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| IdentiFY Project |
| FitLike Software Documentation |
| User Guide 1.0 |

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# General presentation

## Introduction

FitLike sofware was develop to help data processing from STELAR© SPINMASTER FFC2000. It allows to :

* Process bloc data to obtain dispersion curves
* Customize pre-processing methods and models
* Visualize and explore dispersion, zone and bloc data
* Create, apply and export dispersion models

## Installation/Running

FitLike software requires MATLAB© 2014b or upper versions and the following toolbox:

* Curve Fitting ToolBox
* Statistic and Machine Learning ToolBox
* Image Processing ToolBox

*Note : Statistic and Machine Learning ToolBox & Image Processing ToolBox could be avoided by changing the source code.*

### Running FitLike

Step 1 : Download all the files and folder from the following GitHub link : https://github.com/ManuIdentiFY/FitLike2

Step 2 : Unzip the files and put them in the same folder.

Step 3 : Open MATLAB© and run FitLike with **launcher()**

# Interface presentation

FitLike software is composed by a menu and three main figures (Fig. 1) :

* File Manager : visualisation, selection and organisation of the imported files
* Display Manager : data and model visualisation (bloc, zone, dispersion)
* Model Manager : data pre-processing and model training

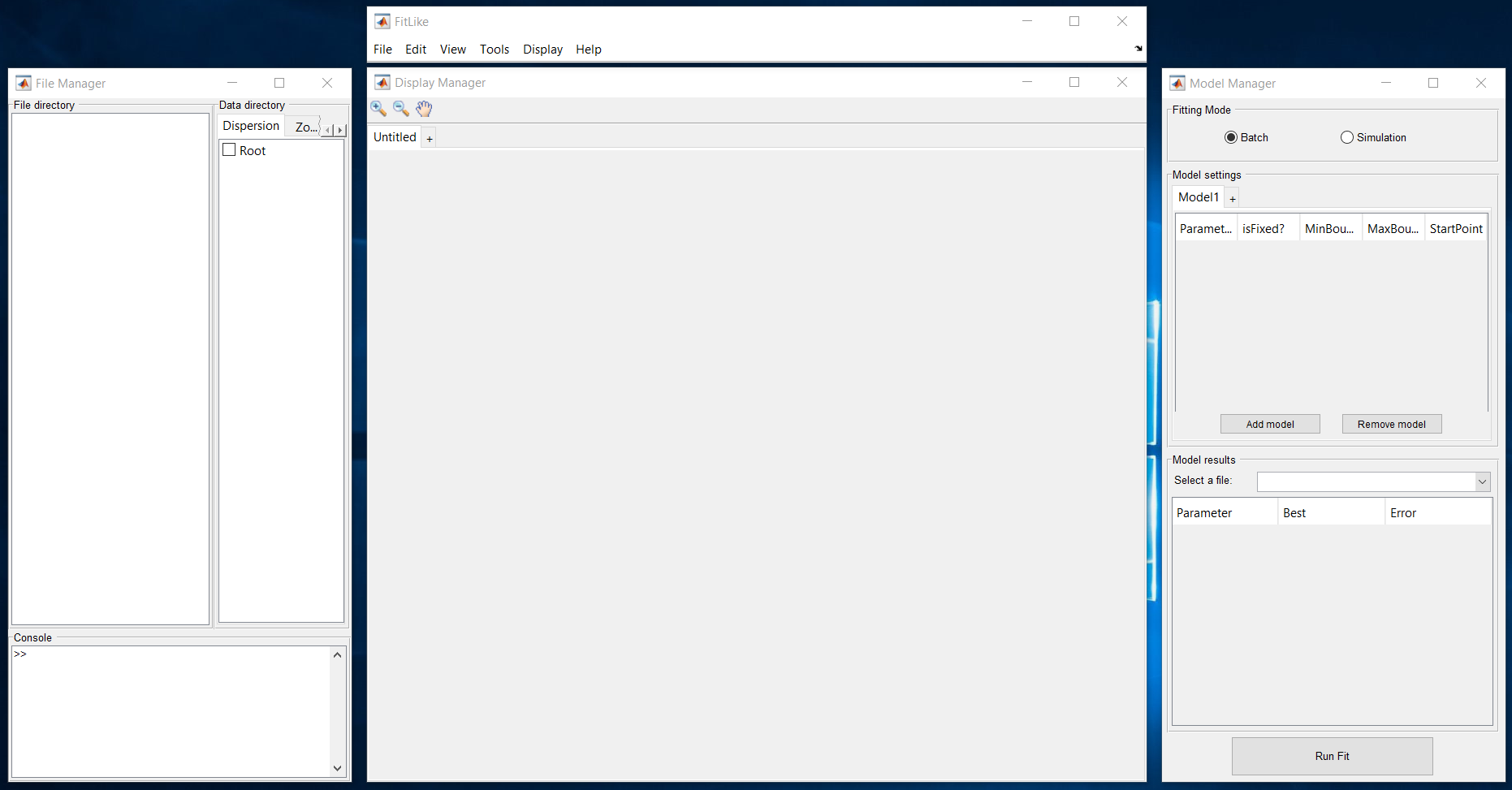


Fig. 1 : FitLike interface - menu and three main figures

Each figure can be set invisible by closing it (red cross at the top right corner of the figure). Using **Display > …** the figure can be set visible or invisible.

# STELAR© files : importation, organisation

## Importation

FitLike software allows the importation of STELAR© files from SPINMASTER FFC2000 (.sdf/.sef). FitLike software can manage two versions of the STELAR© files : version 1.0 and 2.0. Files are imported and organised as Dataset>Sequence>File.

1. **File > Open file**

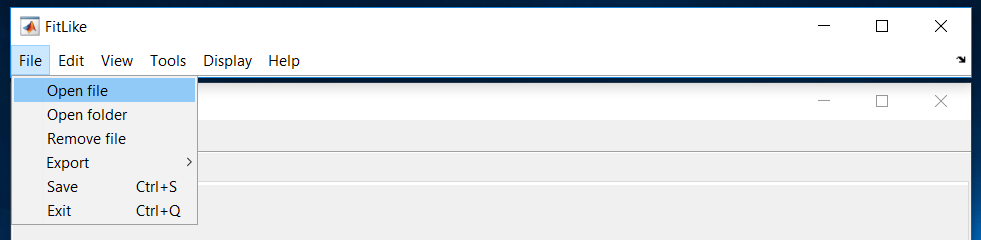


Fig.  : Import .sdf Files

1. Select **.sdf, .sef or .mat files**

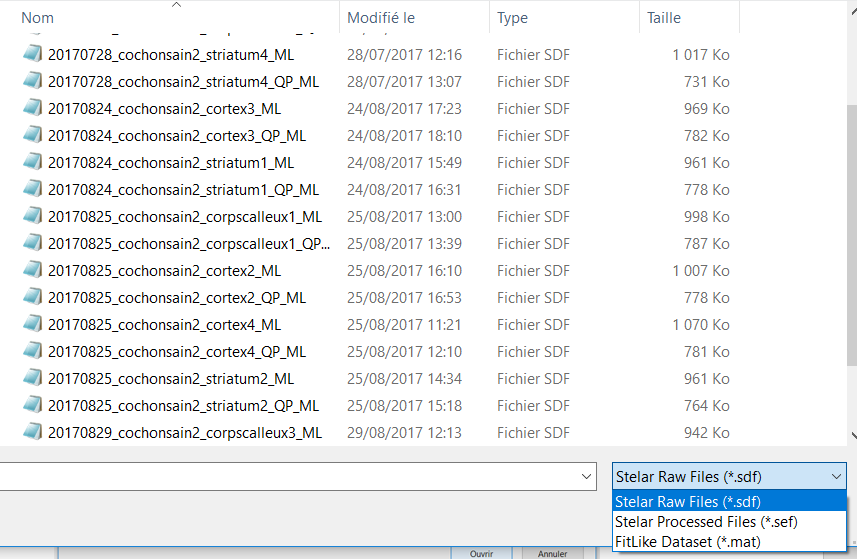


Fig. 3 : Importation window

*Note : You can select multiple files at the same time. Also .mat files corresponds to files saved in FitLike (see Save Working Space).*

