TIMC LAB - TEAM BCM

PANCREAS APPLICATION GUIDE

Created by : BENAISSA Ilian & GUCLU Sefa

Students at Aristide Bergès HNC SIO CLASS OF 2022

Project overseen by : ANGELIQUE Stephanou

Start of project : 03/01/2022

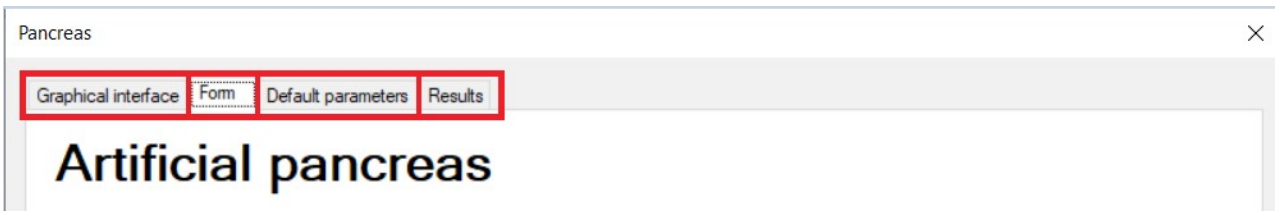
End of project : 11/02/2022

Table of contents

1 Form application

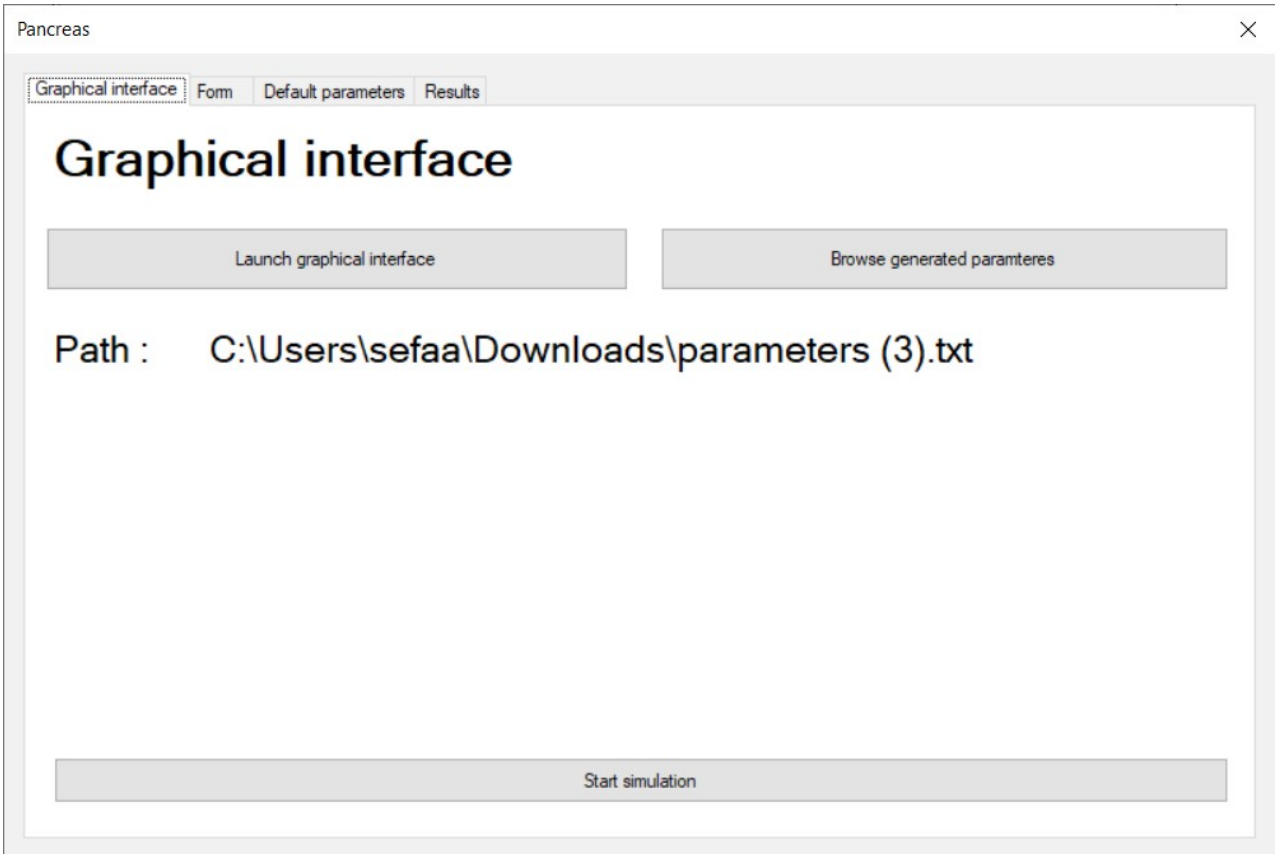
1.1 GUI

The application is split in 3 distinct parts :



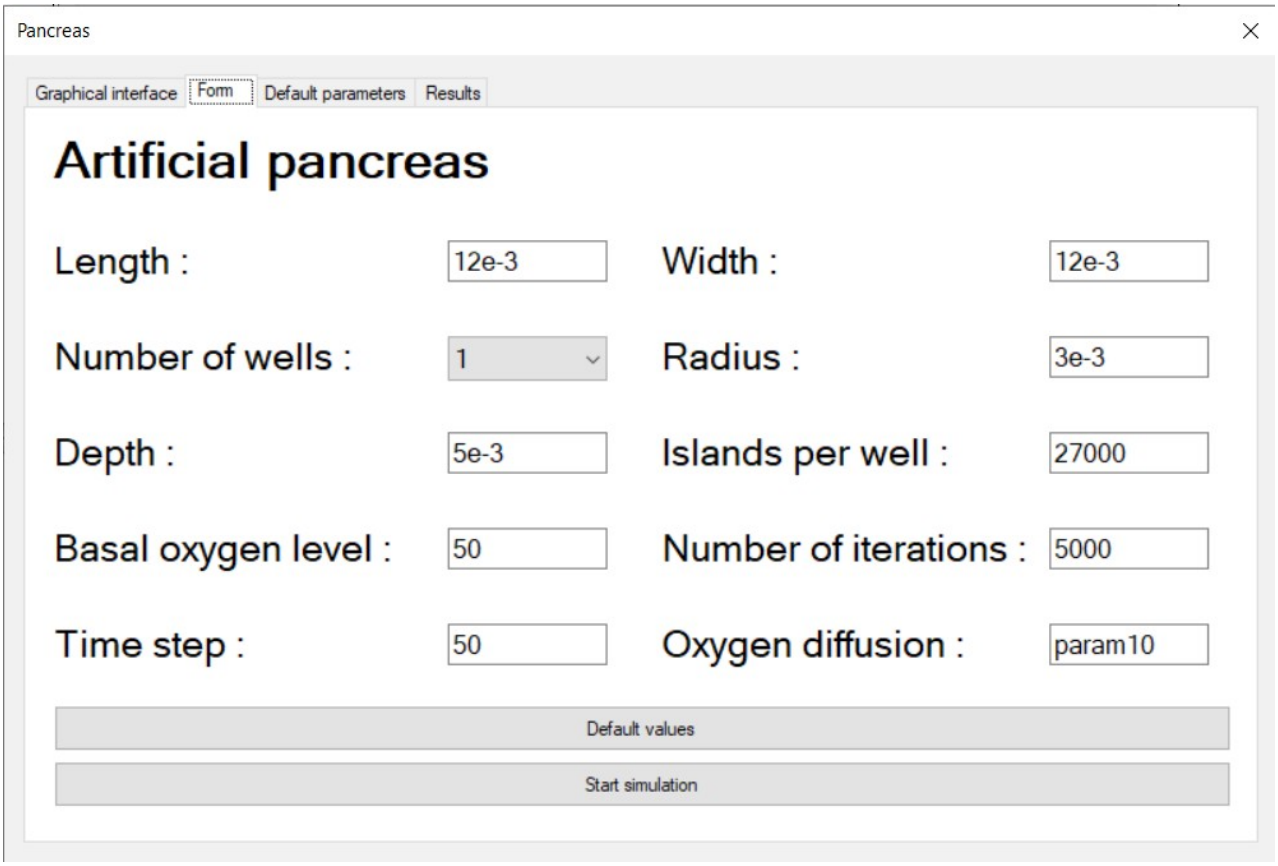
1.1.1 Graphical Interface

This page will help you with launching the graphical interface, browsing generated paramters and starting the simulation.

