



## NEMO USER MANUAL



**HORIZON 2020**

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SeaDataNet - The pan-European infrastructure for marine and ocean data management

Deliverable number	Short title
V1.7.4	NEMO user-manual
Long title	
User manual of NEMO, the reformatting software	
Short description	
User Manual of NEMO software delivered in the frame of SeaDataNet European project. This software is used to reformat ASCII files to one of the ASCII SeaDataNet formats : ODV (Ocean Data View) or MEDATLAS and to the binary SeaDataNet netCDF	
Author	Working group
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Dissemination	Copyright terms
Public	

## History

Version	Authors	Date	Comments
1.2.0	M.Fichaut	13/03/2009	Creation
1.2.11	M.Fichaut	25/05/2009	Update : Report when updating vocabulary Restore button in NEMO configuration Rupture indicator for station header Chronological Julian date accepted in input file Multi-station ODV file accepted as input file
1.2.12	M.Fichaut	04/06/2009	Update : Minus modification on time and latitude descriptions in paragraph 7.3
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1.2.16	M.Fichaut	26/11/2009	Update : Modification of the size of Setting windows
1.2.25	M.Fichaut, S. Brégent	25/05/2010	Update : <ul style="list-style-type: none"> <li>• Global validation of all NEMO steps : §5.5</li> <li>• Batch mode for NEMO : §7.8</li> <li>• Use of P01 parameter code</li> <li>• Default value for bottom depth: §7.3.11</li> <li>• Default value for station start time §7.3.8 and 7.3.9</li> <li>• NEMO settings : choose the default quality flag (§6.12)</li> <li>• Corrections of several anomalies</li> </ul>



			<ul style="list-style-type: none"> <li>Source code rewriting to take into account the conversion of big files (several thousands of stations): modification of the way of converting files.</li> </ul>
1.3.0	M.Fichaut, S. Brégent	18/02/2011	<p>Major Update: P01 available through P02</p> <ul style="list-style-type: none"> <li>New parameter lists - §7.4.2</li> <li>Choice of conversion format moved to File tab - §6.8</li> <li>Modification in Station tab, Depth section - § 7.3</li> <li>Modification of the Data tab - §7.4</li> <li>Modification of the Convert Tab - §7.5.1</li> <li>Note of parameters automatically inserted by NEMO - §7.5.2</li> <li>Batch mode – new arguments for CDI summary and coupling table generation - §7.8</li> </ul>
1.4.0	M.Fichaut, S. Brégent	12/05/2011	<p>Updates</p> <ul style="list-style-type: none"> <li>- user label column in parameters table <ul style="list-style-type: none"> <li>File backup (§3)</li> <li>Column usage (§7.4.2.4)</li> </ul> </li> <li>- data termination indicator (§7.1)</li> <li>- Change in the menu of table of measurements (§7.4.1) <ul style="list-style-type: none"> <li>Select a format,</li> <li>Move current parameter up to top,</li> <li>move current parameter down to bottom</li> </ul> </li> <li>- More arguments in batch mode (§7.8.1): <ul style="list-style-type: none"> <li>couplingTableUpdate</li> <li>couplingTablePrefix</li> </ul> </li> </ul>
1.4.3	M.Fichaut, S. Brégent	24/01/2012	<p>Update:</p> <ul style="list-style-type: none"> <li>- Possibility to keep previous installation preferences while reinstalling NEMO (§3.1.1)</li> <li>- Possibility to save uncompleted model (§7.6)</li> <li>- New example for batch mode script file (§7.8)</li> <li>- Several input and output files for trajectories</li> <li>- Mandatory fields marked by a '*' on the input screens</li> <li>- Data description: output default value not mandatory for ODV format</li> </ul>
1.4.4	M.Fichaut, S. Brégent	21/03/2012	<p>Update:</p> <ul style="list-style-type: none"> <li>- Possibility to use non-numeric parameters (§7.5)</li> </ul>
1.4.5	M.Fichaut, S. Brégent	09/07/2012	Update: Version number
1.5.0	D. Capitaine, S. Brégent M. Fichaut	13/06/2013	<p>Update:</p> <ul style="list-style-type: none"> <li>- Possibility to convert file into netCDF format</li> <li>- Version V2 of BODC vocabularies, number of the lists updated</li> <li>- add above sea level</li> </ul>
1.5.1	M. Fichaut	02/07/2013	<p>Update :</p> <ul style="list-style-type: none"> <li>- add C19 in the vocabulary list and mapping C16-c19 for backwards compatibility</li> </ul>
1.5.2	S. Brégent	16/09/2013	<p>Update:</p> <p>§7.5.3 CDI summary file for Mikado (column PDV_CODE renamed as P02_CODE; column FORMAT_VERSION added)</p>
1.5.3	D.Capitaine	07/09/2013	<p>Update :</p> <ul style="list-style-type: none"> <li>- update installation information</li> <li>- §7.2.1 Nemo accept now ISO-19139 CSR format</li> <li>- Settings panel (EDMO choice graphical list and SeaDataNet Default flag values)</li> </ul>

			- Add FAQ chapter §2
1.5.4	S. Brégent	14/05/2014	Update: Version number
1.6.0	S. Brégent	25/02/2015	Updates: <ul style="list-style-type: none"> <li>- §1.2: require java &gt;= 1.7</li> <li>- §6.10.3 &amp; 7.3.1: improve QC flags explanations (functionalities did not change)</li> <li>- §7.2: Cruise tab is now displayed for ODV conversion</li> <li>- §7.4: new parameters attributes available: instrument and fall_rate</li> <li>- §7.5.2.1: DEPH is allowed as primary variable in MEDATLAS</li> <li>- §7.5.3: SeaDataNet references added automatically</li> </ul>
1.6.1	S. Brégent	15/07/2015	Update: Version number
1.6.2	S. Brégent, M. Fichaut	11/01/2016	Update: Version number <ul style="list-style-type: none"> <li>• table of §0</li> <li>• P02 snapshot in §7.4.2.3</li> </ul>
1.6.3	S. Brégent	19/05/2016	Update: Version number
1.6.4	M. Fichaut	24/06/2016 18/07/2016 01/08/2017	Add precisions in §7.4.2.4 under Start and End, and Format. Add warning in §6.11.3 Correction of links in §8 Correction of typos Update version number update required java version (>=1.8) in §1.2 Add Data columns selection section description in §7.1.3 and §7.4
1.6.5	S. Brégent	27/09/2017	Update: version number
1.6.6	M. Fichaut	23/11/2017	Update: version number
1.6.7	S. Brégent	11/10/2018	§6.1127 Settings: update SeaDataNet flags window §6.5 Settings: add CSR metadata EDMO code in settings §7.2.2.1 Cruise: add BSH CSR reference field §7.3 Station: Add a new format for Latitude/Longitude
1.7.0	S. Brégent M. Fichaut	20/03/2020	Full revision of the document and addition of the following new information: §7.1.2 : new field concerning the variant §7.1.3.2: usage of CSV separator in station header §7.1.3.4: new data termination indicator for CSV files with separator §7.3.1 explanations on LOCAL_CDI_ID build §7.3.8 and 7.3.9: usage of datetime format with date and time inseparables §7.4: mandatory parameters for biological, flow cytometry and microlitter variants. §7.8 add new batches arguments (cruise name, cruise comment, ship code, local CSR identifier, BSH CSR reference) Update URLs in SDN references examples: §7.2.2.1, §7.5.3
1.7.1	S. Crouzille	03/02/2021	§7.5.4 : update DATASET_ABS description §7.8: change description for –datasetRef and -cruiseComment arguments
1.7.2	M. Fichaut, S. Crouzille	18/10/2021	§6: Update the web services settings screenshot. §7.3.2: Addition of ADCP example
1.7.3	S. Crouzille	19/01/2022	Update: Version number
1.7.4	S. Crouzille, M. Fichaut	22/06/2022	Update: version number Update figures 5, 16 and 17

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# 1. Introduction

For purposes of standardisation and international exchange, SeaDataNet has defined common formats [1] for data exchange and distribution which are:

- ASCII SeaDataNet ODV [1] (Ocean Data View) format is a version of the ODV version 4 generic spreadsheet format modified to carry additional information required by SeaDataNet. Variants of this SeaDataNet ODV format have also been defined for Biological [4] [5], flow cytometry [8] [9] and microlitter data [6] [7].
- MEDATLAS [1] [2] which is an auto-descriptive ASCII format designed in 1994, by the MEDATLAS and MODB consortia, in the frame of the European MAST II program in conformity with international ICES/IOC GETADE recommendations. As for ODV, the format has been upgraded to carry additional information of SeaDataNet,
- SeaDataNet netCDF format [1] which is an auto-descriptive binary format

netCDF and ODV formats are both mandatory in SeaDataNet while MEDATLAS is optional.

All these formats are described on the SeaDataNet website, and examples are provided for each format type (<https://www.seadatanet.org/Standards/Data-Transport-Formats>).

NEMO is a reformatting tool able to reformat any ASCII files (input file) of vertical profiles, time-series and trajectories to a SeaDataNet ASCII format (output file at ODV or MEDATLAS format) and SeaDataNet netCDF format.

## 1.1. Main principles

The input files of NEMO can be individual vertical profiles, time series or trajectories, or files grouping several vertical profiles, time-series or trajectories of the same data type (CTD, bottle cast, current meter, thermosalinograph...). All these entities (vertical profile, time-series and trajectory) are called stations in NEMO software.

NEMO is able to reformat:

- a single file or
- a group of files in one directory or
- a group of directories containing several files.

The only requirement is that the input files of NEMO are ASCII, with data measurements in columns.

As the entry file can be all kinds of ASCII format, NEMO must be able to read all these formats to translate them to ODV, MEDATLAS or netCDF.

To do so, the principle is that the user of NEMO describes the input files formats so that NEMO is able to find the information which is necessary to generate the files at SeaDataNet formats.

**One very important pre-requirement** is that in a set of input files the information about the stations must be located at the same position: same line in the file, same position on the line or same column if Comma Separated Value (CSV) format. Furthermore, station information must be at the same format in all the stations.

*For example: for all the stations, the latitude is on line 3 on the station header, from character 21 to character 27, its format is decimal degrees (+DD.ddd).*



## 1.1. NEMO and MIKADO interactions

NEMO was designed to be linked to the SeaDataNet tool 'MIKADO' [3] through the generation of a text file that can be converted to Excel.

The principle (Figure 1) is that while NEMO converts one file or a collection of files (like for example a collection of XBT files in a specific geographical area), it also generates a "CDI summary CSV file" which contains all the minimum information necessary to create CDI records in the SeaDataNet catalogue. This CSV file can be read by MIKADO (automatic generation) using a JDBC driver and then XML CDI files are generated (using predefined queries delivered with MIKADO) and can be directly exported to the central SeaDataNet catalogue.

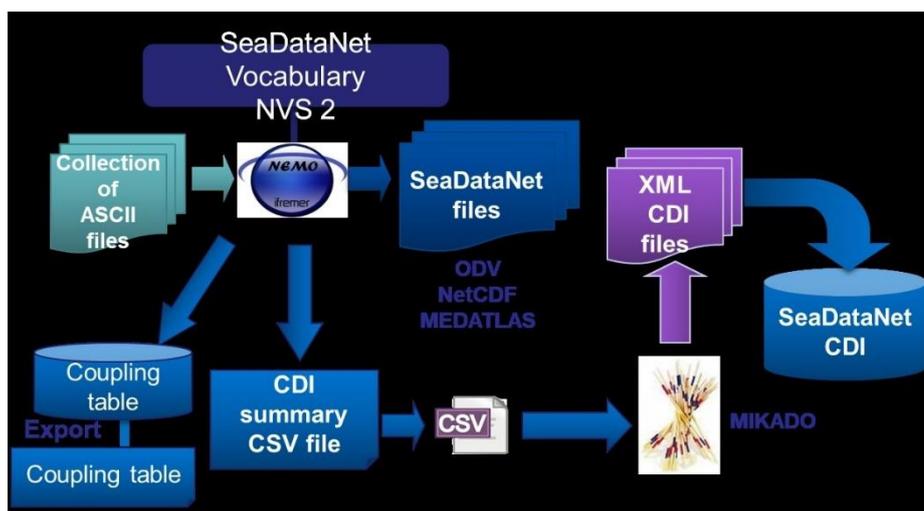


Figure 1– From « raw » data files to SeaDataNet CDI catalogue

## 1.2. Technical characteristics

NEMO is a portable software that can be downloaded from the SeaDataNet website <https://www.seadatanet.org>, free of charge, with its user manual.

It is written in Java Language (Version >= 1.8) and it is available under Microsoft (tested with Windows10) It is also available for Linux and Unix but not tested in IFREMER.

NEMO works offline; however, as it uses the SeaDataNet common vocabularies web services to update its lists of values, network connection is needed only when update of these lists is necessary.

- To know if Java is available on your computer, in the right version, follow these steps:
  - Open 'Start' menu, then 'Execute'
  - On the displayed window, enter: 'cmd', then click on 'OK' button
  - Enter 'java -version'
- Check if command has been executed:
  - If not, download the last java version at <http://java.com/en/download/index.jsp>.
  - Else, check the version displayed. The version should be greater than or equal to 1.6.

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

Q:\>java -version
java version "1.6.0_05"
Java(TM) SE Runtime Environment (build 1.6.0_05-b13)
Java HotSpot(TM) Client VM (build 10.0-b19, mixed mode, sharing)

Q:\>
```

Figure 2 – Check Java version installed on your computer

## 2. FAQ

The Frequently Asked Questions about Nemo software are available online and are regularly updated:

<https://www.seadatanet.org/Standards-Software/Software/NEMO/FAQ>

If you do not find the answer you need in this FAQ, do not hesitate to contact our helpdesk at [sdn-userdesk@seadatanet.org](mailto:sdn-userdesk@seadatanet.org)



[sdn-userdesk@seadatanet.org](mailto:sdn-userdesk@seadatanet.org) – [www.seadatanet.org](http://www.seadatanet.org)

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## 3. NEMO installation and uninstallation

### 3.1. NEMO installation

#### 3.1.1. Installation for Windows

Get NEMO software from SeaDataNet Web site, under Standards & Software:

[https://www.seadatanet.org/standards\\_software/software/nemo](https://www.seadatanet.org/standards_software/software/nemo)

Copy the zip file on your computer, and unzip it.

You will get 2 files: install\_nemo.jar and launcher.bat

If Java is not installed on your computer (see chapter 1.2), install it.

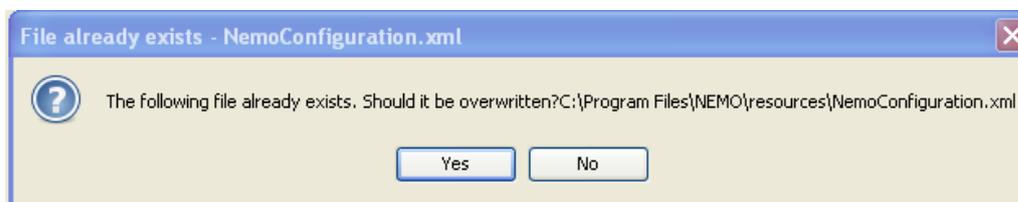
To install NEMO double click on the file launcher.bat.

Then select your language and run the installation.

- 1.** Accept the terms of the license agreement.
- 2.** Select the installation path (default is C:\ Program Files\NEMO)
  - target directory is created if it doesn't exists.
  - if the target directory exists, you will have to confirm overwriting

**Even if you choose to overwrite an existing directory, you will be able to keep your preferences from Nemo's last installation**

- 3.** After Pre installation script click on the "Next" button
- 4.** Confirm the installation path and click on the "Next" button
  - if you overwrite an existing directory, you will be asked 5 times to overwrite particular files:
    - NemoConfiguration.xml
    - nemo.ini
    - userParametersLabels.xml
    - userParametersStandardNames.xml
    - userParametersnetCDFLongNames.xml:



These 5 files contain your Nemo Settings and your personal labels (§7.4.2.4-Fulfil parameter values and test).

**For each of these 5 files, click "NO" to keep your preferences.**

5. If you want a shortcut on your Desktop check the box circled in red on the image below. You can create a shortcut for the current user or for all users of the computer (circled in blue); by default “all users” is checked.

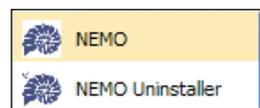


Figure 3 – Installation of NEMO – definition of shortcuts.

The shortcuts are created in the desktop and in the Start menu of the computer with the following icon:



on the desktop or



in the start menu under the group defined in the

circled in green field in Figure 3.

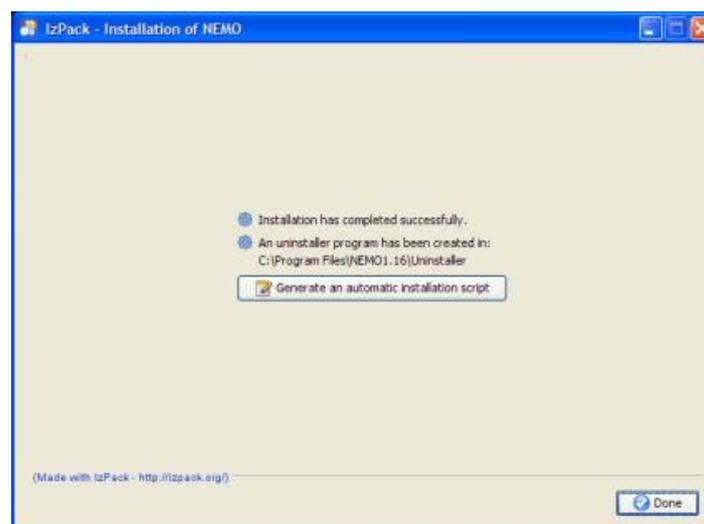


Figure 4 – Last screen of NEMO installation

If NEMO needs to be installed on several computers, it is possible to “Generate an automatic installation script”, by clicking on the appropriate button on the last screen of NEMO installation (Figure 4).

### 3.1.2. Installation for Linux

Get NEMO software from SeaDataNet Web site, under Standards & Software:

[https://www.seadatanet.org/standards\\_software/software/nemo](https://www.seadatanet.org/standards_software/software/nemo)

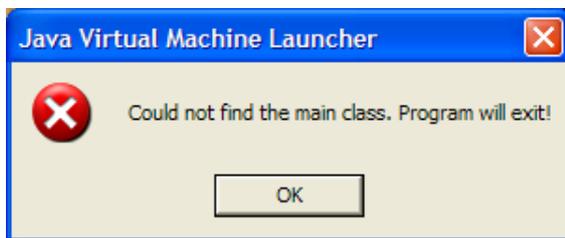
1. Copy the Linux, Linux64bits zip file on your computer, and unzip it (tar -xzf file.tar.gz).
2. You will get 2 files: install\_nemo.jar and launcher\_nemo.sh
3. If Java is not installed on your computer (see chapter 1.2), install it.
4. To install NEMO, run launcher\_nemo.sh or type java -jar install\_nemo.jar. See paragraph 3.1.1 to proceed to the installation.
5. To run NEMO, run ./launcher\_nemo.sh

## 3.2. NEMO uninstallation

### 3.2.1. Uninstallation for Windows

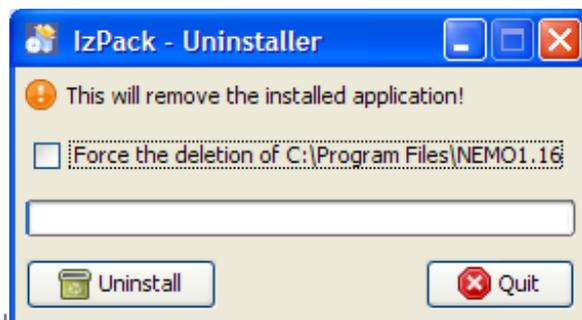
If you want to remove NEMO from your computer, run the uninstaller by selecting NEMO Uninstaller in the start menu of your computer (see paragraph 3.1).

If running the uninstaller generates the following message:



please run `C:\NEMO_Installation_directory\Uninstaller\launcher_uninstaller.bat` (or `uninstall_nemo.sh` for Linux).

The following window opens:



Click on Force the deletion of `C:\NEMO_Installation_directory`

And then click on Uninstall.

### 3.2.2. Uninstallation for Linux

If you want to remove NEMO from your computer, run the uninstaller by using the following command in the Uninstaller directory:

```
./uninstall_nemo.sh
```

## 4. Controlled vocabularies

NEMO includes functionalities to import SeaDataNet controlled vocabularies, EDMO (European Directory of Marine Organisations) catalogue, and some information from IFREMER database useful for MEDATLAS format (such as a subset of Roscop codes corresponding to sensors available on BODC vocabulary or format and default values for MEDATLAS parameters).

SeaDataNet controlled vocabularies used by NEMO are available at the following address: [http://seadatanet.maris2.nl/v\\_bodc\\_vocab\\_v2/welcome.asp](http://seadatanet.maris2.nl/v_bodc_vocab_v2/welcome.asp)

NEMO uses the following lists:

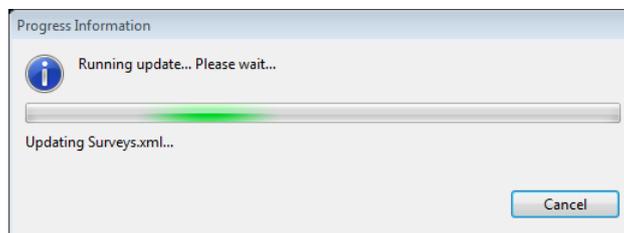
List code	List Name
C16	SeaDataNet Sea Areas
C17	ICES Platform Codes
C18	IOC country codes
C19	SeaVoX salt and fresh water body gazetteer
C77	SeaDataNet Cruise Summary Report data categories
L05	SeaDataNet device categories
L06	SeaVoX Platform Categories
L07	SeaDataNet data access mechanisms
L08	SeaDataNet Data Access Restriction Policies
L20	SeaDataNet measurand qualifier flags
L22	SeaVox Device Catalogue
L30	MEDATLAS Data Centres
L33	WMO C3 vocabulary of XBT data types
P01	BODC Parameter Usage Vocabulary
P02	BODC Parameter Discovery Vocabulary
P06	BODC data storage units
P07	Climate and Forecast Standard Names
P09	MEDATLAS Parameter Usage Vocabulary
C16-C19	Mapping between C16 and C19
L05-C77	Mapping between L05 and C77



P01-P02	Mapping between P01 and P02
P01-P09	Mapping between P01 and P09
P02-P09	Mapping between P02 and P09 for CDI summary
P06-P09	Mapping between P06 and P09
P07-P02	Mapping between P07 and P02
EDMO	European Directory of Marine Organizations
Parameters	Idem than P09 with default value and format information
Surveys	Use by IFREMER for server initialisation on Cruise step

When running NEMO, the controlled vocabularies can be downloaded when using the menu “Options” and “Vocabulary update”.

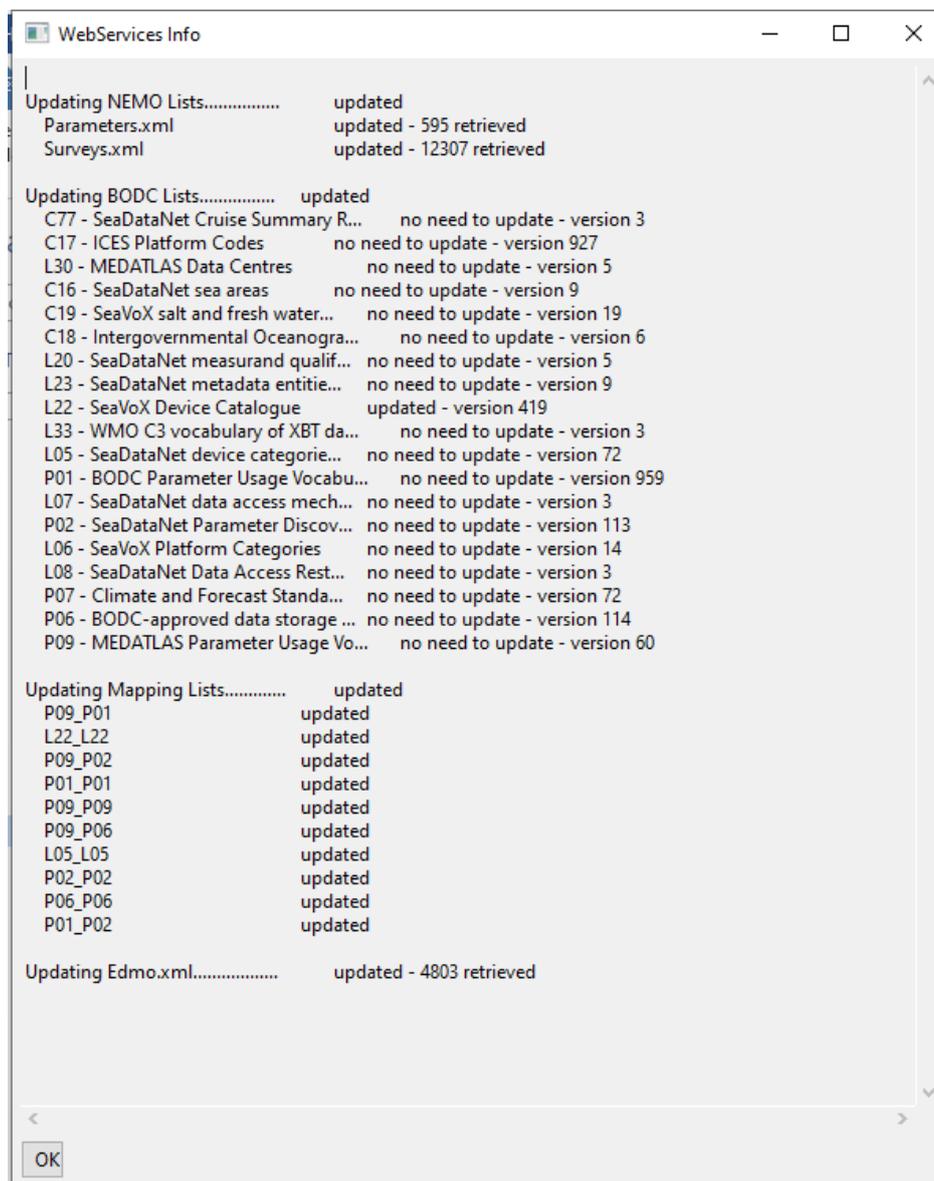
A window shows the progression of the update, where you can see the name of the list which is updated, and its rank among the total list to be updated:



While updating is running, it is possible to stop it by pressing the “Cancel” button ; NEMO tells which lists have been updated and where update was interrupted.



At the end of the updating process a summary is displayed:



For the lists which have version number, NEMO tests if the present version number of a given list has changed since last update of NEMO vocabulary lists. If no, “no need to update” is mentioned in the summary.

In the Web services info window, if FAILED is mentioned in front of a category of list (NEMO, Vocab, Mapping or EDMO), it means that:

- NEMO is not able to connect to BODC, Maris or Ifremer web services or
- no internet connection available on your PC at that moment or
- the firewall of your organization prevents such connection (please contact your network and security team) or
- the connection for your PC to the internet is not direct but is established through a proxy (in that case see §9).



## 5. Common functionalities

### 5.1. Global description of NEMO's main screen

NEMO's main screen is divided into 3 parts that are described in the sections below.

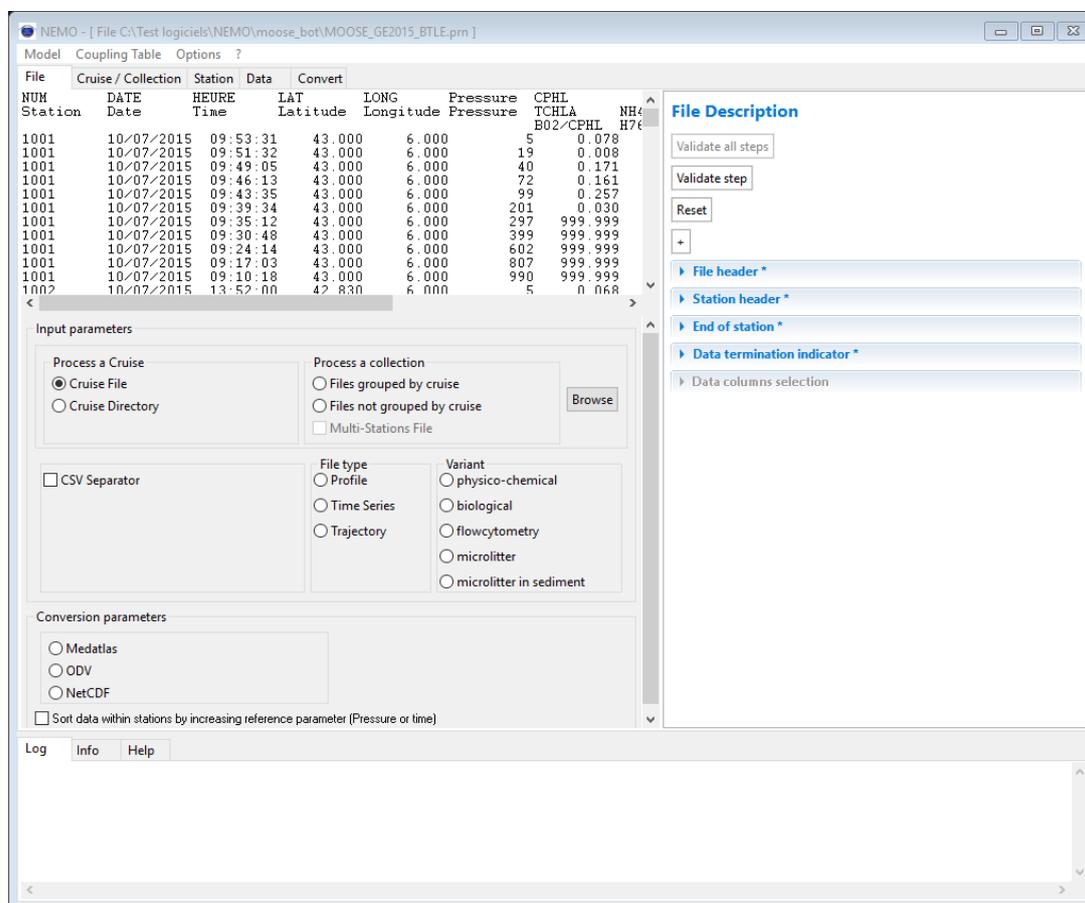


Figure 5 - NEMO main screen

#### 5.1.1. Left part of NEMO Screen

In this left part are the different tabs of NEMO, used to describe the input file(s) (see chapter 7). It is divided into 2 sub-parts, the upper one is used to display the input file, and the lower one is used to input some information about the file.

The input file is displayed on the 4 first tabs on NEMO so that the user can visualize and directly select information in the input file (see chapter 5.2).

#### 5.1.2. Right part of NEMO screen

Right part is used to describe metadata in the input file. It is also on this part that the user can validate or reset each step of the description.

### 5.1.3. Bottom banner of NEMO screens

All screens of NEMO have the same bottom banner which has 3 tabs named “Errors”, “Info” and “Help”.

#### 5.1.3.1. Tab “Log”

This tab gives information about the validation of a step in NEMO or about the data conversion in the last step of NEMO.

If the information is an error, it is written in red, if not it is written in green.

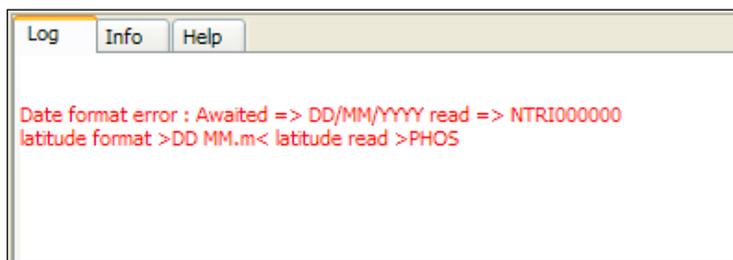


Figure 6 – Example of an error message

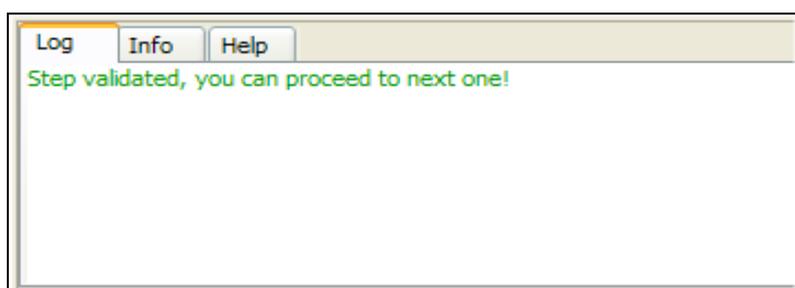


Figure 7 - Example of an informative message

#### 5.1.3.2. Tab “Info”

This tab gives information on the input file or the input directory, and also on the used model, if a model has been loaded.

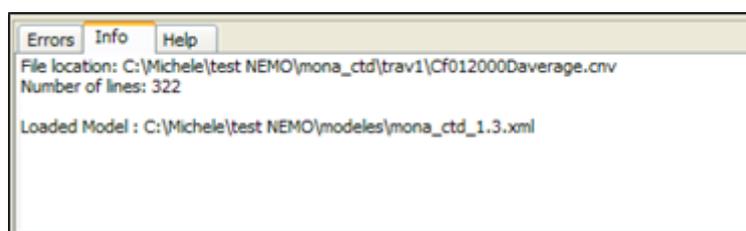


Figure 8 - Example of content of the Info tab

#### 5.1.3.3. Tab “Help”

This tab is a “help online” tab which gives information that can be useful for the user. There is one help per main tab of NEMO.

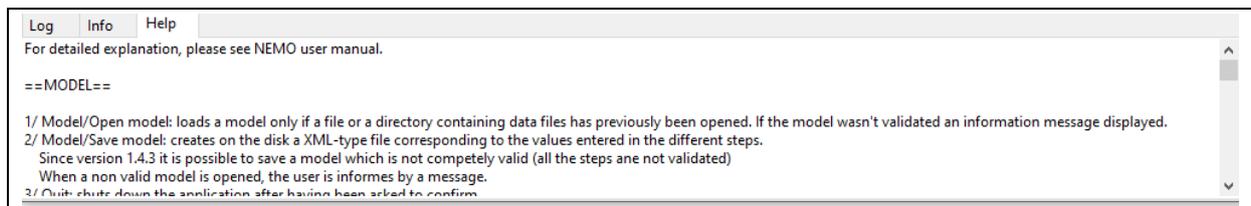


Figure 9 - Help window of the “Description” tab

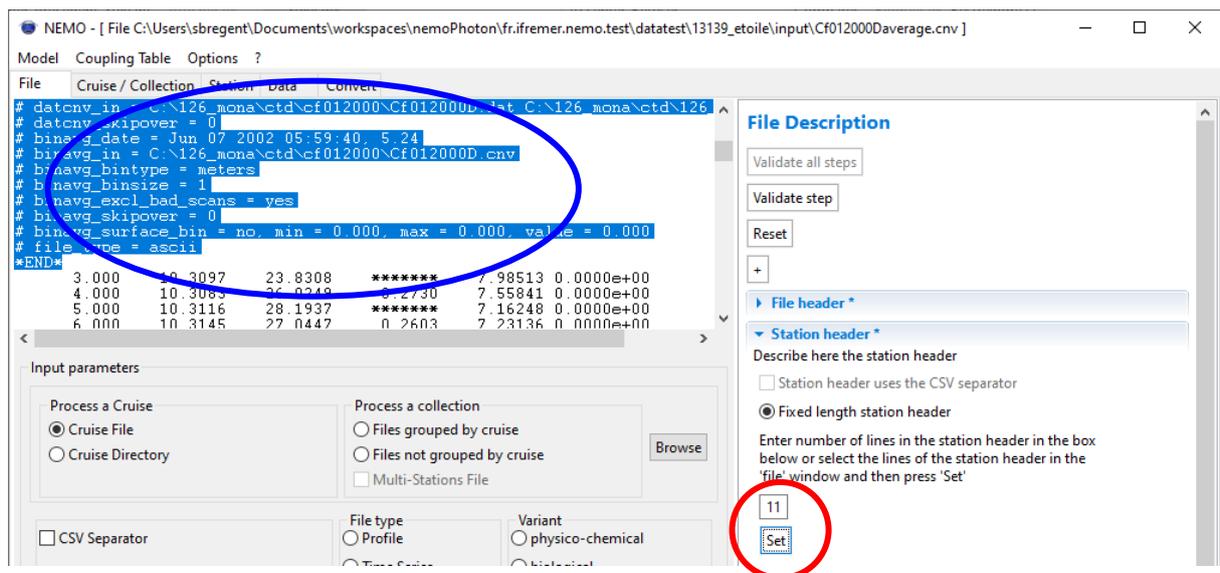
## 5.2. “Set” button

One principle of NEMO for description of the input file(s) is to select the information in the left part of the screen (where input file is displayed) and then to press the “set” button:

- to input the number of selected lines or
- to input the selected text or
- to input the position on the information (number of the line in the file, and start and end character on the line).

Example:

Number of lines in the station header: *The lines of the station header are selected in the left side of the screen (circled in blue), then when pressing the set button, the number of lines is set in the field (circled in red).*



Text in Indicator of end of data: The text which indicates the END of data is selected in the left side of the screen (circled in blue), then when pressing the set button, the text is set in the field (circled in red).

The screenshot shows the 'File Description' panel on the right side of the software interface. The 'Data termination indicator' section is expanded, and the 'END' option is selected. The 'Set' button is circled in red. In the data table on the left, the 'END' text in the first column of the first station is circled in blue.

Position of the latitude in the station header: Latitude value is selected in the left side of the screen (circled in blue), then when pressing the set button, the line and the start and end characters are set in the fields (circled in red).

The screenshot shows the 'Latitude' panel on the right side of the software interface. The 'Position' section is expanded, and the 'Line 1', 'Start 32', and 'End 40' fields are circled in red. In the data table on the left, the 'S21 57.10' value in the station header is circled in blue.

### 5.3. "Test" button

This button is used to verify that the input information is correct. It works for manual and automatic input.



On the example below, the user uses automatic input, he tells NEMO to read latitude on line 13 of each station header from character 14 to character 22 at format *NDD MM.mm*. Clicking on “Test” displays the value of latitude read by NEMO and translates it at the fixed MEDATLAS format, so that the user is able to check that the value is correct, and that he did not make any input error.

## 5.4. “Validate step” button

The 5 steps of NEMO have to be done sequentially; it is not possible to start with “Cruise” or “Station” tab, for example. It is not possible to go directly from “File” tab to “Data” tab.

To go from one step to another one, NEMO user has to click on the “Validate step” button, on the top right part of NEMO window.

Then NEMO makes some checks: on format, on mandatory fields...

If no error is detected, the current step is validated and it is possible to move to next one. A green informative message is written in the error window: “Step validated, you can proceed to next one”, and brackets appears on the tab name:

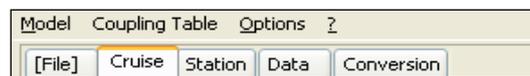


Figure 10 – [File] step is validated, current step is Cruise description not validated yet

If errors are detected, the step is not validated and it is not possible to move to the next one. NEMO user has to read the error message, correct the input and try to validate again.

## 5.5. “Validate all steps” button

The “validate all steps” button is only available on the File folder when input file(s) and model have been loaded.

This button allows validating all the steps of NEMO to go directly to the Convert folder for data conversion. It is very useful if the user runs NEMO several times with the same model.

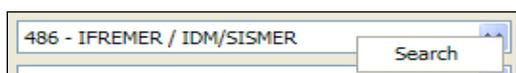
## 5.6. “Reset” button

The “Reset” button is used to reset the current step: it puts back the values to empty or default value in all the fields of the current window.

If the step was previously validated, by clicking on the “Reset” button its status moves back to “not validated”.

## 5.7. Search function

For some list of values containing a lot of records a search function is available. This function is implemented on all the fields concerning an EDMO code. To open the search function, right click on the field:



This Search function is described into details in chapter 6.10.

## 6. NEMO settings

NEMO needs some settings to be able to convert the files, **these settings needs to be defined before the first run of NEMO, using the Menu “Options”, “Settings”**.

This opens the following window:

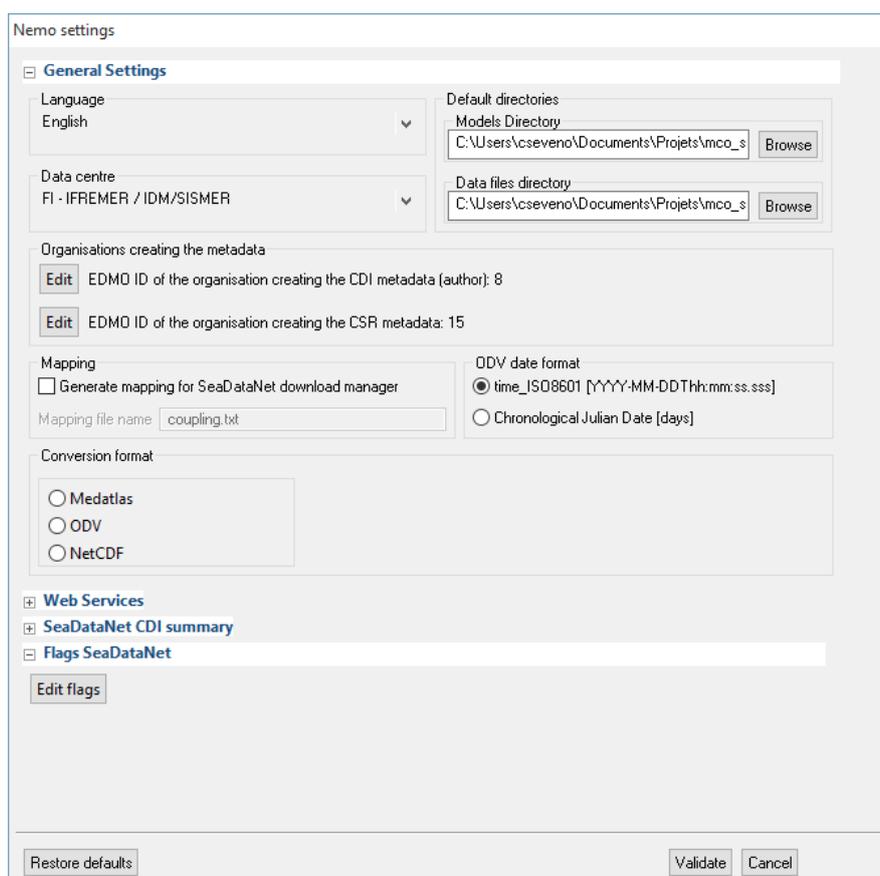
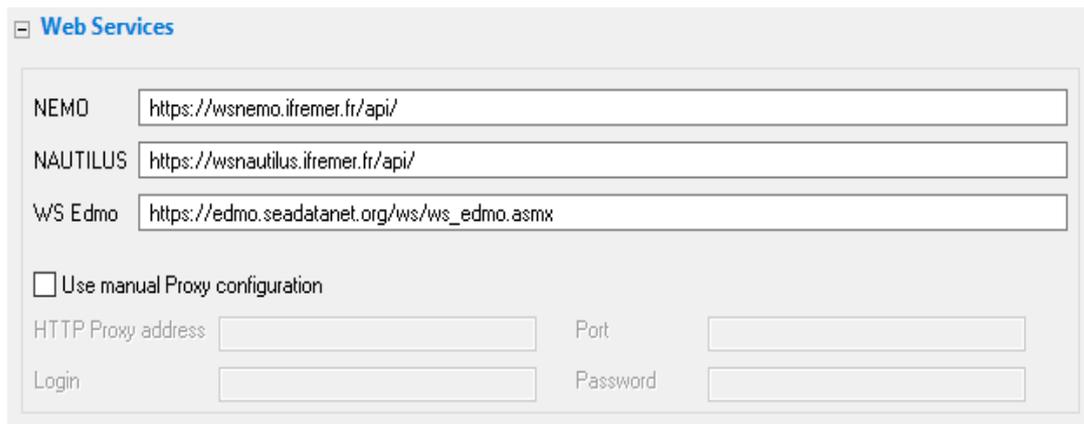


Figure 11 - Main NEMO Settings window

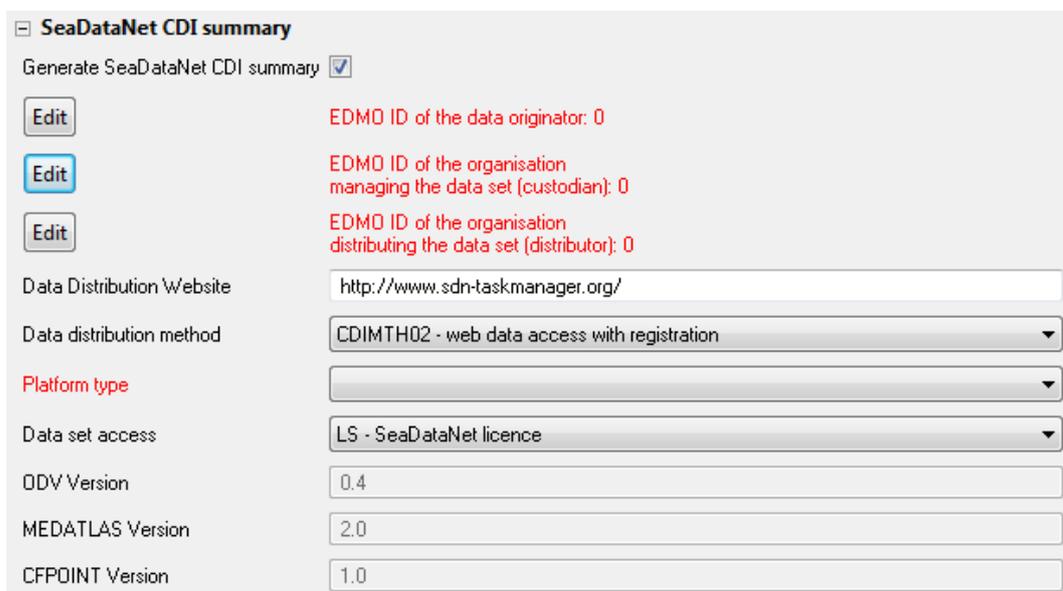
Clicking on “+Web Services” opens the following fields:



The screenshot shows the 'Web Services' configuration window. It contains three text input fields for service URLs: 'NEMO' with 'https://wsnemo.ifremer.fr/api/', 'NAUTILUS' with 'https://wsnautilus.ifremer.fr/api/', and 'WS Edmo' with 'https://edmo.seadatanet.org/ws/ws\_edmo.asmx'. Below these is a checkbox for 'Use manual Proxy configuration'. Underneath, there are four input fields: 'HTTP Proxy address', 'Port', 'Login', and 'Password'.

Figure 12 - NEMO Settings window, Web services information.

Clicking on “+SeaDataNet CDI summary” opens the following fields:



The screenshot shows the 'SeaDataNet CDI summary' configuration window. It features a checked checkbox for 'Generate SeaDataNet CDI summary'. There are three 'Edit' buttons, each followed by a red text label: 'EDMO ID of the data originator: 0', 'EDMO ID of the organisation managing the data set (custodian): 0', and 'EDMO ID of the organisation distributing the data set (distributor): 0'. Below these are several configuration fields: 'Data Distribution Website' (text input with 'http://www.sdn-taskmanager.org/'), 'Data distribution method' (dropdown menu with 'CDIMTH02 - web data access with registration'), 'Platform type' (dropdown menu), 'Data set access' (dropdown menu with 'LS - SeaDataNet licence'), 'ODV Version' (text input with '0.4'), 'MEDATLAS Version' (text input with '2.0'), and 'CFPOINT Version' (text input with '1.0').

Figure 13 - NEMO Settings window, CDI summary information

## 6.1. Default language

NEMO is bilingual (English – French) and the default language may be changed here. To be taken into account, once the language has been changed, user has to quit and restart NEMO.

## 6.2. Default data centre

The data centre is the MEDATLAS code (SeaDataNet common vocabularies – List L30) of the data centre which manages the data (used only in MedAtlas format).



sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataNet - The pan-European infrastructure for marine and ocean data management

## 6.3. Default directories

Default directories have to be defined for the models and for the data files. These directories will be used by default when opening browse windows for data files and models.

## 6.4. CDI Author

EDMO ID of the organisation creating the CDI metadata is mandatory, because it is the EDMO code of this organisation and the LOCAL\_CDI\_ID which determine the iniquity of a CDI records.

## 6.5. CSR Metadata

EDMO ID of the organisation creating the CSR metadata. This EDMO code is needed to use a local CSR Identifier to create a CSR reference (see 7.2.2.1 Reference).

## 6.6. Mapping and coupling table

If the “Generate mapping for SeaDataNet Replication Manager” check-box is clicked, NEMO will insert all the converted stations LOCAL\_CDI\_IDs in a java database included into NEMO software. This coupling table gives the mapping between the unique identifier of a CDI element (LOCAL\_CDI\_ID which corresponds to a vertical profile, a time series or a trajectory) and the file in which this element can be found. It is managed by the “Coupling table” menu of NEMO (see paragraph 7.7).

## 6.7. ODV date format

For time-series in ODV output files, you have to choose date format that can be either ISO8601 or Chronological Julian Date; by default the format is ISO8601.

## 6.8. Conversion format

This menu enables user to choose his default conversion format which is available on the File tab when starting NEMO.

## 6.9. Web services

Web services are used for list of values update, addresses are fulfilled by default when the software is installed and they should not be modified.

NEMO uses 4 different web services:

- NEMO Web services to update parameters (format and default values of MEDATLAS parameters), data types and cruise lists
- NAUTILUS Web services used by IFREMER only for “server initialisation” on the cruise step
- BODC Web services to update vocabularies lists and mappings.
- EDMO Web services to update the list of EDMO IDs.

If connection to internet makes use of a PROXY, check on “Use Manual Proxy Configuration” and fill information according to your configuration. Please see chapter 9.



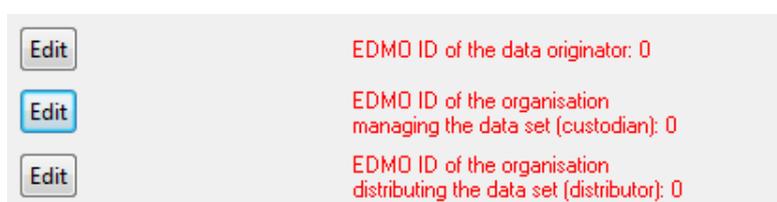
## 6.10. Default values for SeaDataNet CDI summary

NEMO is able to create a file which can be used by MIKADO to generate XML CDI files. If a CDI summary file is needed when using NEMO, the user has to click on the “Generate SeaDataNet CDI summary” checkbox and then to input the mandatory CDI information.

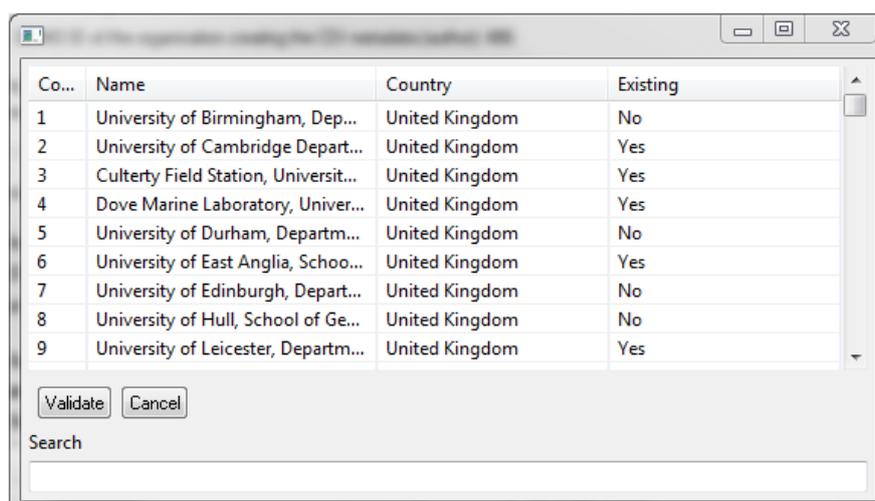
This CDI summary file needs information, which is defined by defaults in this part of NEMO settings. This CDI information may vary from one dataset to another and it is up to the user of NEMO to update this information if necessary.

These defaults values are, among others, the EDMO codes of the different organisations responsible for the data set(s): Data originator, data distributor or data custodian. At present, the list contains around 1500 entries, so to help NEMO user to find a value in the list a search function has been developed.

To open the search function, click on an Edit button...



...to open the search window:



Then the user can type in "Search" field the character string he is looking-up, to filter the list of organisations (in the following example, looking up 'sism'):

Code	Name	Country	Existing
486	IFREMER / IDM/SISMER	France	Yes
1057	IFREMER / TSI/AS-SERVICE ACOUSTIQUE SISMIQUE	France	Yes

Validate Cancel

Search  
sism|

Two fields concern the data distribution:

- Data distribution Website: the default value <http://www.sdn-taskmanager.org/> should not be changed; it is the address of the central CDI web interface, where SeaDataNet users will have to connect to search data.
- Data distribution method: gives the access mechanism of the data set. The list of values comes from SeaDataNet common vocabularies (List L07) gives the access mechanism for the data set.

Platform class: this mandatory field for CDI described the type of platform which has collected the dataset. The list of values comes from SeaDataNet common vocabularies (List L06).

