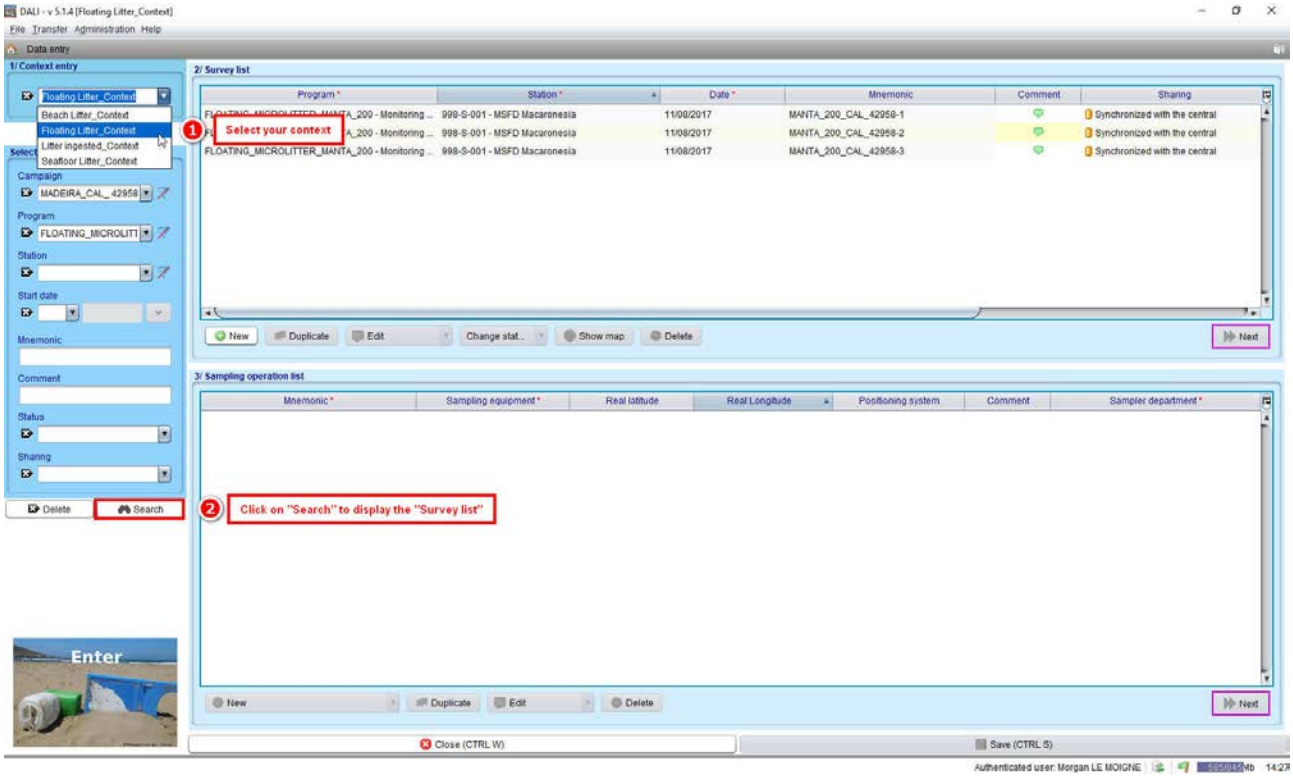


In this test phase, you may encounter different traduction or traduction missing due to the difference between traduction of the software and traduction of the data enter. Don't hesitate to let us know.

Open the entry window by clicking on the picture:

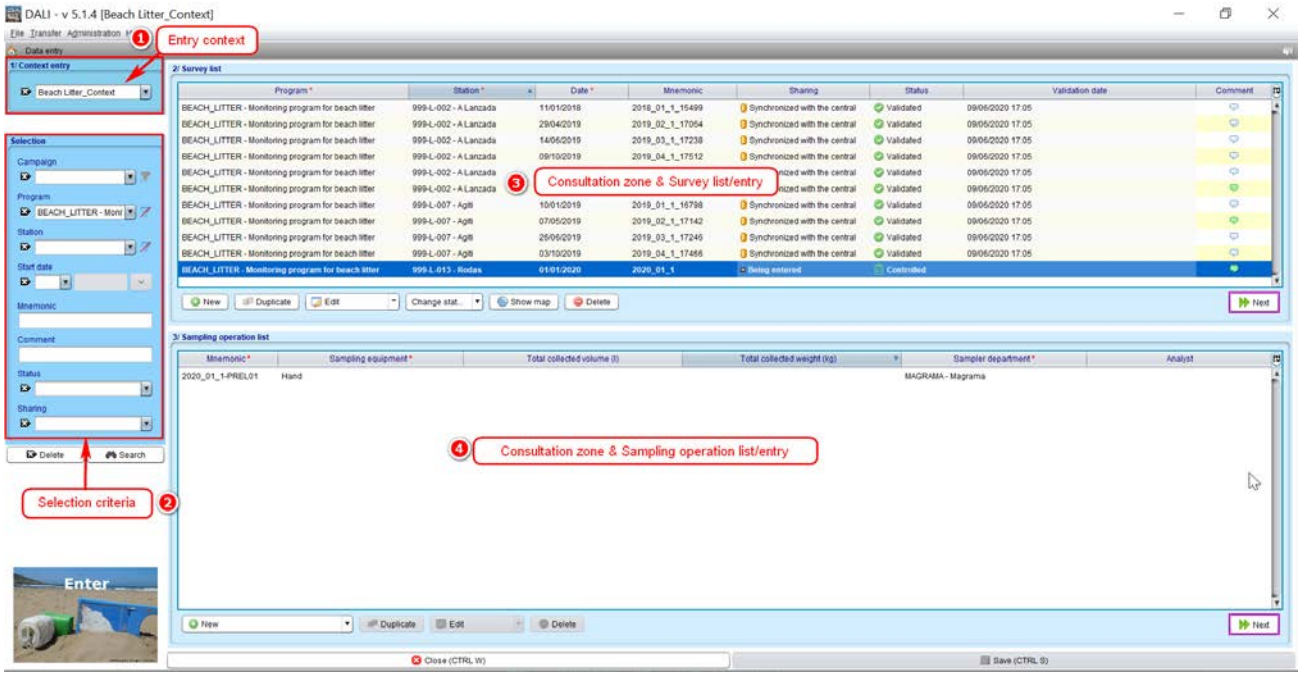


Then, to display your data, select the properly context and click on **Search**:



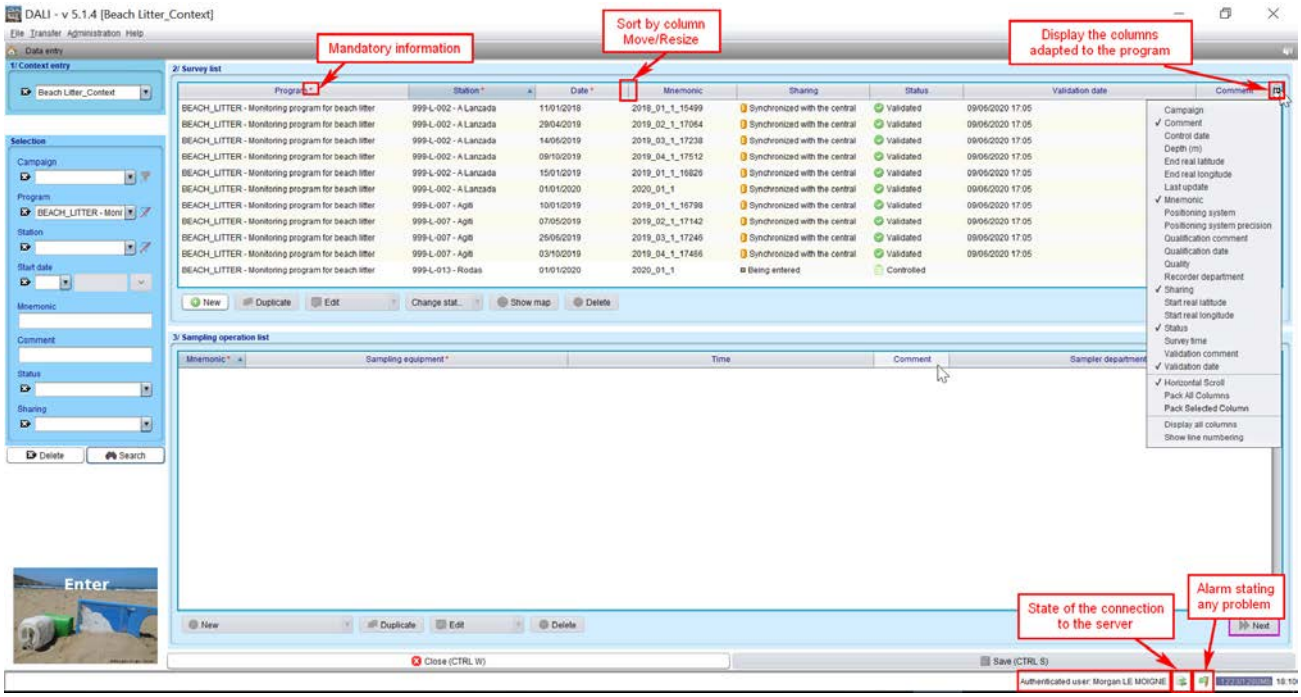
The main data entry window in the software is organized into four parts:

1) The choice of entry context is located at the top left
2) Beneath, the search window which can be used to refine which data is displayed according to filters
3) The list of survey at the top right
4) Beneath, the list of sampling operations



3. TIPS AND HINTS

The screenshot below shows the functions you need to enter data & metadata.



Important to notice : the order of the columns can also be changedby clicking and draging the column from its original place to the desired position. To sort the rows of the table according to a column, click on the column name : first click cross sorting, second click: descending sorting.

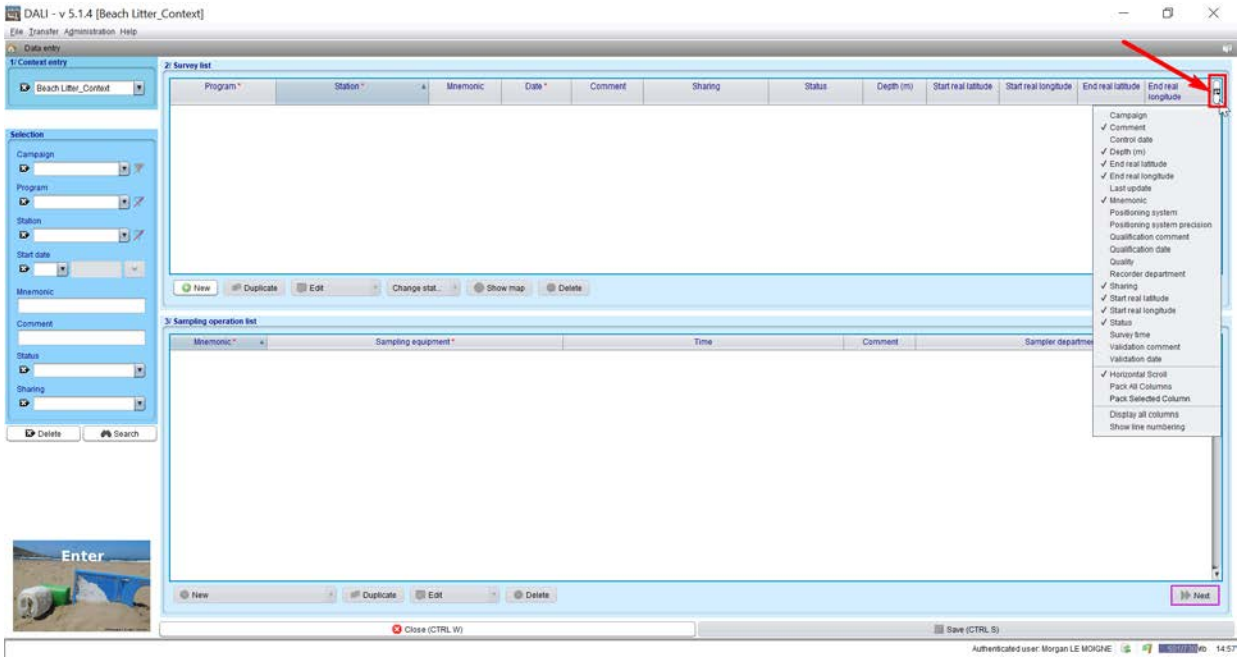
4. MAPPING TABLE

The mapping table below shows in the **left column**, the fields and parameters used in SEAFLOOR_LITTER program and in the **right column**, the originating fields from the source file.

This will help to understand how data have been entered in this test phase.

DALI Database Fields	Fields from ARDITI xls File
1st Tab - ***Survey list***	
Program	Protocol_Code + DALI addings
Campaign	DALI adding + part of Survey_Code
Station	MSFD Region
Mnemonic	Survey_Code + survey number
Date	Date
Survey time	Init_Time
Start real latitude	Initial_Y_Latitude
Start real longitude	Initial_X_Longitude
End real latitude	End_Y_Latitude
End real longitude	End_X_Longitude
Comment	Boat
Sampling operation list	
Mnemonic	Sample_Code
Sampling equipment	DALI adding
Time	End_Time
Sampler department - ***Field automatically completed from strategy information***	ARDITI
Comment	N_surveyors
2nd Tab - ***Survey***	
Duration	Duration
Distance covered - ***Automatic calculated field with coordinates***	Length_meters
Boat speed	Estimated_Speed
Analyst - ***Field automatically completed from strategy information***	ARDITI
3rd Tab - ***Sampling operation - Measurements***	
Mnemonic	Sampling operation Mnemonic
MSFD Code	TSG_ML_General_Code
Litter category - ***Field automatically completed from MSFD Code***	Level_1_ Materials
Litter typology - ***Field automatically completed MSFD Code***	General_Name
Litter color	Color
Litter size	Size
Litter number	N_items
Analyst - ***Field automatically completed from strategy information***	ARDITI

Before starting any entering action, pay attention to make sure that all the fields of the surveys are correctly displayed on the screen matching with the survey fields described above. The display is done using the button at the top right of the screen.


DALI - v 5.1.4 [Beach Litter_Context]
File Transfer Administration Help
Data entry
1/ Context entry
Beach Litter_Context
Selection
Campaign
Program
Station
Start date
Mnemonic
Comment
Status
Sharing
Delete
Search
2/ Survey list
Program *
Station *
Mnemonic
Date *
Comment
Sharing
Status
Depth (m)
Start real latitude
Start real longitude
End real latitude
End real longitude
New
Duplicate
Edit
Change stat...
Show map
Delete
Campaign
Comment
Control date
Depth (m)
End real latitude
End real longitude
Last update
Mnemonic
Positioning system
Positioning system precision
Qualification comment
Qualification date
Quality
Recorder department
Sharing
Start real latitude
Start real longitude
Status
Survey time
Validation comment
Validation date
Horizontal Scroll
Pack All Columns
Pack Selected Column
Display all columns
Show line numbering
3/ Sampling operation list
Mnemonic *
Sampling equipment *
Time
Comment
Sampler departmer
New
Duplicate
Edit
Delete
Next
Enter
Close (CTRL W)
Save (CTRL S)
Authenticated user: Morgan LE MOIGNE

5. NEW CAMPAIGN

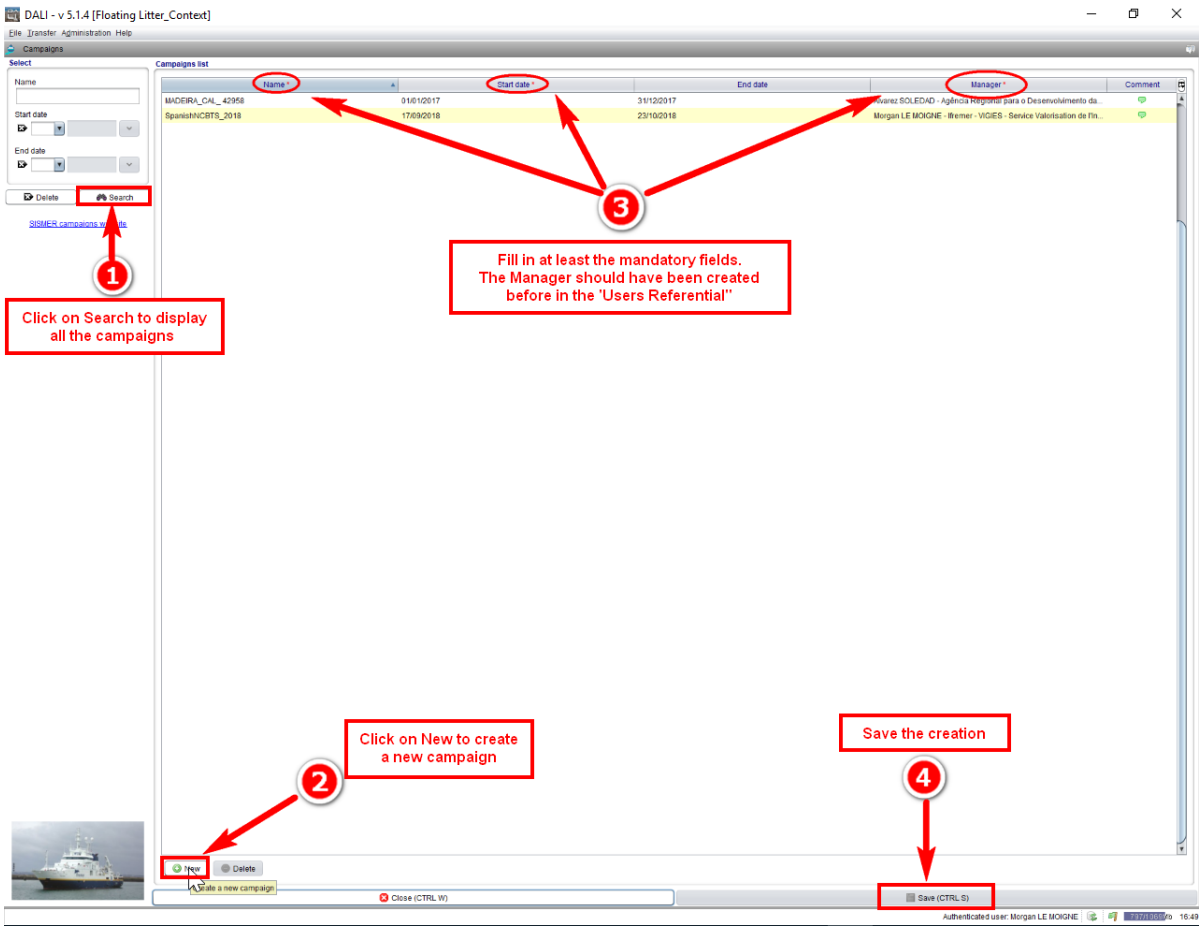
As a definition for this software, we consider a campaign as a set of field trips to a sector in a given period of time, over a continuous period and requiring specific logistic.

In this program, a new campaign will need to be created and to be added into the campaign filter before entering the dataset.

5.1. Creating a new campaign

Click on the **Administration** tab, then **Campaign** tab

Then, follow the 4 steps described below :

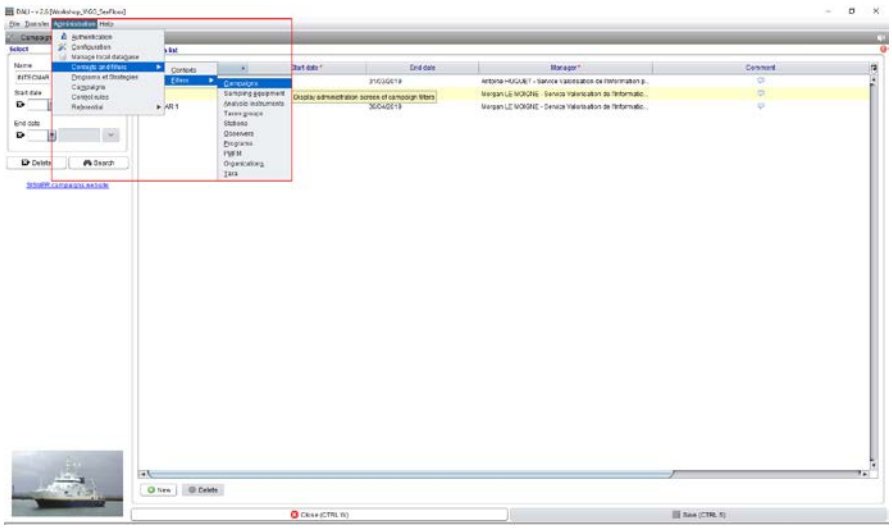


To come back to the entry window, click on **Close** button, or use the tab **File**->Entry

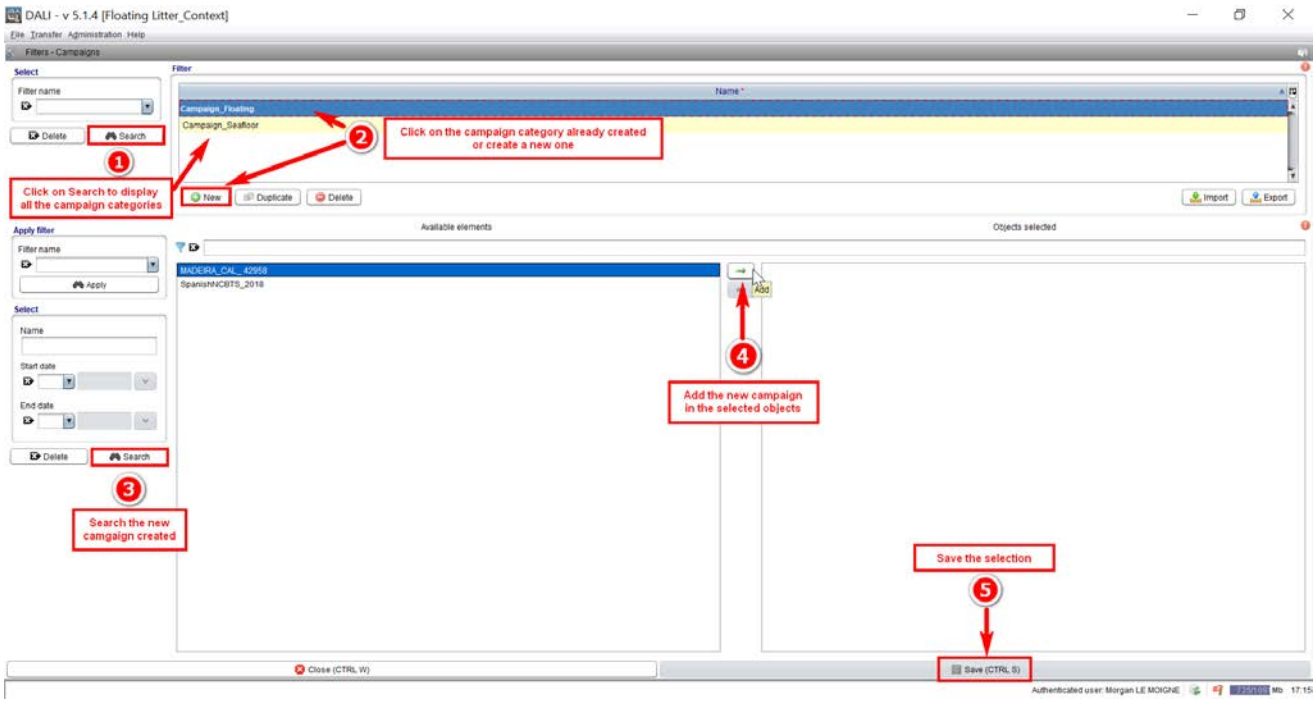
5.2. Adding the new campaign in the campaign filter

The new campaign need to be added to the campaign filter.

Go to the Administration tab → Contexts and filters →Filters→Campaigns



Then, make a research on the campaign created in order to add it to the “Objects Selected”.



Entering Surveys

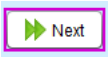
Surveys are entered in the upper part of the software screen.

To create a new survey, click on 

. An empty survey line is created. The columns displayed in the list of surveys make up the basic elements which can be entered.

For each survey to enter, perform the following operations:

- Select the **program FLOATING_MICROLITTER_MANTA_200**
- Select the **Station** corresponding to a MSFD marine sub-region (previously included in the referential)
- Select the **Campaign**
- Specify the Survey **Mnemonic** (confer to the mapping table above)
- **Specify the date of the survey** *via* the calendar or manually
- Enter the **Survey time**
- Enter **Start and End coordinates** of the survey
- **Write a comment** (optional). This comment will provide information about the general conditions during the survey, or about issues related to the survey.

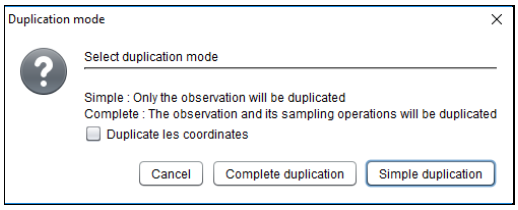
Once the survey has been entered, click on 

to create a sampling operation.

To delete a survey, click on: 

A survey can also be **duplicated**. Select the survey to duplicate and click on: 

A **simple duplication** or a **complete duplication** of the survey is posible. The complete duplication means that you will duplicate the survey **and** its sampling operation.