1. Enter a dataset name or select an existing one
2. Your files appear in the File Manager File directory (Fig. 4)

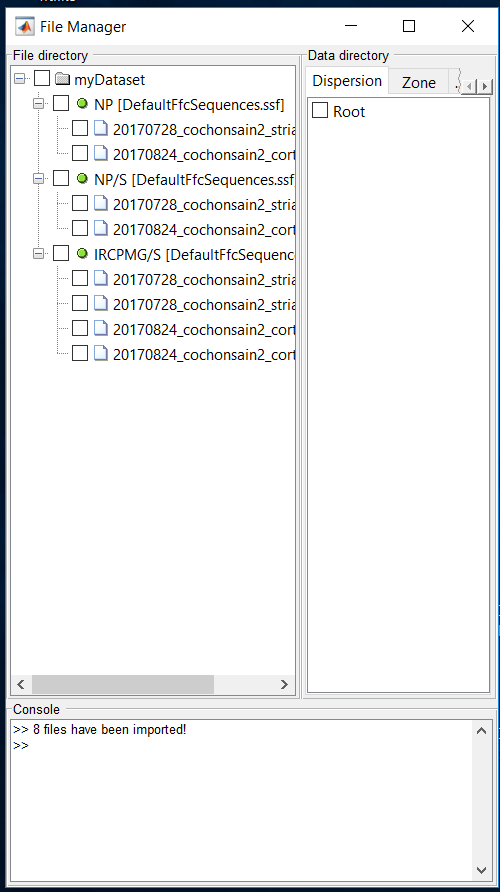


Fig. 4 : File Manager panel after importation

*Note: It is also possible to import directly folder containing the raw data using* ***File > Open Folder****.*

## Organisation

### Rename Dataset/Sequence/File

You can rename dataset/sequence/file by clicking on them in the FileManager File directory tree and **Enter**. See Fig. 5. No duplicated are accepted.

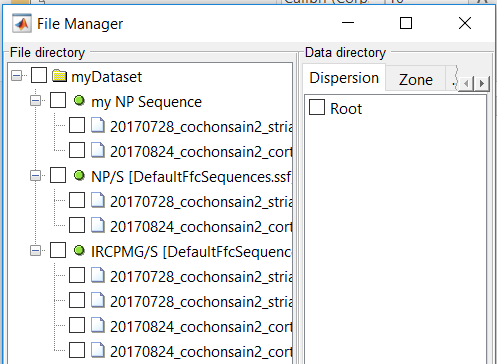
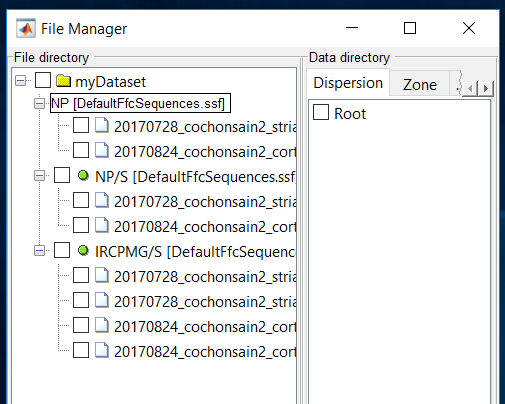


Fig. 5 : Rename files (left: before, right: after)

### Select files

You can select or unselect files by clicking on the checkbox at the left of the dataset/sequence/file in the File Manager file directory tree (Fig. 6).

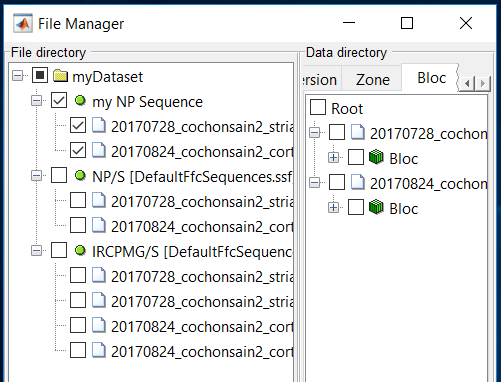
When you select files, data containing inside the files appear in the Data directory. According to the data, you can see them in Dispersion/Zone/Bloc (If you import .sdf files, only Bloc are visible before applying processing).