Data set access: this mandatory field for CDI described the data access restriction policies of the dataset. The list of values comes from SeaDataNet common vocabularies (List L08).

## 6.11. Quality flags mapping to SeaDataNet flags

NEMO is able to convert input file with quality flags into SeaDataNet quality flags scale.

Different quality flag mappings can be used and safeguarded within NEMO software.

The flag window can be opened using the “Edit flags” button, in the Nemo settings window.

The flag window is divided into 2 parts: (i) on the top is the list of existing mappings, (ii) on the bottom are the details of each mapping to SeaDataNet quality flag scale.

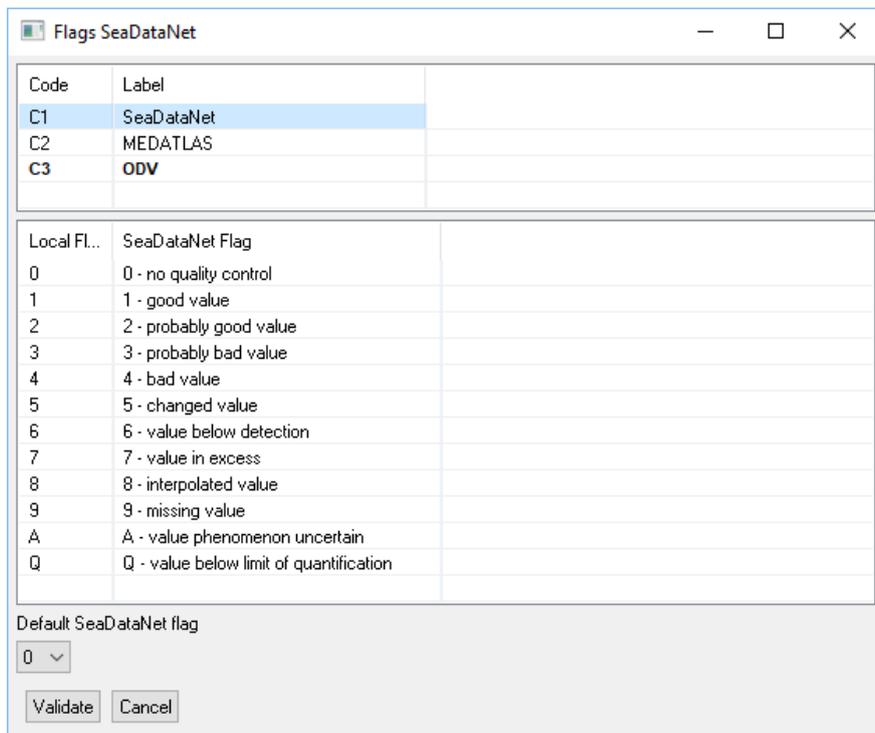
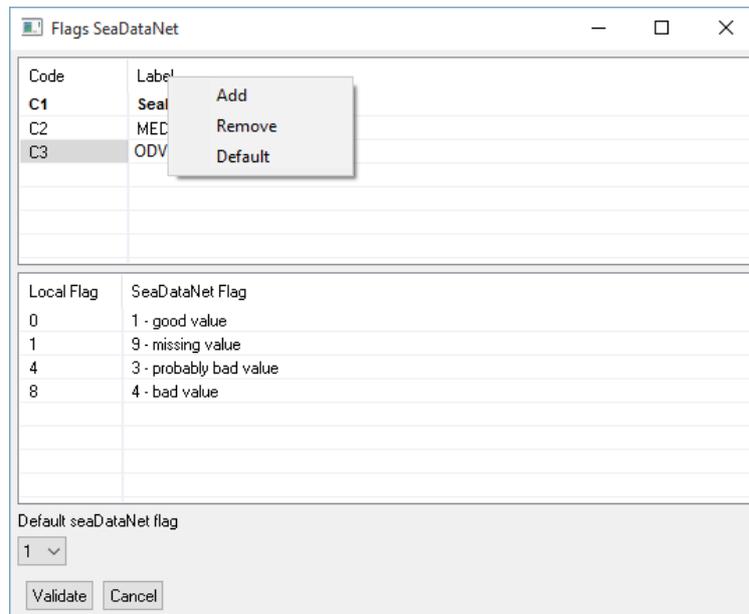


Figure 14- Mapping quality flag scale. On the top: list of existing mappings, on the bottom: details of the selected mapping

### 6.11.1. Add a new QC flags mapping

To add a new mapping:

- right click on the list of mapping to open the contextual menu:
- click on "Add" to add a new line in the list of mappings :



- change the label of the new mapping :

Code	Label
C1	SeaDataNet
C2	MEDATLAS
C3	DDV
WDC	Mapping WDC OCL QC flag

Local Flag	SeaDataNet Flag

Default seaDataNet flag  
 1 ▾  
 Validate Cancel

- Then in the bottom part of the window, enter the flag mapping (same principle than previously, right click opens a window which allows adding or removing a line from the mapping table). Once a new line is created, the value of the local flag, and the mapping between this local flag and SeaDataNet QC flag need to be input as following :

Code	Label
C1	SeaDataNet
C2	MEDATLAS
C3	DDV
WDC	Mapping WDC OCL QC Flag

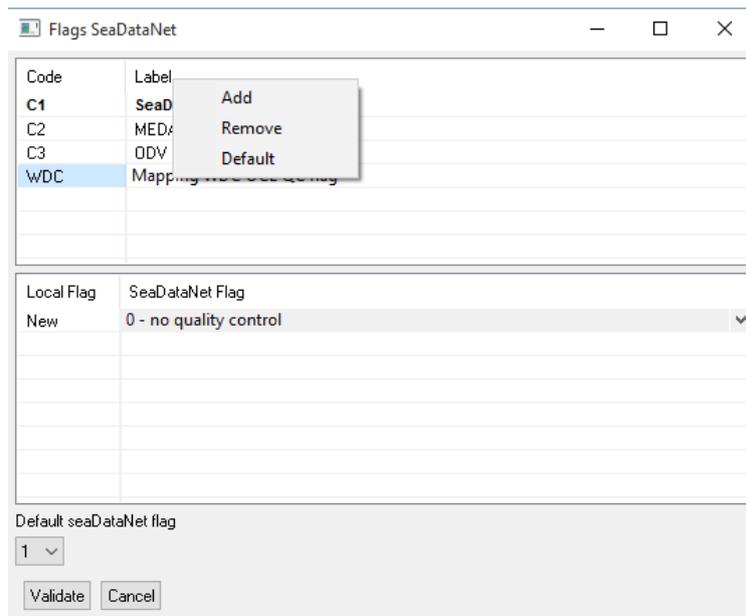
Local Fl..	SeaDataNet Flag
G	1 - good value ▾

Default SeaDataNet flag  
 0 ▾  
 Validate Cancel

### 6.11.2. Remove an existing QC flags mapping

To remove an existing mapping:

- select the line corresponding to the mapping that needs to be deleted
- right click on the list of mappings to open the contextual menu :



- click on “Remove”

### 6.11.3. Define a default mapping for quality flags

To define a mapping « by default », right click on the mapping in the mapping list and select Default in the contextual menu. The default mapping is written in bold characters in the mapping list.

#### **IMPORTANT WARNING:**

**If you are using an existing model, be aware that the flag scale is loaded from the model and is not the default flag scale that you may have added or changed in the settings of NEMO after the loading of the model.**

**If you need to change the flag scale, create a new model or use a model with the same flag scale.**

The mapping used in Nemo conversion will be displayed in the **Station description** step.

- If an existing model is used, the mapping is loaded from this model
- If no existing model is used, the mapping is the default one defined here.

## 6.12. Default SeaDataNet flag

By default when a file is converted to MEDATLAS, ODV or netCDF format, all quality flags are set to 0 (No quality control).

Some users may know that the data that they want to convert have been checked and are all good, it is then possible to set the Default SeaDataNet flag to 1 or 2, so that in the output file of NEMO all quality flags will be set to 1 (good value) or 2 (probably good value).

## 6.13. Restore defaults

Restore initial configuration values. This action can't be cancelled.



## 6.14. Exit NEMO settings

There are 2 ways of exiting NEMO settings window:

- click on Validate to save changes and to exit settings window, or
- click on Cancel to exit without saving the changes.

Note that you need to quit and re-start NEMO to take into account new quality flags mappings at Station step.

## 7. Running data file conversion

To convert input file(s), NEMO user has to proceed 5 steps, which correspond to the 5 tabs in NEMO interface:

1. Describe the type of file and the type of measurements
2. Describe the cruise or the data collection
3. Describe the station information
4. Describe the measured parameters
5. Convert the input file(s)

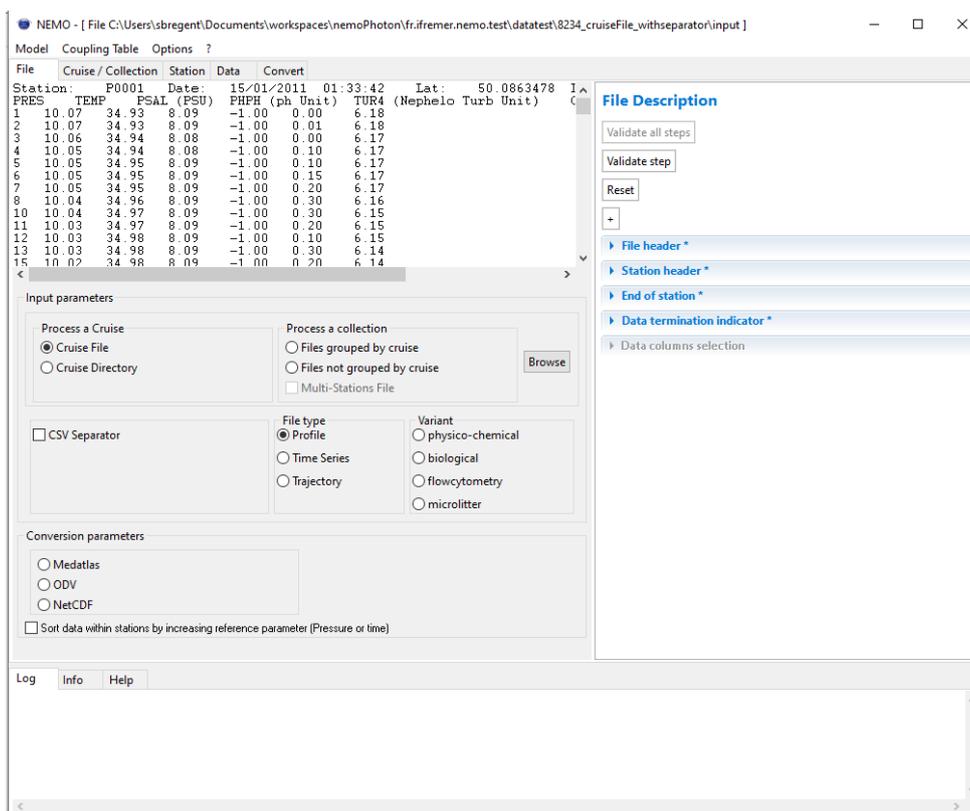


Figure 15- Main screen of NEMO with the 5 tabs corresponding to the 5 steps of conversion

During this chapter we will describe each of these steps.

## 7.1. File description

### 7.1.1. Very important requirement

NEMO can translate almost any kind of ASCII format, but in one execution, NEMO will convert only similar files: the files are homogeneous (same data type: e.g. CTD or Bottle but not both), the information must be located at the same place in all the files that NEMO will reformat in one execution.

Examples:

- User wants to reformat CTD, bottle and current meters of one cruise, he will have to run NEMO three times: one for CTDs, one for bottles and another one for current meters.
- User wants to reformat a set of XBTs collected during several cruises :
  - User can do it in one execution if all the XBTs have the same input format.
  - User must run NEMO three times if he has 3 different input format of XBTs (SIPPICAN, DEVIL and SPARTON)

### 7.1.2. Description of the type of input file(s)

The “File” step consists first in a high level description of the file(s) that needs to be converted: this description is included in the left side of the “File” window.

First step is to describe the type of dataset that is going to be converted (=input files):

- Are the data related to **one** cruise (Process a Cruise)?
  - If yes, is it one file for one cruise (one file for all stations)?
  - Or, is it a set of files in one directory (one file for each station)?
- Are the data related to **several** cruises (Process a collection)?
  - If yes, are they grouped by cruises (one directory per cruise)? Or
  - Are they not grouped by cruise (one directory with all the files of all cruises)?
  - Are the files multi-station files or not?

In case of data conversion related to a collection of cruises or a collection of stations, cruise metadata which are mandatory in MEDATLAS are not available, so data conversion in MEDATLAS is not allowed; only conversion to ODV and netCDF will be available in “Conversion” tab.

Once previous information is given, the user gives the path to input file(s) to NEMO, using the “Browse” button, and the first file of the first input directory (in case of multiple files) or the specified file (in case of one unique input file) is opened in NEMO window:

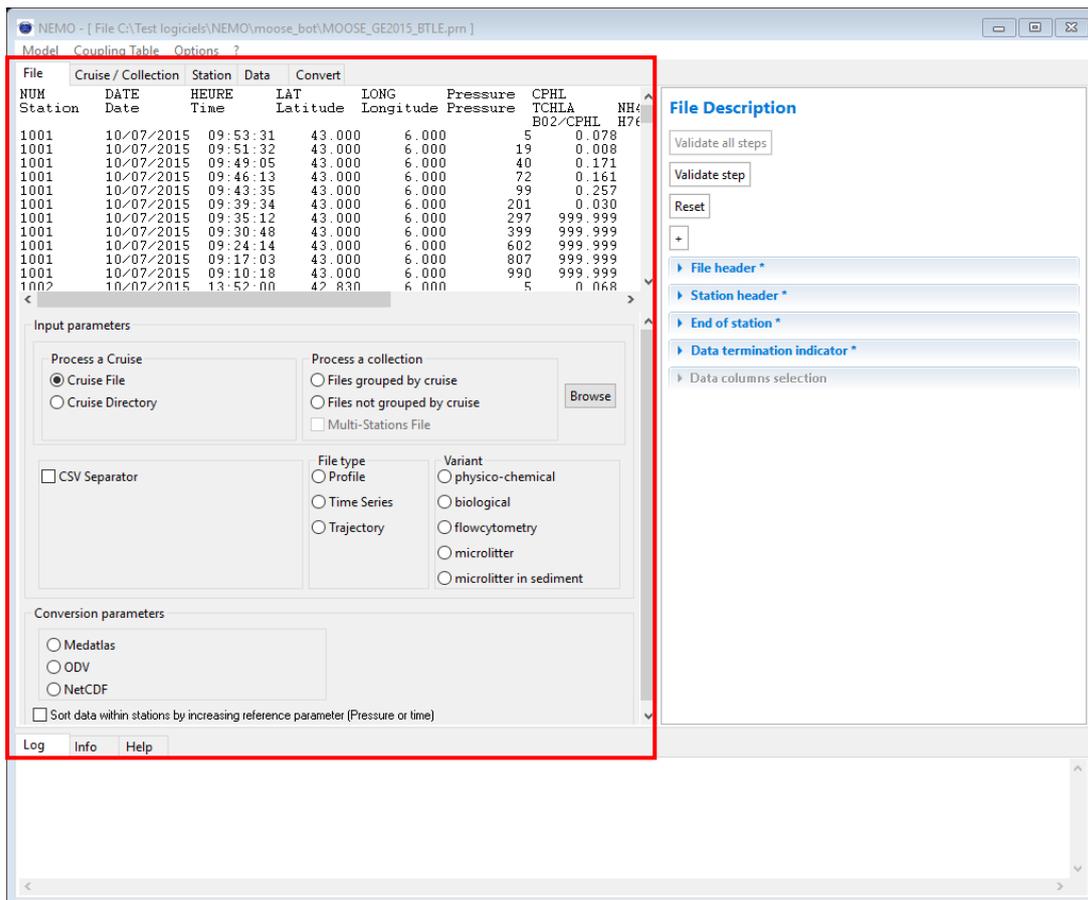


Figure 16– File description screen of NEMO – Left part (in red) for the description of the type of input file(s)

Next, the user must declare if the file(s) contains separators (and which one) or not.

**Remark:** In the case of data file with separators, if the data are not displayed as a table (i.e. “use a table to display data” is checked in Data column section), NEMO will rewrite the files without separators before moving to the next step. During this stage of rewriting the files, an informative message is written in the log window (with progression bars on Data analysis and writing files). The files are rewritten in a directory called *PF\_[name of the input directory]*. Next, NEMO needs to know if the files are related to vertical profiles, time series or trajectories (or none of them, for biological, flow cytometry or microlitter variants).

If you want to generate ODV variants (biological, flow cytometry or microlitter), choose the appropriate one in the Variant section.

Finally, the user chooses the conversion format:

- choose between MEDATLAS, ODV or netCDF format by checking the appropriate box (depending on previous parameters, some formats can be disabled)
- check “Sort data within stations by increasing reference parameter (Pressure or time)” button to be sure that the measured parameters are sorted by the reference parameter in the output file. **Be careful that doing so you can mix up and down casts CTD data for example.**

### 7.1.3. Description of the file(s)

Once the type of file have been described, the user must describe the file itself, this second part of the “File” step is included in the right side of the “File” window:

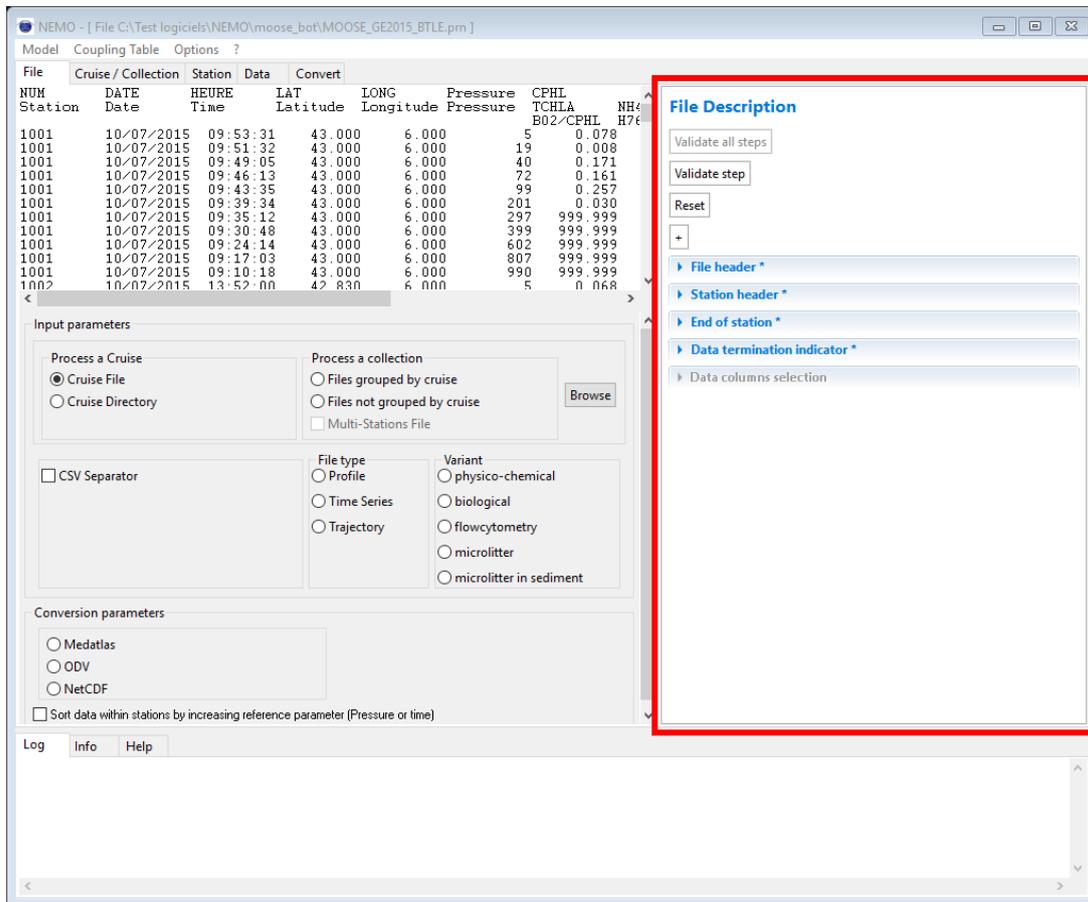


Figure 17– File description screen of NEMO – Right part (in red) for the description of input file(s)

4 fields need to be fulfilled:

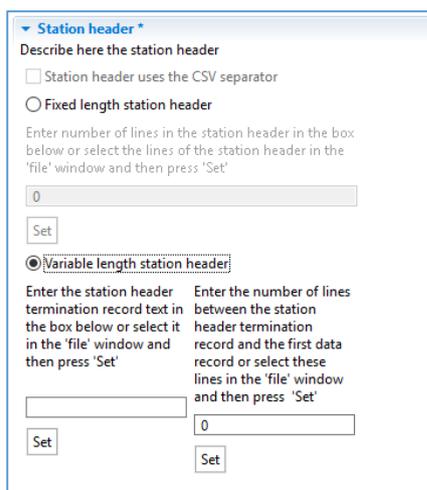
#### 7.1.3.1. File header

This field describes the number of lines of the file header. A file header is generally present when it is a multi-station file, and that there are some lines at the beginning of the file which are related to all the stations. These lines are not repeated in the file.

The number of lines of the file header can be input manually or selected in the left part of the screen in the file and then input through the “Set” button (cf. paragraph 5.2).

This number of lines can be different from zero only if you selected “Cruise File” in the description of the type of input file(s).

### 7.1.3.2. Station header



This section describes the station header.

When data contains separators, station headers may not have separators. In this case, let the “Station header uses CSV separator” unchecked.

Usually, the station header can be described by its number of lines, if it is constant from one station to another. A station header is a set of lines containing information on the station. These lines are the lines before the data lines; they are repeated for each station.

The number of lines of the station header can be input manually or selected in the left part of the screen in the file and then input through the “Set” button (cf. paragraph 5.2).

If the number of line of the station header changes from one station to another (there is a variable length of the station headers) the text that identifies the end of the station header (station header termination record text) must be described. If this text is not directly preceding the first data line, the user must indicate the number of lines between this text and the first data line. Both information could be input manually or selected in the left part of the screen in the file and then input through the “Set” button (cf. paragraph 5.2).

If there is no specific station header lines, let the value equal to 0.

### 7.1.3.3. End of station

This field describes the number of lines of the end of a station. These lines may be present when it is a multi-station file and there are several lines between each station. **The data termination indicator (see below) must not be taken into account in this number of lines**, so if it is the only line between 2 stations, the number of line for the end of station must be set to zero.

The number of lines of the end of station can be input manually or selected in the left part of the screen in the file and then input through the “Set” button (cf. paragraph 5.2).

### 7.1.3.4. Data termination indicator

This section describes the indicator of the end of a station in a file.

▼ **Data termination indicator \***

Enter here what characterises the end of data measurements of one station

The last line of the station which is : \_\_\_\_\_

EOF (End of File)

One empty line

One constant character string

Input the text that identifies the end of a station in the box below or select it in the 'file' window and then press 'Set'

\_\_\_\_\_

Set

---

The first line of the next station starting with : \_\_\_\_\_

A constant character string or regular expression

Regular expression

Enter the text that identifies the beginning of the next station in the box below or select it in the 'file' window and then press 'Set'

\_\_\_\_\_

Set

TEXT FILES (NON CSV): A character string different from the one of the previous station

Input the maximum length of the character string that identifies the beginning of the next station or select it in the the 'file' window and the press set

\_\_\_\_\_

Set

CSV FILES WITH SEPARATOR: A character string different from the one of the previous station

Input the column number (starting from 0) or select it in the the 'file' window and the press set

\_\_\_\_\_

Set

**For single station file**, most of the time the end of file (EOF) is the indicator of end of data, but it may be an empty line at the end of the file or a line with a specific text (*like in MEDATLAS file for example where the last line of a station is a line of default values, that must not be taken into account as measurements*) that can be input manually or selected in the left part of the screen in the file and then input through the “Set” button (cf. paragraph 5.2).

**For multiple stations file**, Nemo needs information to be able to know that station is changing. You can specify how the current station ends, or how the next station begins (if there is no separator between stations).

If you use a separator to indicate the end of the station, this separator can be an empty line or a set of specific characters that can be input manually or selected in the left part of the screen in the file and then input through the “Set” button (cf. paragraph 5.2).

If you do not use separator, you can indicate how next station starts in two ways:

- “a constant character string or a regular expression”, if all station begin with the same character string, or different character strings that can be defined by a regular expression
- For “TEXT FILES (NON CSV) a character string different from the one of the previous station”, if all stations begin with a character string totally different that is present on each line. In this case, input the length of the character string that Nemo must compare between each line, or select the area in the left part and click on the “set” button.

The screenshot shows the Nemo software interface with the 'File' window open, displaying a list of data rows. The 'Input parameters' section is visible, with 'Process a Cruise' selected. The 'File Description' section is active, showing options for 'File header', 'Station header', 'End of station', and 'Data termination indicator'. The 'Data termination indicator' is set to 'TEXT FILES (NON CSV)' with a length of 2.

- For “CSV FILES WITH SEPARATOR: A character string different from the one of the previous station”. If all station contain a value totally different in a given column and present on each line. Input the column number (starting from 0) or select it in the ‘file’ window and press set.

The screenshot shows the Nemo software interface with the 'File' window open, displaying a list of data rows with various columns. The 'Input parameters' section is visible, with 'Process a Cruise' selected. The 'File Description' section is active, showing options for 'File header', 'Station header', 'End of station', and 'Data termination indicator'. The 'Data termination indicator' is set to 'CSV FILES WITH SEPARATOR' with a column number of 5.



Examples:

**1/ in a MEDATLAS file**, the data termination indicator is the line starting with “-999.9 99.999”. Choose “One constant character string” and select it in the file window. It is not necessary to input all the line; the first significant characters are enough.

**2/ For ODV multiple stations file**, data termination indicator must be “a constant character string or regular expression”, without checking “regular expression”. In that case NEMO needs to detect the text that identifies the beginning of the next station, which is a specific set of characters identifying the first line of all the stations in the input file. This text can be input manually or selected in the left part of the screen in the file and then input through the “Set” button (cf paragraph 5.2).

**3/For a file like below:**