Entering sampling operations

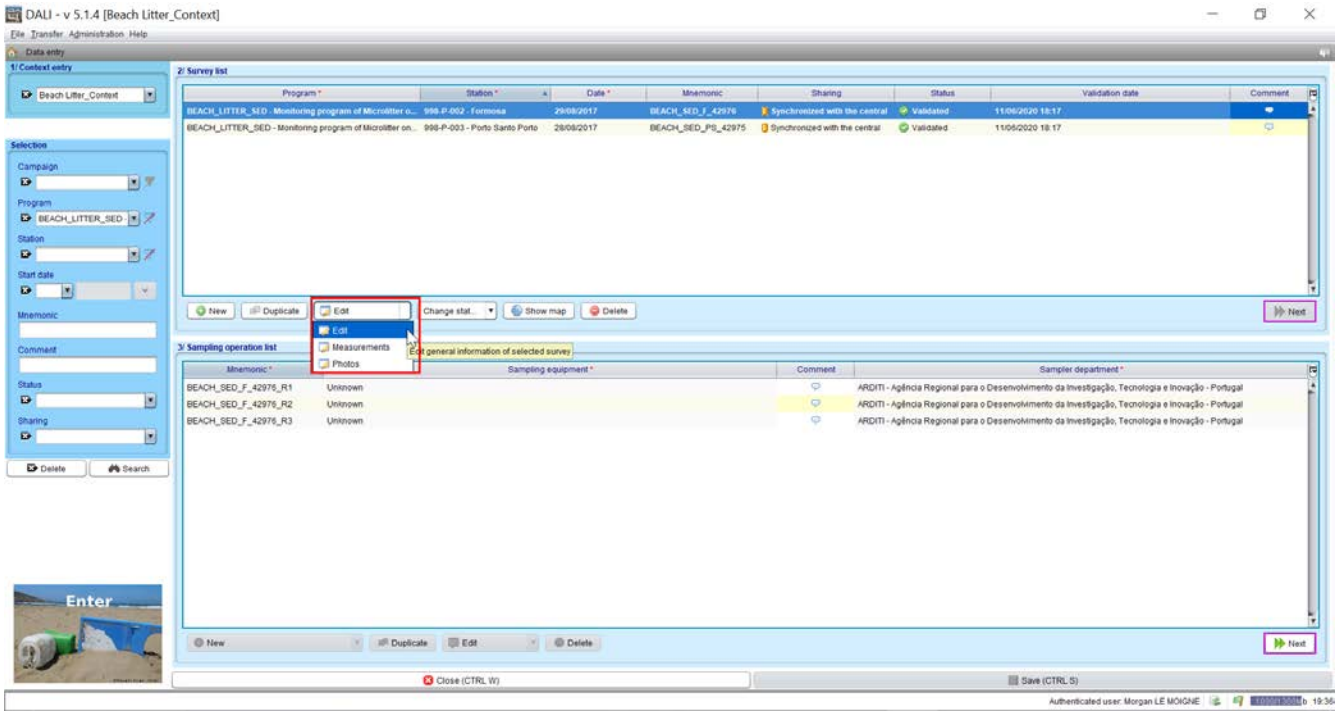
After clicking on Next in the survey list or New in the sampling operation insert, you will create sampling operations.

For each sampling operation to be entered in the same survey, specify:

- the **sampling operation mnemonic code**
- the **Sampling equipment**
- the **time** corresponding at the end of the survey (if any)
- the **Sampler department**
- A **comment** on the sampling operation can be entered at this step.

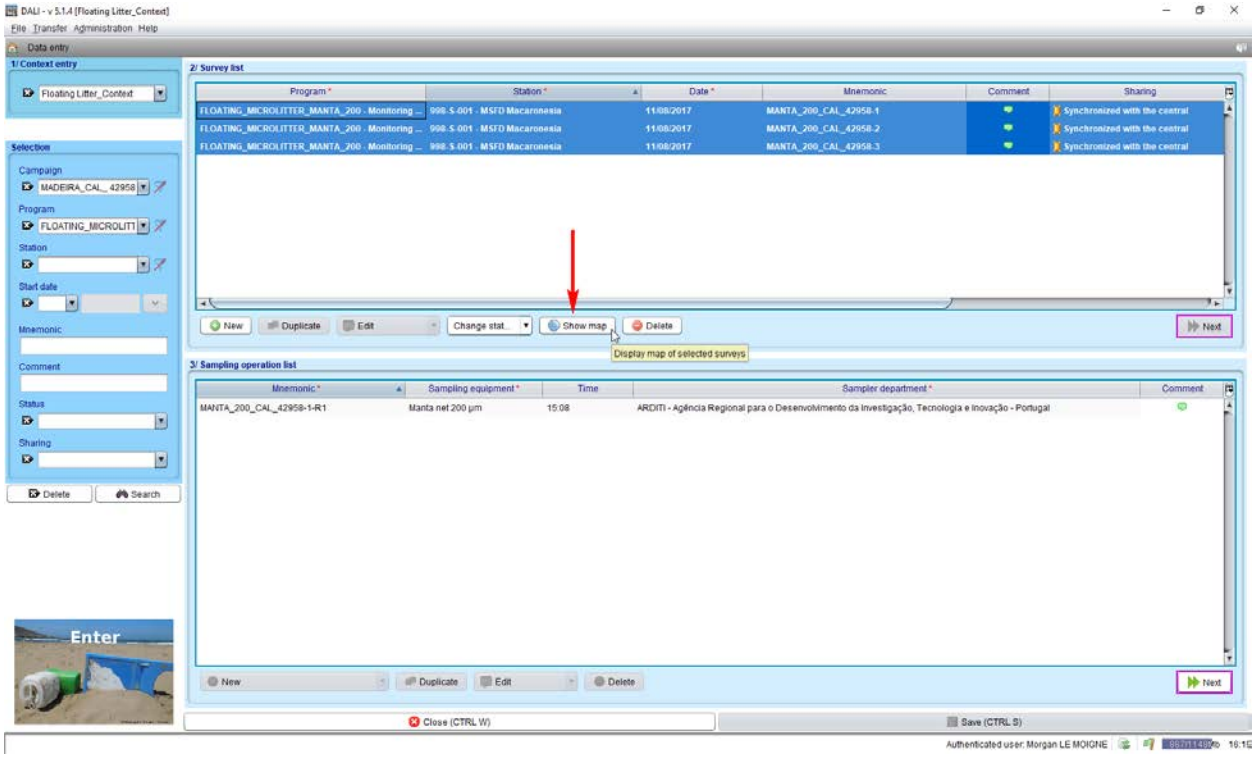
Then click on: Save (CTRL S)

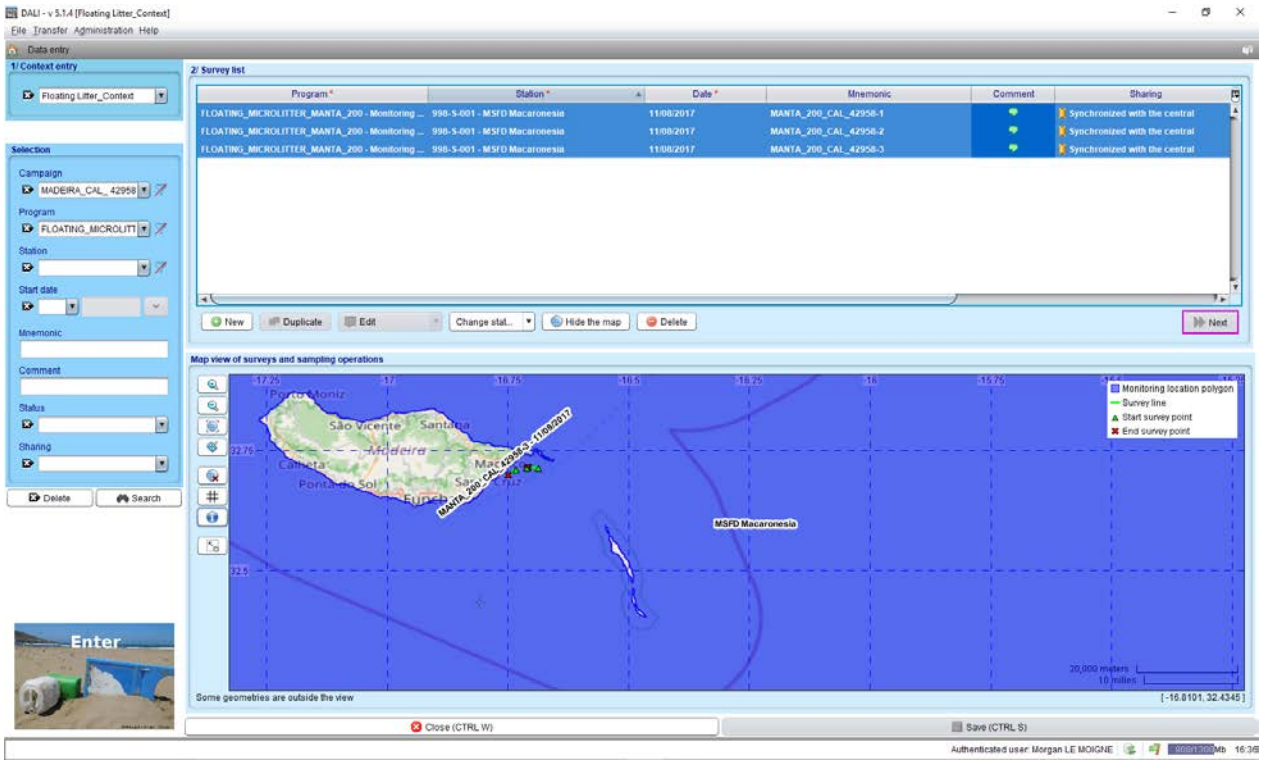
To display the screen to enter additional information of the survey (e.g., the person in charge of the survey/ duration), click on Next at the bottom-right of the screen or **Edit** in the middle of the screen:



Map control

A location Map can be displayed in order to control and detect any errors on the coordinates entered. This function can not be use to fill data in the base.



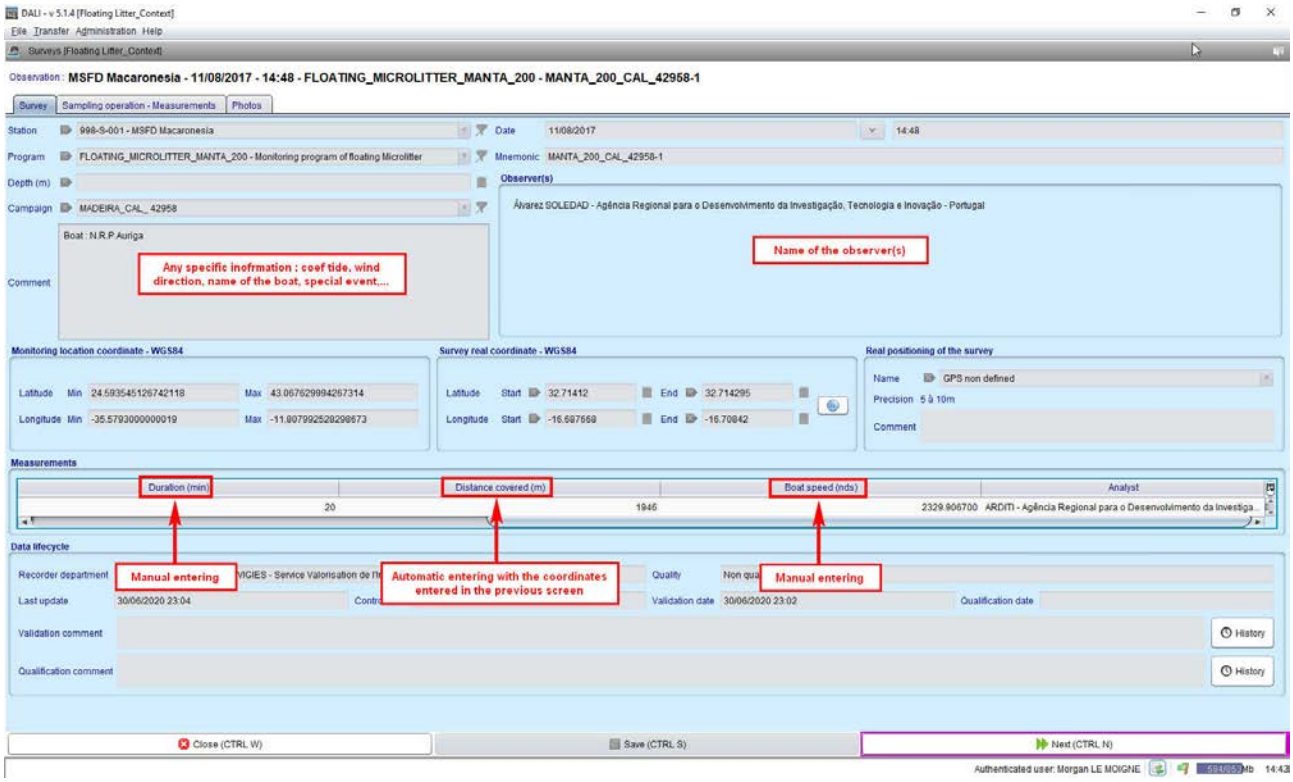


Entering Survey Measurements

Any specific information about the survey can then be entered in the comment field: environmental conditions, any events happened during the survey,…

The name of the observer(s) can also be entered. A quick search is run by adding a special character **"*"** before the name or the service to indicate. This person should have been created previously in the User Referential.

The parameters below are entered manually or automatically.



Other parameters can be included in those Measurements:

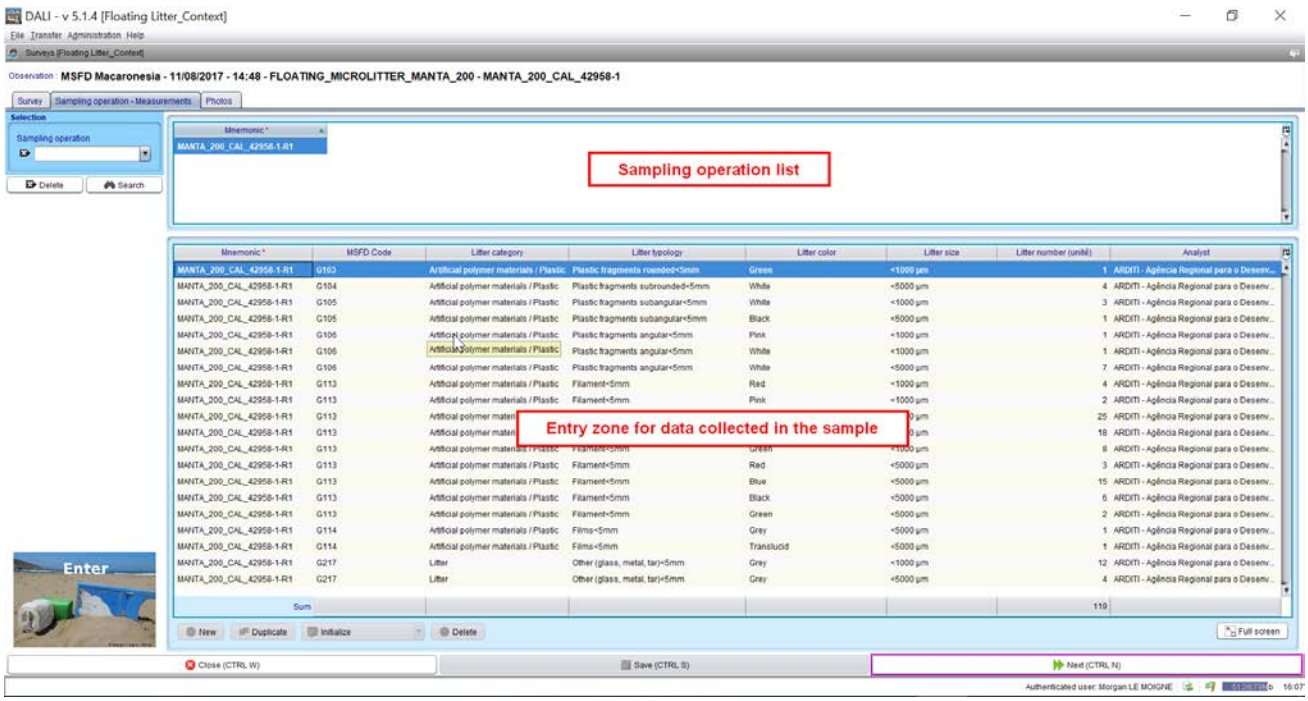
- The number of observers
- The width of the Manta trawl
- The Surface area covered automatically calculated thanks to the Manta trawl width field

Then, click on Next (CTRL N) to enter the measurements of the sampling operation(s).

Entering sampling operation(s) measurements

The Sampling operation - Measurement tab is organized into two parts:

- the top insert to select the sampling operation on which data is entered
- the bottom part is for entering the measurements related to this sampling operation



For each sampling operation, one or several parameters is/are measured.
As for the survey list, the results lines can be duplicated to make faster the enter of similar lines which have only one or two different informations".

Two types of entries can be made:

1. Data entered line by line
2. Entering using initialization of the data entry grid

1. Entry line by line

As far as possible, use keyboard shortcuts that facilitate data entry, particularly *via*:

- the **Tab** (tabulation) **key :** let you move from one column to another

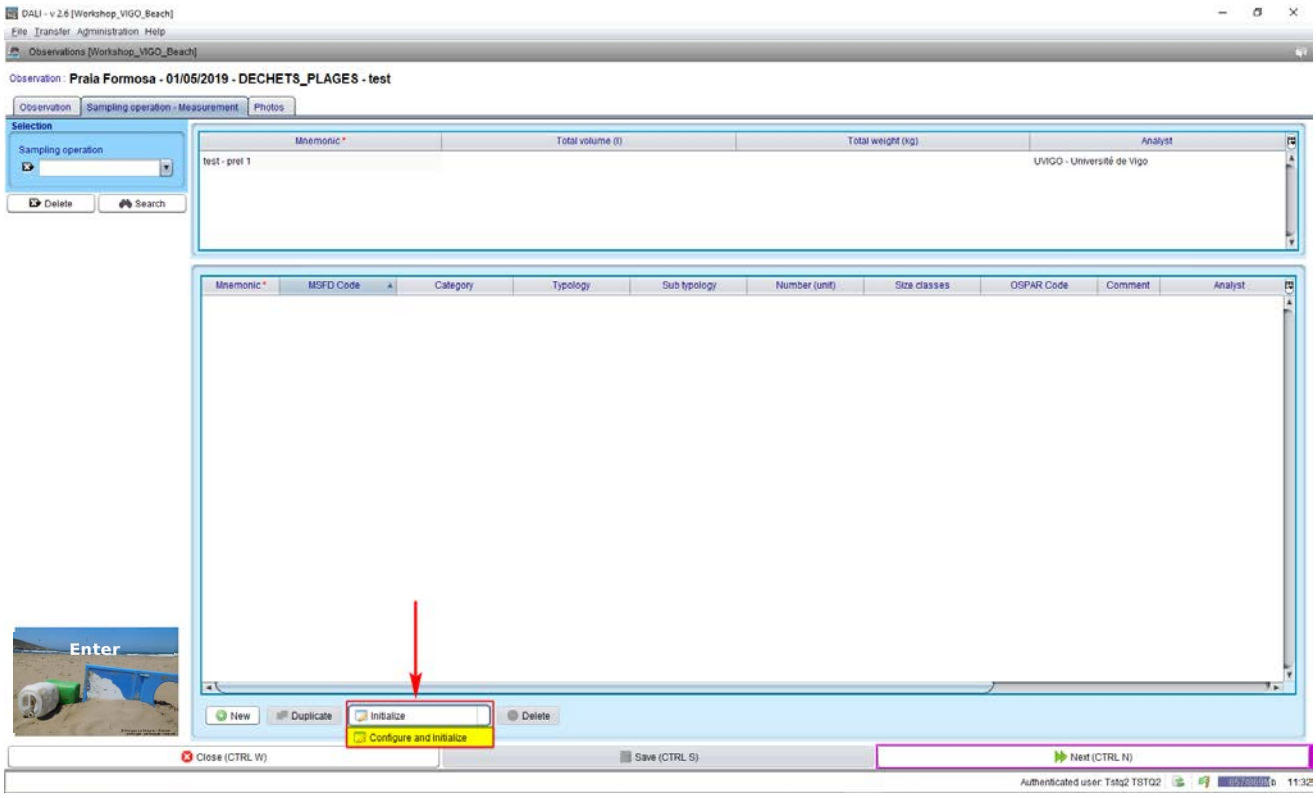
- the **Up/Down arrows** : to select an element from a drop-down list, or to move from one line to another.

The data entry operator selects a MSFD code **which induces the automatic filling of the** Litter category, and Litter typology **fields**. The other fields will be entered manually.

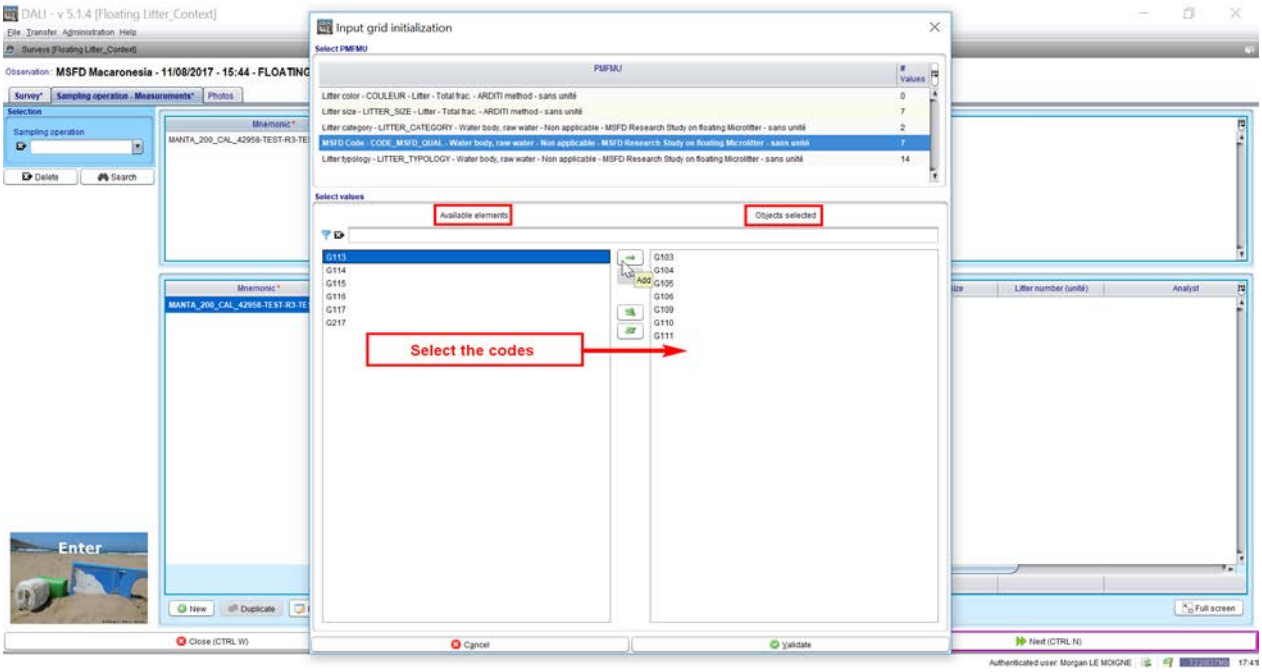
A comment can be filled in if information or a specification about the item is indicated on the xls file.

2. INITIALIZING THE DATA ENTRY GRID

Data entry grid initialization is performed before entering the first measurement thanks to the Configure and Initialize button:



The initialization screen open and the qualitative values of each parameter can be selected in the data entry grid.



A maximum of 3 or 4 parameters (PMFMU above for the Quintuplet : Parameter-Matrix-Fraction-Method-Unit) can be configured.

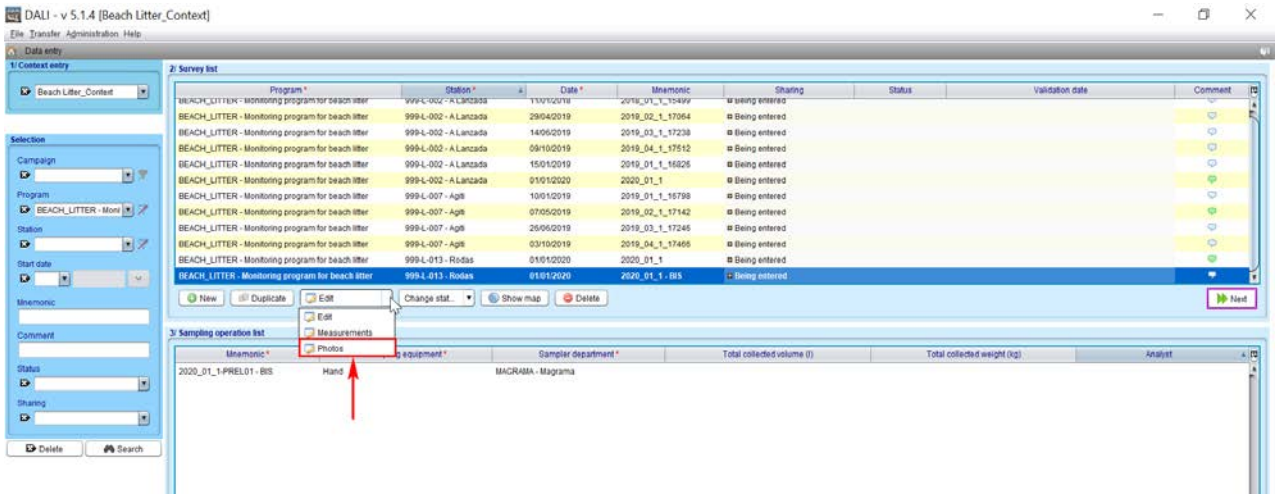
Once the selections made, the entry grid is displayed and the results can be entered.

When entries have been done, save them, and click on Next (CTRL N) to save photos if any (next chapter). Otherwise, move to a new survey.