Fig. 6 : Select files. Bloc data appear in the Data directory (Bloc panel).

### Select data

When you have selected files you can then select data in the data directory. Data will appear in the DisplayManager.

Take care about Bloc/Zone data where you can expand data to select a specific zone/bloc.

### Remove files

Files can be removed by using **File > Remove file.**

### Future functions

* Drag and Drop to move dataset/sequence/file
* Merge/Unmerge files
* Add label to files

# STELAR© files : processing

The imported files can be processed using different functions. Precisely raw data (.sdf) can be treated to obtain dispersion data following:

Each arrow corresponds here to a specific process.

## Processing Manager presentation

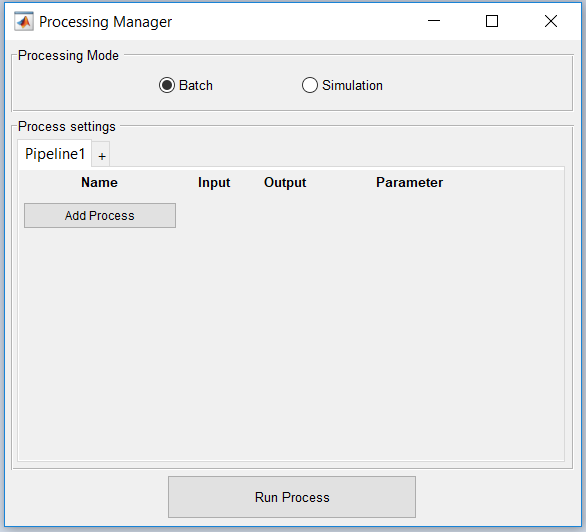
The ProcessingManager figure can be open with **Display > ProcessingManager.**

Fig. : Processing Manager figure

Two processing mode can be used:

* Batch: allow to treat multiple files with the same pipeline
* Simulation: allow to treat one file with multiple pipeline (not available)

In the Process settings, process pipeline can be created by clicking on **Add Process**. Description of each process will be available soon in the interface but can be found in Data Controller folder.

After selection, the process appears in the current pipeline. Input and Output displays the input and output type of the process (here from bloc to zone).

Arrows and red cross allow to move up/down or supress a specific process.

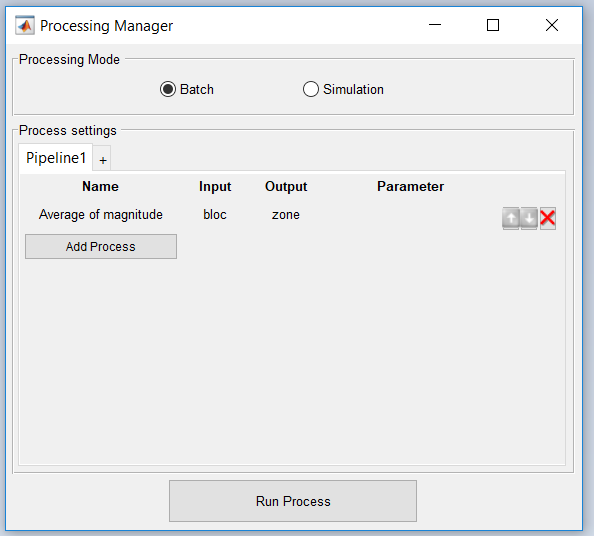
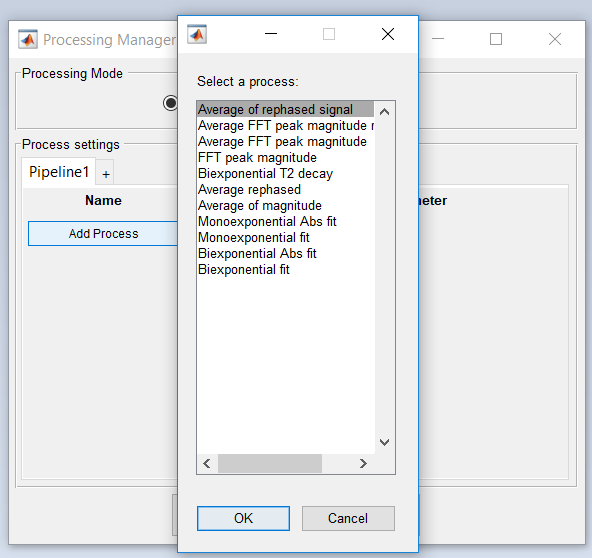