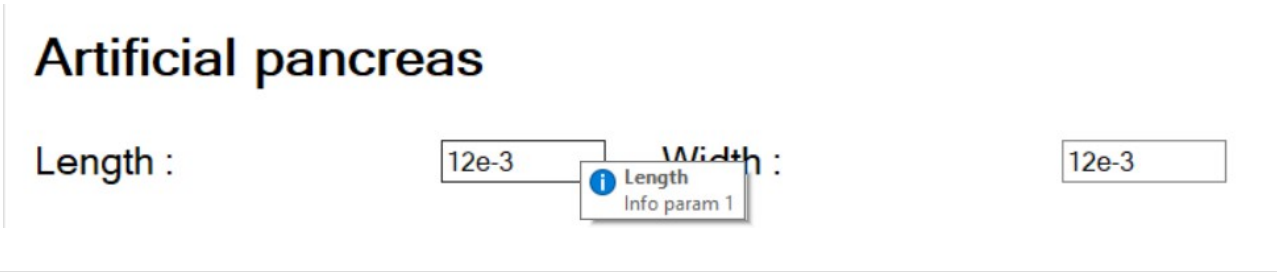


1.1.2 Form

This page is a form that will start the simulation with the parameters that the user has put.

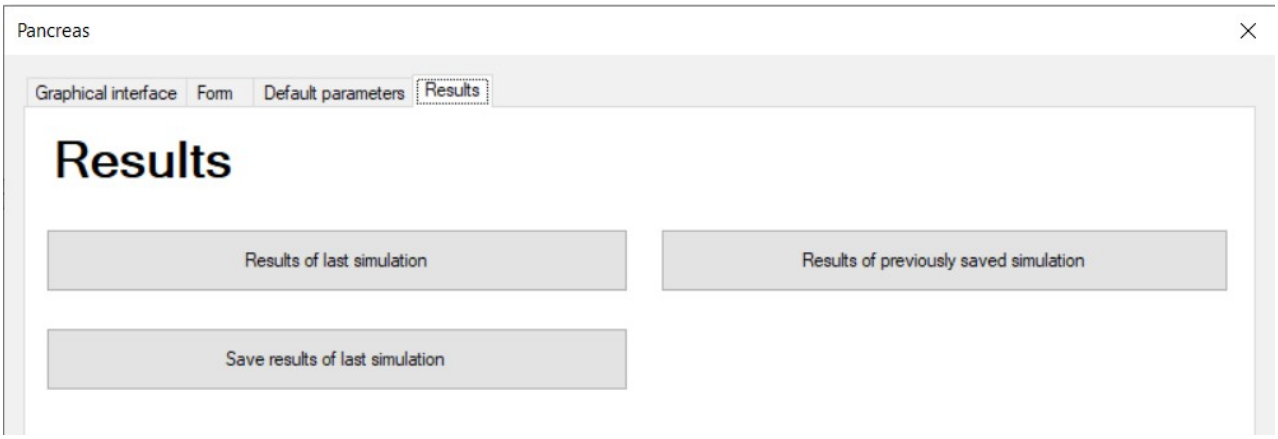


Each parameter is described once you hover over the input box.