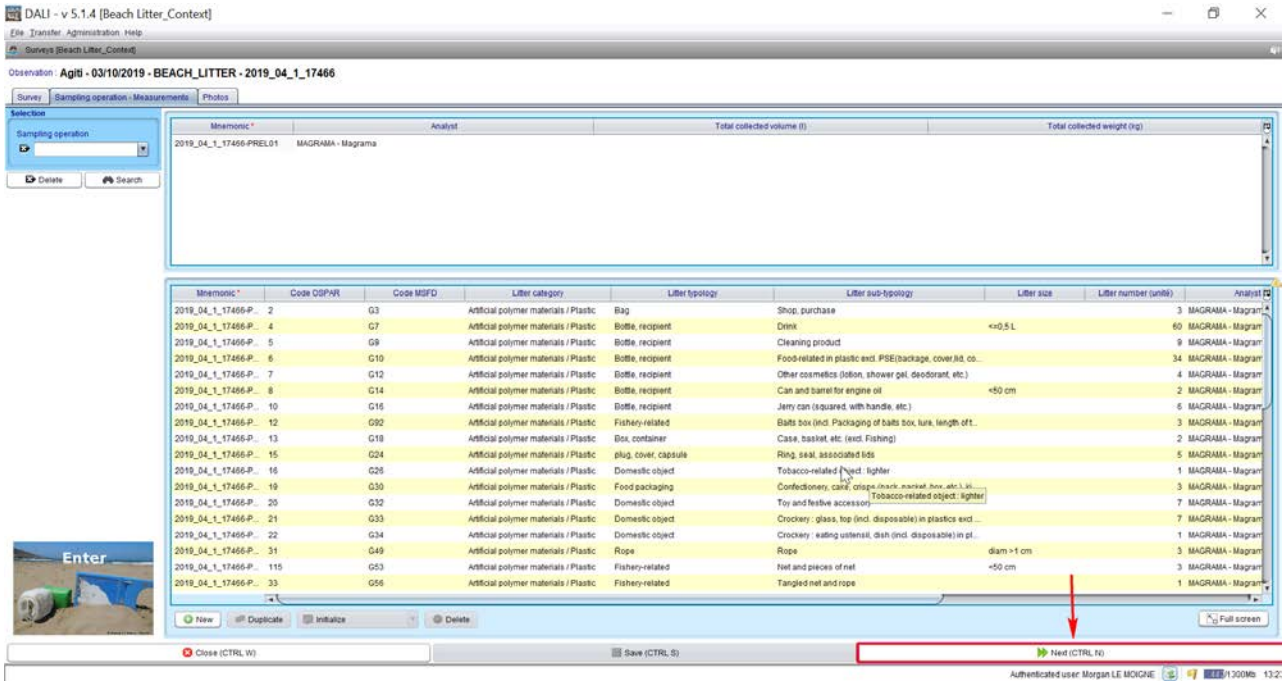
Saving photos

Two ways to display the photo tab :

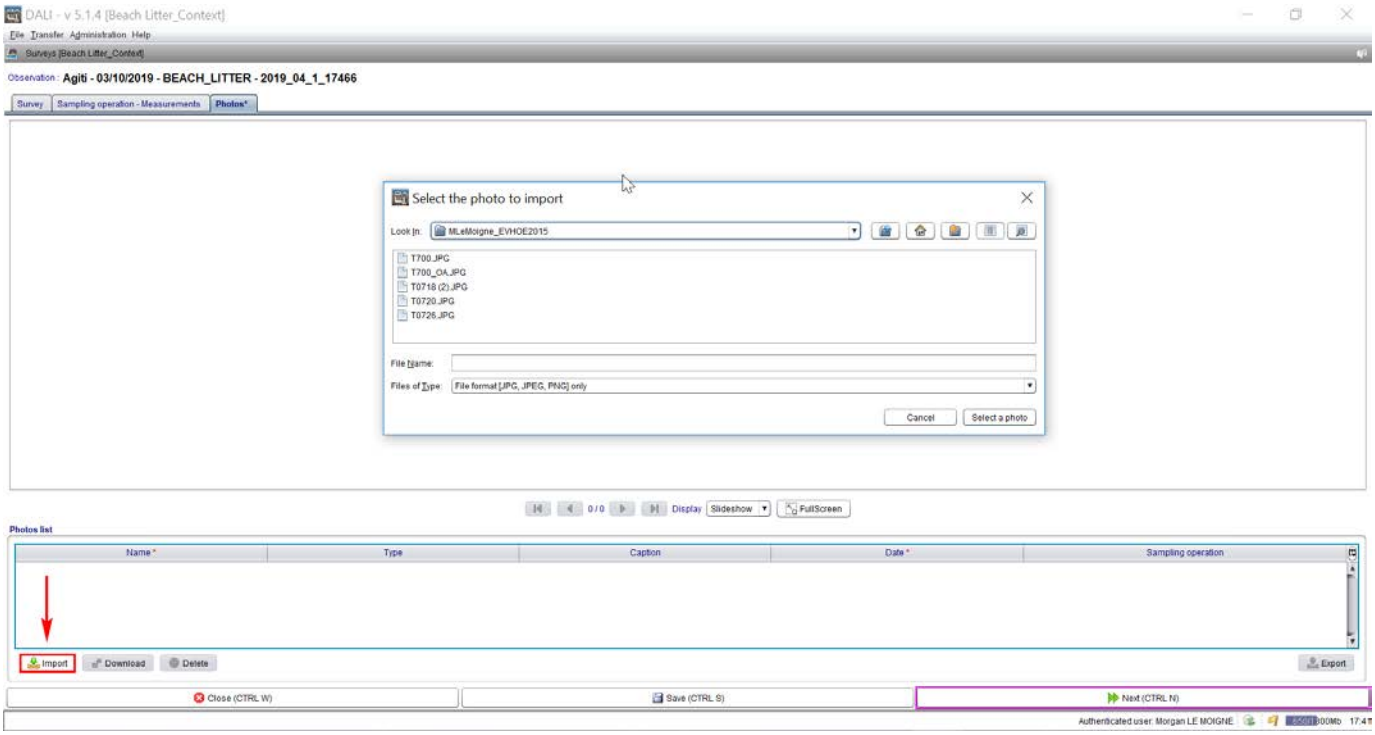
1) From the “Enter” menu



2) From the Sampling operation - Measurements tab



This 3rd tab of this software is used to import photos. The only mandatory field is the **Name** of your photo. The survey mnemonic or the sampling operation mnemonic is recommended to facilitate the link between photo and results.

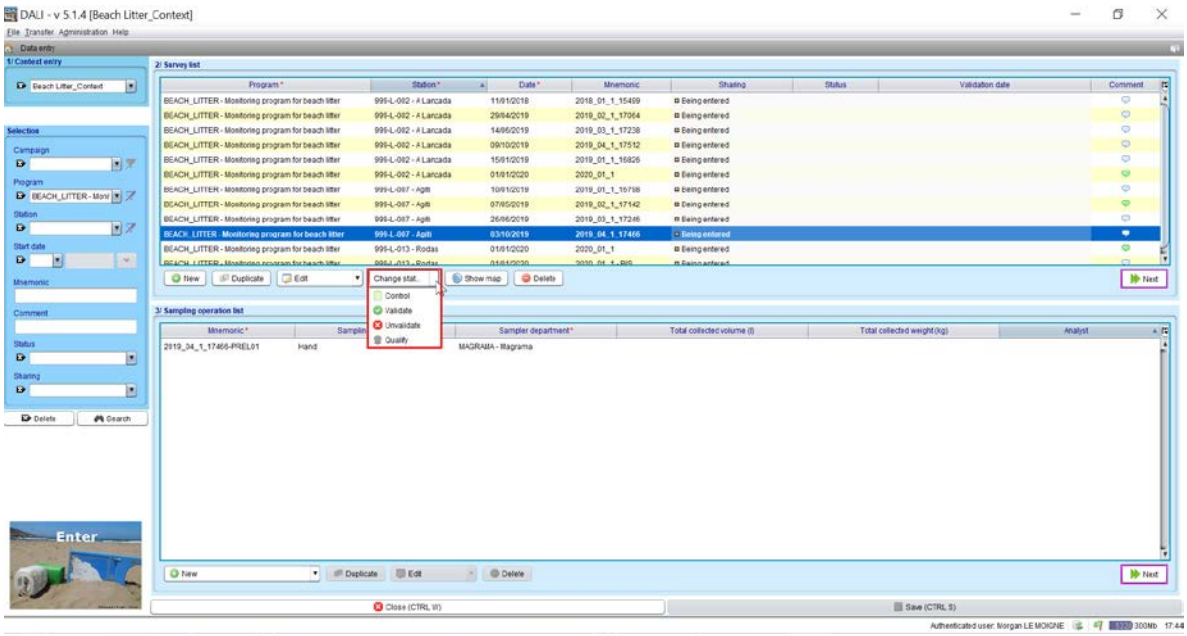


Then, fill the name of the photo and the date when this picture has been taken. You can enter more information in the field Caption.

Then save your entry.

Control and validation

Once the survey and the associated sampling operations are entered, a status need to be specified for these data *via* the menu **Change state** located below the list of surveys (1st tab):



Synchronizing data with the central database (next chapter) requires that the steps to **control** and **validate** data have been successively performed. To modify data which have already been validated, an **unvalidated** action with a comment explaining the reason why will be required.

The control check aims to ensure that data have been correctly entered in DALI. The following series of control checks are the minimum to be run:

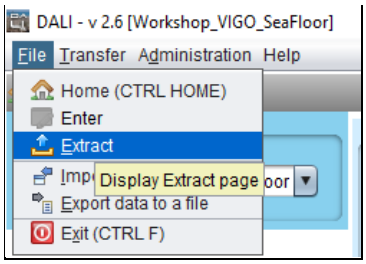
a- Manual and visual checks, per sampling operation, of the sets of codes for litter + associated measurements (as indicated in the previous section).
b- Control checks based on data extracted from DALI beforehand using the extraction module.

Extraction

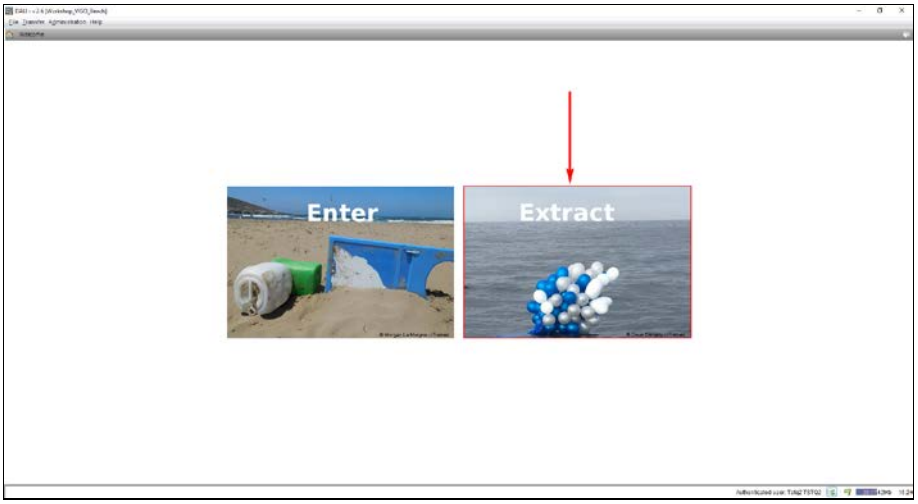
Extraction is useful to make some analysis or to control over data.

Two ways to access to the extraction:

1. Select **Extract** in the **File** tab

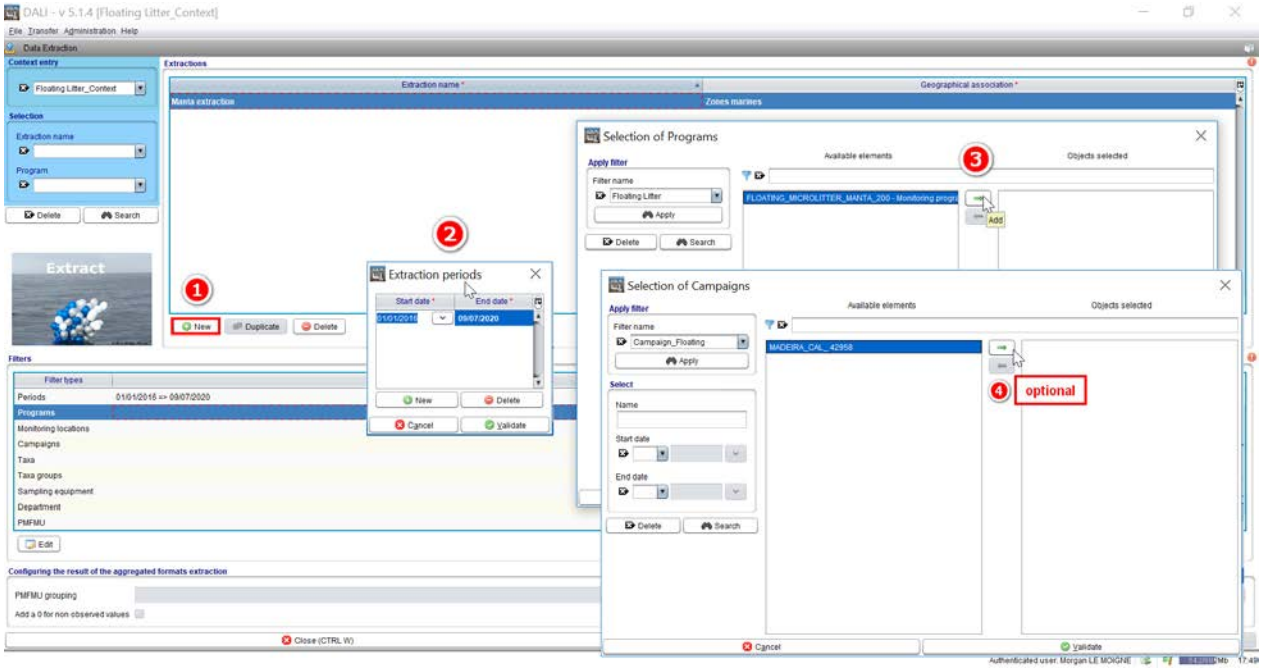


2. After closing the data entry window, open the extraction window by clicking on the picture:



To perform an extraction, click on  and give a name to the extraction.

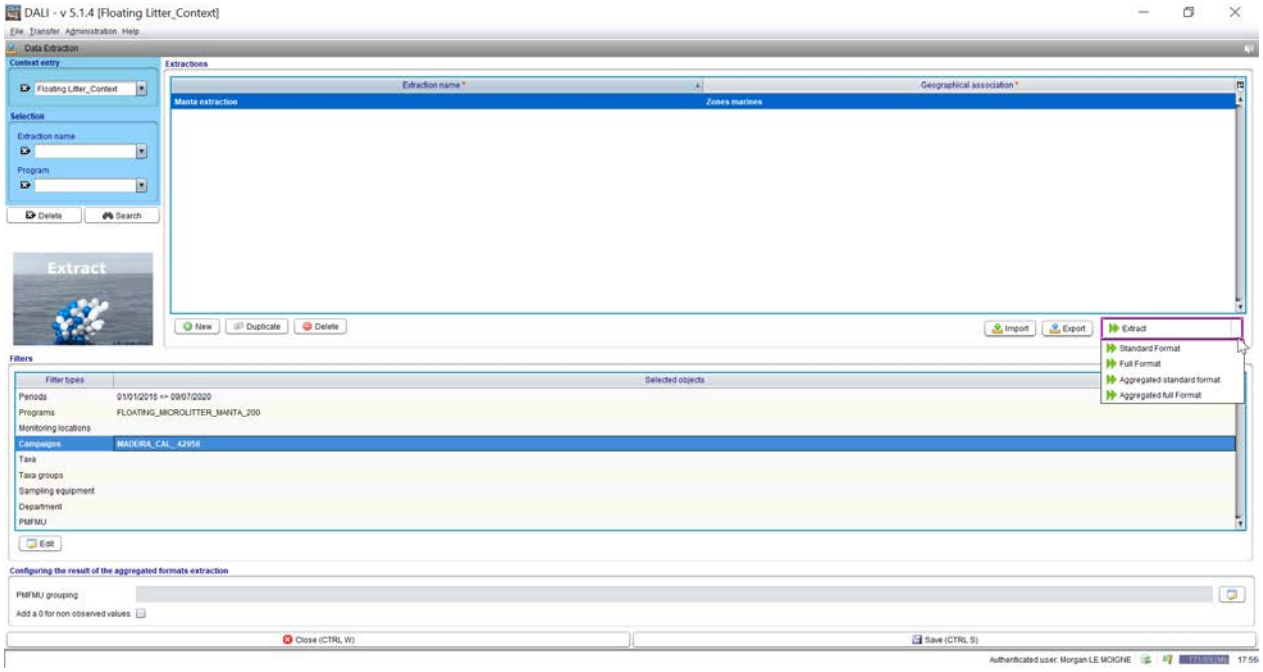
The extraction periods and programs fields are mandatory, whereas the other fields are optional.



Several extraction formats are possible:

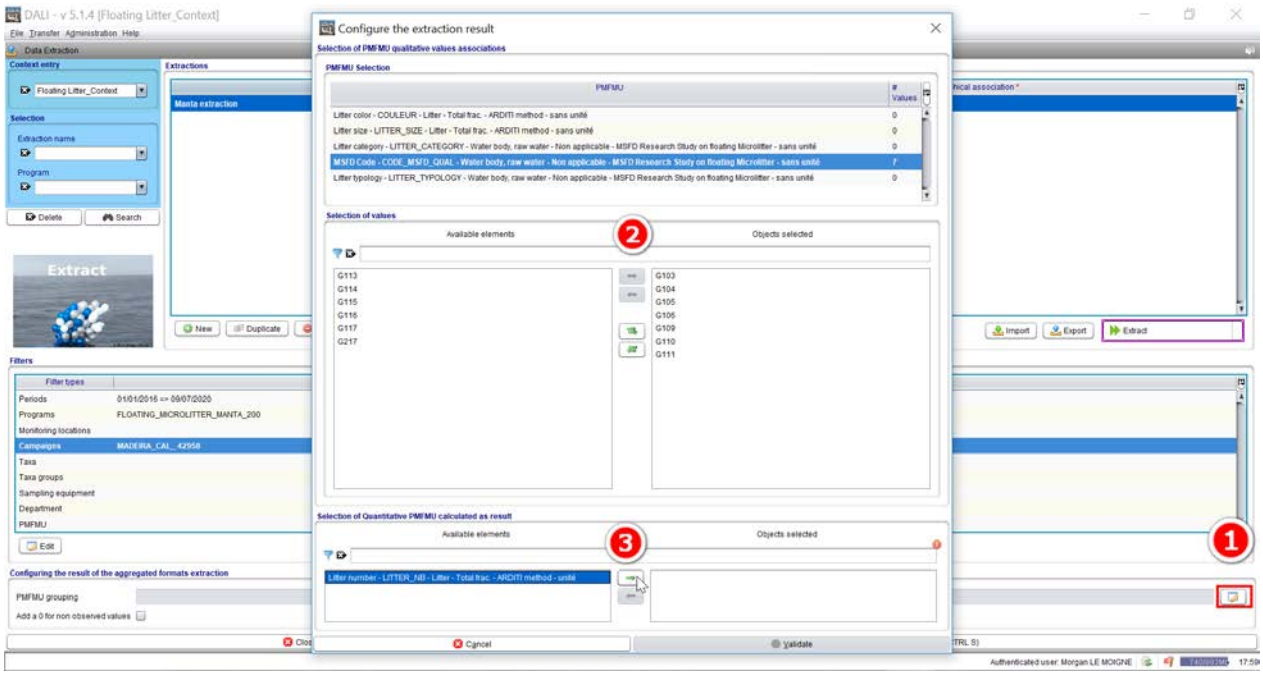
- simple format,
- full format,
- simple aggregated format and
- full aggregated format.

The **simple and full formats** can be obtained without any further parametrization. The **full format** extracts all the DALI fields whereas the **simple format** extracts a selection of fields parametrized in the software.



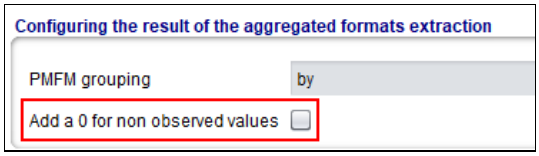
The simple aggregated and full aggregated formats require specific aggregations to find out different parameters in the same column.

In the example below, the aggregation was performed to obtain the number of litter items per MSFD Code :



Aggregations can be very useful for checking the entries.

It is also possible to '**Add 0 for unobserved values**' to have a file with all the associations present in the software:



Data sharing

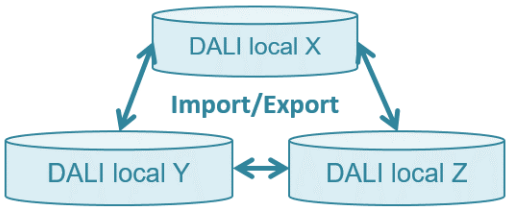
1. LOCAL SHARING

Different people can take part in the data entry of a same programme. There is an exchange system in DALI to facilitate this sharing.

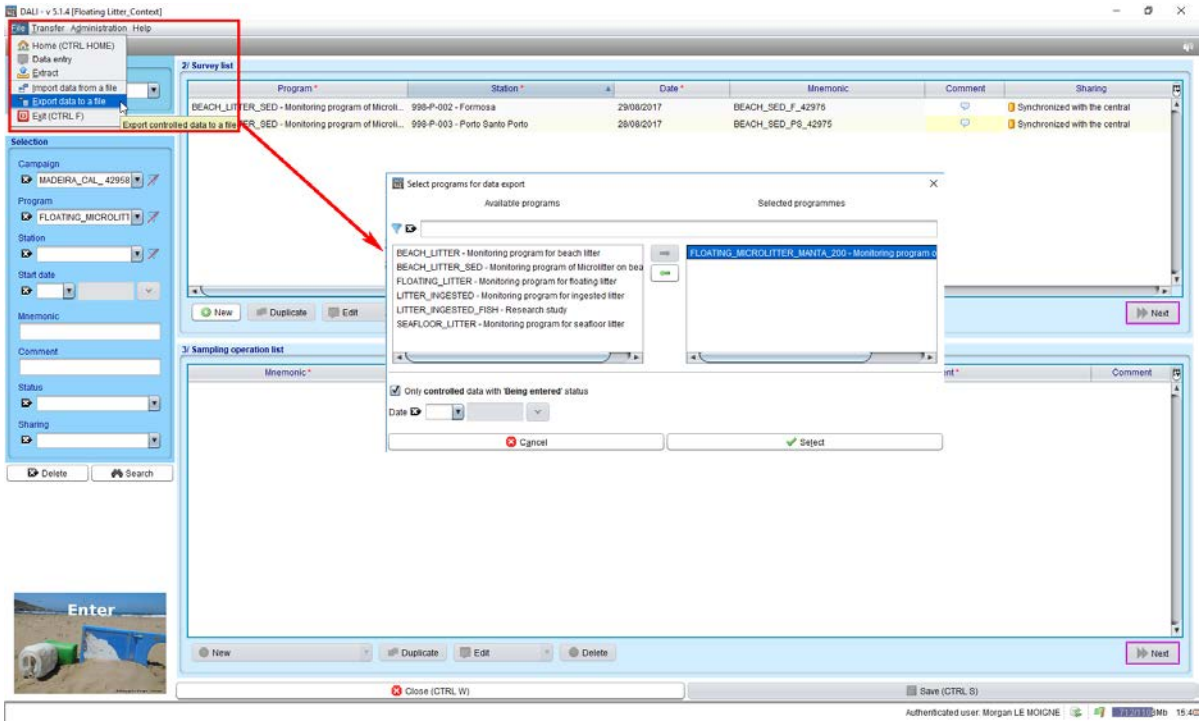
The process to transfer data from one workstation to another meets several needs:

- Allow various actors to carry out simultaneous data entries on distinct local bases, following observations made on the same day at the same location,
- Allow the implementation of the Control/Validate process between different actors (data responsibles, validators) working on distinct local bases.
- Allow the compilation of entered data on different workstations into a single workstation.

The transfer from one workstation to another is managed through a simple exchange of files between users.



Data entered on a workstation X can be exported to a workstation Y through the menus **File/Export data to a file** and **File/Import data from a file**. Surveys should have been **controlled beforehand**.



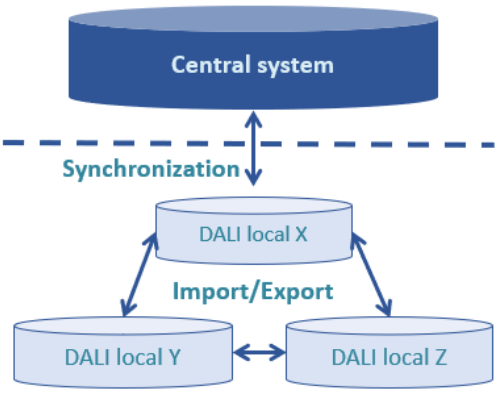
A zipped folder is saved, to be imported to the workstation Y. Once the data is imported, the field Sharing indicates that the surveys are synchronized with a file.

In case of duplications (surveys already existing on workstation Y = same location, same date, same programme), the application informs the user.

The user can visualize duplicated surveys and select those to import.

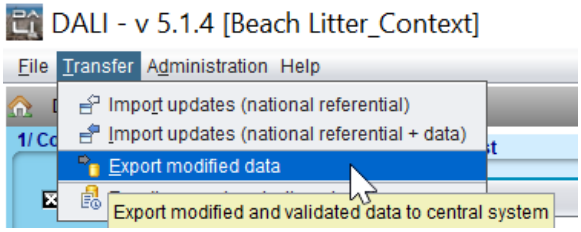
2. SYNCHRONIZATION WITH THE CENTRAL SYSTEM

The synchronization consists in exporting or importing data from the local system (local database) to the central system.

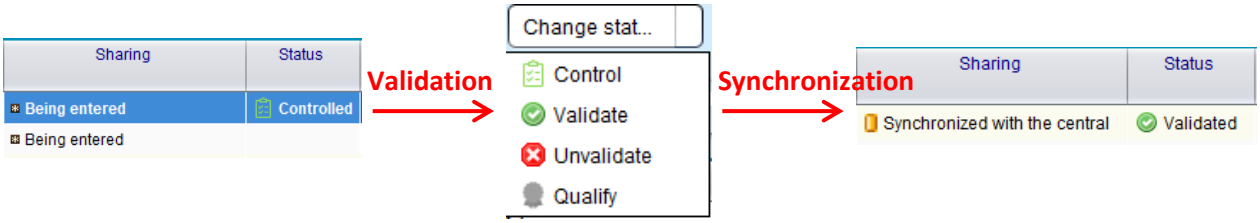


To export, surveys (and associated sampling operations) that have been added or modified since the last export, have to be **validated**.