Fig. 8: Process selection window and result after selection

## Processing Manager – Pipeline options

You can add new pipeline by clicking on the “+” tab. Just left click on another tab to select it.

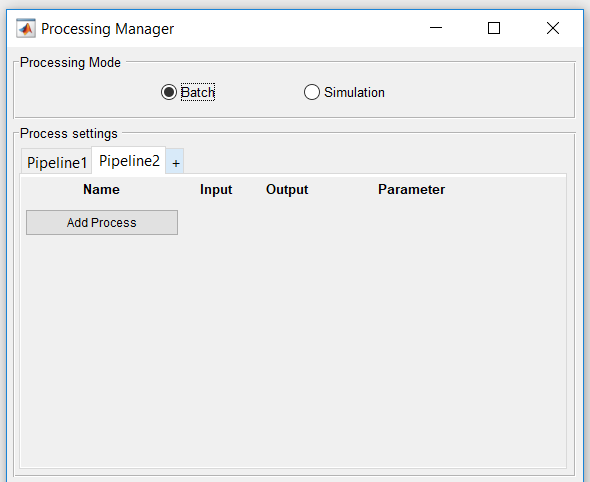


Fig. 9: New pipeline can be added by clikcing on the '+' tab

By right clicking on a specific tab (other than ‘+’ tab), you access several options:

* Rename the pipeline
* Load a saved pipeline
* Save the selected pipeline
* Delete the selected pipeline

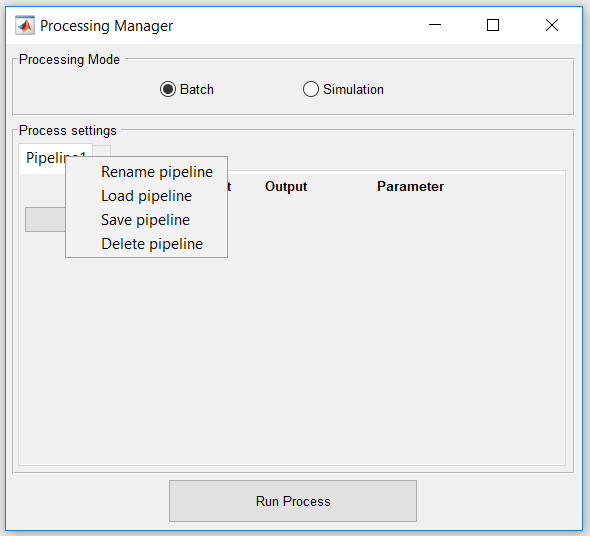


Fig. 10: Tab options available (right click)

## Processing Manager – Run process

After selecting the processing mode and designing your pipeline you can run it by clicking on **Run Process**. Results will be automatically displayed in the DisplayManager if possible.

Do not forget to select files in the FileManager (file directory tree).