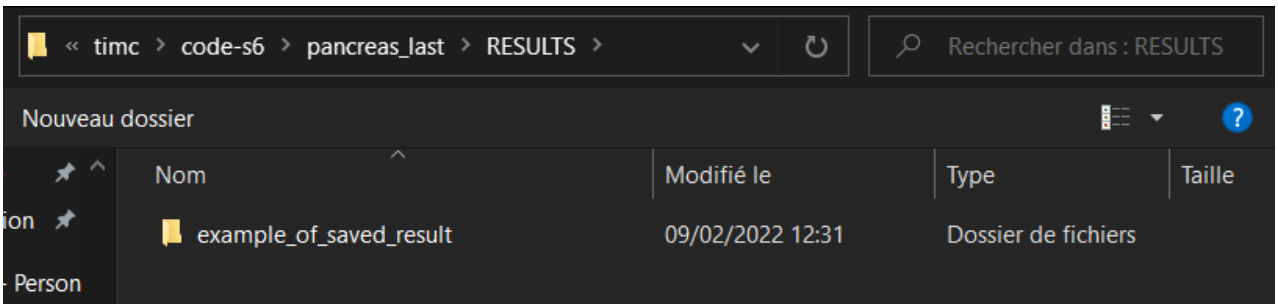
1.1.3 Results

The « Results » page is the final page of this application ; it is where render our last simulation or our previously saved ones.

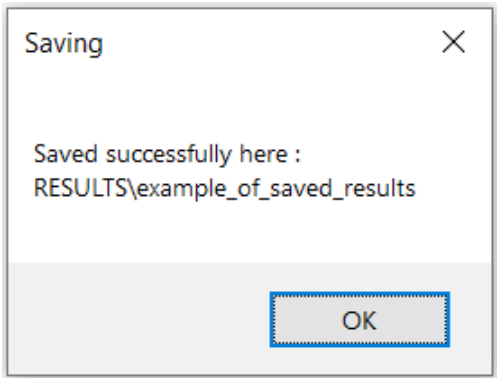


Clicking on the first button will direclty start rendering the last simulation, if any were made.

The second button will let the user choose which folder he will like to render.