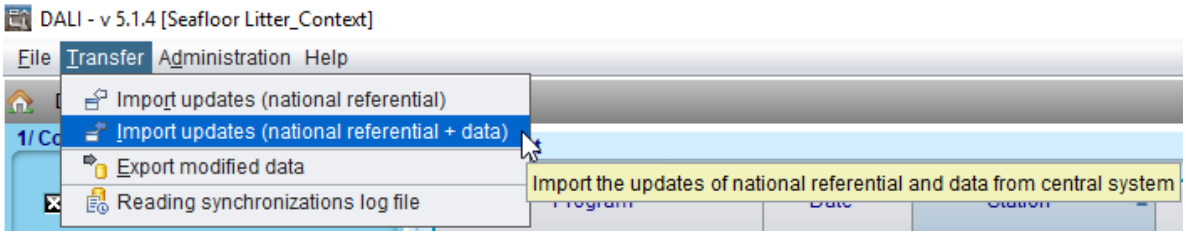
Use **Export modified data** in the **Transfer** tab:



When data have been exported, the **Sharing** field indicates that the survey has been S**ynchronized with the central system.**



To import updates, use **Import updates (national referential + data)** in the **Transfer** Tab **:**



CleanAtlantic

Tackling Marine Litter in the Atlantic Area

Deliverable 6-v1: Instructions for entering Beach Litter data in Data Litter software connected to a PostGreSQL Database

WP 5.1.3 : IT Developments

Ifremer
Interreg Atlantic Area European Regional Development Fund
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Clean Atlantic

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authors	Morgan Le Moigne – ODE/VIGIES Ifremer
participants	Alice Lamoureux & Arnaud Rouilly – ODE/VIGIES Ifremer, Stéphane Bocandé (ISI/IRSI) Ifremer,

Disclaimer

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Foreword

DAta LItter is a software developed to enter data on Marine Litter topic. This software is connected to a PostGreSQL database to enable **harmonised and sustainable data storage**.

This document specifies instructions for entering Beach litter data collected *via* MSFD Beach litter Monitoring Program, from Guideline TSG_ML 2013 which is itself based on the OSPAR protocol for surveying 100 m stretches of beach.

Data source tested come from the file sended by Pedro Monteiro from DRAAC :

- BD Teste IFremer.xlsx

Installation / Launch

Unzipped the **dali_val_postgresql.zip** folder on your computer and double-click on the two other folders. Then, you can launch **Dali.exe** every time.

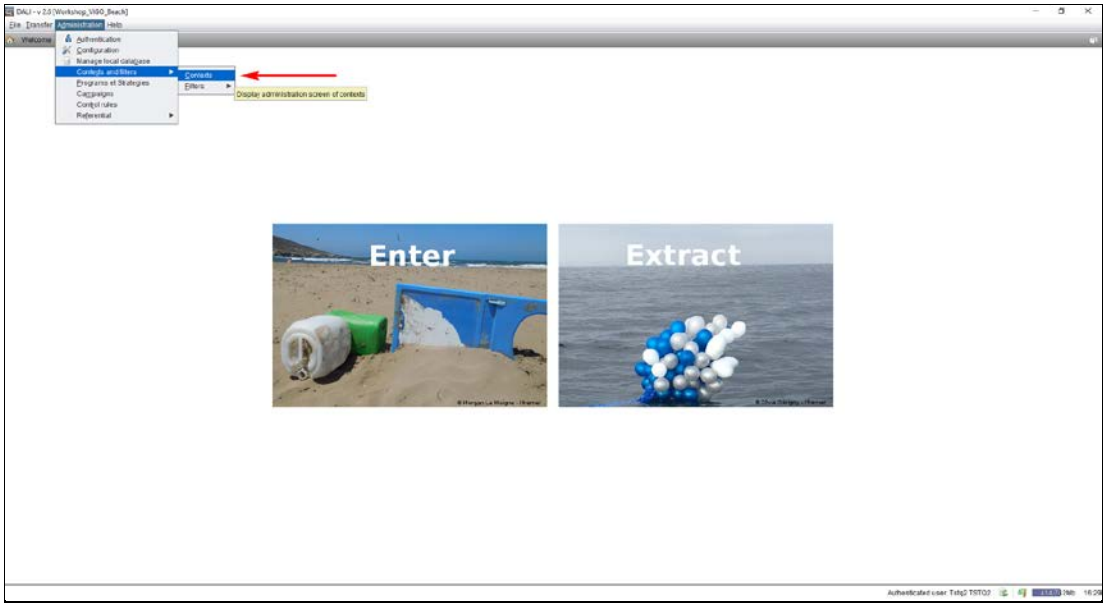
Enter your **login** and **password** sent by **assistance@ifremer.fr on 10/12/2020**.

Prerequisite for data entry

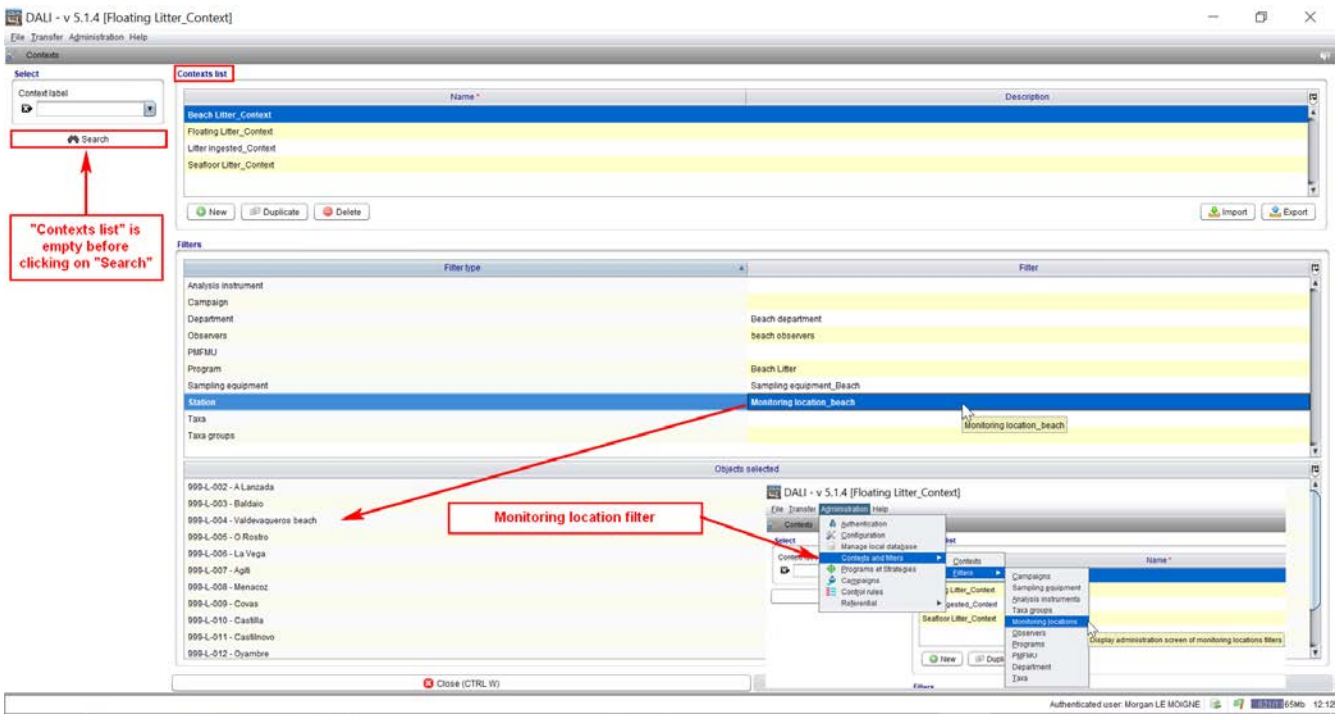
In order to enter data in the software, the user needs to refer to the proper **program** and the associated **strategy**. For beach litter, the program is **BEACH_LITTER - Monitoring program for beach litter** and the strategy is **MSFD Monitoring.**

1. CONTEXT / FILTERS

To facilitate data entry **user can create a "user context"**. This context is obtained by applying several filters targeting the metadata & data to be entered (monitoring location, data responsible, service,…). **To facilitate this test phase, the user context *Beach Litter_Context* is provided in this software**:



The different available contexts are displaying by following the steps below :



The content of the filters can be consulted by clicking on one of them.

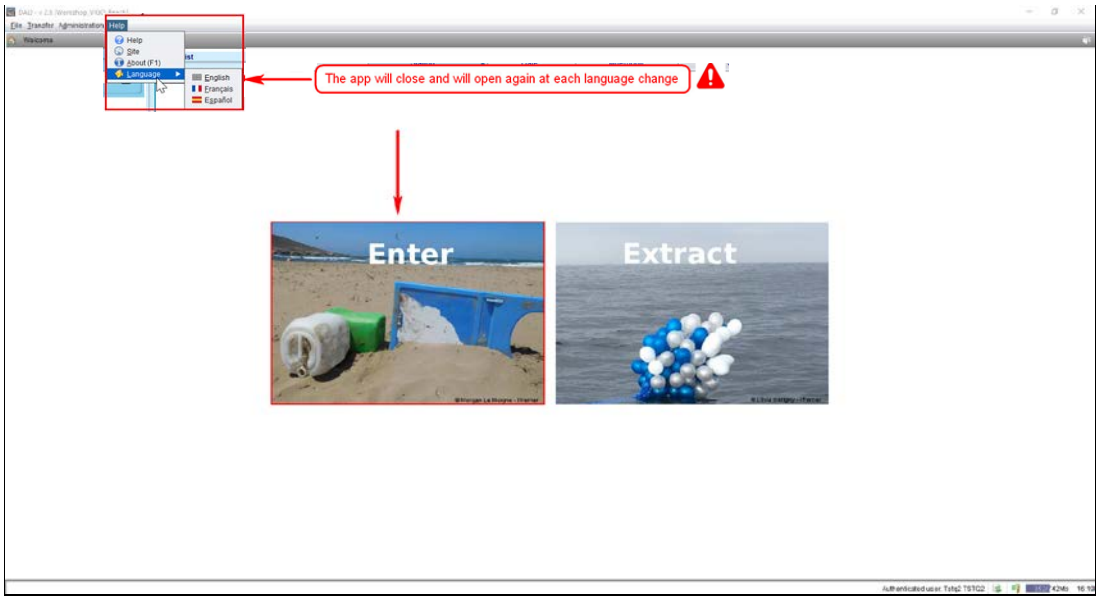
As the referential management functionalities are not developed yet, the filters modification is limited to add or delete existant values from the referential to the filter's list.

This feature will be available at the beginning of 2021.

The referential contents are based on historical datas and current protocols. You can create your own filters using the tab "Administration">"Filters"

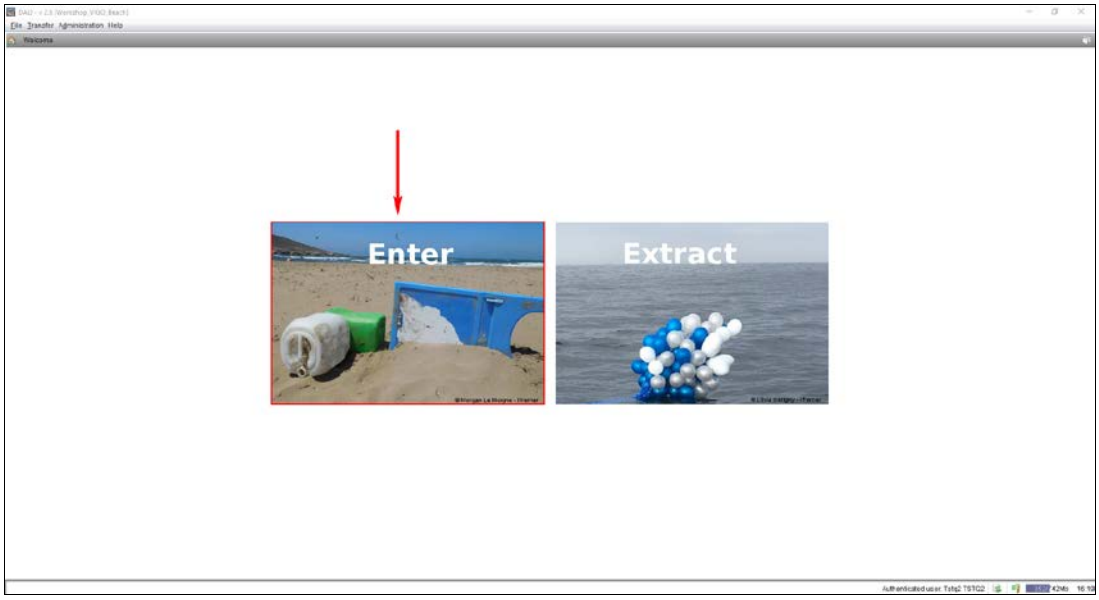
2. DATA ENTRY WINDOW

You can select your language (English, French or Spanish) in the **Help** tab :

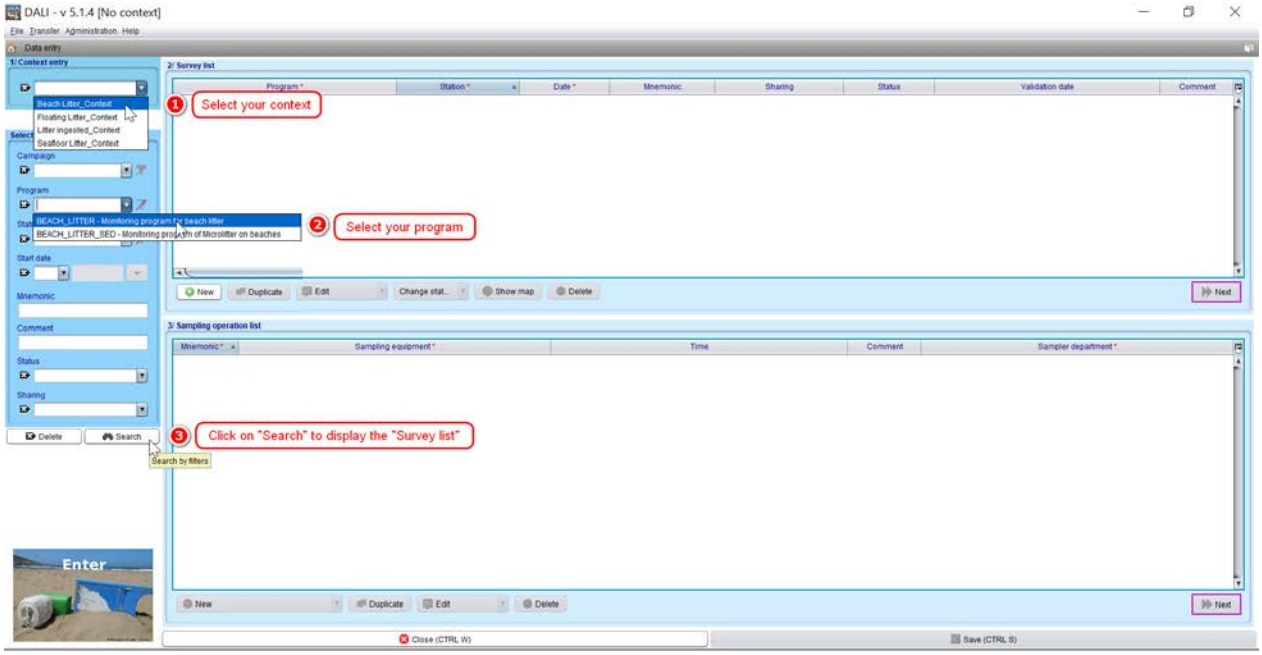


In this test phase, you may encounter different traduction or traduction missing due to the difference between traduction of the software and traduction of the data enter. Don't hesitate to let us know.

Open the entry window by clicking on the picture:

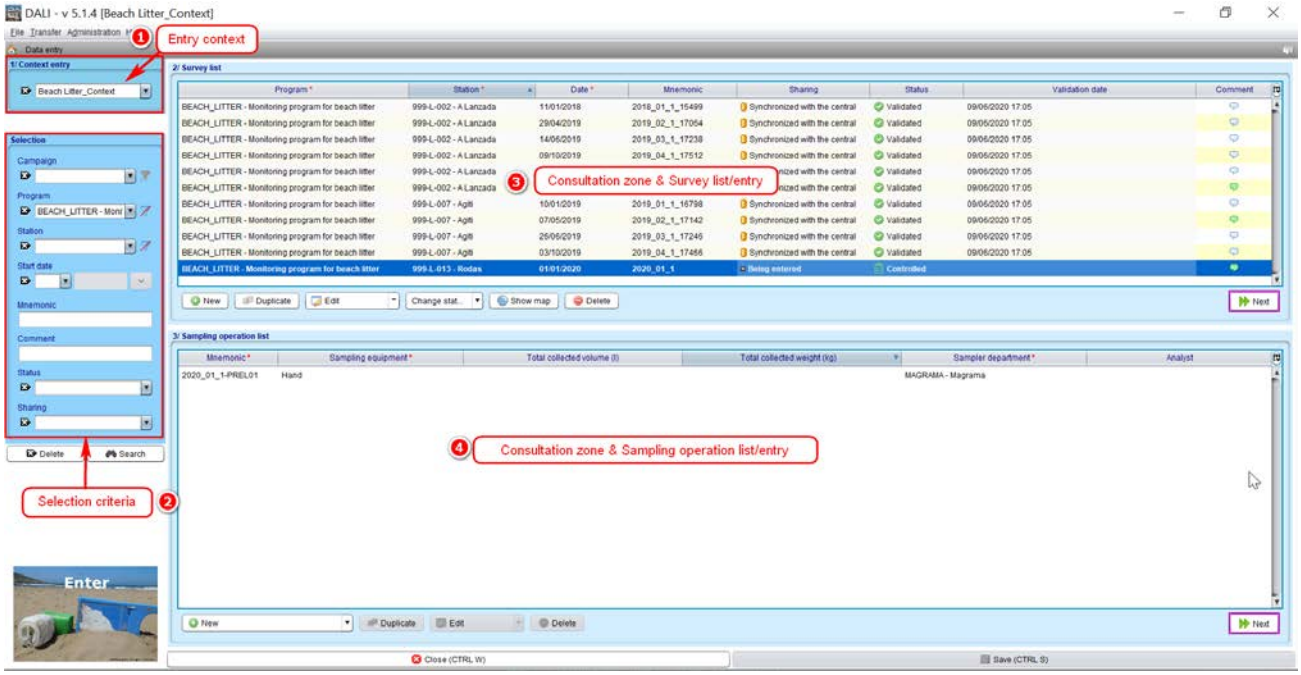


Then, to display your data, select the properly context and click on **Search**:



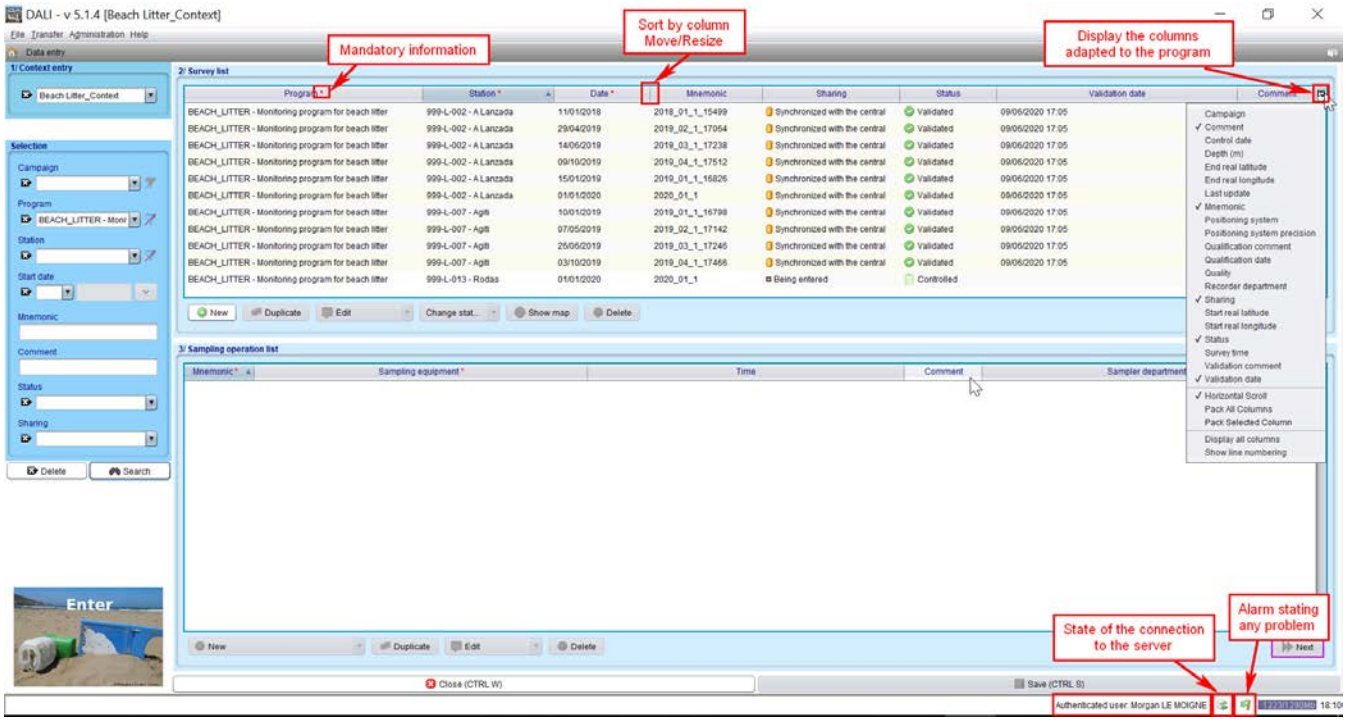
The main data entry window in the software is organized into four parts:

1) The choice of entry context is located at the top left
2) Beneath, the search window which can be used to refine which data is displayed according to filters
3) The list of survey at the top right
4) Beneath, the list of sampling operations



3. TIPS AND HINTS

The screenshot below shows the functions you need to enter data & metadata.



Important to notice : the order of the columns can also be changed by clicking and draging the column from its original place to the desired position. To sort the rows of the table according to a column, click on the column name : first click cross sorting, second click: descending sorting.

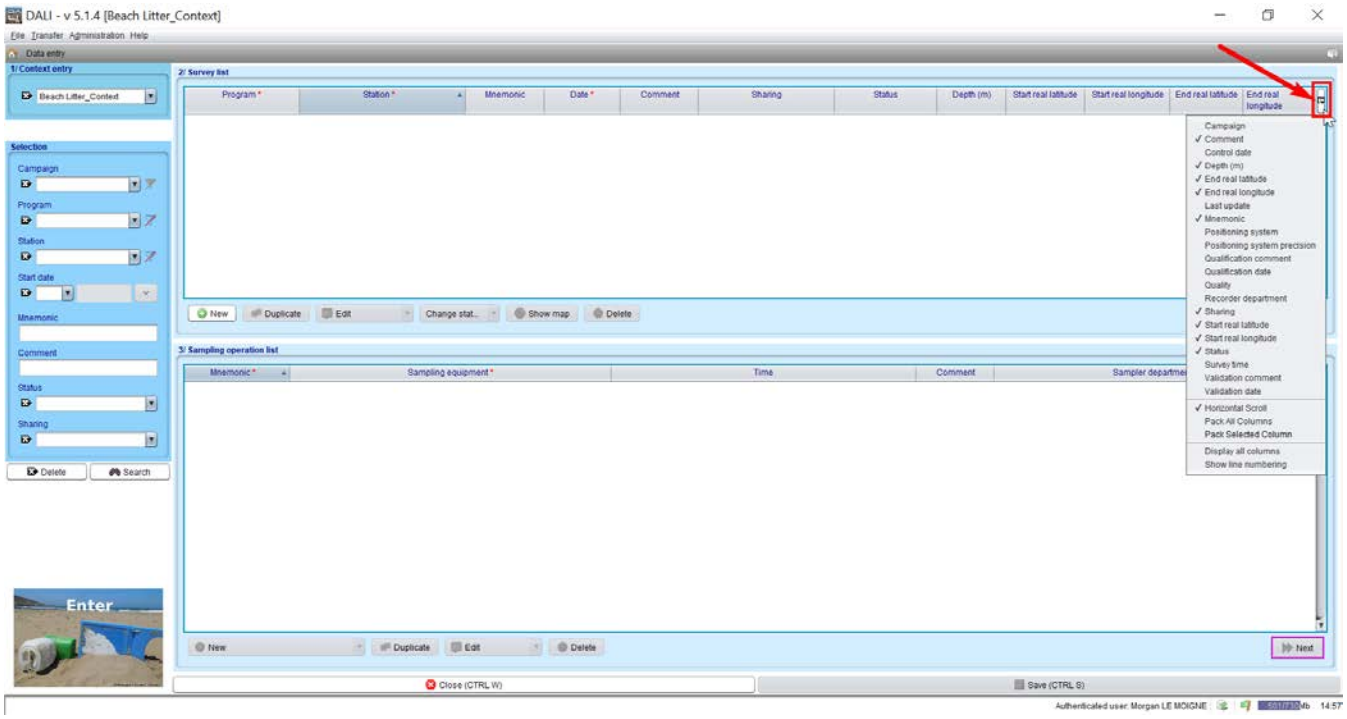
4. MAPPING TABLE

The mapping table below shows in the **left column**, the fields and parameters used in BEACH_LITTER monitoring program and in the **right column**, the originating fields from the source file.

This will help to understand how data have been entered in this test phase.

DALI Database Fields	Fields from DRAAC xls File	
1st Tab - *Survey list*		
Program	DALI addition	
Station	Nome da Praia (Coordenada GPS included)	
Mnemonic	YYYY_OSPAR Period_Nº visita monitorização_ID OSPAR	
Date	Data	
Comment	Tipo monitorização ; Período OSPAR ; Nº de Pessoas ; Efetuou-se recolha do lixo? ; Data da última limpeza ; Alterações quanto aos 100m ; Emaranhado ; Estadopré estabelecidos? ; Categoria do Lixo Emaranhado ; Descrição do Animal ; Espécie ; Sexo ; Idade ; Condições Atmosféricas ; Houve alguma circunstância que tenha inflenciado a campanha; (Ex: limpeza, enchimento) ; Houve algum acontecimento que provocou o aparecimento de quantidades e tipos invulgares de lixo?	
Sampling operation list		
Mnemonic	Survey Mnemonic-PREL Nb	
Sampling equipment	DALI addition	
Sampler department - ***Field automatically completed from strategy info***	Entidade, Morada, Contacto, Email - DRAAC	
Comment	Comment (if any)	
2nd Tab - *Survey*		
Observer(s)	Not completed because no names	
3rd Tab - *Sampling operation - Measurements*		
Mnemonic	Sampling operation Mnemonic	
OSPAR Code	OSPAR Codes	Fields refering to Cedre correspondance xls file with TG-ML List 2019
MSFD Code - ***Field automatically completed from OSPAR Code***	TG-ML Codes	
Litter category - ***Field automatically completed from MSFD Code***	Level_1_ Materials from 2019 TG-ML list	
Litter typology - ***Field automatically completed from MSFD Code***	General type from Cedre xls file	
Litter sub-typology - ***Field automatically completed from MSFD Code***	Specific type from Cedre xls file	
Litter size - ***Field automatically completed from MSFD Code***	Size	
Litter number	N_items	
Comment	Survey: Remarks [999] (if any)	
Analyst - ***Field automatically completed from strategy information***	DRAAC	

Before starting any entering action, pay attention to make sure that all the fields of the surveys are correctly displayed on the screen matching with the survey fields described above. The display is done using the button at the top right of the screen.