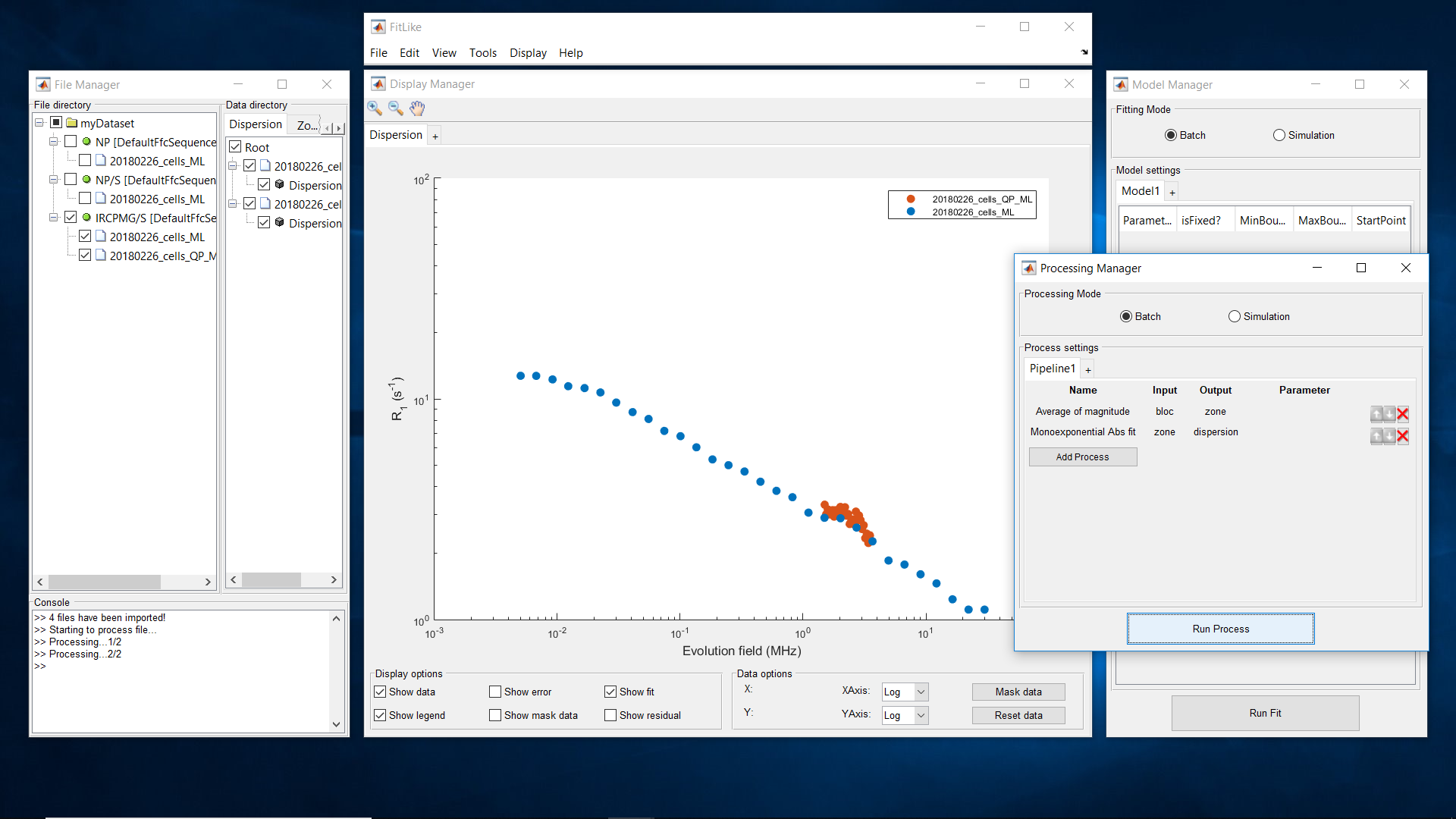


Fig. : dispersion result after processing

# STELAR© files : visualisation, exploration

This part is mainly dedicated to the DisplayManager presentation and the visualisation options available.

Before introducing the DisplayManager window you need to select data you want to display. See III-B to select files then data. Do not forget that Zone and Dispersion data appear only after processing (expect if you are using .sef files).