```
11000512021200000015801846013165800932      013   055
11000512031200000815501864013366240998      013   078
11000512021715000016201844013075970968      006   077
11000512031715000816001842013095870947      013   077
11020512021440000017601869012965660945      016   035
11020512031440000817001864013055930978      023   048
11085512021910000019101736011625170882      013   050
```

The first two stations begin with the same string. But the third and fourth stations are not exactly the same (in yellow”).

In this case, data termination indicator must be “a constant character string or regular expression”, with checking “regular expression”.

The regular expression to use here is “**110005120212000000**”

Where “.” indicates “any character” and “\*” indicates “0 or many times”.

When the file description is over, click on “Validate step” (cf. paragraph 5.4) to move to next step.

### 7.1.3.5. Data columns selection

If the file(s) are declared containing separators, the *Data columns selection* section is enabled.

Check “use a table to display data”, to display data in a table (instead of raw text) in the Data tab.

If the file(s) contains the parameter names as column titles, check “The column titles are in the input file”, select the line containing the titles and click on “Set”.

**Data columns selection**

Check if you want to display data in a table. Set the line number where the data column headers must be read.

Use a table to display data

The column titles are in the input file (select the line then click on set)

1

Set

## 7.2. Cruise description

This step is performed only in case of

- processing one cruise: that means that in “File” tab, “Cruise file” or “Cruise directory” has been selected

and / or

- converting to MEDATLAS or netCDF format

The screenshot shows the NEMO software interface. The main window displays a table of data for five stations (1, 5, 7, 10, 11) with columns for parameters like NTRI, NTRA, PHOS, AMON, CPH1, and CHLB. The right-hand panel contains a 'Cruise / Collection Description' section with buttons for 'Validate step', 'Server initialisation', 'XML Initialisation', and 'Reset', along with expandable sections for 'Reference', 'Location', 'Data Source', 'Archiving Centre', 'Type of data', and 'Comments'.

Figure 18 - Cruise description screen of NEMO

### 7.2.1. Ways of fulfilling the information

There are 3 ways of fulfilling the cruise information in NEMO:

- Server initialisation



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This is specific for IFREMER/SISMER use; it uploads the cruise information from SISMER database using the NAUTILUS Web service.

Available for MEDATLAS and netCDF only.

- XML initialisation

This is to import the information from SeaDataNet CSR XML file (generated by MIKADO or other tools). The actual version of NEMO is compatible with the version ISO-19115 and ISO-19139 of CSR XML schema.

- Manual input

If no automatic import of CSR information is available, NEMO user can manually input the information.

## 7.2.2. Cruise information

Several sections must be filled; they are described in this chapter.

### 7.2.2.1. Reference

This section describes the reference of the cruise; It concerns all formats:

<b>▼ Reference *</b>
Input the references of the cruise / collection
Cruise / collection reference *
FI35200110014
input only one of the fields below: Local CSR Identifier
<input type="text"/>
BSH CSR Reference
<input type="text"/>
Cruise / collection name *
DIAPALIS 2
Ship *
35AY - Alis

Cruise reference: MANDATORY

in the example given, it is a MEDATLAS reference which is composed as described in the MEDATLAS format description [2].

Note: the cruise reference is used in the LOCAL\_CDI\_ID which is composed as: **[Cruise Reference]\_[Station Code]\_[Data type]** (station code is optional) .

Local CSR Identifier: OPTIONAL

If set, this identifier will be used to create the SDN reference in the output file.

Example:

```
<sdn_reference xlink:href="https://seadata.bsh.de/cgi-csr/XML/xmlDownload_V2.pl?edmo=486&identifier=localCSR" xlink:role="isObservedBy" xlink:type="SDN:L23::CSR"/>
```



Nemo checks that the local CSR reference exists in the catalogue for the EDMO code set in the Nemo settings “EDMO ID of the organisation creating the CSR metadata” field. If not, Nemo displays a WARNING.

#### BSH CSR Reference: OPTIONAL

If set, this identifier will be used to create the SDN reference in the output file.

Example:

```
<sdn_reference xlink:href="https://seadata.bsh.de/cgi-csr/XML/xmlDownload_V2.pl?csrref=20057238" xlink:role="isObservedBy" xlink:type="SDN:L23::CSR"/>
```

Nemo checks that the BSH CSR reference exists in the catalogue. If not, Nemo displays an ERROR.

**Note: it is not possible to input both local and BSH references.**

Cruise name: MANDATORY in MEDATLAS and netCDF

Ship: MANDATORY in MEDATLAS only

The list of ship is the C17 ship list of SeaDataNet common vocabularies.

If set, the ship code is automatically used to create a SDN reference in the output file.

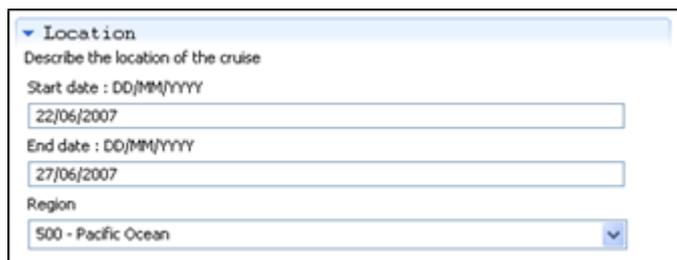
Example:

```
<sdn_reference xlink:href="https://www.seadatanet.org/urnurl/SDN:C17::35AY" xlink:role="isObservedBy" xlink:type="SDN:L23::NVS2CON"/>
```

Note: since NEMO 1.6.0, the Cruise tab is available for ODV. The reference is not asked at the end of the process. The Cruise column value in the ODV file is the Cruise / collection name field.

### 7.2.2.2. Location

This section describes the temporal and geographical location of the cruise. It concerns MEDATLAS (mandatory) and netCDF (optional). The 3 fields are mandatory in MEDATLAS:



Location  
Describe the location of the cruise  
Start date : DD/MM/YYYY  
22/06/2007  
End date : DD/MM/YYYY  
27/06/2007  
Region  
500 - Pacific Ocean

Region: the list of regions is the C19 sea areas list of SeaDataNet common vocabularies.

### 7.2.2.3. Data source

This section describes the source country, laboratory, project and chief scientist of the cruise. It concerns MEDATLAS (mandatory) and netCDF (optional). The country and the chief scientist are mandatory in MEDATLAS.



▼ Data Source  
Describe the origins of the Cruise's data

Country  
35 - France

Laboratory  
CNRS, plusieurs universités françaises (de Bordeaux I, d'Aix-Marseille II e

Chief scientist  
BEAUFORT Luc

Project

Country: the list of countries is the C18 IOC country codes list of SeaDataNet common vocabularies.  
Laboratory, Chief scientists and Project are free text fields.

#### 7.2.2.4. Archiving centre

This section describes the data centre where data are archived and the MEDATLAS code for the data availability. It concerns MEDATLAS (mandatory) and netCDF (optional).

▼ Archiving Centre  
Describe the archiving centre of the Cruise's data

Data centre  
F1 - IFREMER / IDM/SISMER

Confidentiality  
P - Public  
P - Public  
L - Limited  
C - Confidential

Data centre: the list of data centres is the L30 MEDATLAS data centres of SeaDataNet common vocabularies. By default the data centre is the one given in NEMO settings (cf. paragraph 6.2).

Confidentiality: it corresponds to the MEDATLAS code for data availability that can take one of the following values: P – Public, L – Limited, C – Confidential.

#### 7.2.2.5. Type of data

This section deals with the ROSCOP code of data found in the files that are going to be converted.

▼ Type of data  
Add or modify the types of data measured during the Cruise

CODE	Number	QC	Sensor
H10 - CTD stations	8	N	true
H21 - Oxygen	8	N	false

Data type code is the ROSCOP code; it is the C77 ICES ROSCOP data types list of SeaDataNet common vocabularies.

At least one data type with Sensor at true is mandatory.

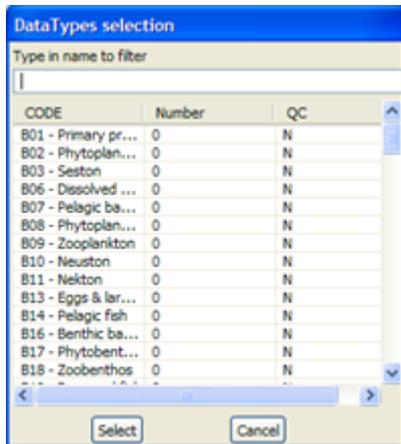
“Number” represents the number of stations with the corresponding data type in the file; it cannot be equal to 0. In this example, the cruise file contains 8 CTD stations; each of them has dissolved oxygen measurements.

A right click on the list opens the following window:



- List selection
- Move current type up
- Move current type down
- Delete current type

To add a code in the list, click on “List selection” and you will get a window to choose a new data type:



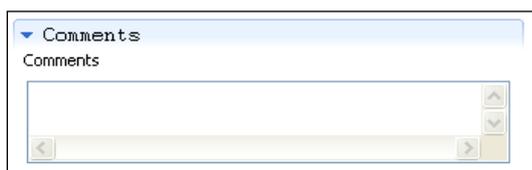
When the data type is selected in the list, click on “Select” to add it in the list of data types of the cruise, and then change the number of stations which is set to 0, by default.

To delete one or several data types: select the line(s) to be deleted by left click on the left hedge of the data type lines (use Shift and/or Control to select several lines), then right click on the list and select “Delete current type” in the menu.

It is also possible to move up or down a current data type in the list.

### 7.2.2.6. Comments

This section is used to input comments about the cruise or the data measurements. There is no limitation on the number of comment lines.



When the cruise description is over, click on “Validate step” (cf. paragraph 5.4) to move to next step.

## 7.3. Station description

This step is performed to indicate to NEMO where to find the mandatory or important information in the station header(s) of the file(s). This information is changing following the File type (vertical profiles, time series or trajectories) and the variant (physico-chemical, biological, microlitter or flow cytometry data)

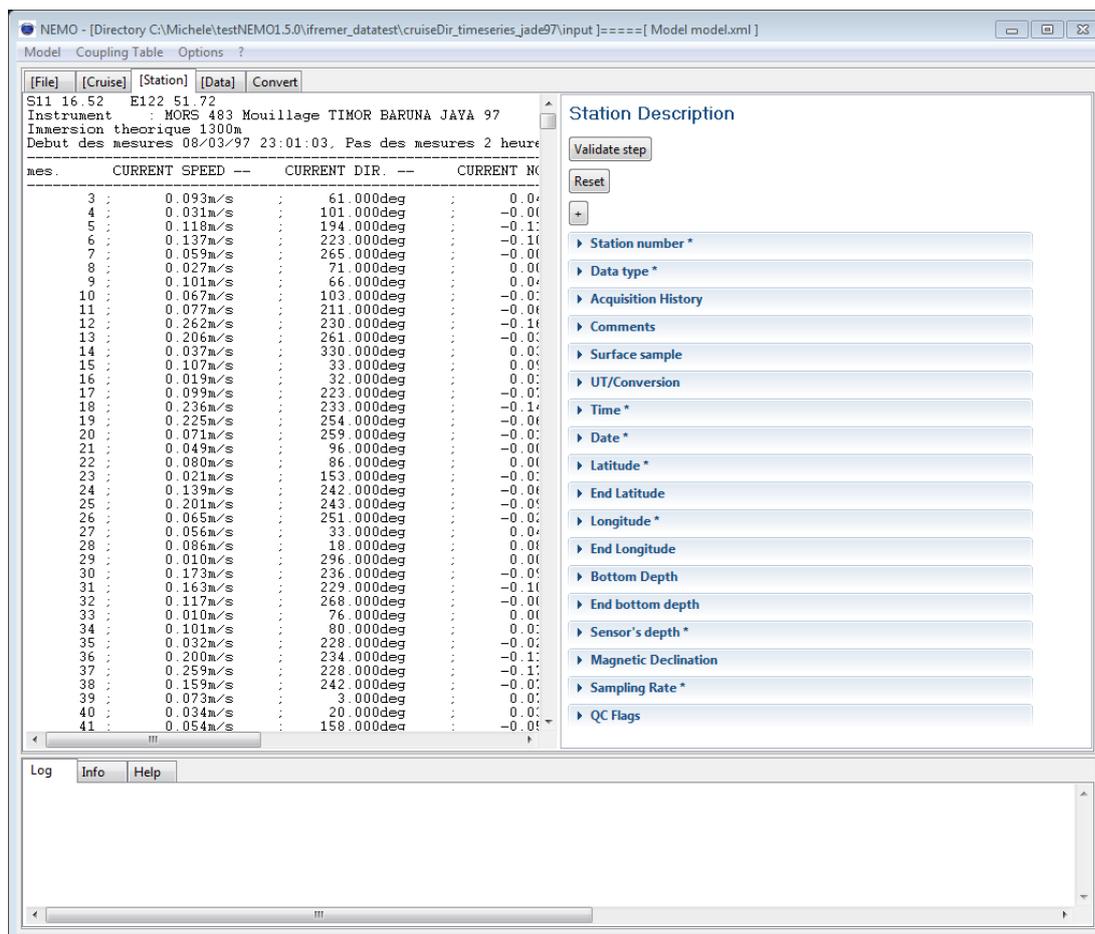


Figure 19 - Station description window with all possible fields

Mandatory fields are: Station code, Data type, Time, Date, Latitude and Longitude for all data types and variants.

Sensor Depth and Sampling rate are mandatory for time series

Fields Acquisition History, Comments, Surface Sample, UT/Conversion, End Latitude, End Longitude, End Depth and Sampling Rate are not mandatory and can't be described on a data line. .

End Latitude, End Longitude and End Depth (if existing) are the last data line value of Latitude, Longitude and Depth. These information can be described in the station tab or can be automatically filled by NEMO if read in the data lines.

For trajectories, fields Latitude, Longitude, Depth (if existing) must be described on a data line

When the station description is set, click on "Validate step" (cf. paragraph 5.4) to move to next step.

### 7.3.1. Considerations on LOCAL\_CDI\_ID

The LOCAL\_CDI\_ID is built by Nemo. It is composed as: [Cruise Reference]\_[Station Code]\_[Data type].

The station code is optional.

Cruise reference is set in the Cruise tab and is described in §7.2.2.1

Station code and Data type are set in the Station tab and are described respectively in §7.3.2 and §7.3.3.



### 7.3.2. Station code

The station code can be an incremental number starting at a number given by the user or can be in the station header and input in NEMO using the set and test buttons (paragraphs 5.2, 5.3), or can be fixed for several stations (in the case of biological, microlitter and flow cytometry variants)

▼ **Station code**

Choose if station code is computed (set a number to increment) or read in the file at a given position or extracted from the filename (use 0 for line number)

Number to increment

Fixed position

Position

Line  Start  End

Use as the middle part of the LOCAL\_CDI\_ID (if unchecked, all stations will have a unique LOCAL\_CDI\_ID)

**Remark:** If station's code is located within the filename, use 0 as line number, and give the start and end character in the file name.

The station number field is used in two ways:

- As station number, which is the second column in ODV files, the SDN\_STATION variable in SeaDataNet NetCDF
- As part of the LOCAL\_CDI\_ID

In ODV, a trajectory is considered as a series of stations with one point of measurement at each station, **but the LOCAL\_CDI\_ID is the same for all the stations**. In MEDATLAS and netCDF a trajectory is only one station within which latitude and longitude are considered as measured parameters. The station number cannot be incremental.

If you need to set a unique LOCAL\_CDI\_ID, you can choose not to use the station number as middle part: uncheck the "Use as the middle part of the LOCAL\_CDI\_ID" check box.

This can be useful for example for trajectories, ADCP data presented as successions of vertical profiles or for some biological (such as the BioODV\_Demfish\_monoCDI example in the "TemplateAndExamples\_BioODV.xls" file) and microlitter variants which are "sort of" trajectories and have only one LOCAL\_CDI\_ID for all "stations".

### 7.3.3. Data type

It is the ROSCOP code of the instrument (H10 - CTD for example) used for data collection; it is selected in the list of data types input during the previous step (cruise description) or can be input manually by the user only in ODV and netCDF for data types that does not exists in the list.

If processing a collection of files, "Data type" field is not available, it will be asked during conversion step.

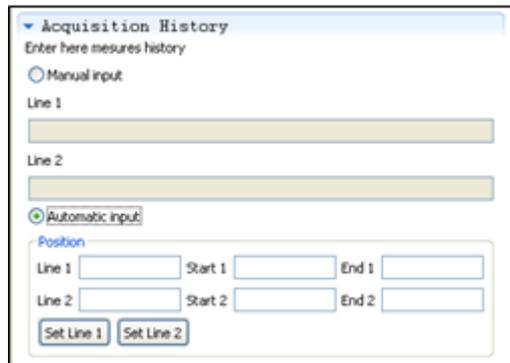


Note: the data type is used in the LOCAL\_CDI\_ID which is composed as: [Cruise Reference]\_[Station Code]\_[Data type] (Station Code is optional)

### 7.3.4. Acquisition history

They are 2 lines for comments about method and/or instrument used for data collection. They can be manually or automatically input, in the following fields.

Not available in netCDF.

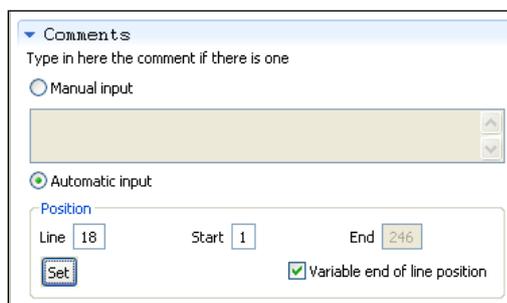


### 7.3.5. Comments

Comments about the station can be manually or automatically input. There is no limitation on the number of comment lines.

If the comment is spread among several lines which do not have the same length, click on “Variable end of line position”.

Not available in netCDF.



### 7.3.6. Surface samples

Same principle as Acquisition history, 2 lines for comments about surface samples if there are some.

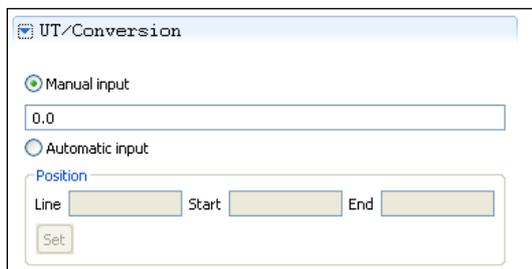
Not available in netCDF.

### 7.3.7. UT/Conversion

This field is to manage non universal time in the input files.

If station time in the input file is TU-5, type '5' (or read by automatic input) in the UT/Conversion field and NEMO will add 5 hours to the input time. If time in the input file is TU+5, type '-5' in the field.

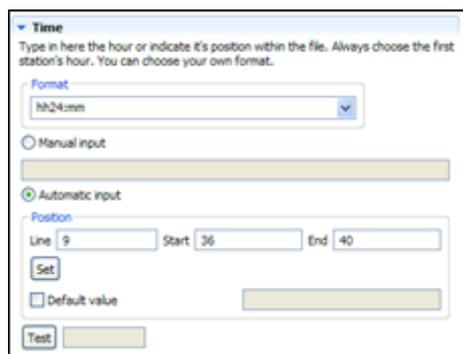
The default value is zero, for this field.



### 7.3.8. Time

This field concerns the time of stations.

User needs to input the format in which time is provided in the input file and then, he has to set and test the value (paragraphs 5.2, 5.3).



To describe the format, user must either select a predefined value in the list, or he can create its own format within the following:

**hh:** hour expressed in 2 digits (hh24 indicates time on 24 hours)

**mm:** minutes expressed in 2 digits

**ccc:** hundredth in the time expressed in 1 up to 7 digits

**ss:** seconds expressed in 2 digits

**tttt:** seconds expressed in 1 up to 5 digits

**PM:** allows NEMO to read PM and AM time

**If date and time are inseparables, you can select the value and use the same date-time pattern for both fields. For example: for CSV files with date and time in the same column, ISO datetime formats or datetime in Julian days.**

Example of valid formats for time:

22:30:15 → hh24:mm:ss

10-12 AM → hh-mm PM



17.125 → hh24.ccc (converted to 17:07:30.000)  
 2008/02/05 15:32 → YYYY/MM/DD hh24:mm (result is 15:32)

2008-08-12T03:16:00 → ISO8601  
 2008-08-12T03:16:00.002 → ISO8601  
 2008-08-12T03:16 → ISO8601

2446101.156 → JULIAN DAY

Time may be unknown for some stations of vertical profiles and in that case a default value must be specified, user has to click on Default value and to input this value in the corresponding field like in the example below

**Remark:** In the test field, time is displayed in ISO format, if UT/conversion field contains a value different from 0, the displayed time takes into account the time conversion to UT.

### 7.3.9. Date

This field concerns the date of stations.

User needs to input the format in which date is provided in the input file and then, he has to set and test the value (paragraphs 5.2, 5.3).

To describe the format, user must either select a predefined value in the list, or he can create its own format within the following:

- YY or YYYY:** year expressed in 2 or 4 digits
- MM:** month expressed in 2 digits
- MMM:** month expressed in 3 alphabetic characters



**DD:** day in the month expressed in 2 digits

**Note that the format for date is case sensitive; mm means minutes and not month (MM).**

**For CSV files with date and time in the same column, declare the datetime pattern in both date and time fields.**

Example of valid formats for date:

2008/07/10 → YYYY/MM/DD

86-07-10 → YY-MM-DD

Jun 10 2002 → MMM DD YYYY

2008/02/05 15:32 → YYYY/MM/DD hh24:mm (result is 2008-02-05)

2008-08-12T03:16:00 → ISO8601

2008-08-12T03:16:00.002 → ISO8601

2008-08-12T03:16 → ISO8601

2446101.156 → JULIAN DAY

In the test field, date is displayed in ISO format.

### 7.3.10. Latitude and Longitude

These fields concern the latitude and longitude of stations.

User needs to input the format in which latitude and longitude are provided in the input file and then, he has to set and test the values (paragraphs 5.2, 5.3).



To describe the format, user must either select a predefined value in the list:

- predefined format
- Decimal degrees for file with separators: available only for files with a separator, in which latitude and longitude are given in the CSV columns. Decimal degrees, regardless of the number of characters.

Or user can describe his own format within the following:

**N:** expresses the hemisphere. Input values have to equal N or S in the case of latitudes and W or E in the case of longitudes

**±:** expresses the hemisphere. Input values have to equal ' ' or '+' to express N in the case of latitudes, E in the case of longitudes and '-' to express S in the case of latitudes, W in the case of longitudes

**DDD or DD or D:** Degrees



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**DDD.ddd or DD.ddd:** Degrees in decimal values. The maximum number of D must be 3 in the case of longitudes and 2 in the case of latitudes

**DDD.ddd or DD.ddd:** Degrees in decimal values. The maximum number of D must be 3 in the case of longitudes and 2 in the case of latitudes. The number of 'd' characters expresses the number of decimals.

**MM:** Minutes

**MM.mm:** Minutes in decimal values. The number of 'm' characters expresses the number of decimals.

**SS:** Seconds

Decimal degrees for file with separators

Example of valid formats for latitude and longitude:

W123 10.25 → NDDD MM.mm

7.12345 → +D.ddddd or Decimal degrees for file with separators

-123. 175 → +DDD.ddd or Decimal degrees for file with separators

S45 10' 55" → NDD MM SS

49° 40.685' N → DD° MM.mmm' N"

In the test field, latitude and longitude are displayed in MEDATLAS format.

Click on “variable end of line position or variable start position” if all latitudes and longitudes do not end or start at the same character in every station (this often happens with not significant zero values) and if the file is not with separators

For example:

Latitude: +25.205

Latitude: +25

Latitude: +25.15

Latitude: -0.15 ('-' 1 character to the right of '+')

These 4 lines (in 4 different stations of the same dataset) will be described as +DD.ddd with “variable end of line position or variable start position”.

### 7.3.11. Bottom Depth

This field concerns the bottom depth of stations, which must be given in meter in the input file. This field can be input automatically or set to “no value”.

**Bottom Depth**

If bottom depth is measured, indicate it's position within the file. Always choose the first station's depth. Note the unit of measurement MUST be meter.

No Value

Automatic input

Position

Line  Start  End

Variable end of line position or variable start position

Default value

If the file is not a CSV file, click on “variable end of line position or variable start position” if all bottom depths do not end or start at the same character in every station (this often happens with not significant zero values)

Some files could contain default values if bottom depth is not measured (-999, for example). To describe this value, click ‘Default value’ and enter the corresponding value in the text field.

### 7.3.12. End Latitude and End Longitude:

These fields concern the latitude and longitude of the end time of time series.

By default, if not input, the values will be the same than “Latitude” and “Longitude” which are considered as the position at the start time of the time series.

Input in these fields is the same than for “Latitude” and “Longitude” described for vertical profiles.

Not available in netCDF.

### 7.3.13. End Bottom depth

This field concerns the bottom depth at the end time of time series.

By default, if not input, the value will be the same than Depth which is considered as the bottom depth at the start time of the time series.

Input in this field is the same than for “Depth” described for vertical profiles.

Not available in netCDF.

### 7.3.14. Sensor’s depth

This field concerns the depth of the sensor measuring time series. It must be given in meter in the input file. This field can be input manually or automatically.

### 7.3.15. Magnetic Declination

This field concerns the magnetic declination at the location of the time series, useful for current meters. The declination is a signed integer: W007 declination must be input as -7 and E005 as +5 or 5. This field can be input manually or automatically.

Not available in netCDF.

### 7.3.16. Sampling Rate

This field concerns the sampling rate of the sensors. This sampling rate can be input manually, or automatically. NEMO will calculate it automatically if time and date are selected in the first line of measurements.

The unit of the sampling rate is Second. If it is not given in second in the input file, it must be converted by using the field “Conversion formula” (example: if the sampling rate is given in Hour in the input file, input \*3600 in the formula).



**Sampling Rate**

Unit = second, to be converted through formula if necessary, input 0 in the field "Manual input" if sampling rate has to be computed from date and time in the data.

Conversion

Formula

Manual input

Automatic input

Position

Line  Start  End

For time series If time or date are selected in the first line of measurements in the file displayed in NEMO window, sampling Rate field is disabled.

### 7.3.17. QC Flags

This part concerns the quality flags that could exist in the input file.

QC Flags can concern metadata and/or data.

- Header QC flags are only used in MEDATLAS format, they concern Date/Time, Latitude, Longitude and Bottom depth.
- Data QC flags can be used in all formats.

If some quality flags exist in the input file, it is necessary to have their mapping with SeaDataNet flag scale. To do so, it is possible to add and remove values in the mapping list or to load an existing mapping (paragraph 6.11). To open the menu, right click on the mapping table.

Remark: if the input file has the same quality flag scale than SeaDataNet, no mapping is necessary.

**QC Flags**

Type in here QC Flags for time/date, latitude, longitude and depth.

Local F...	SeaDataNet Flag
0	0 - no quality control
1	1 - good value
2	2 - problem
3	3 - problem
4	4 - background
5	5 - changed value
6	6 - value below detection
7	7 - value in excess
8	8 - interpolated value
9	9 - missing value
A	A - value phenomenon uncertain
Q	Q - value below limit of quantification

C1 - SeaDataNet
C2 - MEDATLAS
C3 - ODV
WDC - Mapping WDC OCL QC flag

Metadata	Line	Start	End	Test (in...	Test (o...
----------	------	-------	-----	-------------	------------

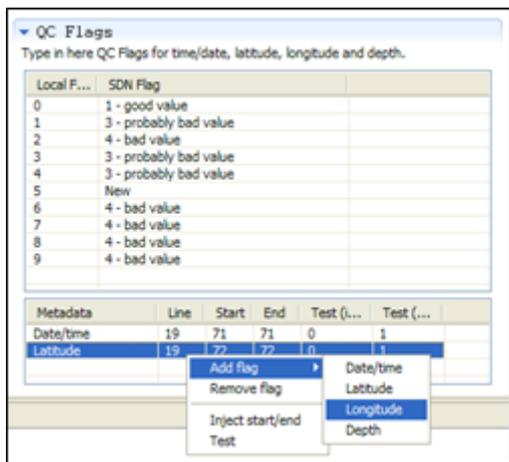
When mapping is done, the location of the 4 quality flags can be input.

Right click on the table to open the menu:



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Then you can add or remove a line. On the example, here, user is adding a line for longitude flag.

Once one line is added, the flag has to be selected in the file (left part of NEMO window) and set in the table by clicking on Set start/end in the menu. The value can be tested by clicking on “Test” in the menu.

When the station description is over, click on “Validate step” (cf. paragraph 5.4) to move to next step.

## 7.4. Data description

This step is performed to indicate NEMO where to find the data measurements in input file(s). This information concern the name and unit of the measured parameters, their default values (found in the input file when the parameter is not measured), and the format in which the parameter will be written in the output file.

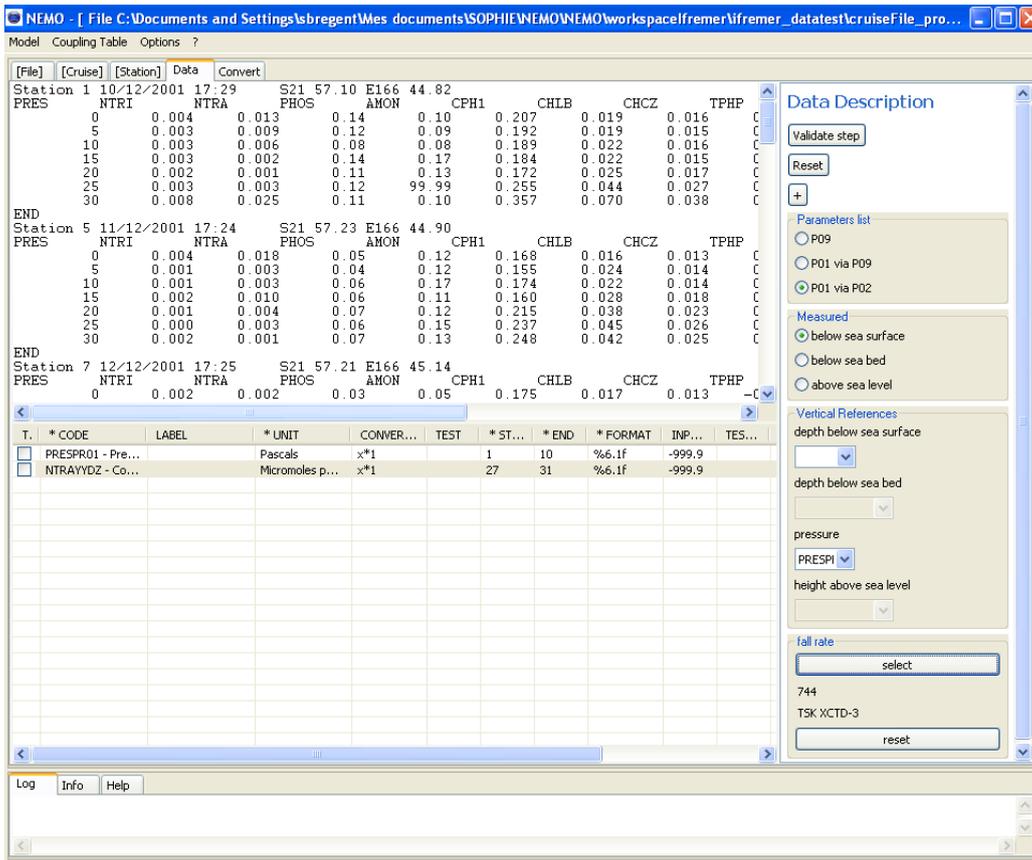


Figure 20- Data description window

If the file(s) contains separator and if the data columns selection section was chosen in the File tab, data are displayed in a table:

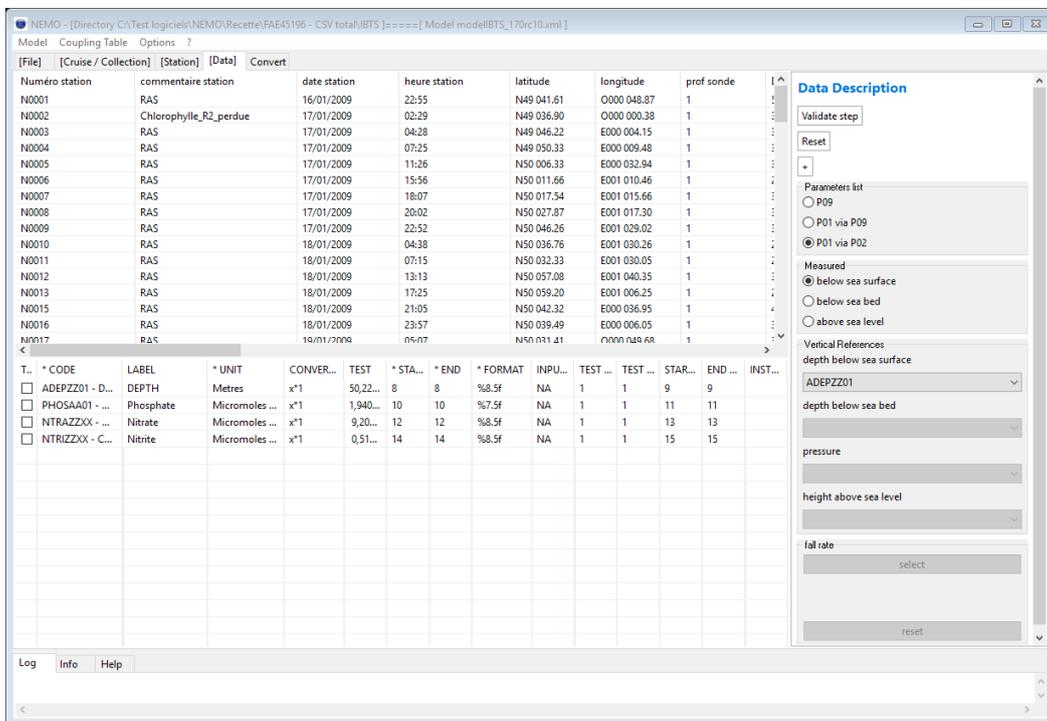


Figure 21- Data description window: data displayed in a table

First choose the parameters list to use: P09, P01viaP09 or P01viaP02 (P01viaP02 is disabled for MEDATLAS conversion and P09 is disabled for netCDF conversion).

Then choose the measure type: below sea surface, below sea bed, above sea level.

If input files concern biological, flow cytometry or microlitter variants, the mandatory are automatically added. Some of the mandatory parameters allow several P01 (eg. SamplingEffort in biological variant can be either AREABEDS, VOLWBSMP, LENTRACK, AZDRZZ01 or VOLFFMXX). By default, samplingEffort is set to VOLWBSMP, the user can remove this parameter and choose another one. Nemo will check if the mandatory parameters are present during the tab validation.

See the variants documentations: [4], [5], [6], [7], [8], [9].

If input files concern physico-chemical vertical profiles, one of the following parameters is mandatory:

	P09 or P01viaP09	P01viaP02
below sea surface	PRES or DEPH	a P01 parameter chosen from AHGT P02 list
below sea bed	DPSF	a P01 parameter chosen from AHGT P02 list
above sea level	ALTS	a P01 parameter chosen from AHGT P02 list

Then provide the vertical reference: this step is needed to control the user input: existence of mandatory parameters, their position in the list, it also identifies the parameters that will be used by NEMO for automatic additions of calculated parameters:

The parameters list in these fields are filled from the parameters added in the table.

You have to add the appropriate parameters (see table above) in the table in order to be able to select a value in these fields.

If P09 or P01viaP09 is used, the vertical reference fields will be automatically selected when 'validate step' button is clicked.

If P01viaP02 is used, you will have to select manually the vertical reference.

If input files concern physico-chemical or flow cytometry time series, date and time of measurements will be automatically added in output files, they do not need to be described in the measurement description.

If input files concern physico-chemical or flow cytometry trajectories date, time, latitude, longitude and bottom depth (if existing) of measurements will be automatically put in output files, they do not need to be described in the measurement description.

If input files concern bathythermograph profiles, you can choose a fall-rate via the L33 BODC list.

This code will be associated to the vertical reference parameter selected in the "Vertical references" section and will be written in the SDN Mapping in MEDATLAS and ODV, or in the variable attributes in netCDF.

Example in ODV:

```
//<subject>SDN:LOCAL:PRESPR01</subject><object>SDN:P01::PRESPR01</object><units>SDN:P06::P
ASX</units><instrument>TOOL0804</instrument><fallrate>745</fallrate>
```

Since version 1.4.4, NEMO accepts **non-numeric parameters for ODV format only**. Click on the checkbox to specify that the parameter is not numeric.



## 7.4.1. Menu of the table of measurements

Right click on the table of measurement opens the following menu:

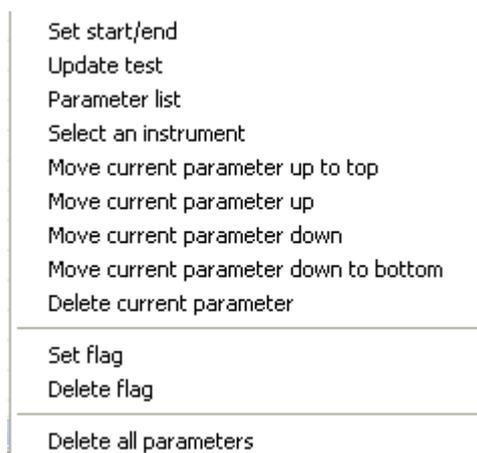


Figure 22 Parameters default menu

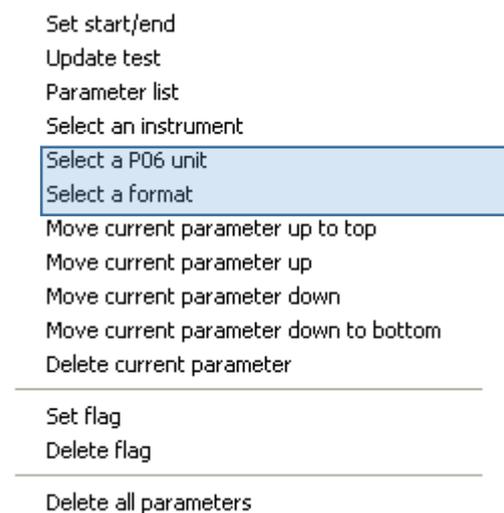
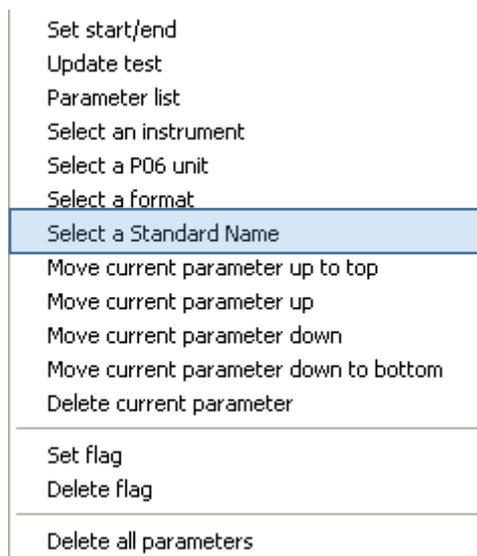


Figure 23 Parameters menu if P02 parameters are used



**Figure 24 Parameter menu if netCDF conversion is used**

The role of each item of the menu is explained here after:

**Set start/end:**

Used to set the start and end character or the column number of the selected parameter in the data line. The value of the parameter, or the column containing this parameter (table mode) has to be highlighted on the first data line before using this menu.

**Update test:**

Used to insert the value in the test fields including: “Test” (for the measured parameters), “Test (input)” for the value of the quality flag read in the input file and “Test (output)” for the value of the quality flag in the output file.

The user can then checks that the displayed values are correct and correspond to the values of the input files.

**Parameter list:**

Used to add a new parameter in the table of measured parameters. (see paragraph 7.4.2)

**Select an instrument:**

Used to add an instrument via the L22 list.

**Select a Standard Name:**

Used to add a Standard Name via the P07 list for netCDF conversion. Visible only in this case.

**Select a P06 unit:**

Used to add a unit via the P06 list when using P01numeric parameters via P02. Visible only in this case.

**Select a format:**

Used to add a format via a predefined list. Format can be manually input; this menu helps to choose the format with examples.

Visible only in if using P02 parameters.

**Move current parameter up to top:**



Used to move up a parameter at the top of the table of measured parameters. The order of parameters in the table defines the order of parameters in the output file.

**Move current parameter up:**

Used to move up a parameter in the table of measured parameters. The order of parameters in the table defines the order of parameters in the output file.

**Move current parameter down:**

Used to move down a parameter in the table of measured parameters. The order of parameters in the table defines the order of parameters in the output file.

**Move current parameter down to bottom:**

Used to move down a parameter to the bottom of the table of measured parameters. The order of parameters in the table defines the order of parameters in the output file.

**Delete current parameter:**

Used to delete a parameter from the table of measured parameters.

**Set flag:**

Used to set the start and end character or the column number of the quality flag the selected parameter. The value of the flag or the column containing this flag (table mode) has to be highlighted on the first data line before using this menu.

**Delete flag:**

Used to delete the quality flag information of the selected parameter.

**Delete all parameters:**

Used to delete all parameters from the table of measured parameters.

## 7.4.2. How to add a parameter in the table

To add a parameter in the table, right-click on the data table and click on Parameter list, menu.

It opens a parameters selection window listing P09 or P02 parameters, depending which parameters list is applicable.

### 7.4.2.1. Using P09 parameters list

To add a parameter in the table, right-click on the data table and click on Parameter list, menu.

It opens a parameters selection window listing P09 parameters.

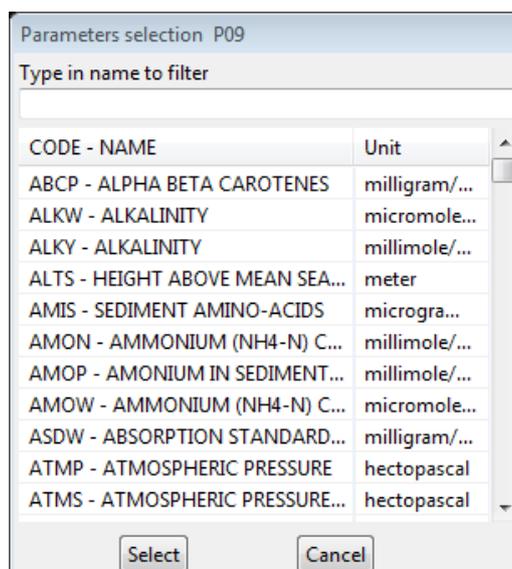
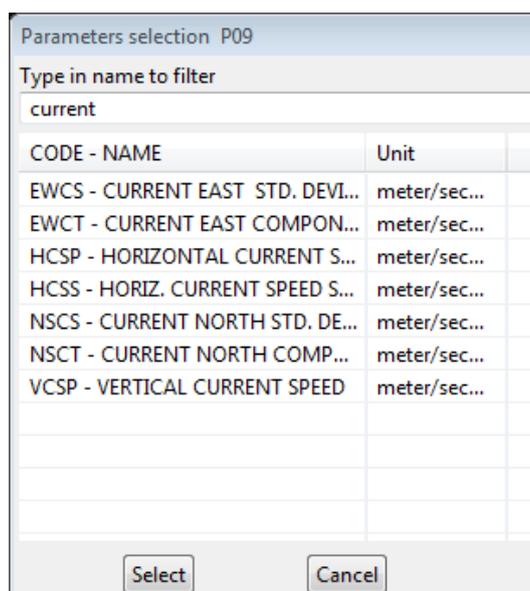


Figure 25- The parameters selection windows displays the P09 list of SeaDataNet (MEDATLAS codes for parameters)

Select a parameter in this list (use filter to find a specific parameter: in the example below, there is a filter on “current”), then press “Select”.



The selected parameter is added in the table, with some values filled by default. The default and the format values linked to the parameter are downloaded from the parameters list of NEMO Web service.

CODE	Unit	Conversion	Test	Start	End	Format	Input def. v...	Output def. ...	Test
EWCT - CURREN...	meter/second	x*1		0	0	%+7.3f		-99.999	

Format, input default value (and output default value if MEDATLAS) can be manually modified.

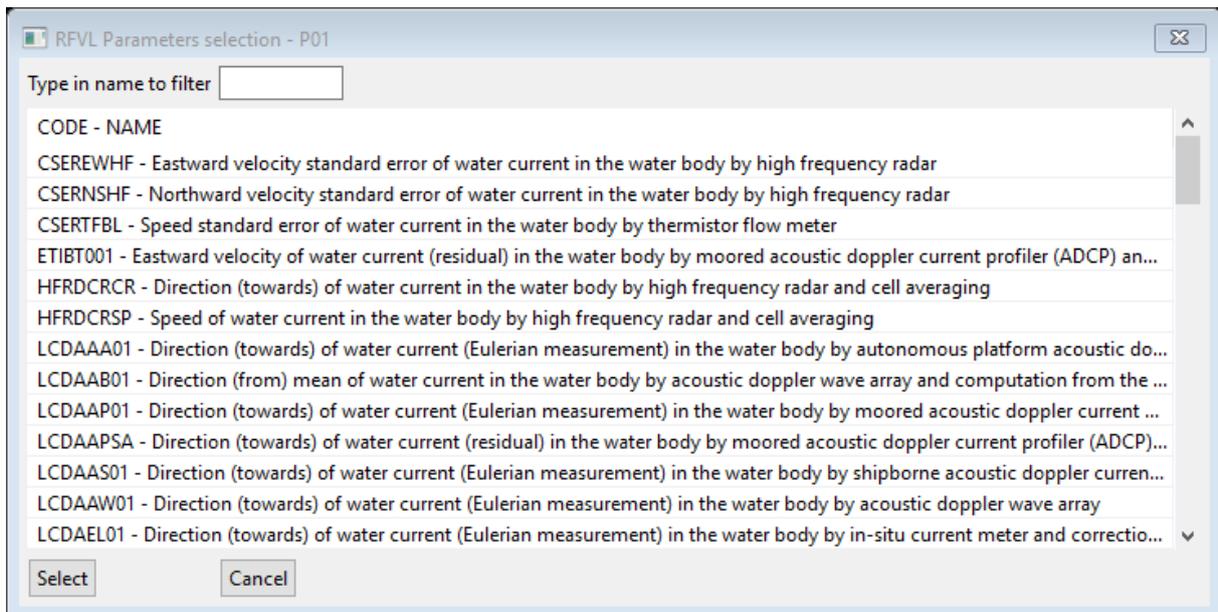
#### 7.4.2.2. Using P01 via P09 parameters list

To add a parameter in the table, right-click on the data table and click on Parameter list, menu.

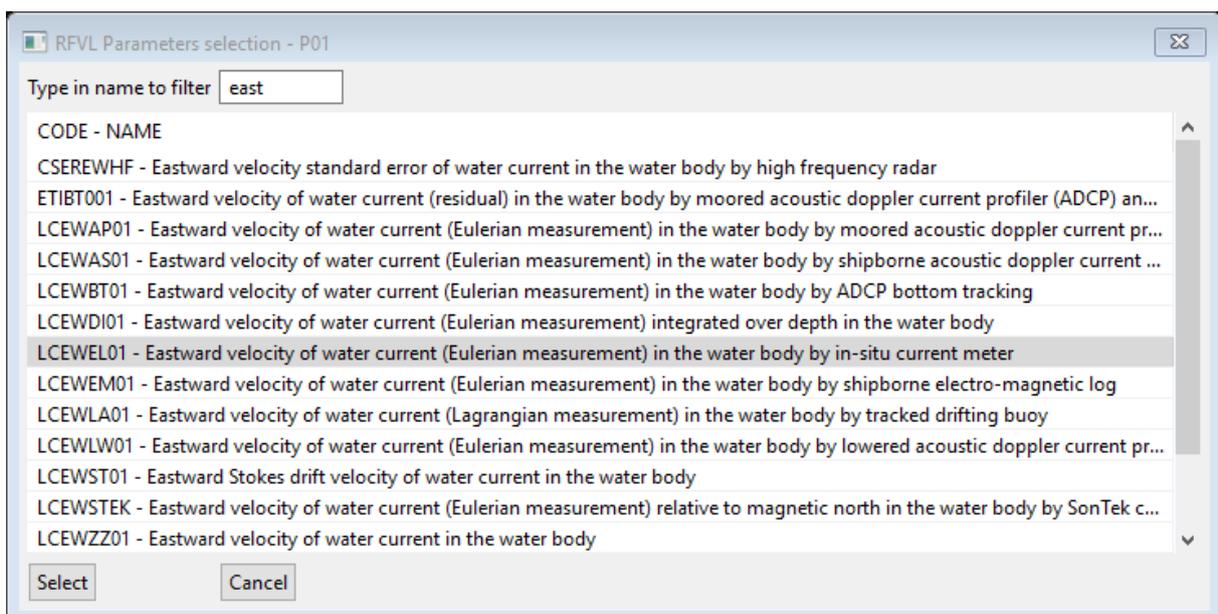
It opens a parameters selection window listing P09 parameters.

The parameters selection windows displays the P09 list of SeaDataNet (MEDATLAS codes for parameters), as in the previous case (using P09 parameters list).

The selection of a parameter in this list opens a second window, displaying P01 parameters list:



Select a parameter in this list (use filter to find a specific parameter, in the example below there is a filter on “east”).



Then press “Select” to add the selected parameter in NEMO’s table, with some values filled by default. The default and the format values linked to the parameter are downloaded in the parameters list of NEMO Web service

CODE	Unit	Conversion	Test	Start	End	Format	Input def. v...	Output def. ...
LCEWEL01 - Eastwar...	meter/second	x*1		0	0	%+7.3f		-99.999

Input default value (and output default value if MEDATLAS) can be manually modified. Format can be manually modified if numeric parameter.



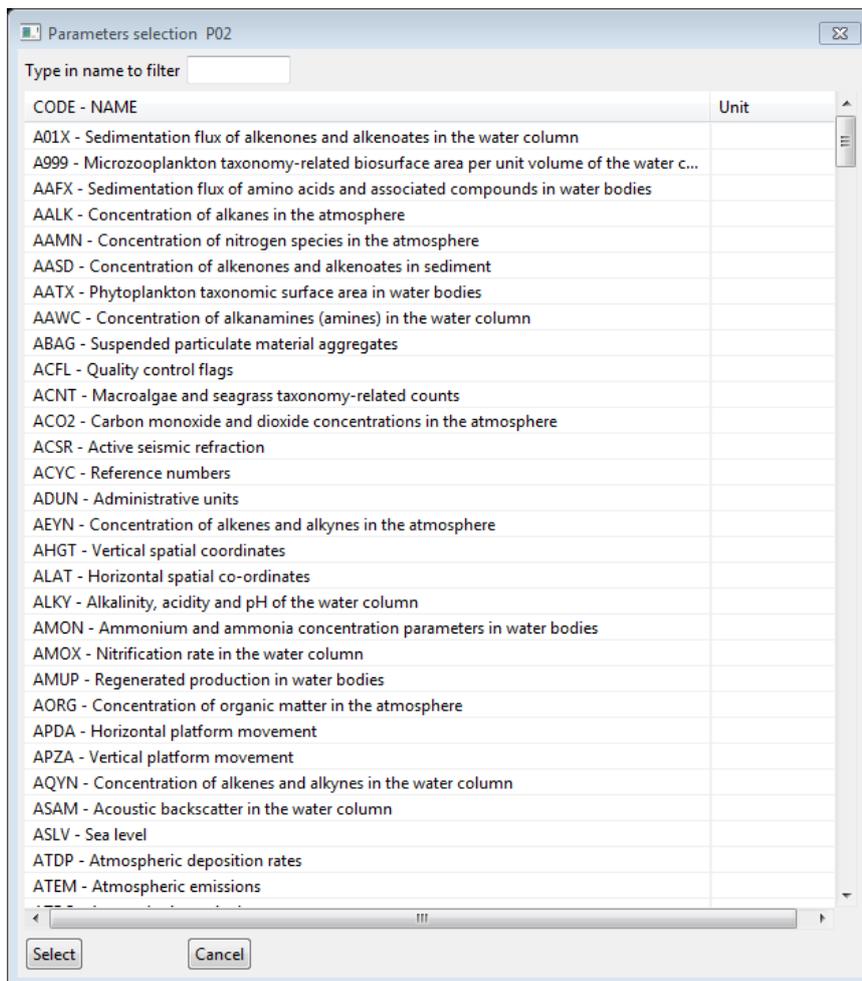
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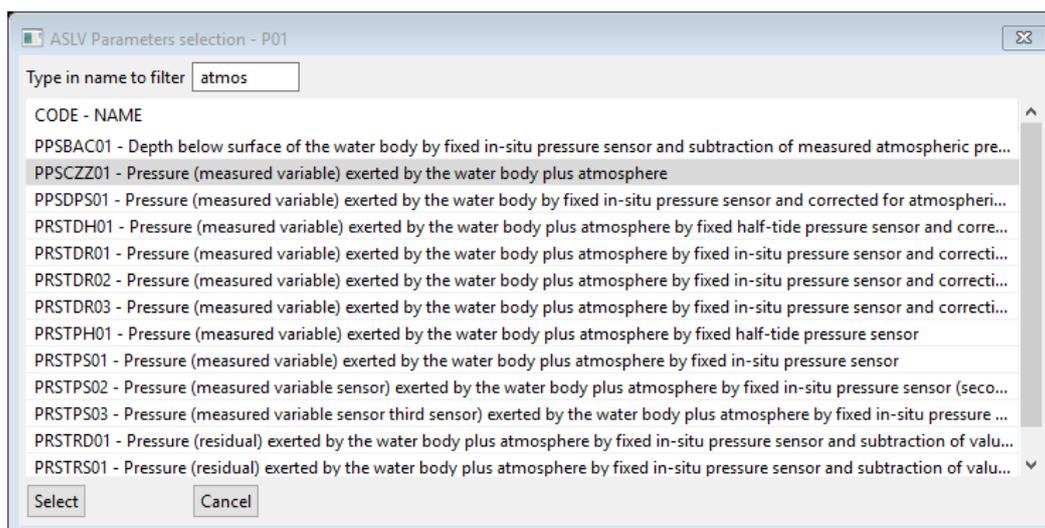
### 7.4.2.3. Using P01 via P02 parameters list

To add a parameter in the table, right-click on the data table and click on Parameter list, menu.

It opens a parameters selection window listing P02 parameters.



The selection of a parameter in this list opens a second window, displaying P01 parameters list:



Select a parameter in this list (use filter to find a specific parameter

Then press “Select” to add the selected parameter in NEMO’s table, with some values filled by default.

CODE	Unit	Conversion	Test	Start	End	Format	Input def. v...	Output def. ...
PPSCZZ01 - Pres...		x*1		0	0			

**For numeric parameters, unit, Format, input default value (and output default value if MEDATLAS) can be input.**

**For non-numeric parameters, input default value can be set. Unit cannot be modified.**

To set unit, right-click on the parameter and select the “select a P06 unit” in the context menu.

Unit can be also modified using this context menu.

#### 7.4.2.4. Fulfil parameter values and test

##### T column:

This column is only available in ODV format.

Check the checkbox to indicate that the parameter is a non-numeric parameter (ie. Geological description)

##### Label:

This column is available only

if you use ODV as conversion format

AND

if you use P01 parameters (P01viaP02 or P01viaP09)

In other cases this column will be hidden.

This field is used to choose **your own parameter label** for conversion.

By default, parameter label (ie column title in ODV and SDN mapping) is the P01 parameter code.

If you put a value in this field, this value will be used instead of the parameter P01 code.

If you use this column, P01 codes / personal labels mapping will be saved in a file:

under [NEMO\_installation\_directory]\resources\userParametersLabels.xml.

Already saved personal labels will be automatically filled by NEMO.

You can always modify them in the parameter table. This will update the mapping file.

##### Standard name:

This column is available only in netCDF format.

The standard name is not mandatory in netCDF but is **highly recommended** for CF compliancy. So if a standard name corresponds to the measured parameters, it is recommended to use one.

##### Conversion:

This field is used to input a conversion formula which should be like  $x*1000+3$ ; with x the value read in the input file(s). This field is not writable for non-numeric parameters.

##### Example:



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In the example below, the East component of the current is given in millimetres/second; as in the output file it is in metres/second, a 0.001 factor has to be applied on the value read in the input file.

The screenshot shows a software window with a menu bar (File, Cruise, Station, Data, Conversion) and a data table. The data table has columns for CODE, Unit, Conversion, Test, Start, End, Format, Input def. value, and Output def. value. The data rows are:

CODE	Unit	Conversion	Test	Start	End	Format	Input def. value	Output def. va...
EWCT - CURRENT ...	meter/second	x*0.001	-0,068	23	30	%+8.3f	-999.999	-999.999
NSCT - CURRENT ...	meter/second	x*0.001	+0,042	32	39	%+8.3f	-999.999	-999.999

The data table in the screenshot also shows a table of values with the following data rows:

1000921143000	-58.247	41.657	301.4	80.	10.595	614.911
2000921150000	-58.882	66.670	318.5	89.	10.595	614.911
3000921153000	-63.479	74.587	319.6	98.	10.549	614.911

Figure 26 - Example of an input value converted through a formula

### Test:

This field displays the value as it will be written in the output file (taking into account the format input by user).

To input value in the test field, right click in the table and choose "Update test" in the context menu; the start and end fields must have been input before.

In the Figure 26 example, the test value takes into account the conversion formula and the output format (column format) which says 3 decimal digits.

### Start-End:

These fields indicate the start character and the end character or the column number of the parameter in the data line.

To input the values in these fields, you have to select the measured parameter value **on the first line of measurement**, or the column header of the measured parameters then right click in the table and choose "Set start/end" in the menu of Figure 22 Parameters default menu.

In the Figure 26 example, East component of the current starts at character 23 and ends at character 30 in the data line.

**Remark: don't forget to take the maximum length of the value into account;** it may not be the same length than the one on the first line of data.

### Example:

4.12345 = first value in the first line of data for a given parameter

You may have to select additional blank spaces to take into account further values that may contains more digits like 15.12345 (one additional blank character has to be selected) or the default value that could be -99.00000 (two additional blank characters have to be selected).

In the Figure 27 example, Phosphate is in the 10<sup>th</sup> column of the data line.

ation	heure station	latitude	longitude	prof sonde	DEPTH	QC DEPH	PHOS	QC PHOS
2009	22:55	N49 041.61	O000 048.87	1	50.22842437	1	1.940000057	1
2009	02:29	N49 036.90	O000 000.38	1	30.51284566	1	1.099999905	1
2009	04:28	N49 046.22	E000 004.15	1	35.72762308	1	0.939999998	1
2009	07:25	N49 050.33	E000 009.48	1	30.4652134	1	1.419999957	1
2009	11:26	N50 006.33	E000 032.94	1	35.50028544	1	1.870000005	1
2009	15:56	N50 011.66	E001 010.46	1	29.20029348	1	1.5	1
2009	18:07	N50 017.54	E001 015.66	1	32.96240385	1	0.610000014	1
2009	20:02	N50 027.87	E001 017.30	1	31.35344483	1	0.370000005	1
2009	22:52	N50 046.26	E001 029.02	1	35.21355769	1	1.400000095	1
2009	04:38	N50 036.76	E001 030.26	1	29.77583333	1	1.049999951	1
2009	07:15	N50 032.33	E001 030.05	1	21.50399194	1	0.379999995	1
2009	13:13	N50 057.08	E001 040.35	1	31.0925	1	0.159999996	1

Figure 27 – Example of start and end fields in a file with separators and table mode

### Format:

This field describes the output format (in the output file) of the measured parameter, **including the format of the default value**.

The user has to describe the output format within the following:

%xd: x = number of digit,

d for integer

%3d → 150

%5d → 15000

%+xd: same than %xd but for signed values

%+4d → +150 or -150

%+6d → +15000 or -15000

%x.yf = x= total number of digits, included the decimal point

y= number of digits to the right of the decimal point

f for decimal number

%6.3f → 12.124

%5.1f → 123.4

%7.5f → 1.12345

%+x.yf: same than %x.yf but for signed values

%+6.3f → +12.124 or -12.123

%+5.1f → +123.1or -123.1

%+7.5f → +1.12345 or -1.12345



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### Input def.value:

This field describes the values found in the **input file** where the parameter is not measured.

This input value can be any type of characters (number, alphabetic). **It must be kept empty if the input default value is empty.**

### Output def. value:

This field describes the values written in **the output** file where the parameter is not measured.

It is not used in ODV format (where default value is an empty string) nor in netCDF format (where default value is always NaN). It is used in MedAtlas format only, where the output value must be a number (often a suite of '9') at the same format than the measured parameters described in the format column.

## 7.4.3. How to keep existing quality flags

In the table of measured parameters, information on quality flags that may exist in input file(s), can be input in the 4 last columns of the table of measured parameters (Test (input), Test (output), Start flag, End flag).

To input the start and end positions of quality information:

- Highlight the quality information in the first data line or in the column header of the input file in NEMO window
- Click on “Set flag” in the menu of 7.4.1

In the example below, the first parameter of the table has a quality flag on character 28 of the data line, the second parameter has a quality flag on character 29 of the data line, the third parameter has a quality flag on character 30 of the data line and the fourth parameter has a quality flag on character 31 of the data line. For all of them the input value of the QC flag is the same than the output value (here 0).

Start	End	Format	Input def. value	Output def. va...	Test (in...	Test (o...	Start flag	End flag
1	6	%6.1f	-999.9	-999.9	0	0	28	28
8	13	%6.3f	99.999	99.999	0	0	29	29
15	20	%6.3f	99.999	99.999	0	0	30	30
22	26	%5.2f	99.99	99.99	0	0	31	31

To delete flag information from the table of measurements:

- Highlight parameter line where you want to delete this information
- Click on “Delete flag” in the menu of 7.4.1

Current flag scale conversion is the one loaded in the previous step (Paragraph 7.3.17, Qc flags).

When the data description is over, click on “Validate step” (cf. paragraph 5.4) to move to next step.

## 7.5. File conversion

This is the last step of NEMO; once the description of the input file(s) is completed, it is possible to run the conversion to either ODV, netCDF or MEDATLAS format.

This conversion step generates:

- output file(s) in the needed format
- Some mandatory parameters may be added, depending on several criteria (see paragraph 7.5.2)



- If “Generate SeaDataNet CDI summary” is clicked in NEMO settings, a CDI summary file will be created while NEMO is converting the input file(s). It is a Comma Separated Values (CSV) file that is directly usable by Mikado to generate a CDI XML export, corresponding to the stations that are converted to ODV, netCDF or MEDATLAS format.
- If “Generate mapping for SeaDataNet Replication Manager” is clicked in NEMO settings, mapping information (for all the stations that are converted to ODV, netCDF or MEDATLAS format) is inserted in the local database of NEMO.

### 7.5.1. Running file conversion

Click on the “Start conversion” button, then user is asked:

- to enter a reference for the dataset if she/he is converting to ODV format, by default the cruise reference is proposed to the user if she/he is converting data related to one cruise, otherwise a free text to identify the dataset can be input.
- to enter a name for the CDI-summary file if “Generate SeaDataNet CDI summary” is clicked in NEMO settings
- to enter a name for the output directory or the output file
- to enter a name for the output directory prefix if “Generate mapping for SeaDataNet Replication Manager” is clicked in NEMO settings. This prefix will be subtracted from the file name in the mapping table.

For example if

output file name = *C:\username\NEMO\cruise\_name\file\_name*

and output directory prefix = *C:\username\NEMO*

file name in the mapping table will be : *cruise\_name\file\_name*

Then the conversion starts and user is informed about its progression in the “Log” tab at the bottom of the window.

When the conversion stops:

- there may be an error, detailed in the “Log” tab in red, or
- conversion is completed and a green message informs the user that the conversion is OK.
- The corresponding batch command is given in the log window, it can be copied (removing line feeds) to be used in a batch file.



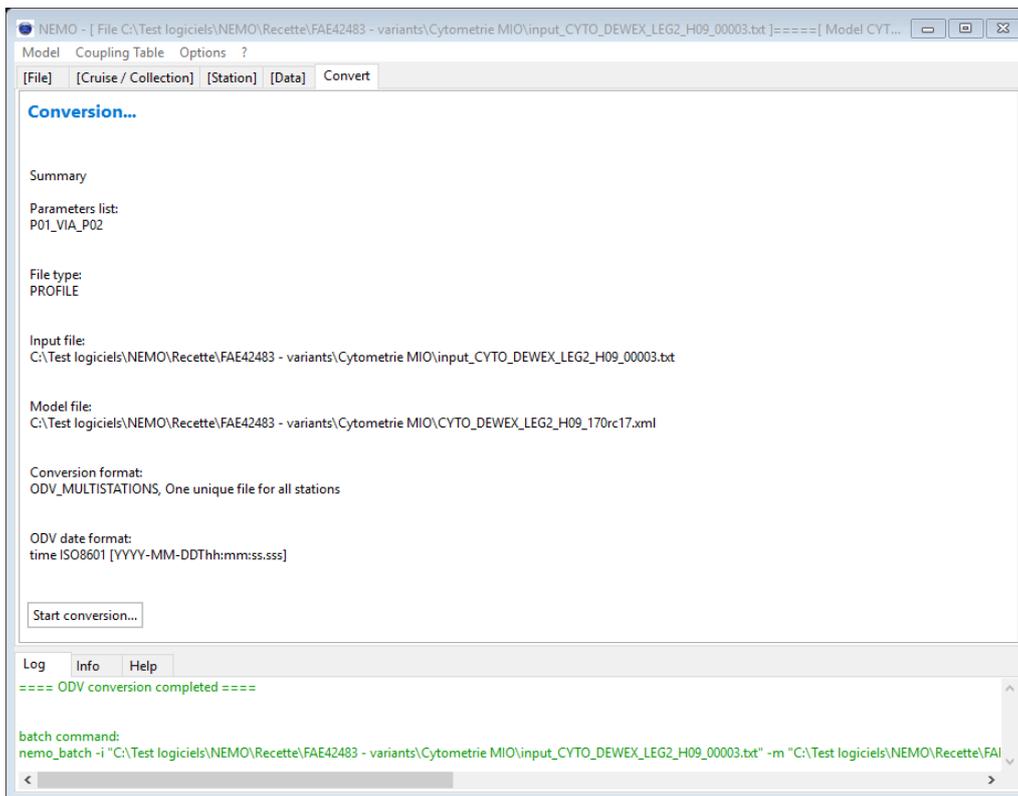


Figure 28 File conversion window, with an ODV conversion completed

## 7.5.2. Automatic insertion of parameters in the output file(s)

Depending on the chosen output format and the data type (vertical profile, timeseries, trajectories) NEMO automatically adds some parameters in the output file.

### 7.5.2.1. MEDATLAS format

- Time series
  - YEAR, MNTH, DAYX and TIME are 4 mandatory parameters for time series at MEDATLAS format. These 4 parameters are automatically added by NEMO, in the output MEDATLAS file, from data and time read in the files and described in the station tab, or computed from start date and the sampling rate of the time series (test p5).
- Trajectories
  - YEAR, MNTH, DAYX and TIME are 4 mandatory parameters for trajectories at MEDATLAS format. These 4 parameters are automatically added by NEMO, in the output MEDATLAS file, from data and time read in the files and described in the station tab, or computed from start date and the sampling rate of the data (test p5).
  - LATX (latitude) and LONX (longitude) are mandatory parameters for trajectories at MEDATLAS format.

These 2 parameters are automatically added by NEMO, in the output MEDATLAS file, from the latitude and longitude read in the files and described in the station tab (test p8).

- If bottom depth is read in the files and described in the station tab, the parameter BATH (bathymetric depth) is added automatically in the output MEDATLAS file. (test p4)

### 7.5.2.2. ODV format

- Vertical profiles

- Depth is the mandatory vertical reference for vertical profiles at ODV format for SeaDataNet.  
If depth is not in the parameter table, and that there is only pressure as vertical reference, depth is automatically computed by NEMO, from pressure converted to seawater depth using UNESCO algorithm.

- Time series

- Depth is the mandatory vertical reference for time series at ODV format for SeaDataNet.  
If depth is not in the parameter table, depth is automatically added by NEMO, as a constant value equal to the sensor depth described in the station tab.
- Time is automatically added by NEMO, in the output ODV file, from data and time read in the files and described in the station tab, or computed from start date and the sampling rate of the time series. The format is time ISO8601 or chronological Julian date depending on the default time format chosen in NEMO settings.

- Trajectories

- If depth is not in the parameter table, and if the sensor depth described in the station tab, then depth is automatically added by NEMO, as a constant value equal to this sensor depth .

### 7.5.2.3. netCDF format

- Trajectories

- If depth is not in the parameter table, and if the sensor depth described in the station tab, then depth is automatically added by NEMO, as a constant value equal to this sensor's depth.

## 7.5.3. Automatic insertion of SeaDataNet References

- **CDI references** are automatically written in the output file.

<sdn\_reference