Entering Surveys

Surveys are entered in the upper part of the software screen.

To create a new survey, click on 

. An empty survey line is created. The columns displayed in the list of surveys make up the basic elements which can be entered.

For each survey to enter, perform the following operations:

- Select the **Station** (previously included in the referential)
- **Specify the date of the Survey** *via* the calendar or manually
- Specify the **time** of the survey (if any)
- **Select the program** (BEACH_LITTER – Monitoring program for beach litter)
- **Specify a survey mnemonic code**. The mnemonic code can follow the following writing convention **YYYY_S_N_OSPAR ID** where:
  - YYYY is the year of the survey, *e.g.: 2017*
  - S is the number of the season* preceded by 0, *e.g.: 01, 02, 03 or 04*
  - N is a survey number to be incremented in the case where several observations have been made during the same season
  - ID OSPAR is the number indicated in xls file.

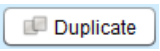
For example: During the second quarter (April to June) of the year 2017, two surveys have been made on the same beach. They are identified by the mnemonic codes 2017_02_1 and 2017_02_2.

- **Make a comment** (optional). This comment will provide information about the general conditions during the survey, or about issues related to the survey data.

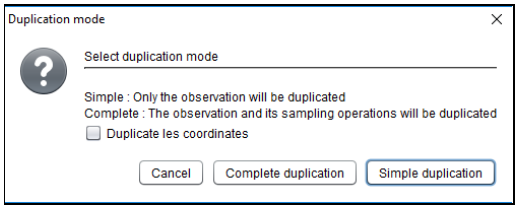
Once the survey has been entered, click on 

to create a sampling operation.

To delete a survey, click on: 

A survey can also be **duplicated**. Select the survey to duplicate and click on: 

A **simple duplication** or a **complete duplication** of the survey is posible. The complete duplication means that you will duplicate the survey **and** its sampling operation.



Entering sampling operations

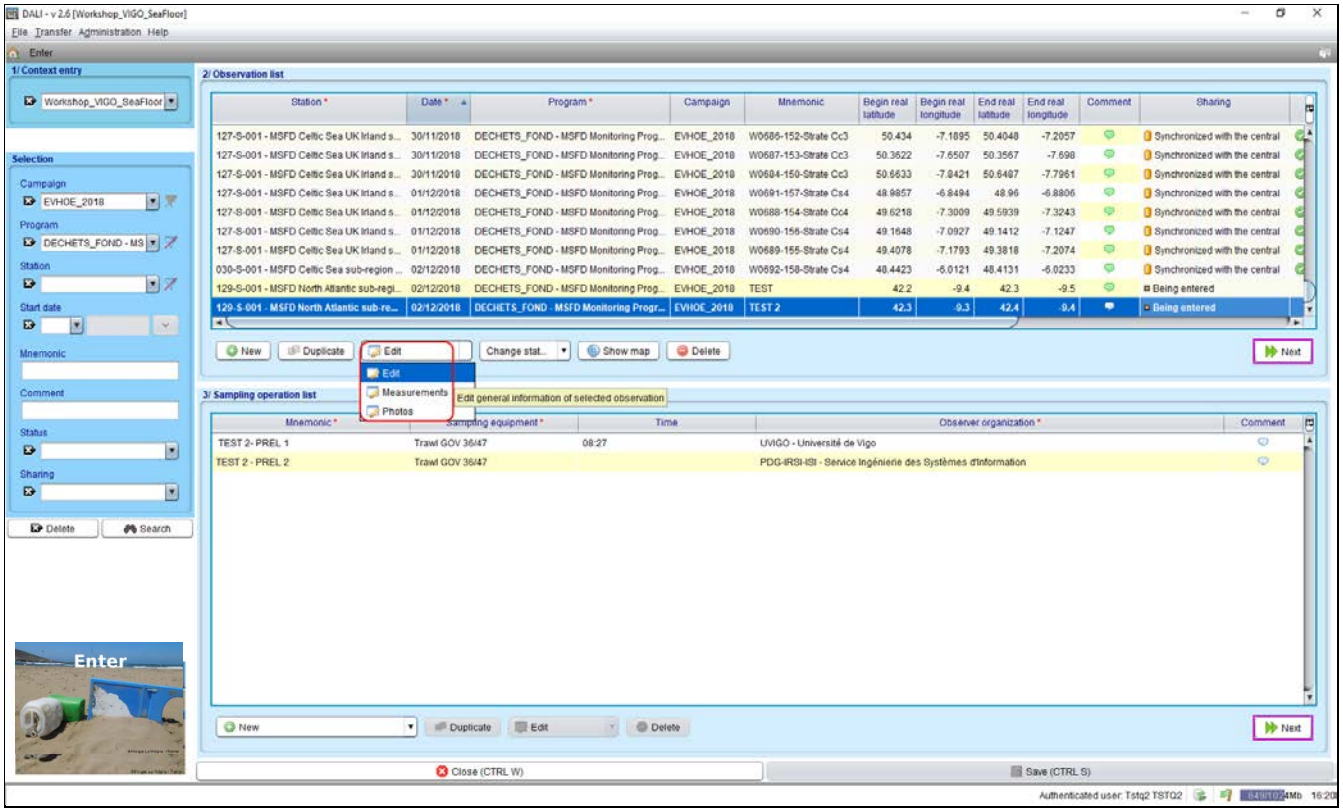
After clicking on Next in the survey list or New in the sampling operation insert, you will create sampling operations.

For **each sampling operation** to be entered, carry out the following operations:

- Specify the **sampling operation mnemonic code**. A suggestion is to use the following writing convention: **<Survey Mnemonic>-PREL 0N** where: : **<Survey Mnemonic>** is the mnemonic code of the corresponding survey & N is the number of the sampling operation for the corresponding survey (e.g.: 2017_01_1_LM001-PREL 01)
- The **Sampling equipment (**Hand)
- If Total Volume and/or Total Weight of the sample have been collected fill in these fields
- Specify the **Sampler department**
- A **comment** on the sampling operation can be entered at this step.

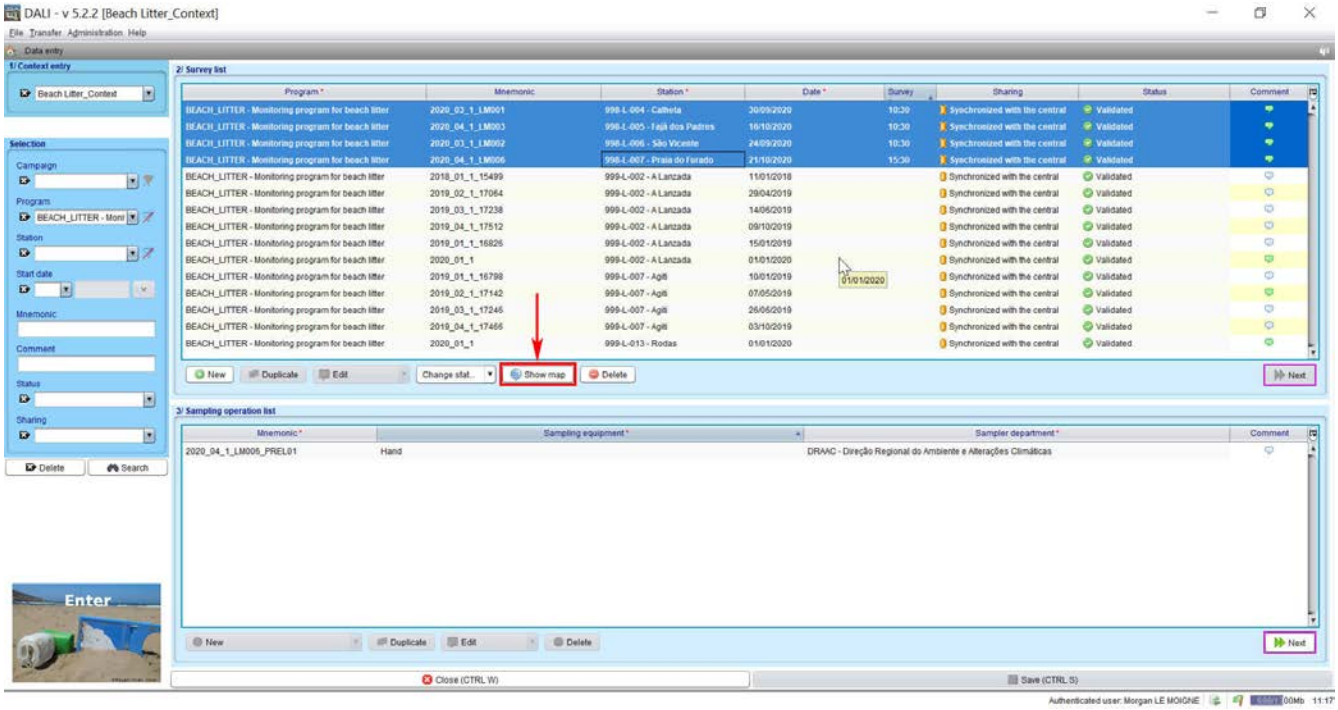
Then click on: Save (CTRL S)

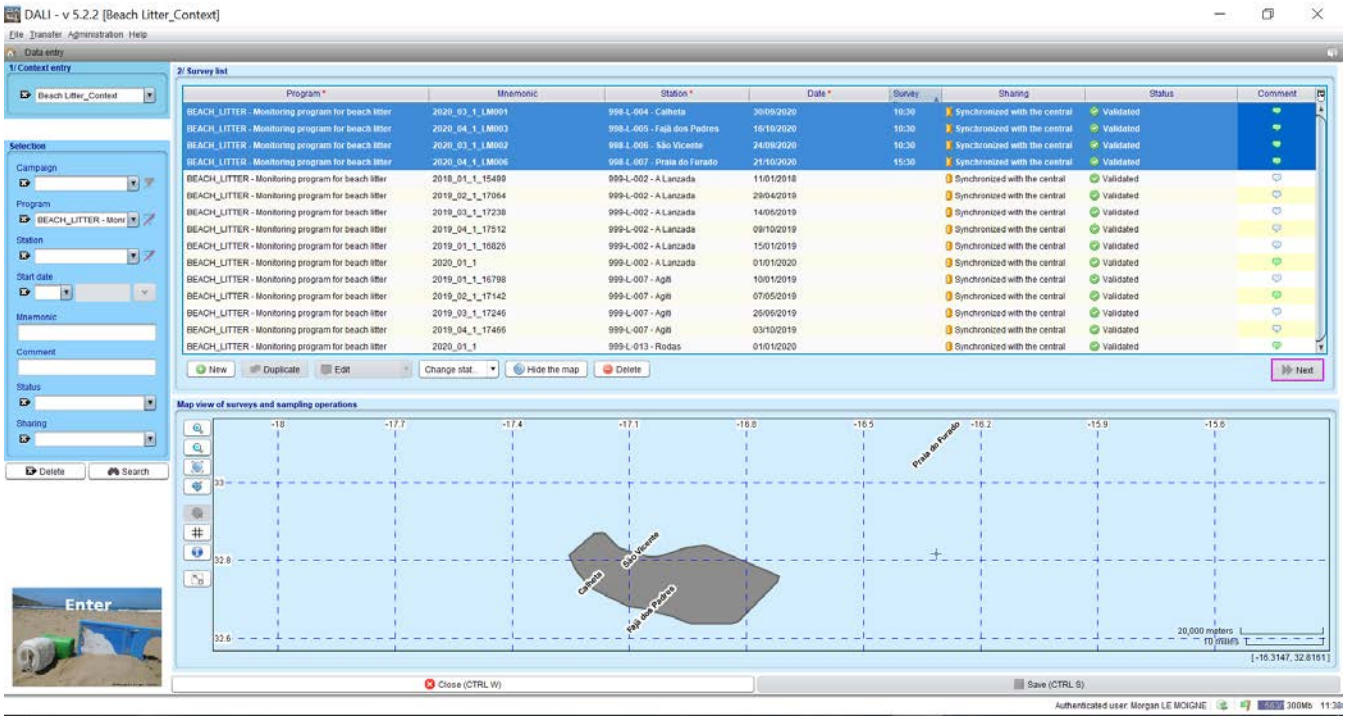
To display the screen to enter additional information on the survey (e.g., the person in charge of the observation/entry/duration), click on Next at the bottom-right of the screen or Edit in the middle of the screen:



Map control

A location Map can be displayed in order to control and detect any errors on the coordinates entered. This function can not be use to fill data in the base.

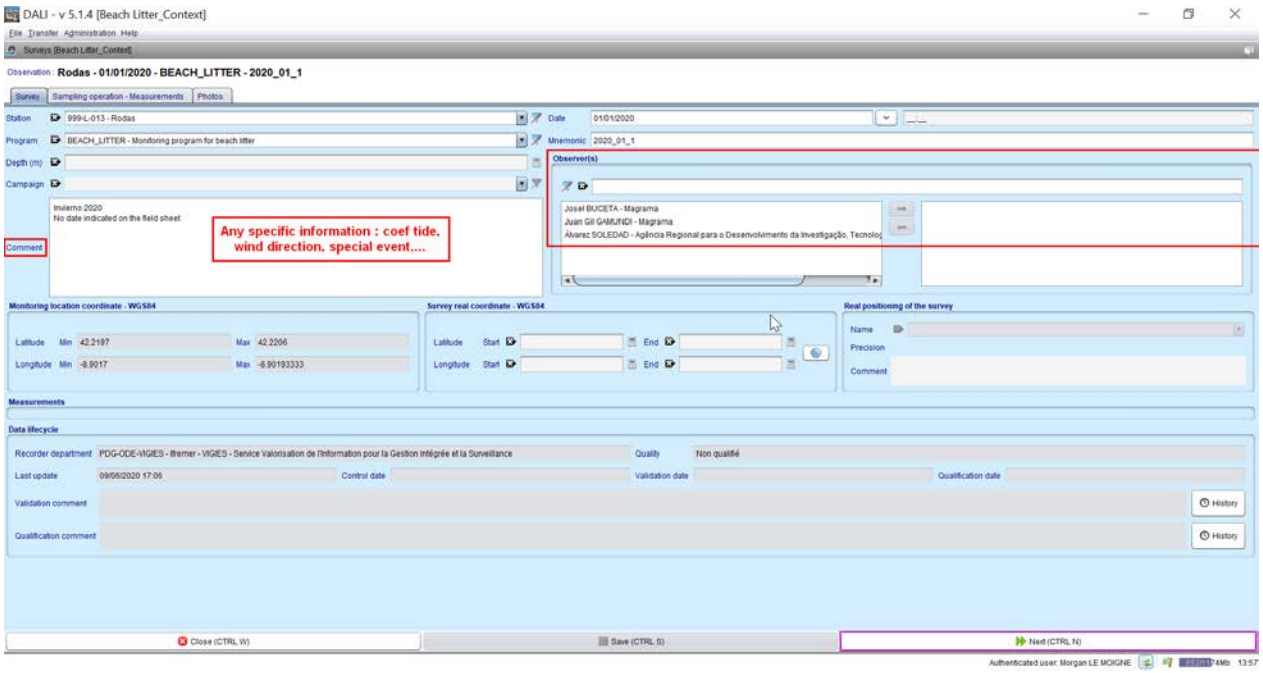




Entering Survey Measurements

Any specific information about the survey can be entered in the comment field: environmental conditions, any events happened on the beach,…

The name of the observer(s) can also be entered. A quick search is run by adding a special character **"*"** before the name or the service to indicate. This person should have been created previously in the User Referential.

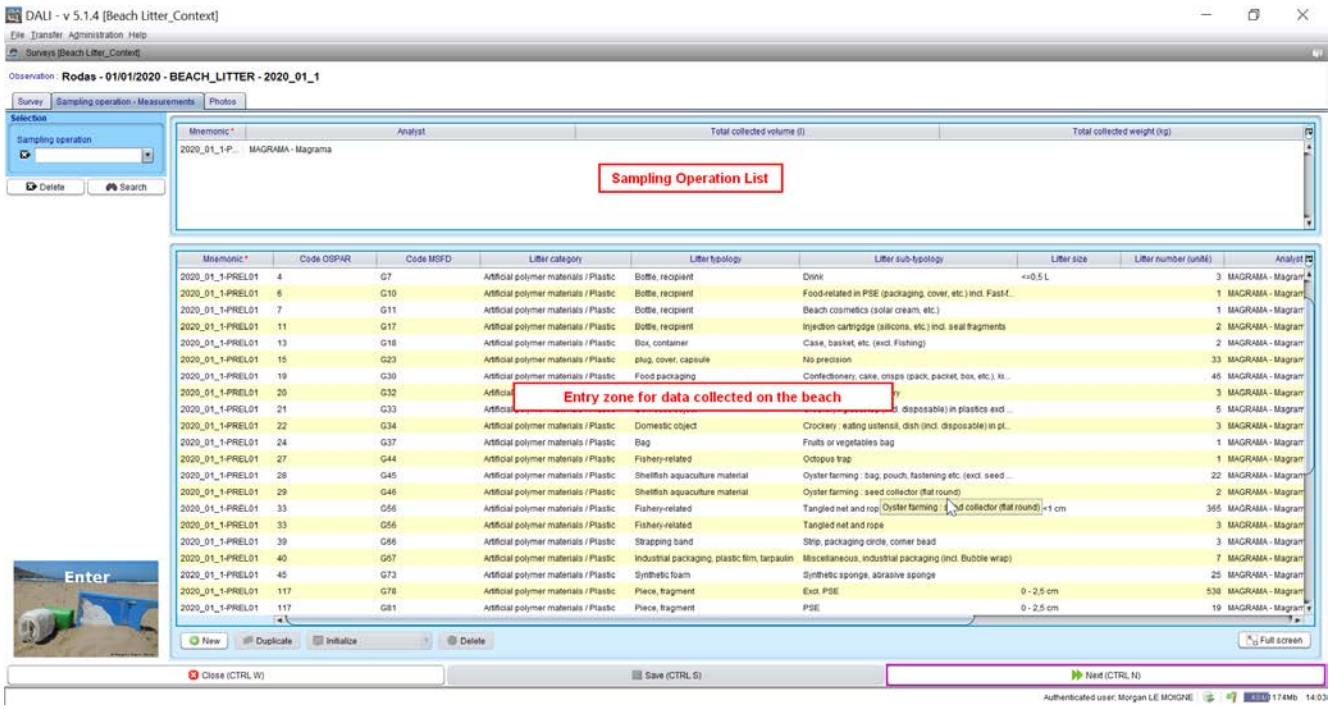


Then, click on Next (CTRL N) to display the screen to enter results for the sampling operation(s).

Entering sampling operation(s) measurements

The Sampling operation - Measurement tab is organized into two parts:

- the top insert to select the sampling operation on which data is entered
- the bottom part is for entering the measurements related to this sampling operation



For each sampling operation, one or several parameter is (are) measured.

As for the survey list, the results lines can be duplicated to make faster the enter of similar lines which have only one or two different informations".

Two types of entry can be made:

1. Data entered line by line
2. Entering using initialization of the data entry grid

1. ENTRY LINE BY LINE

As far as possible, use keyboard shortcuts that facilitate data entry, particularly *via*:

- the **Tab** (tabulation) **key :** to move from one column to another

- the **Up/Down arrows** : to select an element from a drop-down list, or to move from one line to another.

In order to avoid errors, the user enter the measurements from the field sheet and the OSPAR code.

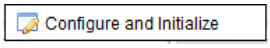
Two cases may occur when entering line by line:

1. The user selects the OSPAR code **which allows the other fields to be filled in automatically** : MSFD code, category, typology, sub-typology and size. The number is the only field to be completed.
2. The data entry operator selects an OSPAR code **which doesn't allow the other fields to be filled in automatically**. In most cases, the "sub-typology" field will need to be filled by choosing in the drop-down list. The associations refer to the ***CEDRE Beach litter file.***

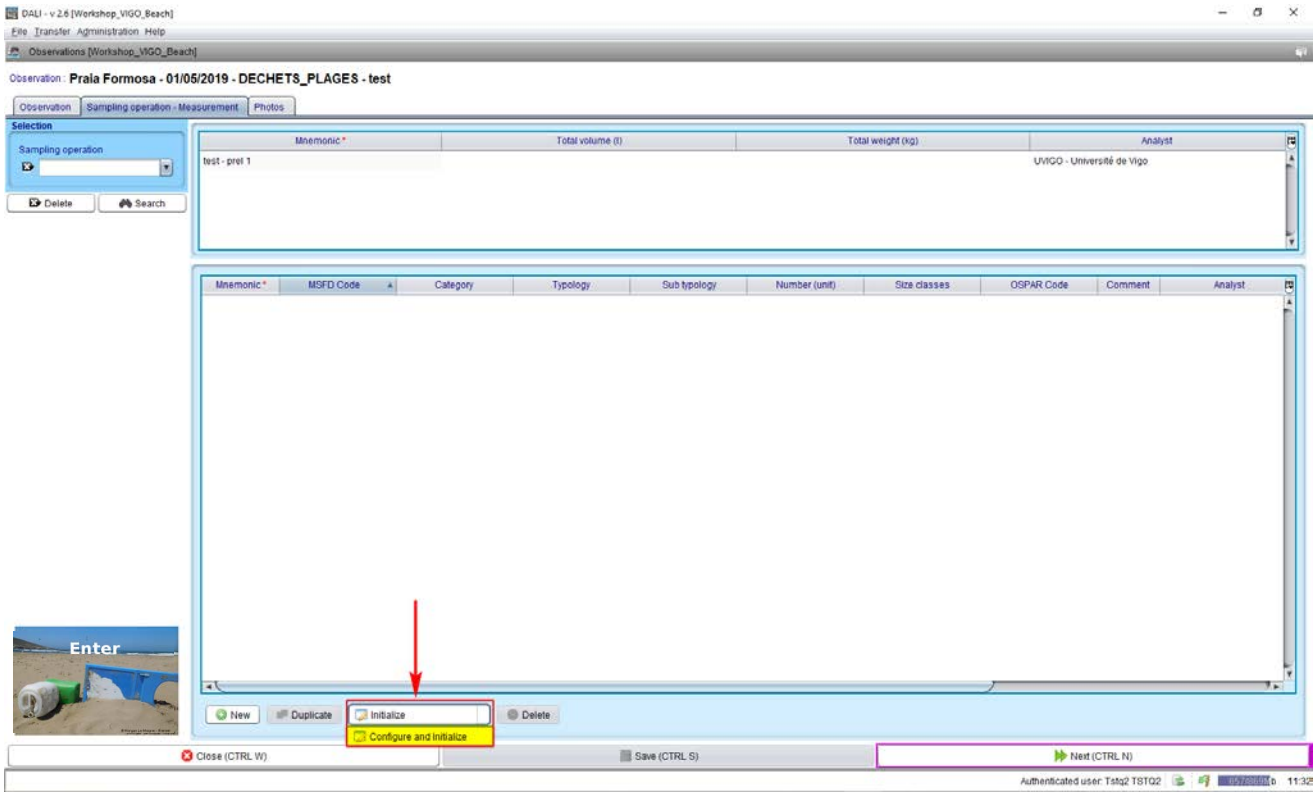
A comment can be filled in if information or a specification about the item is indicated on the field sheet.

Weight of a category (Polymer/plastic material, Metal, Rubber, etc.) can be entered in creating a specific sampling operation to this category.