*Note: The process function used are indicated briefly in the data directory (here Dispersion T1 🡪 monoexponential fit; Zone Abs 🡪 Magnitude averaged).*

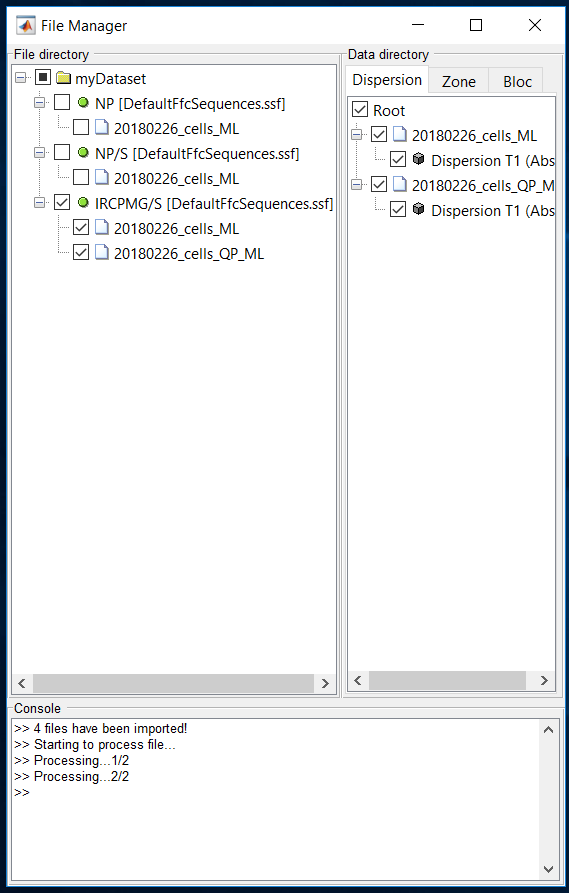
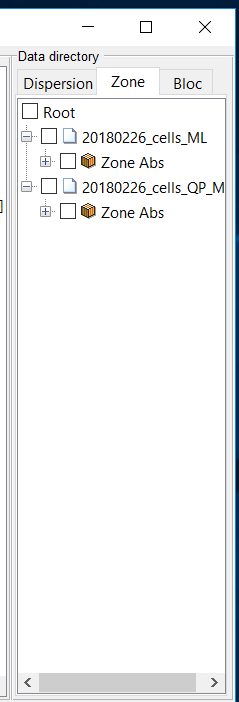
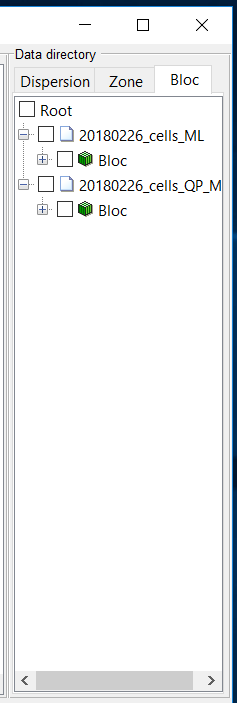


Fig. : Dispersion/Zone/Bloc Data

When you want to visualise data, two cases are possible:

* If the selected tab in DisplayManager is empty you can select any data type (dispersion, zone, bloc). The selection of data changes automatically the empty tab into an appropriate tab.
* If the selected tab in DisplayManager is already a dispersion, zone or bloc you can only add or remove the same type of data. If you try to display other type of data, an error message will appear in the console.