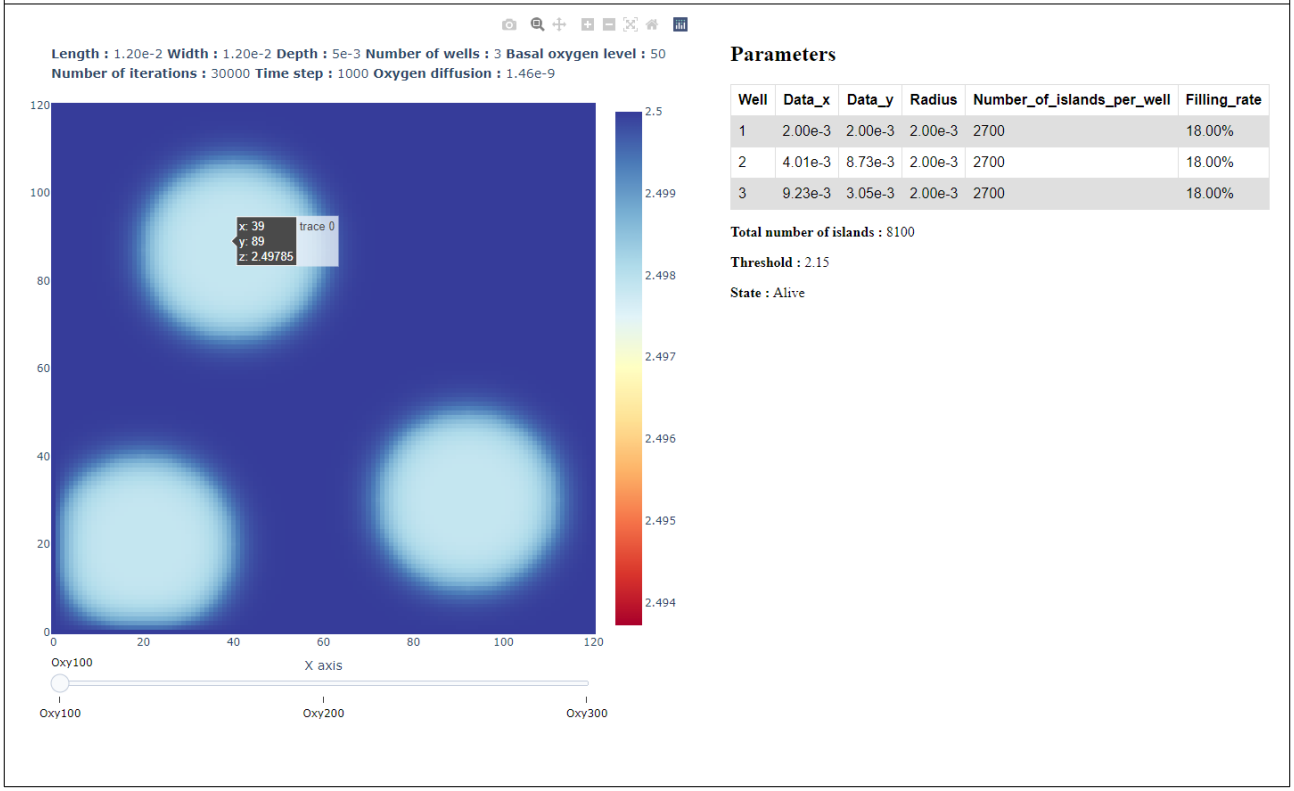


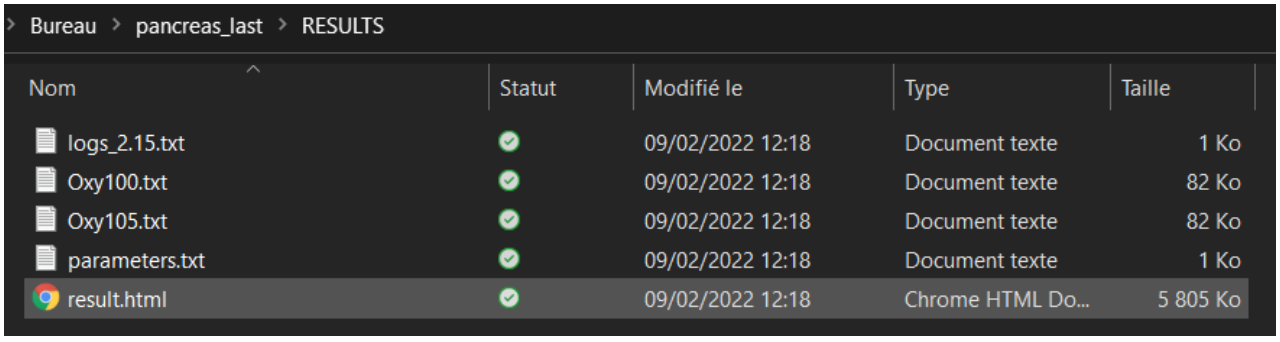
The third and final one is used to saved the results of the last simulation in a subfolder in the folder « RESULTS »



2 Result rendering

The rendering is automatically done in a html page opened in the user's default browser.