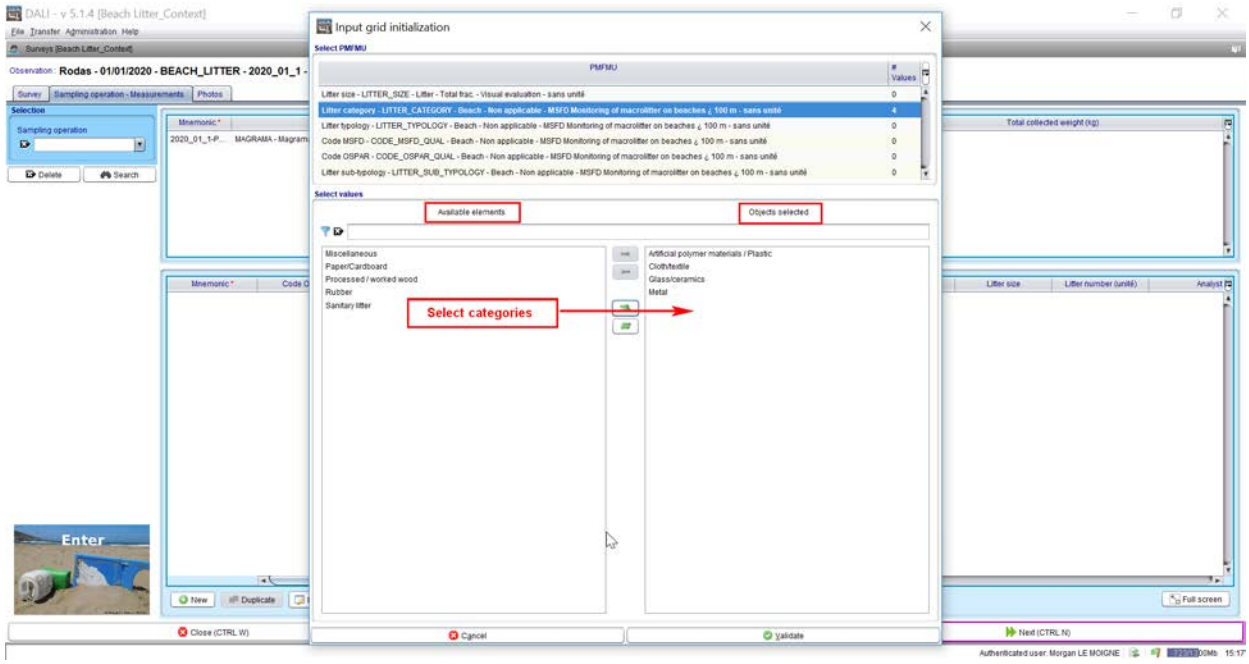
2. INITIALIZING THE DATA ENTRY GRID

Data entry grid initialization is performed before the first measurement thanks to 

button :

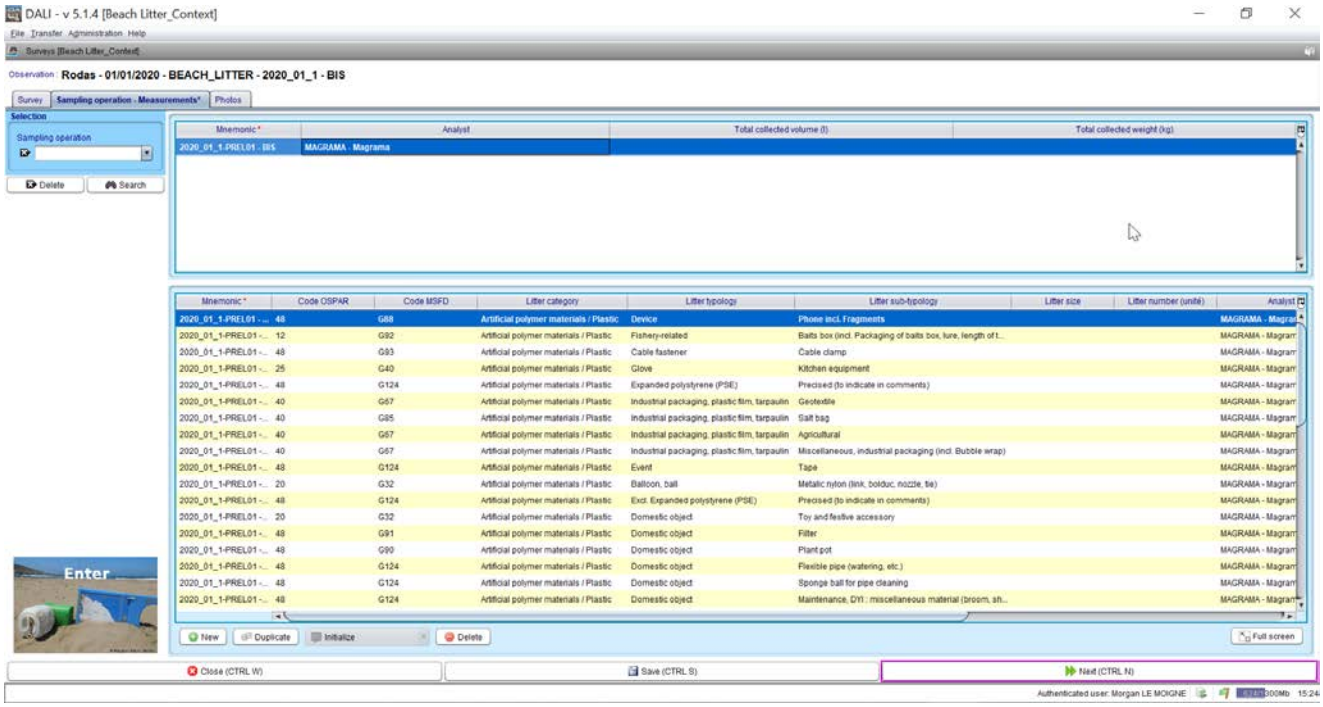


The initialization screen open and the qualitative values of each parameter can be selected in the data entry grid.



A maximum of 3 or 4 parameters (PMFMU above for the Quintuplet : Parameter-Matrix-Fraction-Method-Unit) can be configured.

Once the selections made, the entry grid is displayed and the results can be entered.

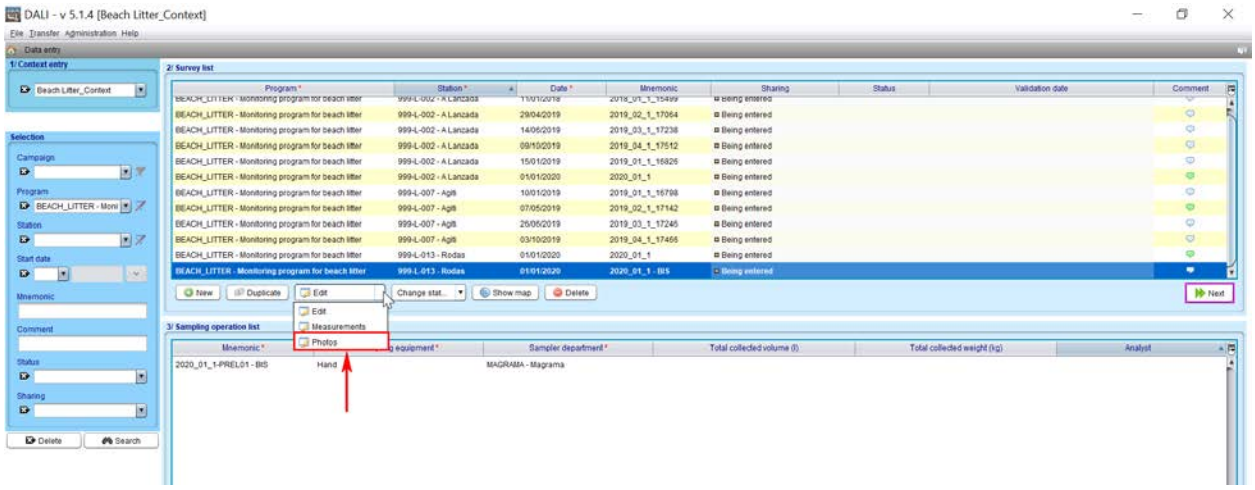


When entries have been done, save them, and click on Next (CTRL N) to save photos if any (see next chapter). Otherwise, move to a new survey.

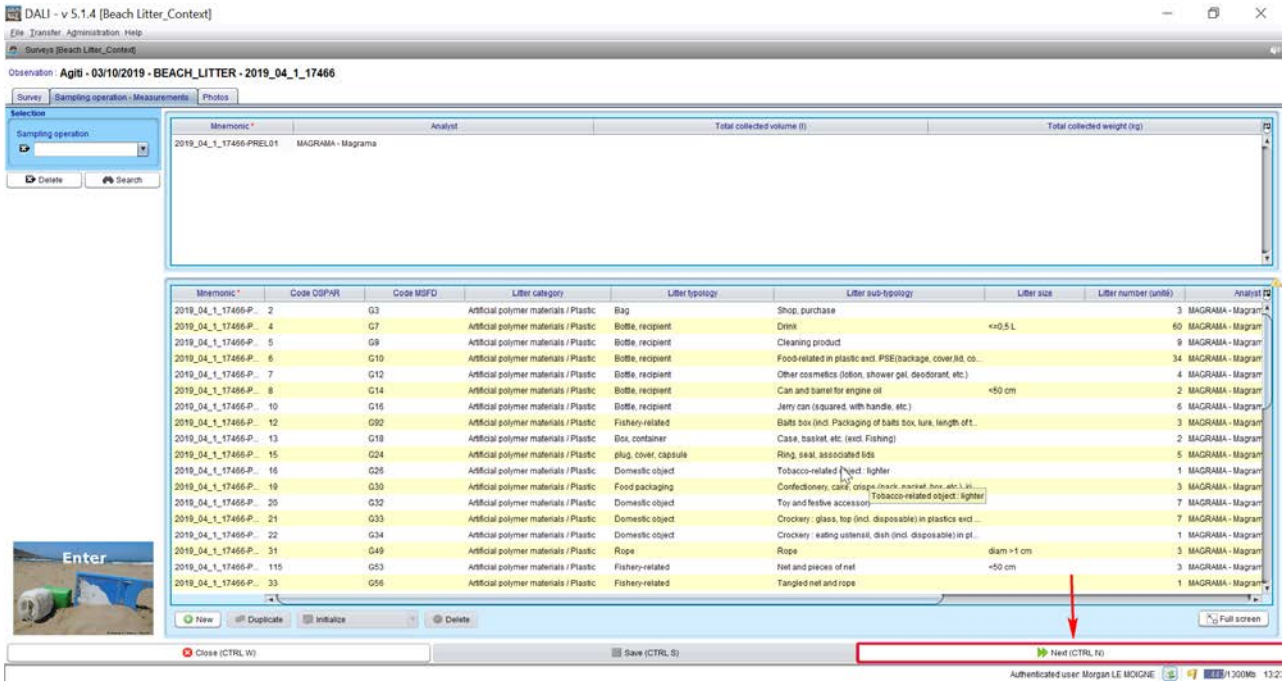
Saving photos

Two ways to display the photo tab :

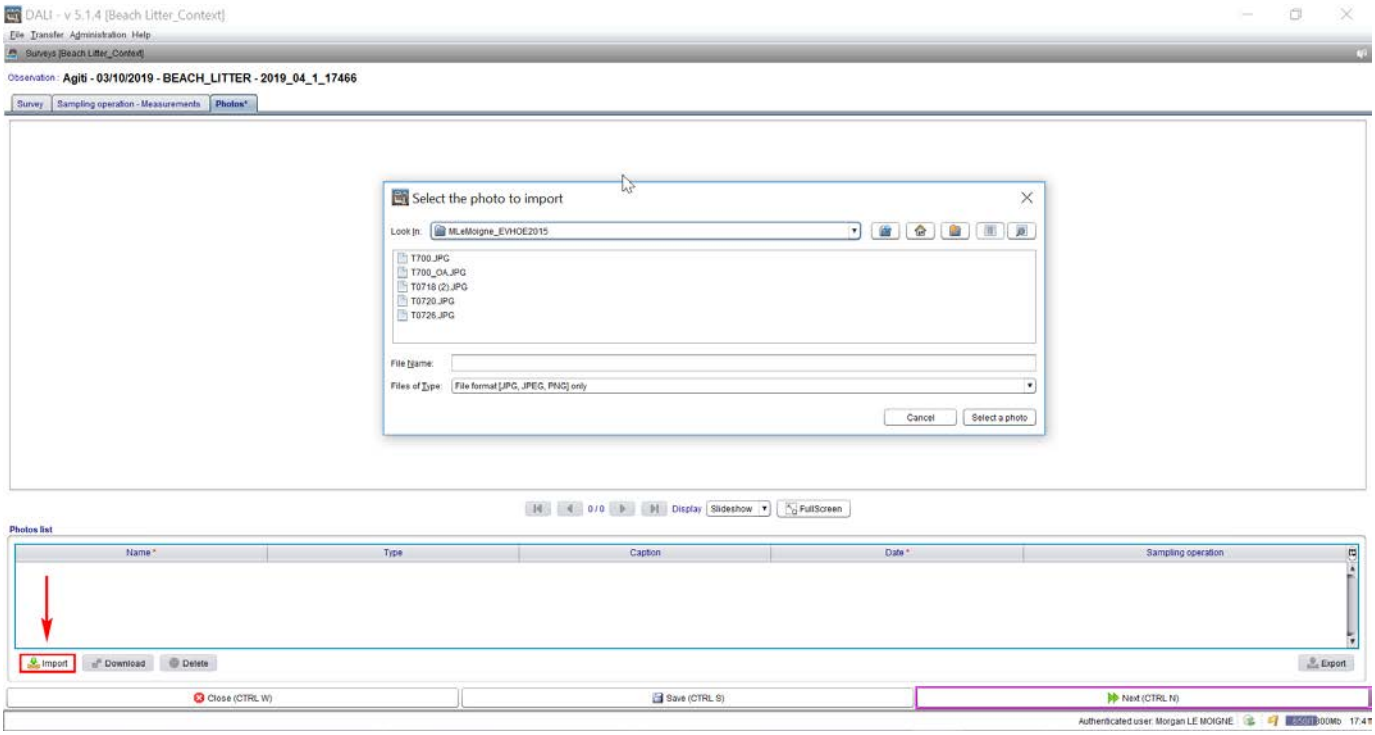
1) From the “Enter” menu



2) From the Sampling operation - Measurements tab



This 3rd tab of this software is used to import photos. The only mandatory field is the **Name** of your photo. The use of survey mnemonic or the sampling operation mnemonic is recommended to facilitate the link between photos and results.

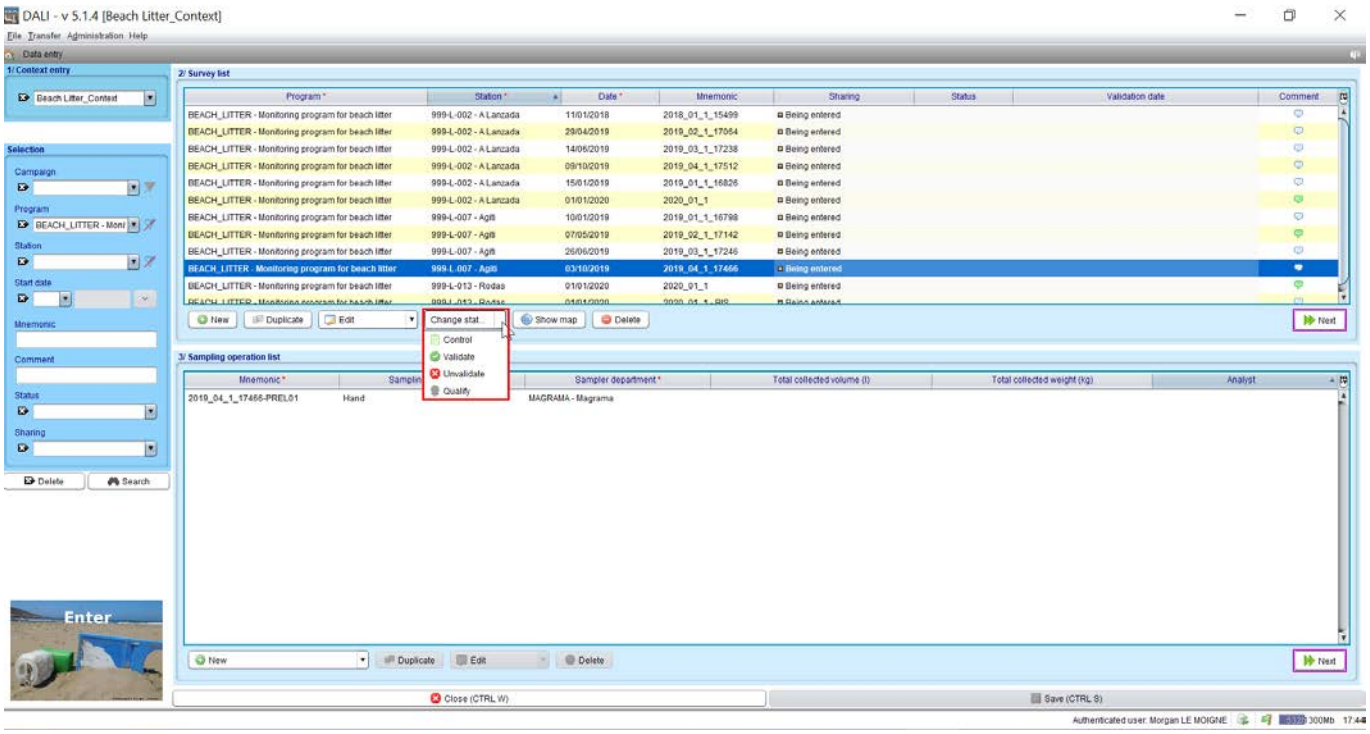


Then, fill the name of the photo and the date when this picture has been taken. You can enter more information in the field Caption.

Then save your entry.

Control and validation

Once the survey and the associated sampling operations are entered, a status need to be specified for these data *via* the menu C**hange state** located below the list of surveys (1st Tab).



Synchronizing data with the central database (next chapter) requires that the steps to **control** and **validate** data have been successively performed. To modify data which have already been validated, an **unvalidated** action with a comment explaining the reason why will be required.

The control check aims to ensure that data have been correctly entered in DALI. The following series of control checks are the minimum to be run:

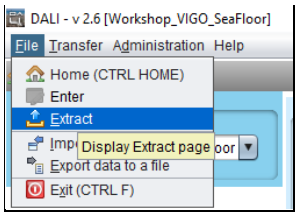
a- Manual and visual checks, per sampling operation, of the sets of codes for litter + associated measurements (as indicated in the previous section).
b- Control checks based on data extracted from DALI beforehand using the extraction module.

Extraction

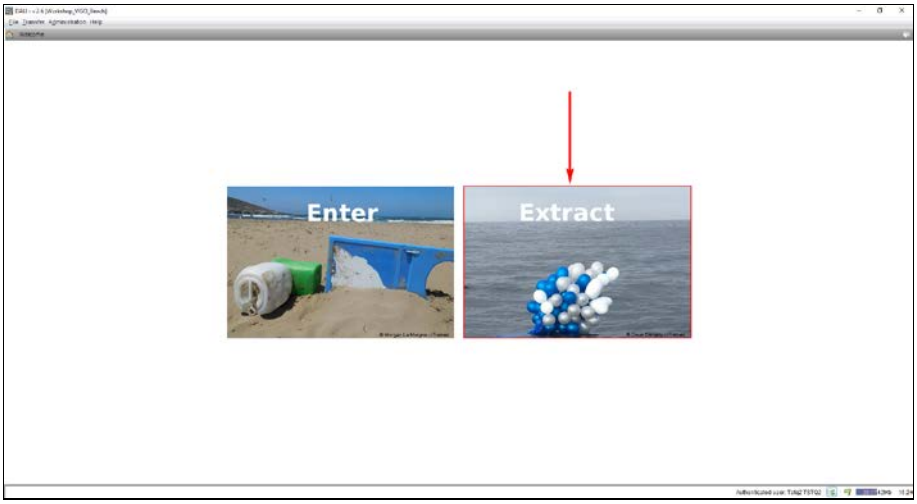
Extraction is useful to make some analysis or to control over data.

Two ways to access to the extraction:

1. Select **Extract** in the **File** tab

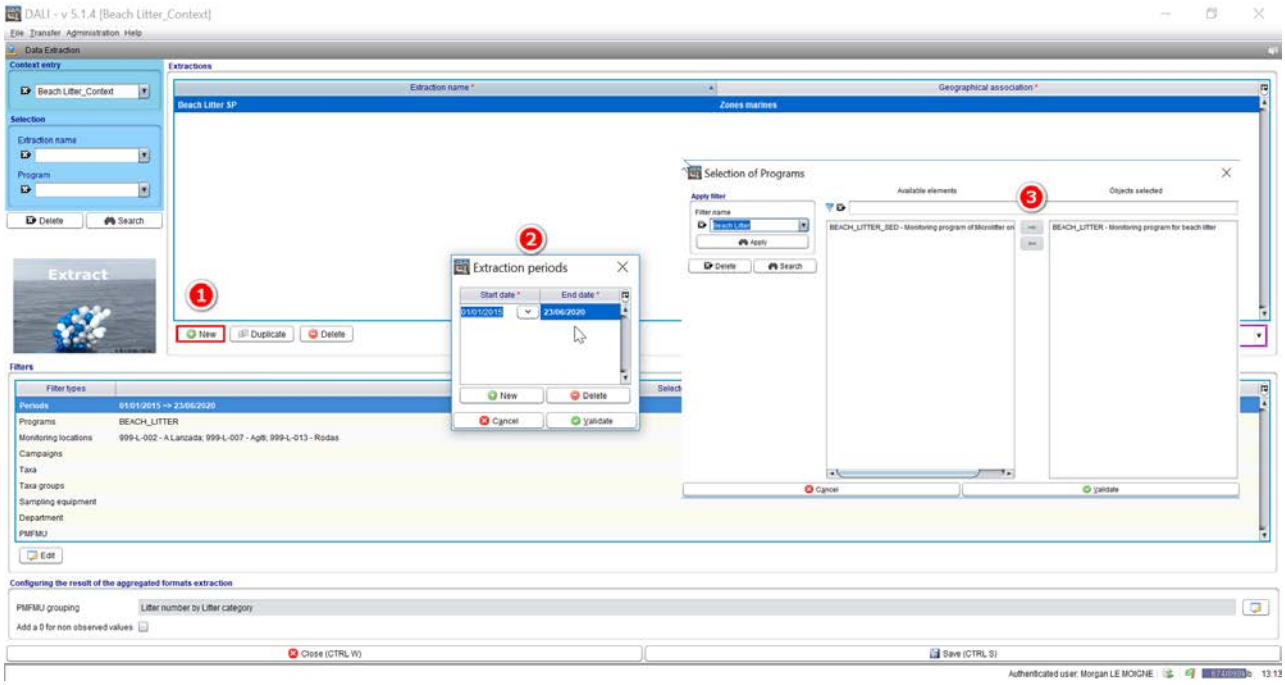


2. After closing the data entry window, open the extraction window by clicking on the picture:

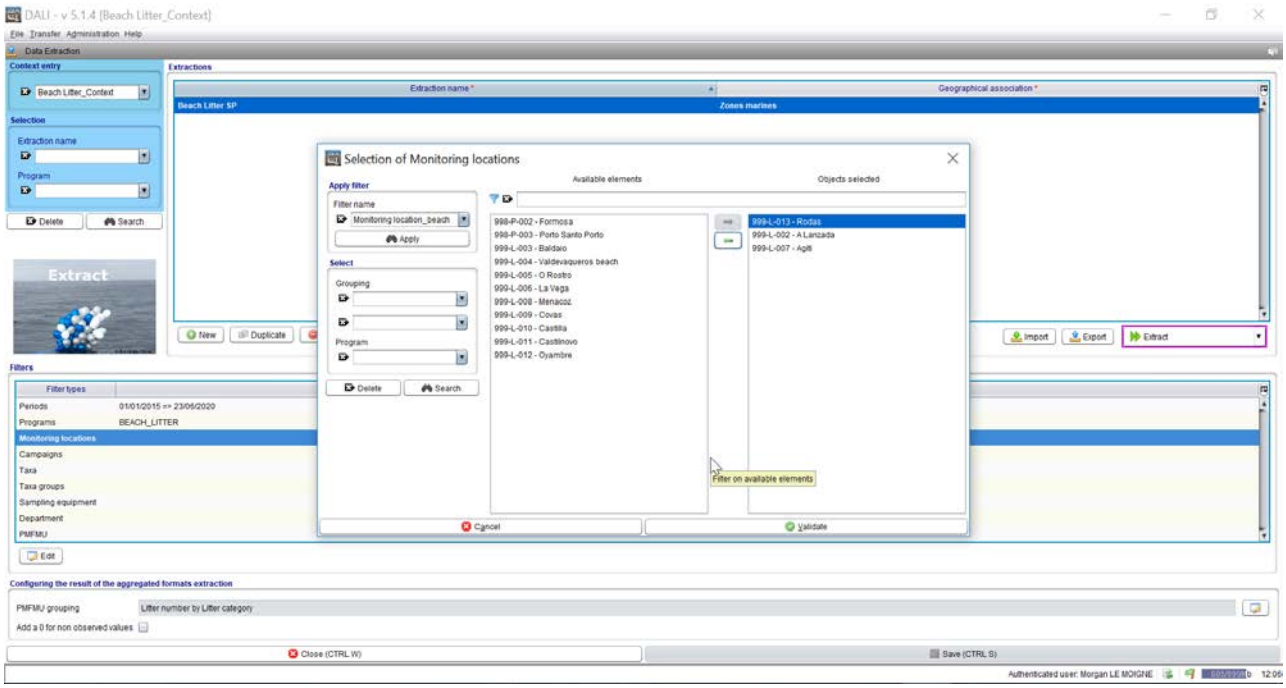


To perform an extraction, click on New and give a name to the extraction.

The extraction periods and programs fields need to be completed, whereas the other fields are optional.



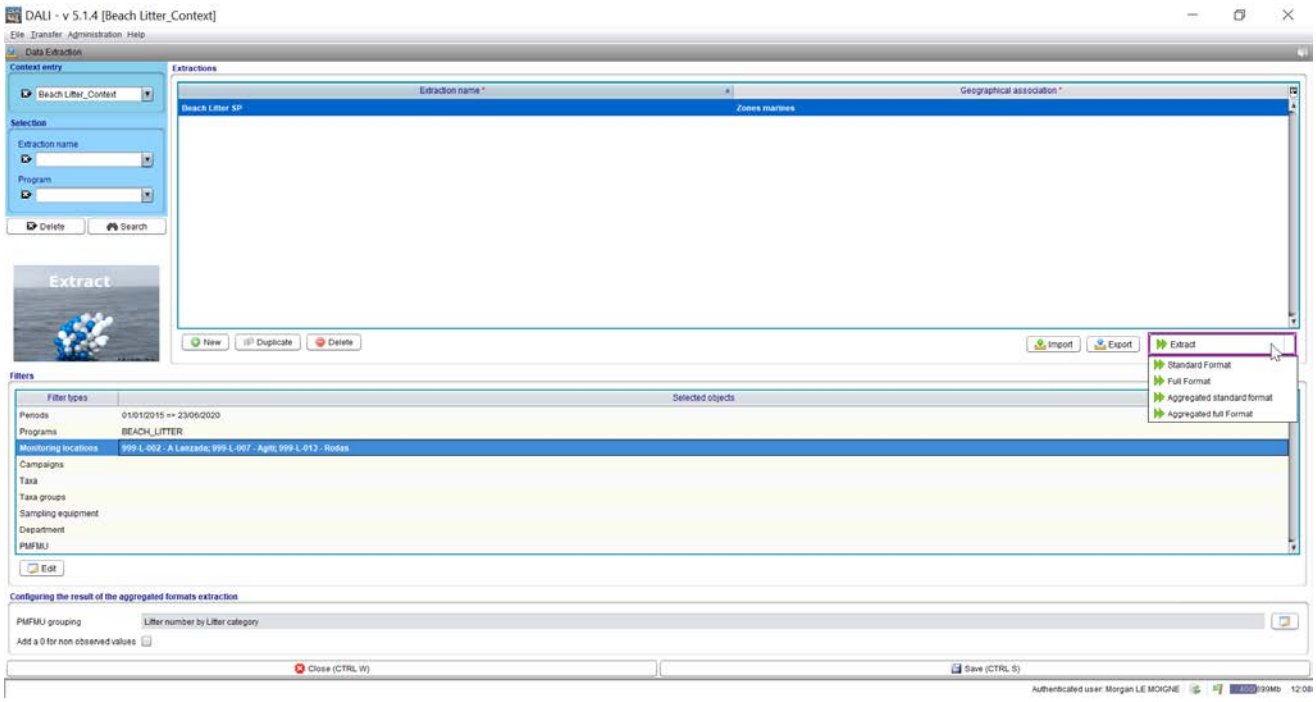
If the extraction concerns a single location, this can be chosen in the location list filter:



Several extraction formats are then possible:

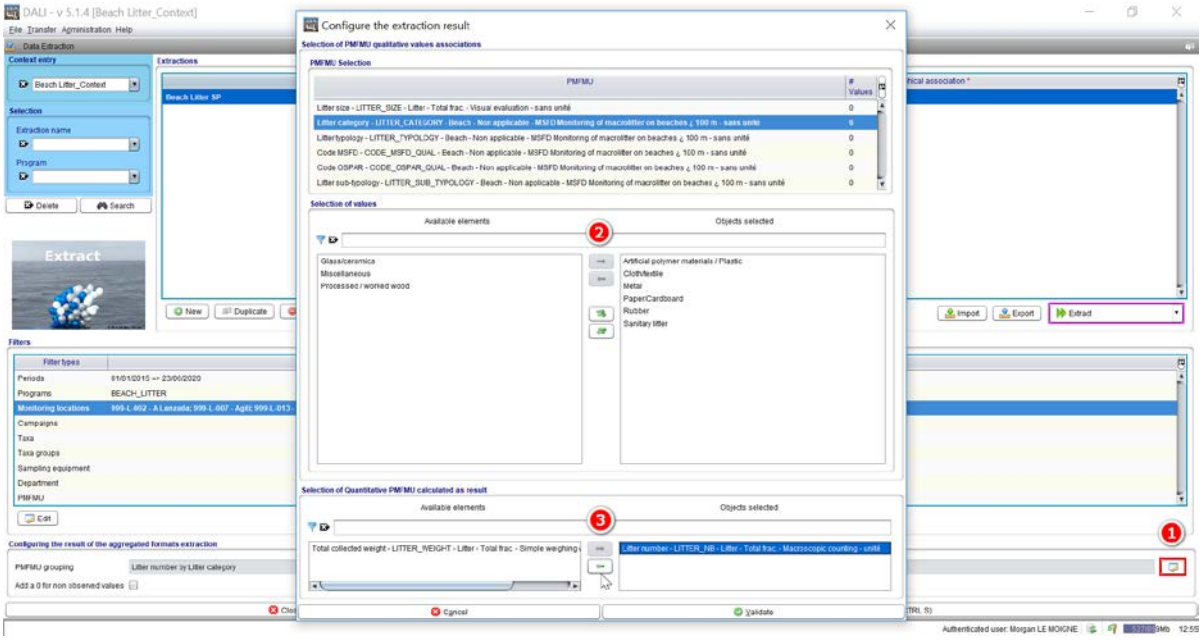
- simple format,
- full format,
- simple aggregated format and
- full aggregated format.