```
xlink:href="https://cdi.seadatanet.org/report/edmo/10/cruiseRef_00001_H09"  
xlink:role="isDescribedBy" xlink:type="SDN:L23::CDI" sdn:scope="10:cruiseRef_00001_H09"/>
```



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- If local CSR Id is set in the Cruise tab, **CSR references** are automatically written in the output file:

```
<sdn_reference xlink:href="https://seadata.bsh.de/cgi-csr/XML/xmlDownload_V2.pl?edmo=EMDO_CODE&identifier=local/CSR" xlink:role="isObservedBy" xlink:type="SDN:L23::CSR"/>
```

- If central CSR Id is set in the Cruise tab, **CSR references** are automatically written in the output file:

```
<sdn_reference xlink:href="https://seadata.bsh.de/Cgi-csr/XML/xmlDownload_V2.pl?csrref=BSH_CSR_reference" xlink:role="isObservedBy" xlink:type="SDN:L23::CSR"/>
```

- If SHIP is set in the Cruise tab, **SHIP references** are automatically written in the output file

```
<sdn_reference xlink:href="https://www.seadatanet.org/urnurl/SDN:C17::35AY" xlink:role="isObservedBy" xlink:type="SDN:L23::NVS2CON"/>
```

#### 7.5.4. CDI summary file for MIKADO

If “Generate SeaDataNet CDI summary” is selected in NEMO settings, NEMO generates a CDI summary CSV (Comma separated value) file to be used by MIKADO [3].

This CSV file contains all the necessary information for the generation of a SeaDataNet XML CDI file. The content of the CSV summary file for CDI is described in the following table:

Name	Content	Comment
LOCAL_CDI_ID	CDI ID in the data centre generating the CDI	[Cruise reference]_[Station number]_[Data_type] Example : FI352002200040_00005_H10 Or [data set reference]_[Station number]_[Data type] Example: XBT_2002_00005_H13 :
EDMO_AUTHOR	EDMO ID of the data centre responsible of the CDI	Input in NEMO settings
AREA_TYPE	Type of measurement	SeaDataNet Geospatial Feature Types (SeaDataNet common vocabulary , List L02) Set to 'Point' If vertical profiles and time series and to 'Curve' if trajectories
DATASET_NAME	Name of the dataset	Set to 'Not Specified', if cruise, set to Cruise Name, if dataset reference exists set to dataset reference
DATASET_ID	Dataset_ID	Set to 'Not Specified', if cruise set to Cruise reference, if dataset reference exists set to dataset reference
DATASET_REV_DATE	Date of last revision of the dataset	Date of the day at ISO format YYYY :MM :DDTHH24 :MI :SS
EDMO_ORIGINATOR	EDMO_ID of the dataset originator	Input in NEMO settings
DATASET_ABS	Abstract describing the dataset	Set to 'Not specified' except in batch mode where a value can be input using the –cruiseComment argument
EDMO_CUSTODIAN	EDMO code of the organisation managing the dataset	Input in NEMO settings
P02_CODE	Measured parameters	BODC Parameter Discovery Vocabulary (SeaDataNet common vocabulary, List P02). The mapping between MEDATLAS codes input with NEMO and P02, is done automatically.
PLATFORM_TYPE	Platform class	SeaDataNet Platform Classes (SeaDataNet common vocabulary, List L06). To be input by the user.
DATASET_ACCESS	Dataset access restrictions	SeaDataNet Data Access Restriction Policies (SeaDataNet common vocabulary, list L08). To be input by the user.
CRUISE_NAME	Cruise name	If cruise : set to cruise name If collection of files grouped by cruise set to the name of the directory If collection of files not grouped by cruise = set to 'Not specified'
STATION_NAME	Station name	Set to station number
STATION_LATITUDE	Latitude of the station	If trajectories and time series: start latitude
STATION_LONGITUDE	Longitude of the station	If trajectories and time series : start longitude
STATION_DATE	Date of the station	If trajectories and time series : start date and start time
EDMO_DISTRIBUTOR	EDMO code of the organisation distributing the dataset	Input in NEMO settings
FORMAT	Format Type of file	In Nemo :

		If MedAtlas : MEDATALAS If Odv : ODV If netCDF : CFPOINT
FORMAT VERSION	Version of file format	Input in NEMO settings
DATA_SIZE	Size of the data file	For profiles and time-series : If one file per station = Size of the file in Mbytes If one file per cruise : Size of the Cruise file/number of stations in Mbytes for trajectories : size of the file in Mbytes
DIST_WEBSITE	Distribution website	Must be set to « <a href="http://www.sdn-taskmanager.org/">http://www.sdn-taskmanager.org/</a> » Input in NEMO settings
DIST_METHODE	Distribution method	SeaDataNet data access mechanisms (SeaDataNet common vocabulary, List L07). Input in NEMO settings

To use the file with MIKADO to generate export of XML CDI records, refer to Mikado’s user manual [3].

### 7.5.5. Coupling table for SeaDataNet Replication Manager

If “Generate mapping for SeaDataNet Replication Manager” is clicked in NEMO settings, for all conversions of data files NEMO will insert records in the coupling table which exists in the local database of NEMO. NEMO inserts one record for LOCAL\_CDI\_ID.

The coupling table contains the following information:

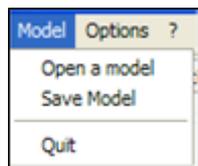
- LOCAL\_CDI\_ID,
- Modus = 1 (for 1 station per file), 3 (for multi-station files)
- Format (which is ODV or MEDATLAS)
- File name as described in paragraph 7.5.1.
- Date of creation

LOCAL\_CDI\_DI + format is the unique index of the coupling table.

This coupling table is used to create a coupling file used by SeaDataNet Replication Manager to make the mapping between a LOCAL\_CDI\_ID (one profile, one time-series or one trajectory) and the name of the file containing this LOCAL\_CDI\_ID.

## 7.6. NEMO models

The “Model” menu of NEMO allows to save a model or to open an existing model:



### 7.6.1. Save a model

NEMO can save the model to let the user reuse it for a similar dataset. A full description of a dataset isn't mandatory.

By default, the model is saved as an XML file, in the default 'models directory' field in NEMO settings. The extension of the model file is ".xml".

### 7.6.2. Open an existing model

A user can open an existing model to apply it with or without modification to a new dataset.

She/He must first enter the type of data to process (Cruise or collection), then select the file or the directory to be processed before opening the model.

Opening a model before having selected input file(s) or directory results in an error message.

If the model wasn't fully validated an information message is displayed.

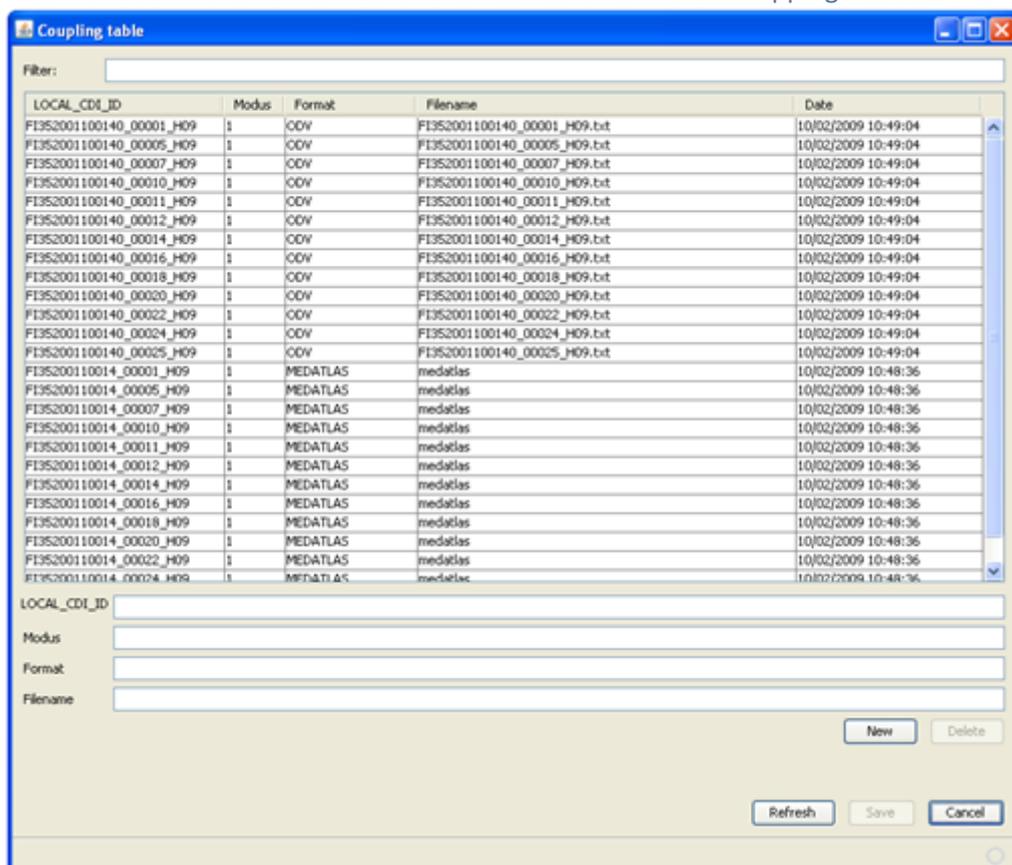
## 7.7. Coupling table management

The "Coupling Table" menu of NEMO allows managing the content of the mapping table defined in paragraph 7.5.5.



## 7.7.1. Edit the coupling table

This function allows to edit the content of the mapping table and to manage it.



User can:

- Search specific rows in the mapping table using the filter
- Sort the mapping table by clicking the column title
- Delete rows in the mapping table by selecting the row(s) and then click on the “Delete” button. The definitive delete is only done after clicking on Save.
- Insert rows manually in the mapping table by typing the LOCAL\_CDI\_ID, Modus, Format and Filename in the empty text inputs, then by clicking on New.
- Edit a row by clicking it, then click in one of the editable columns (Modus, Filename, Date) to change it
- Refresh the content of the table from the database. **Refresh is cancelling all changes not previously saved.**
- Quit without saving by clicking on Cancel.

## 7.7.2. Export the coupling table

This export function generates a coupling file that will be used by SeaDataNet Replication Manager for retrieving stations in the files. The default name for this coupling file is “coupling.txt”, but it can be changed in NEMO settings.



The coupling file used by SeaDataNet Replication Manager is unique and called “coupling.txt”. This file must not contain duplicates (the coupling file ID is LOCAL\_CDI\_ID + format). It’s up to NEMO user to create only one file called “coupling.txt” for SeaDataNet purpose by using the coupling table facilities.

The format of this coupling file is the following:

*Local\_cdi\_ID;Modus;Format;File\_name*

### 7.7.3. Import a coupling file

The import function allows to import a coupling file, at the same format as previously described (paragraph 7.7.2), into the coupling table.

This can be useful, if a user prefers to modify the coupling table using a text editor, he can successively:

- Export the coupling table from NEMO,
- Delete the coupling table in NEMO
- Modify the coupling file in a text editor
- Import the coupling file in NEMO
- Export the new coupling table for SeaDataNet usage

## 7.8. NEMO in batch mode

NEMO can be run in batch mode if models have been previously defined.

To launch a conversion, use the command is *nemo\_batch* with several arguments:

**-i:** with the path and name of the input file or directory (mandatory)

**-o:** with the path and name of the output file or directory (mandatory)

**-m:** with the path and name of the model (mandatory)

**-c:** with the format *odv, medatlas, netcdf* (mandatory)

**-cdiSummary:** with the path and name of the CDI summary (optional)

**-couplingTableUpdate:** (optional) to ask for an update of the NEMO coupling table, if not present the table will not be updated.

**-couplingTablePrefix:** with the prefix to use in the coupling table (mandatory if **-couplingTable** is present)

**-mono:** one station per file

**-multi:** one file with all the stations

**-datasetRef:** Sets the first part of the filename and the first part of the LOCAL\_CDI\_ID. Cannot be used when processing a collection.

**-cruiseName:** sets the cruise name. Overrides the model value.

**-cruiseComment.** Overrides the model value and input the value in the DATASET\_ABS field of the CDI\_summary file for MIKADO

**-shipCode:** sets the ship code, and gets the ship name from the C17 list. Overrides the model value.



**-localCsrIdentifier:** sets the Local CSR Identifier. Checks the identifier validity. Overrides the model value.

**-bshCsrReference:** sets the BSH CSR Reference. Checks the identifier validity. Overrides the model value.

Note that -localCsrIdentifier and -bshCsrReference are mutually exclusive.

To launch an update of external resources (BODC vocabularies, CSR list, EDMO codes, Surveys list), the command is **nemo\_batch** with only one argument:

**-updateVocabs:** update external resources

## 7.8.1. Windows environment

### .bat file examples:

Copy the text in the boxes in a file named with .bat extension. Do not forget to adapt the text to your data and the conversion type you want.

#### *example1: launch one Nemo batch command*

```
"nemo_batch" -m "C:\testNEMO\models\mona_ctd_1221_P01.xml" -i "C:\testNEMO\mona_ctd\trav1"  
-o "C:\testNEMO\mona_ctd\outputODV" -c odv -multi -cdiSummary "C:\testNEMO\mona_ctd\cdi.txt"  
-couplingTableUpdate -couplingTablePrefix "C:\testNEMO\mona_ctd"
```

#### *example 2: launch Nemo batch on all files in a directory*

```
@echo off  
REM=====br/>REM little batch script to call NEMO on several files in the same directory  
REM this script must be put in the Nemo installation directory (usually C:\Program Files\NEMO)  
REM this file can be used to run Nemo in batch mode on several files using the same model  
REM=====br/>  
REM set the input directory path in the line below  
setinputDir=C:\myData\115518\input\  
setoutputDir=C:\myData\output\  
setmodelFile=C:\myData\myModel.xml  
  
REM here we loop on all files in the inputDir, except files beginning with "PF_", because these are files created by Nemo  
for /f %a IN ('dir /b "%inputDir%*"*. * ^| find /V "PF_") do (  
REM the line below just displays the current input file name in the console  
echo processing file: %a  
REM the line below calls nemo in batch mode on current file ("%a", and creates the output file called as the input, but  
ending with ".odv"  
REM CHANGE HERE the conversion format if needed and the datasetRef  
call nemo_batch -i "%inputDir%%a" -m "%modelFile%" -o "%outputDir%%a.odv" -c ODV -multi -datasetRef  
myDatasetRef
```



## 7.8.2. Linux environment

On Linux, launch *nemo\_batch* with the following additional arguments:

*-nosplash* (mandatory)

*-batch* (mandatory)

### Example of one command line which can be in a shell script file:

```
#!/bin/sh
./nemo_batch -nosplash -batch -m ./testNEMO/models/mona_ctd.xml -i ./testNEMO/mona_ctd/trav1
-o ./testNEMO/mona_ctd/outputODV -c odv
```

## 7.8.3. Log file

While the batch is running, a log file is created in NEMO installation directory (*NEMO\_installation\_directory\Logs\nemoBatch.log* file).

The program appends messages in the log file (one log file per day).

### Example of log file with error :

```
2010-05-04 15:43:27,337 [main] INFO nemoBatch / Batch mode starting. Arguments :
```

```
2010-05-04 15:43:27,337 [main] INFO nemoBatch / -batch -m
C:\Michele\testNEMO1.2.20\modeles\mona_ctd_1221_P01.xml -i
C:\Michelex\testNEMO1.2.20\mona_ctd\trav1 -o
C:\Michele\testNEMO1.2.20\mona_ctd\outputODV_batch_mono -c odv
```

```
2010-05-04 15:43:27,368 [main] ERROR nemoBatch / Input file not found
```

```
2010-05-04 15:43:27,368 [main] INFO nemoBatch / Batch mode ended with errors.
```

### Example of log message with no error :

```
2010-05-04 15:38:11,492 [main] INFO nemoBatch / Batch mode starting. Arguments :
```

```
2010-05-04 15:38:11,492 [main] INFO nemoBatch / -batch -m
C:\Michele\testNEMO1.2.20\modeles\mona_ctd_1221_P01.xml -i
C:\Michele\testNEMO1.2.20\mona_ctd\trav1 -o
C:\Michele\testNEMO1.2.20\mona_ctd\outputODV_batch_mono -c odv
```

```
2010-05-04 15:38:23,007 [main] INFO nemoBatch / Batch mode successfully ended.
```

## 8. References

- [1] – Lowry R., Fichaut M., Schlitzer R., Maudire Gilbert, Bregent Sophie 2019 - SeaDataNet data transport formats. ODV, MEDATLAS, NETCDF, *SeaDataNet report, version 1.22, 69p.*  
<https://doi.org/10.13155/56547>
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<https://data.ifremer.fr/Tout-savoir-sur-les-donnees/Gestion-des-donnees/Formats/MedAtlas>
- [3] – Tosello V., Fichaut M., Harscoat V., Larour M. Maudire G, 2009 – SeaDataNet, MIKADO user manual. *SeaDataNet report, version 1.1.3, 81 p.*  
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- [4] – Deneudt K, De Pooter D, Gouzien S 2019 – Recommended data transport format for biological data in the framework of SeaDataNet *SeaDataNet report, version 2.1, 21 p.*  
[https://www.seadatanet.org/content/download/638/file/SDN2\\_D84b\\_WP8\\_ODV\\_biology\\_variant\\_format%20guidelines.pdf](https://www.seadatanet.org/content/download/638/file/SDN2_D84b_WP8_ODV_biology_variant_format%20guidelines.pdf)
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- [6] F. Galgani, A. Giorgetti, M. Vinci, M. Le Moigne, G. Moncoiffe, A. Brosich, E. Molina, M. Lipizer, N. Holdsworth, R. Schlitzer, G. Hanke, D. Schaap, 2019 - Proposal for gathering and managing data sets on marine micro-litter on a European scale. *EMODnet chemistry report, 07/06/2019, 34 pp.,*  
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- [7] Microlitter format and examples of ODV data and CDI xml metadata files  
<https://doi.org/10.6092/18ba5288-cea8-4af2-867f-9f4813265af2>
- [8] – Lahbib S, Claus S, Oset P, Fichaut M, Thyssen M, 2019 – Ingesting, validating, long-term storage and access of Flow Cytometry data. . *SeaDataNet report, version 6, 43 p.*  
[https://www.seadatanet.org/content/download/3721/file/SDC\\_WP9\\_D9.13\\_FlowCytometryDataManagement.pdf](https://www.seadatanet.org/content/download/3721/file/SDC_WP9_D9.13_FlowCytometryDataManagement.pdf)
- [9] Flowcytometry format and examples of ODV data files and CDI xml metadata files  
[https://www.seadatanet.org/content/download/2101/file/TemplateandExampleODV\\_CDI\\_FlowCytometry.xlsx](https://www.seadatanet.org/content/download/2101/file/TemplateandExampleODV_CDI_FlowCytometry.xlsx)

## 9. Appendix 1 – Proxy connection to internet

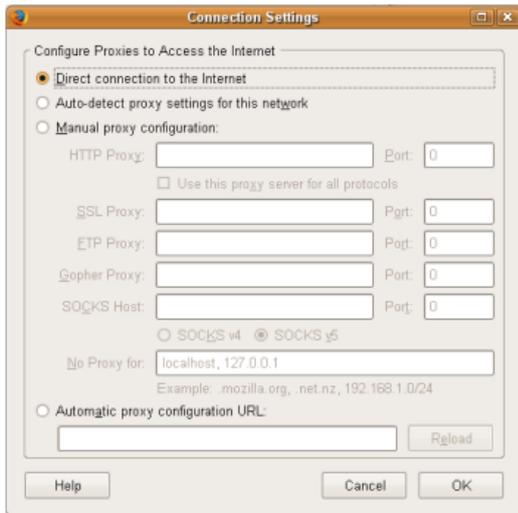
To get the proxy address and port please do as follow:

### 9.1. Firefox

Go into the following menus:

Tools> Options> General > Proxy > Parameters

If you have got a Proxy configuration, the address and port to add in the nemo.ini file are in the HTTP Proxy and Port fields of the following window:



### 9.2. Internet explorer

Go into the following menus:

Tools, Internet options, Connection, Local Area Network (LAN) settings

If a Proxy configuration is set, the address and port to add in the nemo.ini file are in the Proxy server Address and Port fields of the following window:



## 10. Appendix 2 – Writing regular expressions

1/

use "x" to represent the character "x"

use "." to represent any character including white space, digital number...

2/

use one of the following symbols to indicate the occurrence of this character:

use "?" to indicate once or not at all (ex. "a?" for search "a" once or not at all)

use "\*" to indicate zero or more times (ex. "b\*" for search "b" zero or more times)

use "+" to indicate one or more times (ex. "f+" for search "f" one or more times)

More about pattern possibilities:

<http://download.oracle.com/javase/1.4.2/docs/api/java/util/regex/Pattern.html>

Note:

=====

Nemo automatically adds ".\*" at the end of the pattern, while we are searching for a string at the beginning of a line.

Example:

=====

a world beginning with "toto", ending with "zz", with one or several unknown characters in the middle (ex. "totoazertyzz")

use pattern="toto.\*zz"

where "." represents any character and "\*" indicates that this "any character" can occur zero or more times.

This pattern will match with the following words:

totoabcdefzzxy

totoabcdefzz

toto1234zz

totoab56zz

totoab 34 zz

totozz

totozz

This pattern will NOT match with the following words:

toabcdzz ("toto" not found)

totoabcd ("zz" not found)