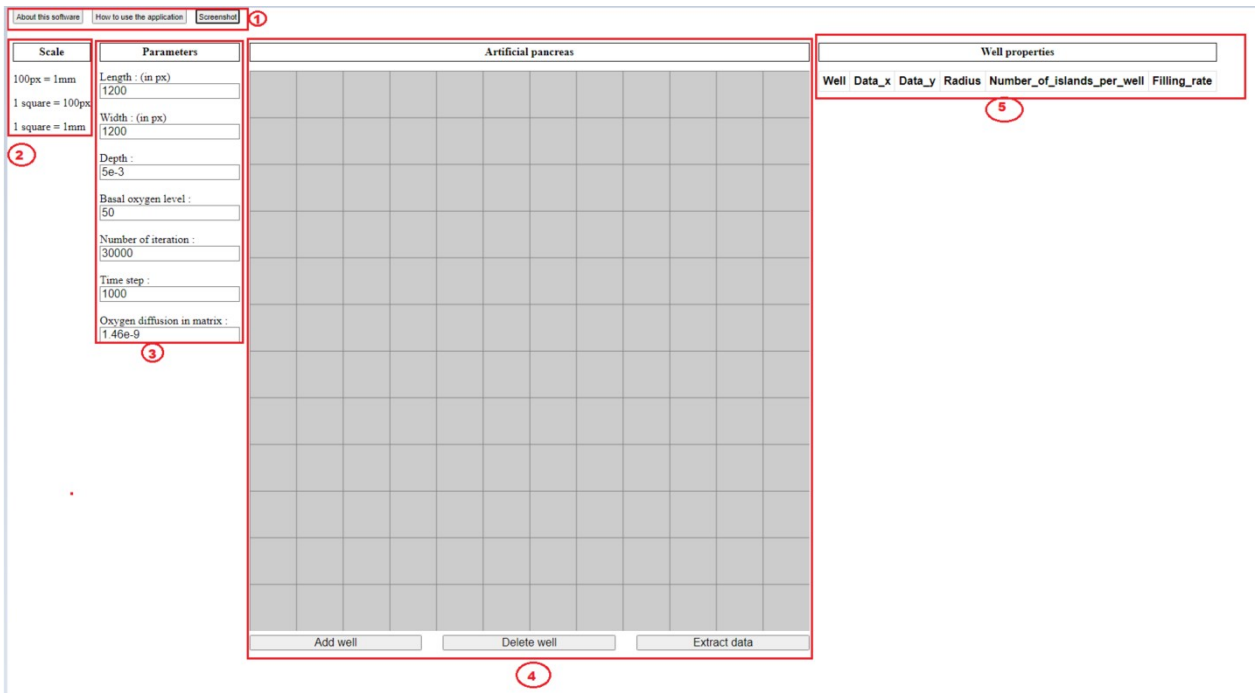


Each rendering generates a logs.txt, paramters.txt and result.html file. Each result is stored in the result.html file, ready to be open in the future without having to restart the simulation.

3 Graphical Interaface

3.1 GUI

The interface is split in 5 distinct parts.

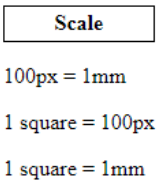


3.1.1 Screenshot, guide & about

In the first one you have 3 buttons, the first one gives you information about the artificial pancreas GUI and it's creation process, the second opens this guide. The last button takes a screenshoot of what you've done so you can easily share it with your collegue.

3.1.2 Scale

The second part gives you the scale of the app. It's important to notice that one square of the « grey zone » equals to 1mm.

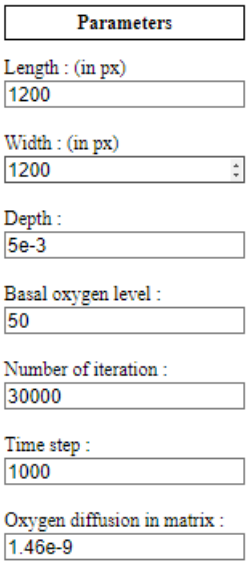


3.1.3 Parameters

The third part allows you to enter the global parameters of the artificial pancreas. The two first parameters (Length and Width) reffer to the length and the width of the grey zone
.
The third parameters named Depth reffers to the depth of the wells that you are going to create later.

Next, you can choose the basal level of oxygen that is going to be spread in the simulation and the time that the simulation is going to last (« number of iterration »).

The two last parameters are for the time step between each simulation and the level of diffusion of the oxygen inside the simulation.



3.1.4 « Grey zone »

The fourth part of this application is the « grey zone ».

The first button, as named, is used to create a new well in the grey zone (the grey zone represents your artificial pancreas). Once a well is created, you can resize it and move it easily like a window on a computer (by clicking on it and doing some drag and drop, or pulling it's side to resize it).

The second button allow you to delete the last well you have created. There is no return to this action so, be carefull.

The last button is used to extract the data of your pancreas, it will save the global parameters and the position of each well and their properties.

You'll use this button when you're satisfied of your work and want to lauch the simulation. This will create a .txt file that you'll need later, you will need to remember where it will be saved (by default, it will be in in your downloads folder).

3.1.5 Propreties

The fifth and last part of the artificial pancreas GUI is the well properties zone. It give you information about each well. (The information in the screenshot bellow are just for demonstration purposes)

Well properties

Well	Data_x	Data_y	Radius	Number_of_islands_per_well	Filling_rate
well-1	409.99	364.03	329.53	2700	6.63%
well-2	1114.76	85.24	85.24	2700	99.12%
well-3	926.51	585.49	199.99	2700	18.00%

3.2 How to start a simulation

3.2.1 Step 1 : Launching the interface

Launch the graphical interface from the form (as seen here).