The **simple and full formats** can be obtained without any further parametrization. The **full format** extracts all the DALI fields whereas the **simple format** extracts a selection of fields parametrized in the software.



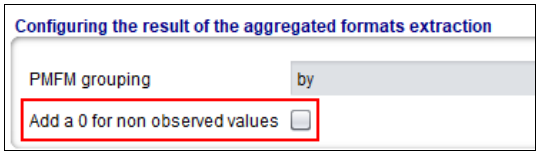
The simple aggregated and full aggregated formats require specific aggregations to find out different parameters in the same column.

In the example below, the aggregation was performed to obtain the number of litter items for each litter category in the same column:



Aggregations can be very useful for checking the entries.

It is possible to '**Add 0 for unobserved values**' to have a file with all the associations present in the software:


Configuring the result of the aggregated formats extraction
PMFM grouping
by
Add a 0 for non observed values

Data sharing

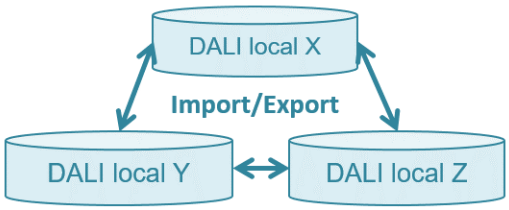
1. LOCAL SHARING

Different people can take part in the data entry of a same programme. There is an exchange system in DALI to facilitate this sharing.

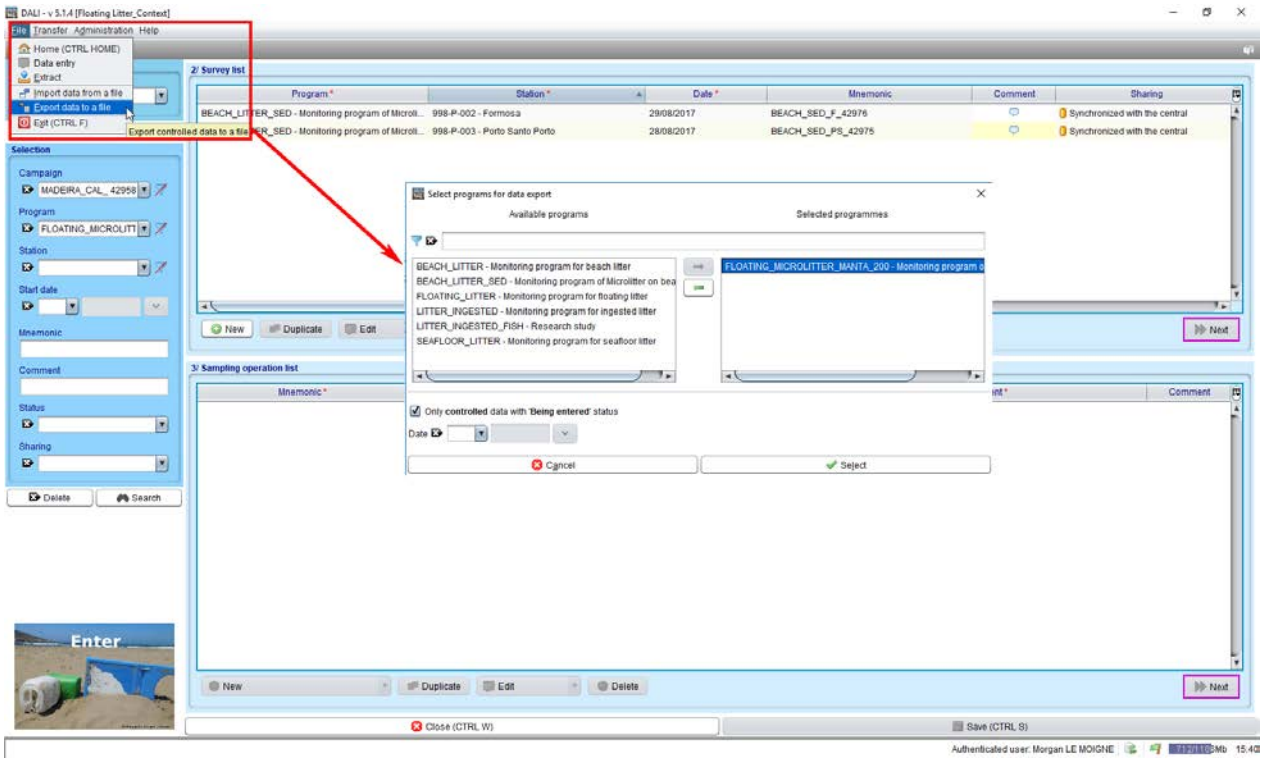
The process to transfer data from one workstation to another meets several needs:

- Allow various actors to carry out simultaneous data entries on distinct local bases, following observations made on the same day at the same location,
- Allow the implementation of the Control/Validate process between different actors (data responsibles, validators) working on distinct local bases.
- Allow the compilation of entered data on different workstations into a single workstation.

The transfer from one workstation to another is managed through a simple exchange of files between users.



Data entered on a workstation X can be exported to a workstation Y through the menus **File/Export data to a file** and **File/Import data from a file**. Surveys should have been **controlled beforehand**.



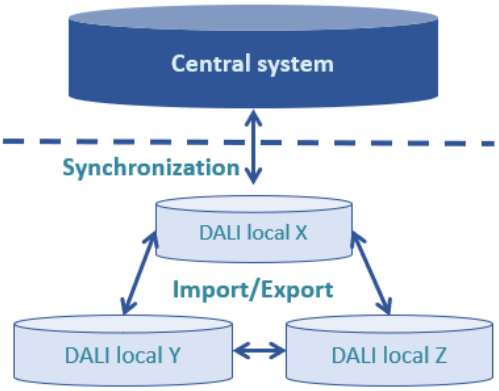
A zipped folder is saved, to be imported to the workstation Y. Once the data is imported, the field Sharing indicates that the surveys are synchronized with a file.

In case of duplications (surveys already existing on workstation Y = same location, same date, same programme), the application informs the user.

The user can visualize duplicated surveys and select those to import.

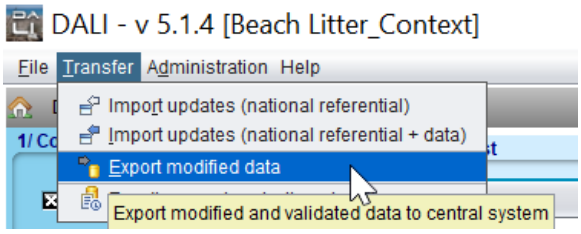
2. SYNCHRONIZATION WITH THE CENTRAL SYSTEM

The synchronization consists in exporting or importing data from the local system (local database) to the central system.

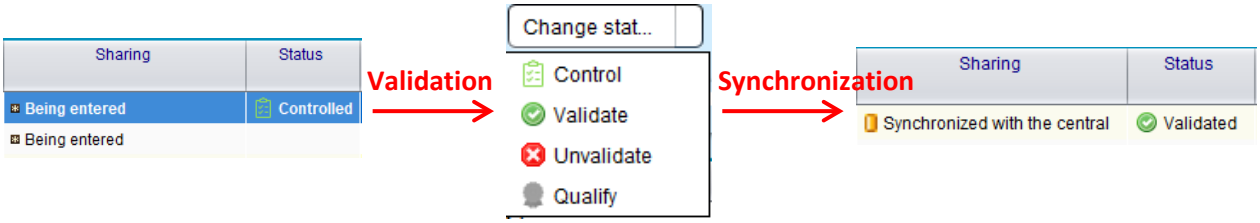


To export, surveys (and associated sampling operations) that have been added or modified since the last export, have to be **validated**.

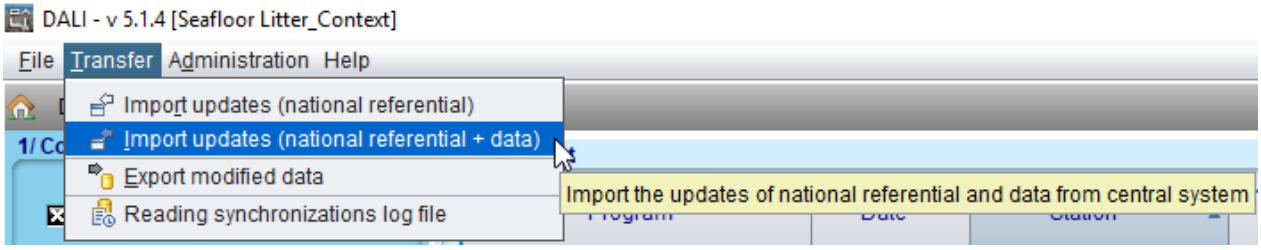
Use **Export modified data** in the **Transfer** tab:



When data have been exported, the **Sharing** field indicates that the survey has been S**ynchronized with the central system.**



To import updates, use **Import updates (national referential + data)** in the **Transfer** Tab **:**



ANNEX 6 – Quadmire Referential tool instructions

Ifremer

Quadmire

Manual user

Interreg
Atlantic Area
European Regional Development Fund

EUROPEAN UNION

Clean Atlantic

1 Introduction

QUADMIRE is a web interface to create referentials essential for the use of the DALI PostGreSQL Database developed in the CLEANATLANTIC project.

- **What is Quadmire ?**

- **Who can use Quadmire ?**

This web interface is destinated to the manager of the DALI postGreSQL DataBase to create programs/strategies and the different referentials needed to enter standardized dataset in this database.

The programs/strategies as well as the various referentials are available to all users of the Database.

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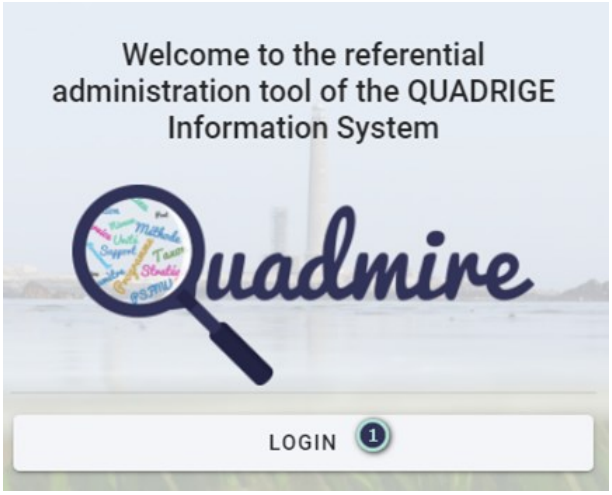
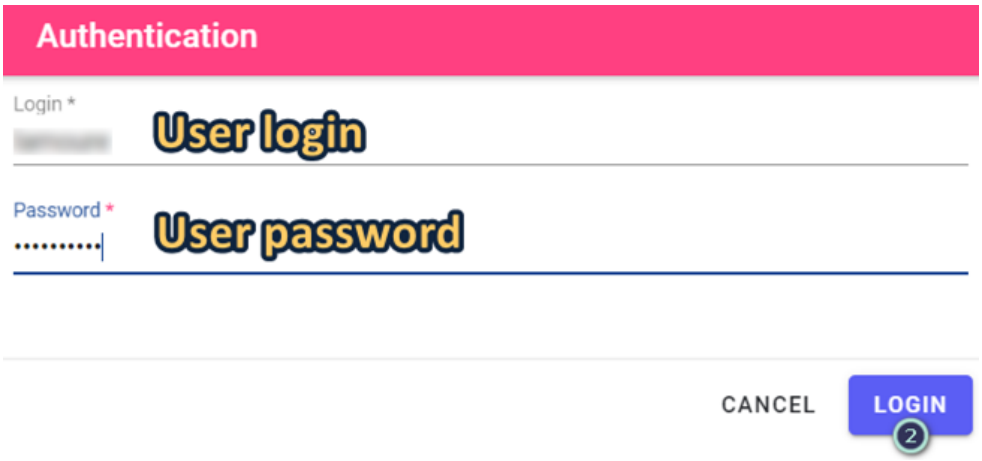
2 Connection

To authenticate to the referential management interface, you need a user login and password provided by the referential manager.





- Browsers validated from version :

91.0.4472.124

68.4.2

To take advantage of Quadmire's regular evolutions, please use the latest versions of your browsers.

Note :

The browser may offer to save your login information. Please refuse this recording in case of shared use of the computer.

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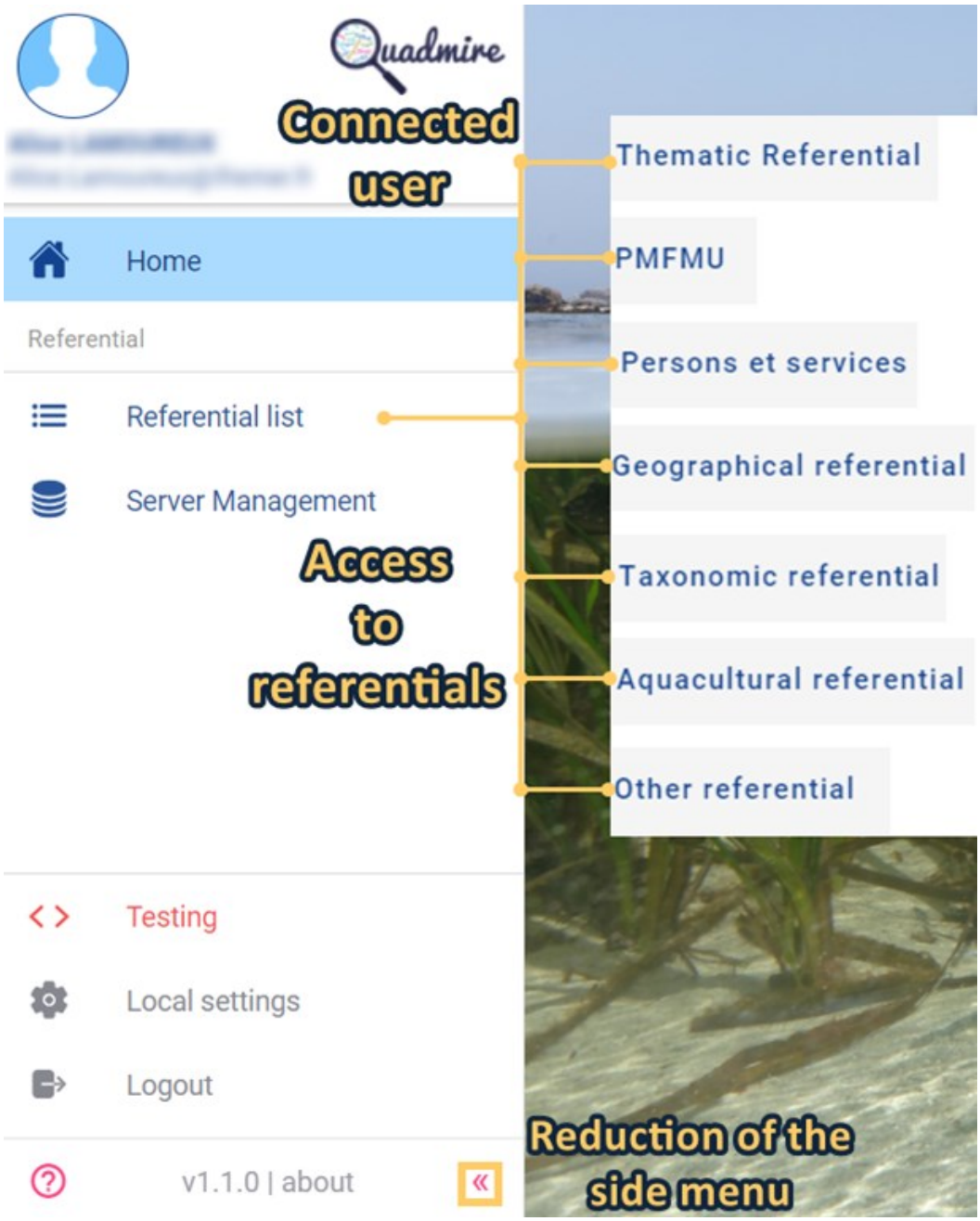
3.1 Interface : menus

Once connected to the application, the Quadmire interface appears.

It consists of a sidebar on the left allowing to access the referentials (Referential list) or to configure the application. This panel is retractable.

The central pane enables to navigate between the referentials, to consult them and to modify them.



Note :

The taxonomic referential is not available in the current version of the application.

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3.2 Interface : signage

The icons below have the same identical actions in each screen. Here is the meaning of each of them:

- **Filters**


Button to access the filterable elements of the referentials.


Button to access the filtered elements of the referential for consultation or modification. The medallion indicates the number of filtered fields.


Button to delete all filters performed on this referential.

- **Basic functionalities**


Button to add an element (strategy, parameter, etc.).


Button to duplicate the selected item.


Button to delete the selected item.


Medallion indicating the number of elements available


Cancellation of actions performed on the line


Line modified but not saved


Deselection of all selected items


Item not selected


Item selected

- **The right side menu of details**

Depending on the referential, it is necessary to display an additional window. It appears on the right side of the screen.


Button to fold the side menu.


Button to unfold the side menu.


Button to unfold the side menu. The pink color indicates that there are items to consult.

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3.3 Interface : configuration

- **The columns of the reference table**

Configuration of the columns to be displayed in the table.
This configuration is to be done once on each table and will be kept at the next connection.

The columns are sortable.

The order of the columns is configurable. You have to hold the click on the header of the column to be moved and to position it at the desired location and release the click.

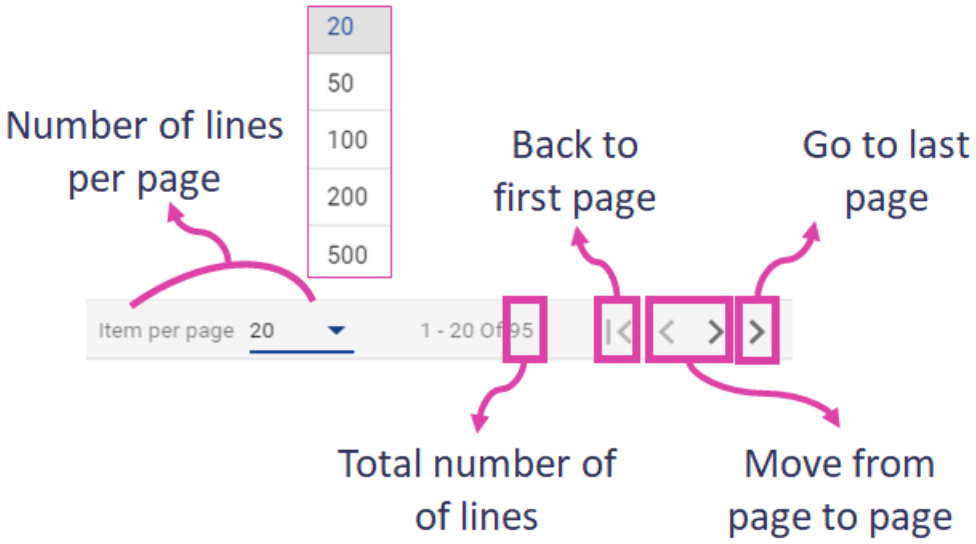
The width of the columns is adjustable. You have to position the mouse on the right part of the column header to adjust.

* Mandatory field

Frozen
Active
Frozen elements are shown in italics as opposed to active elements.

- **The table pagination system**

At the bottom right of each table is the pagination system.



Note :
Each sort action, each new search, or each reset request executes a new database query.

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4.1 Programs and strategies

A **program** refers to the activities that result in the collection of a consistent set of data, whether for monitoring networks or other programs, including time-limited studies.

The **strategy** defines the periods of activity at the monitoring sites, the frequency of sampling, and the PMFMUs monitored, based on the program that initiated the data collection. The strategy helps with data entry at a site by customizing the screens, and facilitates quick consultation of the theoretical content of the database.

Note: a strategy cannot exists without a program. A program can exist without a strategy but will not allow data entry.

The management of **programs/strategies** is done from the "Thematic referential" menu

The management of programs / strategies is complex. It is strongly advised to follow the breadcrumb trail to find your way.

Only the administrativ manager has the rights to create a program.

On the other hand, the latter is managed by the program manager as well as the creation and management of strategies.

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4.1 Programs and strategies

- **Consultation et management programs**

Programs are listed in tabular form. The fields available for this referential are describe below :

Code : program code. Once created, it can no longer be modified

Name: progam name

Description : program description

Strategies : number of strategies related to the program

Status : program status (Active or *Frozen)*

Comment : program comments (modifications story)

Creation date : creation date of the program in the database

Updated date : updated information on the program

To target the programs to be consulted, filters are available on :

Code and **name** program

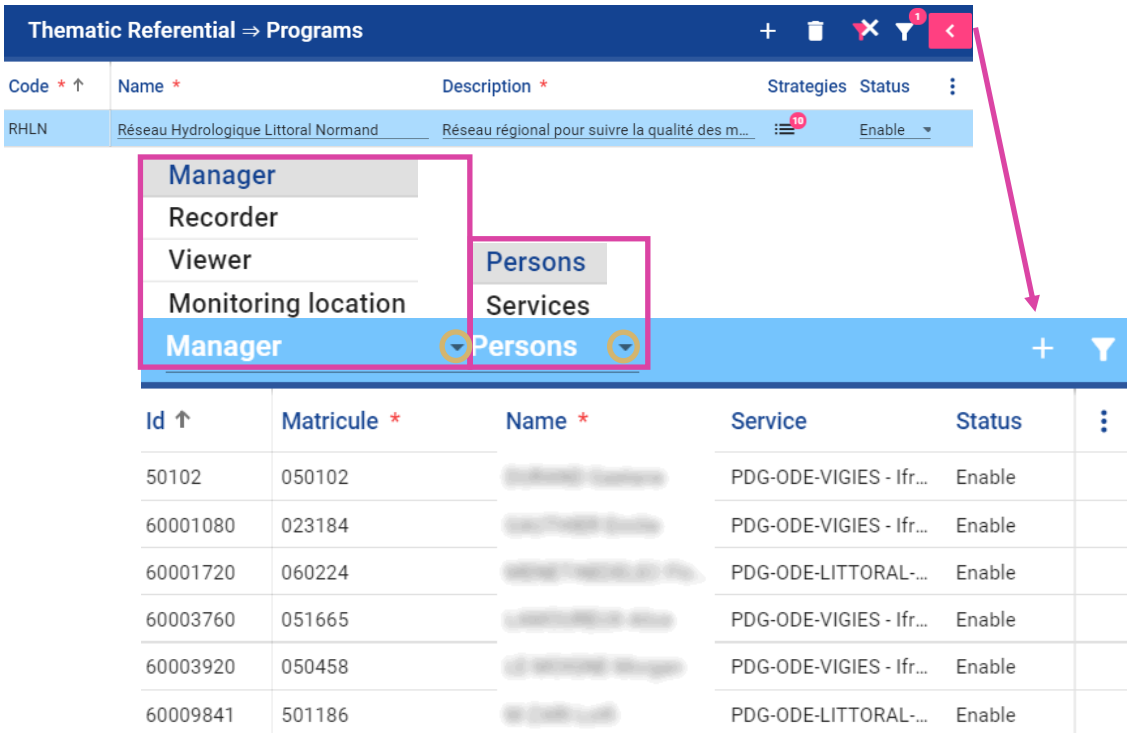
Status : active or *frozen*

Location : multiple choice allowed

Strategies : multiple choice allowed

Start and end periods of the strategy

To view or add the locations, persons and services responsible for, capturing or having full viewing rights associated with a program, need to select first the desired program and display the side view.