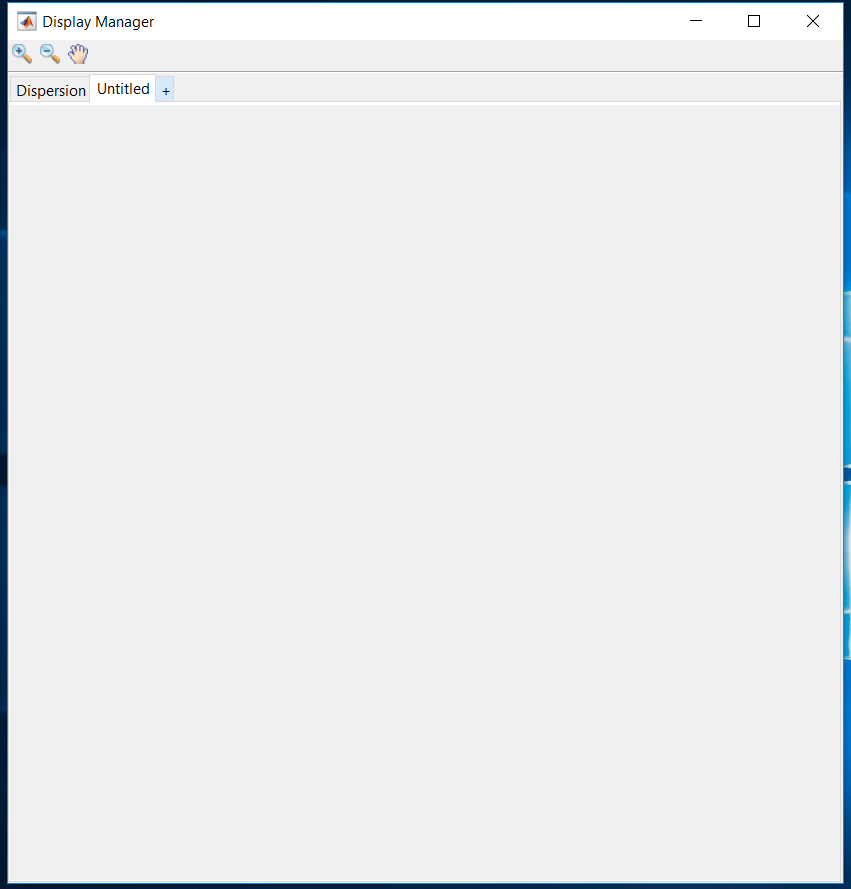
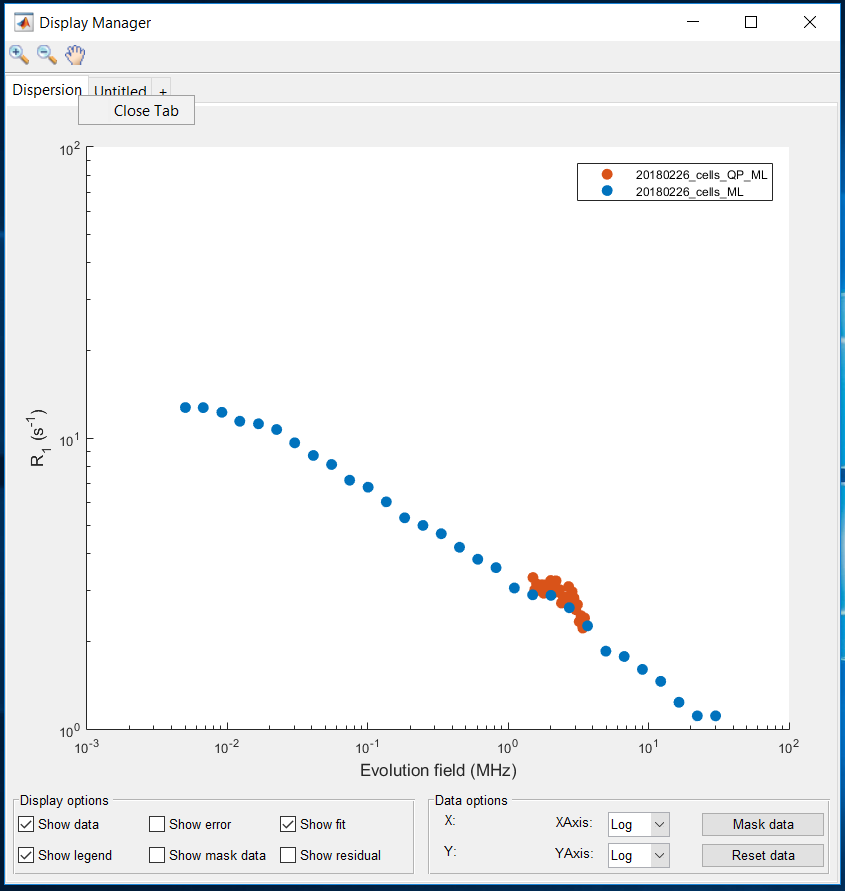


Fig. 13: DisplayManager tab system. You can add new tab by clicking on the ‘+’ tab or you can remove specific tab by right clicking on it and select ‘close tab’. here the new tab “untitled” accept any type of data whereas the dispersion tab accept only dispersion data.

## Dispersion tab

## zone tab

## Bloc tab

# STELAR© files : Modelisation

# FitLIke Data : Save, export