3.2.2 Step 2 : Generating the parameters

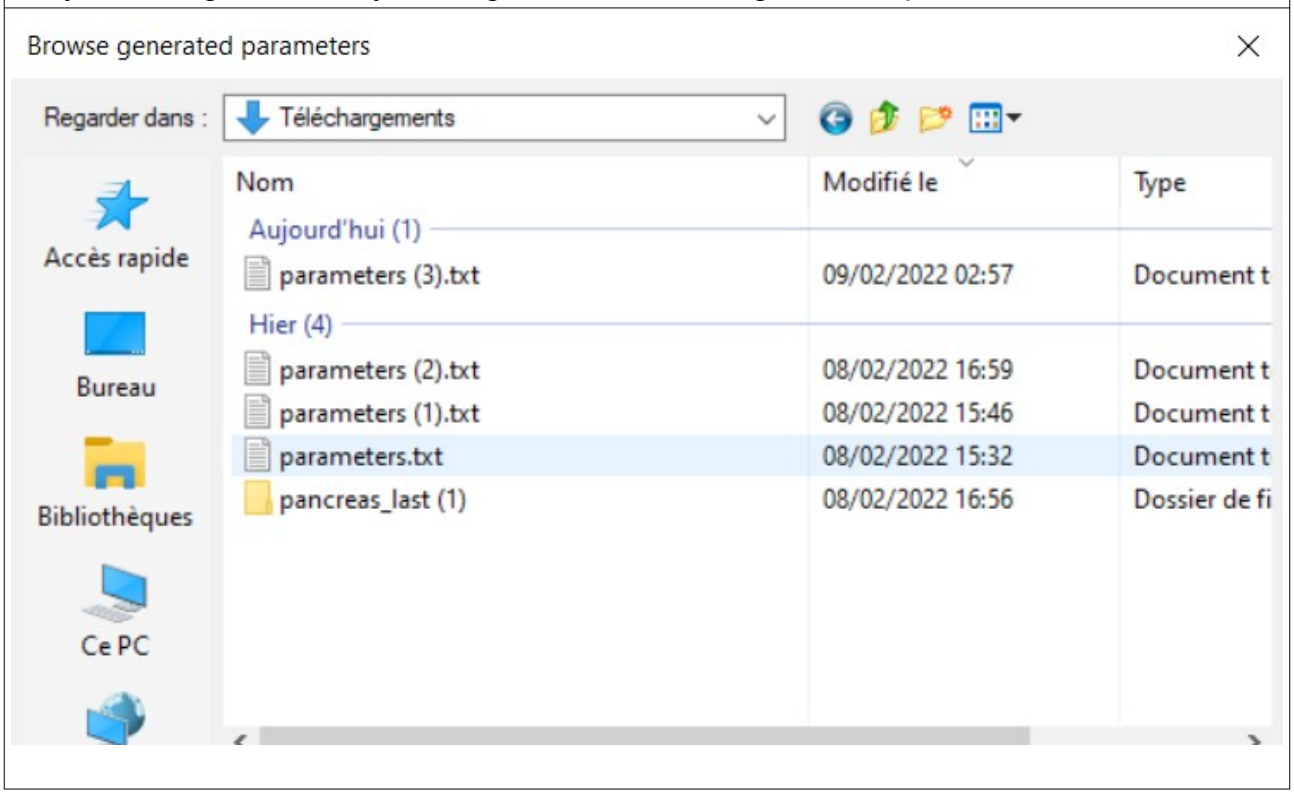
Generate parameters from the graphical interface (as seen here).

3.2.3 Step 3 : Exctracting the parameters

Extract parameters (as seen here).

3.2.4 Step 4 : Selecting the parameters file

Come back to the form on the « Graphical interface » page (as seen here), and select the .txt you have generated by clicking on the « Browse generated parameters » button.



3.2.5 Step 5 : Starting the simulation

Start the simulation by clicking on the button at the bottom (as seen here)

3.2.6 Step 6 : Rendering or saving results

Once the simulation has finished, you are free to render or save the results (as seen here)