Note :

Once a program is created, the administrative manager needs to add it in the DALI PostGreSQL Database using the synchronization server : http://dali.vi.ieo.es/synchro

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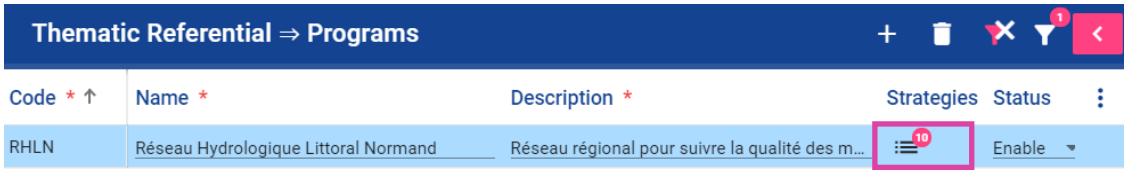
4.1 Programs and strategies

- **Consultation and management of strategies of a program**

To access the list of strategies for the program, click on the medallion with the number of strategies at the desired program level. The strategies screen opens.



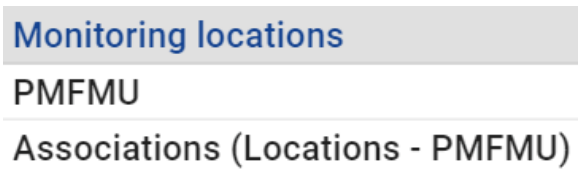
10 strategies

The strategy screen is divided into 4 parts.

1 - Strategies of the selected program	**2 - Persons and/or services responsible for the selected strategy**
3 - Location, PMFMUs and location/PMFMUs associations for the selected strategy	**4 - Periods of application of the selected location**

To consult or add the managers, locations and application periods, you need to select first the desired strategy. Existing information will be displayed in Parts 2, 3 and 4.

In part 3, a drop-down menu allows you to navigate to the locations, the PMFMUs and the associations between locations and PMFMUs of the selected strategy.



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4.1 Programs and strategies

- **Consultation and management of monitoring location of the strategy (Part 3)**

The locations are listed in tabular form. The fields available for this referential are described below:

Id : internal identifier of the monitoring location
Mnemonic : mnemonic of the location
Name : name location
Frequency : sampling frequency of this location for this strategy
Sampler : sampler of this location for this strategy
Taxons Group : taxons group finded on the location
Referent Taxon : taxon present and monitored at this location

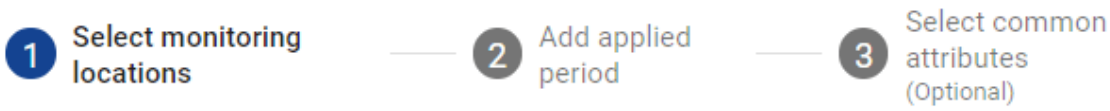
To target the locations to consult, filters are available on :

Identifier, **mnemonic** and **name** of the location
Sampling frequencies : multiple choice allowed
Taxon groupes : multiple choice allowed
Referential taxons : multiple choice allowed

To add locations, click on the "+" button. A window will open, follow the steps below:

1– Select locations
2– Add the application period(s) of the selected locations
3– Select the sampler, sampling frequency, taxon group and reference taxon if these are perennial in time for that location/period

Note : It is possible to go back and correct the previous steps by clicking on the title of the step in the top banner of the window.



- **Adding of an application period for a location (Part 4)**

To view or add an application period to a location, you need to select first the desired location. The start and end dates of the application period are displayed. It is possible to add periods by clicking on the "+" button.

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4.1 Programs and strategies

- **Consultation and management of strategy PMFMUs (Part 3)**

PMFMUs are listed in tabular form. The fields available for this referential are described below :

Id : internal identifier for the PMFMU
Parameter : code and name for the parameter
Matrix : name and identifier for the matrix
Fraction : name and identifier for the fraction
Method : name and identifier for the methode
Unit : name, symbology and identifier for the unit
Number : number of times the PMFMU can be entered
Enter on individual : result enter per individual
Single per individual : singleness check that each pair [(taxon or taxon group), value of PMFMU] is unique for the same element in situ
Incertainty unit : unit of uncertainty
Survey : results entry at the survey level
Sampling : results entry at the sampling level
Sample : results entry at the sample level
Sum : sum of the values of the individuals
Mean : mean of the values of the individuals
Standard deviation : standard deviation of individual values
IC95 : 95% confidence interval of individual values
Update date : updated date information on the PMFMU in the strategy

To target the PMFMUs to be consulted, filters are available on :
Parameters, **matrix**, **fractions**, **methods** and **units** : multiple choice allowed

Note : The order of the PMFMUs in the table corresponds to the order of the PMFMUs in the input grid.

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4.1 Programs and strategies

- **Consultation and management of the associations (location - PMFMUs) of the strategy (Partie 3)**

The associations are listed in tabular form. The fields available for this referential are described below:

Id Location : internal identifier of the location
Location : mnemonic and name of the location
Id PMFMU : PMFMU internal identifier
Parameter : code and name of the parameter
Support : name and identifier of the matrix
Fraction : name and identifier of the fraction
Method : name and identifier of the method
Unité : name, symbology and identifier of the unit
Analyst : analyst service
Analysis equipment : analysis equipment
Update date : update date of a location information

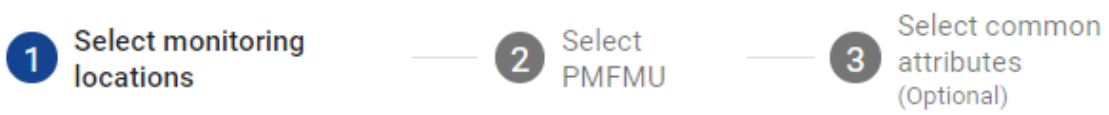
To target the locations to consult, filters are available on :

Identifier, **mnemonic** and **name of the location** : multiple choice allowed
Code and **parameter of the PMFMU** : multiple choice allowed
Identifier, **code** and **name** of the **analyst service** : multiple choice allowed

To add the associations (locations-PMFMUs), click on the "+" button. A window will open, follow the steps below:

1– Select location to be associated
2– Select PMFMUs
3– Select analysts and analysis equipment, if if they are sustainable over time

Note : It is possible to correct the previous steps by clicking on the title of the step in the top banner of the window.



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4.2 Metaprograms

This module will be developed in a later version.

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4.3 Control rules

This module will be developed in a later version.

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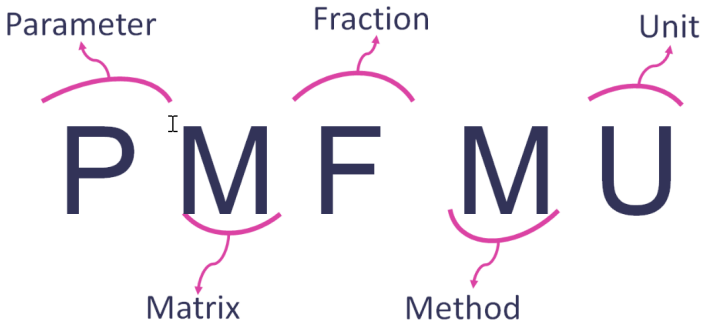
5.1 PMFMU : quintuplet

- **What PMFMU means ?**



- **What is the quintuplet unit?**

A PMFMU is the element that defines any result in the DALI database. Each result is necessarily attached to one and only one PMFMU.

PMFMUs are listed in tabular form. The fields available for this referential are describes below :

Id : internal identifier of the PMFMU
Parameter : code and name of the parameter
Matrix : name and identifier of the matrix
Fraction : name and identifier of the fraction
Methode : name and identifier of the method
Unit : name, symbol and identifier of the unit
Status : status of the PMFMU (Activ or *Frozen*)
Threshold : detection threshold
Maximum number of decimals
Number of significant digits
Comment : comments of the PMFMU (historical modifications)
Creation date : creation date of the PMFMU in the database
Update date : update date of a PMFMU information

To target the PMFMUs to be consulted, filters are available on :

Identifier of the PMFMU
Status : activ or *frozen*
Code and **name** of the parameter
Parameter groupe : multiple choice allowed
Identifier and **name** of the matrix
Identifier and **name** of the fraction
Identifier and **name** of the method
Identifier and **name** of the unit
Qualitative values : multiple choice allowed
Program : multiple choice allowed
Strategy : strategy of a program on which a PMFMU is defined, multiple choice allowed

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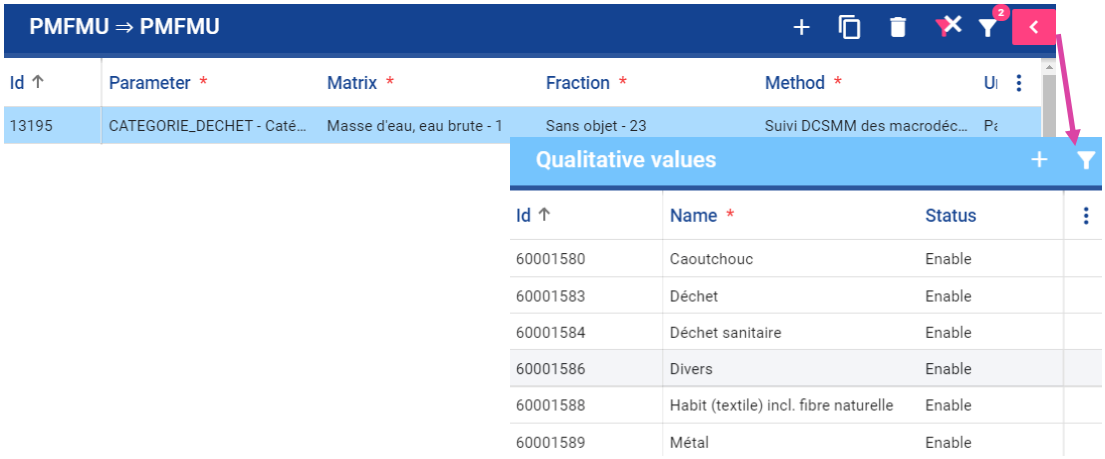
5.1 PMFMU : quintuplet

A PMFMU can be quantitative or qualitative, depending on the parameter.

For a qualitative PMFMU, the qualitative values can be reduced from the list of available values for the parameter.

Note: if a qualitative value is missing from a drop-down list in the applications, this means that it has not been added to the parameter (see part 5.2) and/or to the PMFMU (see § below).

To view or add qualitative values for a PMFMU, you need to select first the PMFMU and display the side view.



From this "Qualitative Values" side view, the referential administrator can select a short list of qualitative values for this PMFMU by clicking the "+" button.

If no qualitative values are selected at the PMFMU level, all qualitative values for the parameter will be available.

Note:

It is also possible to restrict the list of PMFMU qualitative values at the strategy level.

By default, all the qualitative values of a PMFMU are applicable to the strategy. The strategy's list of qualitative values is automatically populated with the list of qualitative values from the PMFMU.

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5.2 PMFMU : parameter

A **parameter** is a property of the environment or of an element of the environment that contributes to assess its characteristics, quality and/or suitability for use. There are two types of parameters:

- **Quantitative :** parameters with an infinite number of results,
- **Qualitative :** parameters taking a limited number of predefined values.

These two types are mutually exclusive.

The parameters are listed in tabular form. The fields available for this referential are described below :

Code : parameter code. Once created, it can no longer be modified

Name : parameter name

Parameter group : name of the parameter group combined with its internal identifier

Status : parameter status (Active or *frozen*)

Description : parameter description

Qualitative : qualitative parameter (yes or no).

- **Yes :** the administrator creates a list of qualitative values, which can then be used for the input
- **No :** the user enters numerical values without list restriction

Taxinomic : taxonomic parameter (yes or no).

- **Yes :** results of measurements on taxon or group of taxons
- **Non :** results of measurements

Comment : comments on the parameter (historical modifications)

Creation date : date of creation of the parameter in the database

Update date : update date of a parameter information

To target the parameters to be consulted, filters are available on :

Code and **name** of the parameter

Status : active or *frozen*

Parameter group : multiple choice allowed

Qualitative type : yes, no

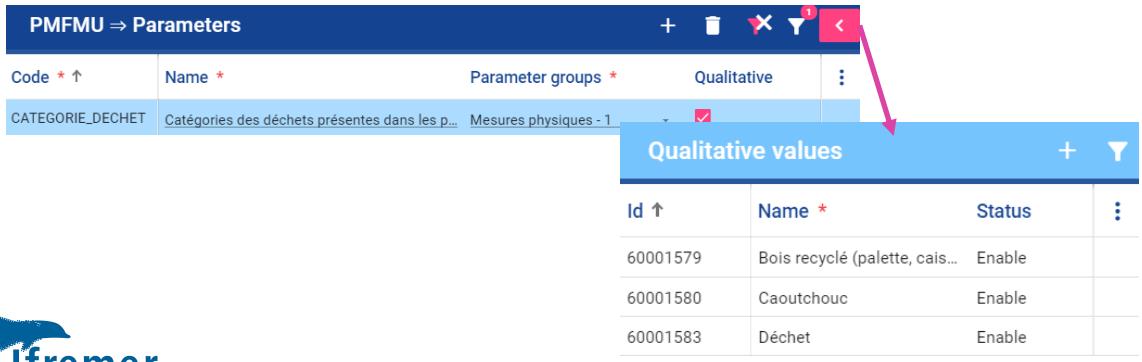
Taxinomic type: yes, no

Qualitative values : multiple choice allowed

Program : multiple choice allowed

Strategy : multiple choice allowed

To view or add the qualitative values of a parameter, you need to select first a parameter and display the side view.



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5.3 PMFMU : matrix

A matrix refers to a component of the environment under investigation, which is generally sampled for subsequent analysis in order to assess its quality. The matrix does not correspond to the matrix really analyzed, since it is generally a fraction of the matrix that is analyzed (e.g. for water, we distinguish between raw water and filtered water). A matrix can be an inert component such as water, sediments, suspended matters which are generally the subject of physicochemical and microbiological analyses or a community of living beings which live in the environment.

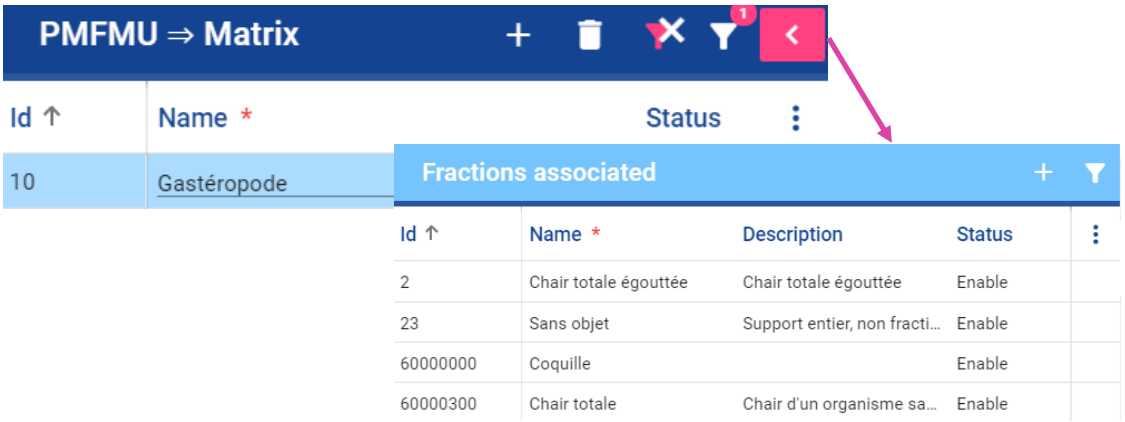
Matrix are listed in tabular form. The fields available for this referential are described below :

Id : internal identifier of the matrix
Name : matrix name
Status : status of the matrix (Active or *frozen*)
Description : description of the matrix
Comment : comments of the matrix (historical modifications)
Creation date : creation date of the matrix in the database
Update date : update date of a matrix information

To target the matrix to be consulted, filters are available on :

Identifier and the **name** of the matrix
Status : active or *frozen*
Associated fractions : multiple choice allowed

To consult or add the fractions associated with a matrix, you need to select first the matrix and display the side view.



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5.4 PMFMU : fraction

An analysed **fraction** corresponds to all or part of the matrix on which the analysis is performed. Different categories of analyzed fractions exist. The examples below illustrate this diversity: "Water" matrix with the analyzed fraction "raw water", "Sediment" matrix with the analyzed fraction "Particle".

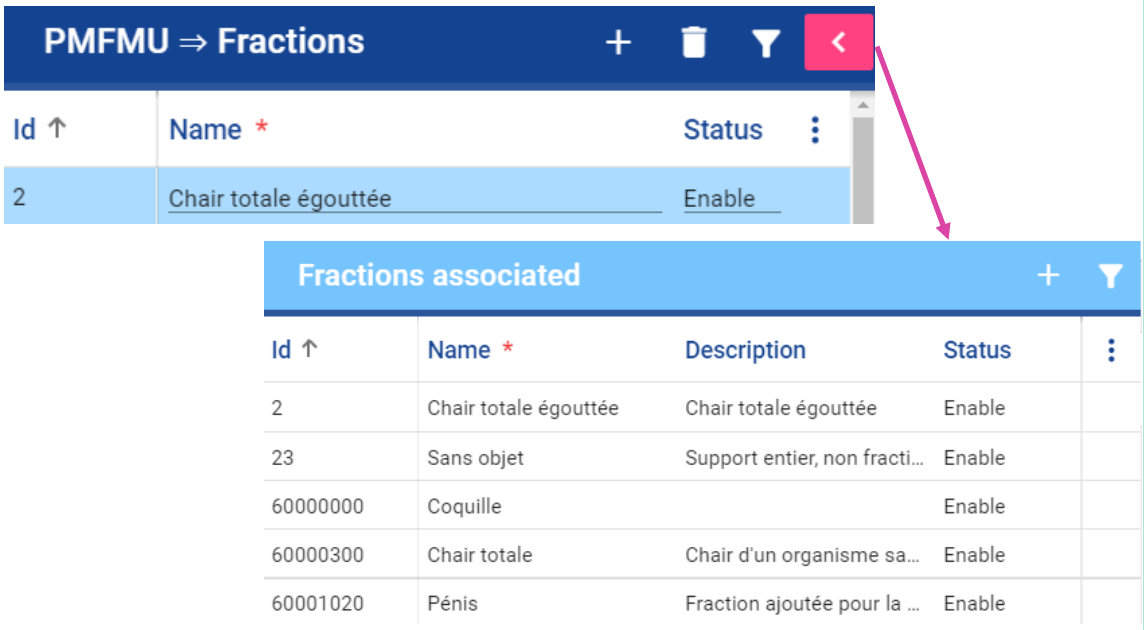
The fractions are listed in tabular form. The fields available for this referential are described below :

Id : internal identifier of the fraction
Name : fraction name
Status : status of the fraction (Active or *frozen*)
Description : description of the fraction
Comment : comments of the fraction (historical modifications)
Creation date : creation date of the fraction in the database
Update date : update date of an information of the fraction

To target the fractions to be consulted, filters are available on :

Identifier and the **name** of the fraction
Status : active or *frozen*
Associated fractions : multiple choice allowed

To consult or add the matrices associated with a fraction, you need to select first the fraction and display the side view.



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5.5 PMFMU : method

A method is a set of steps which constitute a protocol in order to carry out an operation (sampling, fractionation, conservation, measurement) on an analyzed fraction (a part or the totality of a matrix).

The methods are listed in tabular form. The fields available for this refrential are described below :

Id : internal identifier of the method
Name : method name
Status : status of the method (Active or *frozen*)
Description : description of the method
Reference : reference of the method
Method sheet : document attached to the method
Description of the packaging: description of the packaging features
Description of the preparation: description of the preparation conditions
Description of the conservation: description of the conservation conditions
Comment : comments on the method (historical modifications)

To target the methods to be consulted, filters are available on :

Identifier and the **name** of the method
Status : active or *frozen*
Associated methods : multiple choice allowed

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5.6 PMFMU : unit

The expression of the units of measurement is based on the international system. The unit of measure refers to the combination of the PMFM.

The units are listed in tabular form. The fields available for this referential are the following:

Id : internal identifier of the unit
Name : unit name
Status : status of the unit (Active or *frozen*)
Symbol : symbol of the unit
Comment : comments on the unit (historical modifications)
Creation date : creation date of the unit in the database

To target the units to be consulted, filters are available on :

Identifier, **name** and **symbol** of the unit
Status : active or *frozen*

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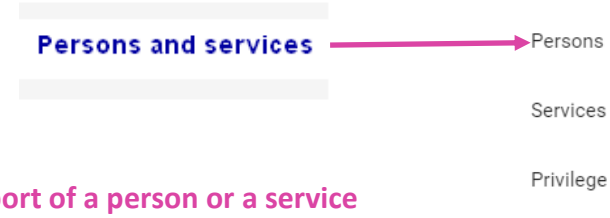
6 Persons and services

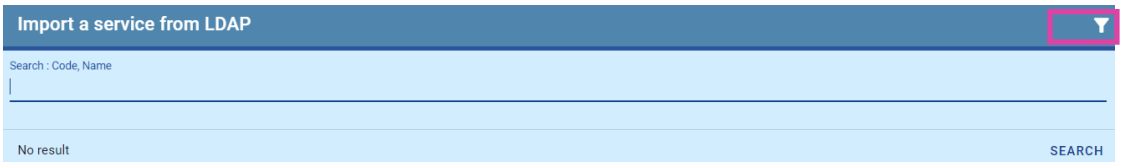
The referential of persons and services are created using the LDAP directory or created by the administrator of the database.



- **Import of a person or a service**

A person is created in the person referential as soon as he/she has been trained in this application.

1- Button to add an element. A window opens to select the element(s) to be ad-



2- To consult the elements available in the directory, you have to click on Search, having previously made a filter or not.

3- To select one or more elements, click on the checkbox. This one becomes pink when selected.

- **Create a person or a service manually**

A field observer not using the applications can be created directly in the tool without going through a directory synchronization.

1- Button to add an item without the directory.

2– A new line is created, fill in the requested information.

- **Add privilege to a person**

Once a person is created, administrator may add her/him some Priviliege(s).

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- **Add Privilege(s) to a person**

Once a person is created in Quadmire, administrator may add her/him some Privi-liege(s) :

- Validator : mandatory to export /synchronize data in central database
- Qualificator : to be able to qualify data entered in the database...

Persons et services ⇒ Privilege

Code * ↑	Name *	Description	Sta
1	Administrateur de référentiel	Administrateur de référentiel	Enal
2	Administrateur de préférence locales	Administrateur de préférence locales	Enal
3	Qualificateur	Qualificateur	Enal
4	Consultation expert	Consultation expert	Enal
5	Administrateur BDRecif	Administrateur local pour la BD Recif	Enal
6	Valideur	Valideur pour BD RECIF et Q3	Enal

Persons

Id ↑	Matricule *	Name *	Service
50102	050102	DURAND Gaetane	PDG-ODE-VIGIES -
50796	050796	HUGUET Antoine	PDG-ODE-VIGIES -
60000180	001723	ALLENOU Jean-Pierre	PDG-RBE-BIODIVE
60000880	001675	TREGUIER Cathy	PDG-RBE-DOI - Ifre
60001080	023184	GAUTHIER Emilie	PDG-ODE-VIGIES -
60003361	128872	CAUVIN Bruce	GIPRNMR - GIPRN

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7 Locations

Locations are geographical places on which observations, samples and measurements are carried out. They are unique according to their geographical extent (point, line or polygon). A location can be used by several programs.

- **Consultation of locations**

Locations are listed in tabular form. The fields available for this referential are described below:

Id : internal identifier of the location
Mnemonic of the location

Location name : name of the location
Latitude and longitude Min / Max : location coordinates
Positioning : positioning system used for the survey of the coordinates
Positioning precision : precision of the positioning system
Winter Delta UT : UT format of the time for the place (0, +1, -4...). +1 by default
Bathymetry : location bathymetry, can be positive or negative
Home port : location home port
Apply time change: summer/winter time change. Yes by default
Description of the location : download the description of the location
Status: status of the monitoring location (Active or *Frozen*)
Comment : location comments (historical modifications)
Creation date : creation date of the location in the database
Update date : update date of a location information

To target the places to consult, filters are available on :

Identifier, **mnemonic** and **name** of the location
Status : active or *frozen*
Type of geographical grouping: water agencies, water bodies, oceans, OSPAR regions, PMAs, DCSMM marine sub-regions...
Value according to the chosen grouping
Type of location geometry : point, linear, surface
Metaprogram : multiple choice allowed
Program : multiple choice allowed
Strategy : multiple choice allowed

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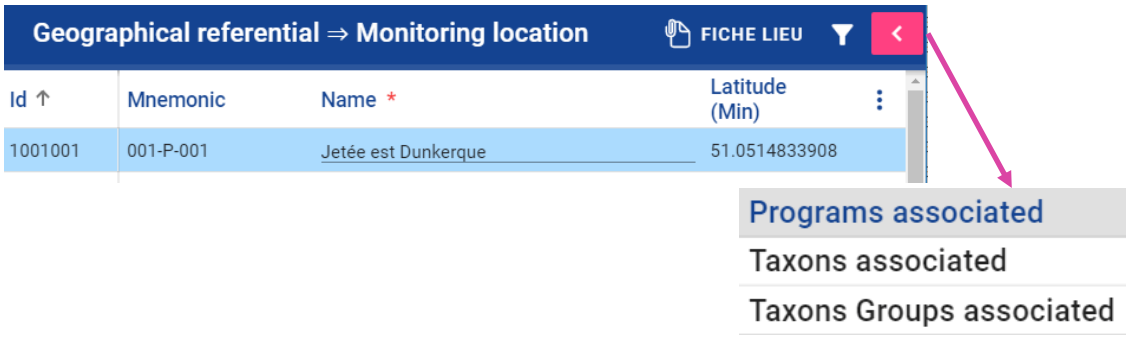
7 Locations

- **Consultation of the information associated with the locations**

To view the programs, taxa and taxon groups associated with a location, you need to select first a location and display the side view.



- **Locations creation**

Locations are created by the administrative manager using a shapefile import tool external to the application. The geographical connections are made manually using a GIS software.

In the future, the creation and linking of places will be done automatically in Quadmire.

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8 Taxinomic Referentials

This modul will be developed later

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9 Generic Referentials

A number of referentials are basic. They do not require any particular knowledge or learning to use them. They are not detailed in this document.

Aquacultural referential

- Age group
- Ploidy
- Breeding structures
- Breeding system
- Breeding phase type

Other referential

- Analysis instrument
- Sampling equipments
- Frequencies
- Ships
- Depth level
- Quality flags
- Numerical precision
- Event types
- Precision types
- Photo types
- Resource types
- Observation Typologies

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