

Figures Tutoriel Chapter X

Representation of the drainage network in urban and periurban areas using a 2D polygonal mesh composed of pseudo-convex elements

The various steps presented in this document are part of a series of exercises the objective of which is to reproduce most of the figures included in this chapter. Two steps can be distinguished: the first one that only uses the TriangleQGIS plugin for the triangulation of bad-shaped elements, and the second one that also allows the second step, called dissolution and that uses the Geo-PUMMA toolbox, based on Python and Grass scripts and functions.

Part A: (QGIS-Windows)

Installation of the TriangleQGIS plugin in Windows

Getting the following figures included in the chapter under numbers:

x2;x28;x30;x31;x34;x35;x36

Part B: (QGIS-GRASS-Virtual box)

Dissolution of the triangulation and application to the Mercier catchment

Getting the following figures included in the chapter under numbers:

X34;x35;x36;x37

Part A: (QGIS-Windows)

Installation of the TriangleQGIS plugin in
Windows

Système

▼ Panneau de configuration ▼ Système et sécurité ▼ Système

Rechercher

Page d'accueil du panneau de configuration

- Gestionnaire de périphériques
- Paramètres d'utilisation à distance
- Protection du système
- Paramètres système avancés


Informations système générales

Édition Windows

Windows 7 Professionnel


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Service Pack 1



Système

Fabricant :	opsi
Évaluation :	5,1 L'indice de performance Windows doit être actualisé.
Processeur :	Intel(R) Core(TM) i7-3520M CPU @ 2.90GHz 2.90 GHz
Mémoire installée (RAM) :	8,00 Go (7,88 Go utilisable)
Type du système :	Système d'exploitation 64 bits
Stylet et fonction tactile :	La fonctionnalité de saisie tactile ou avec un stylet n'est pas disponible sur cet écran



opsi - support

Site Web :	Support en ligne
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Paramètres de nom d'ordinateur, de domaine et de groupe de travail

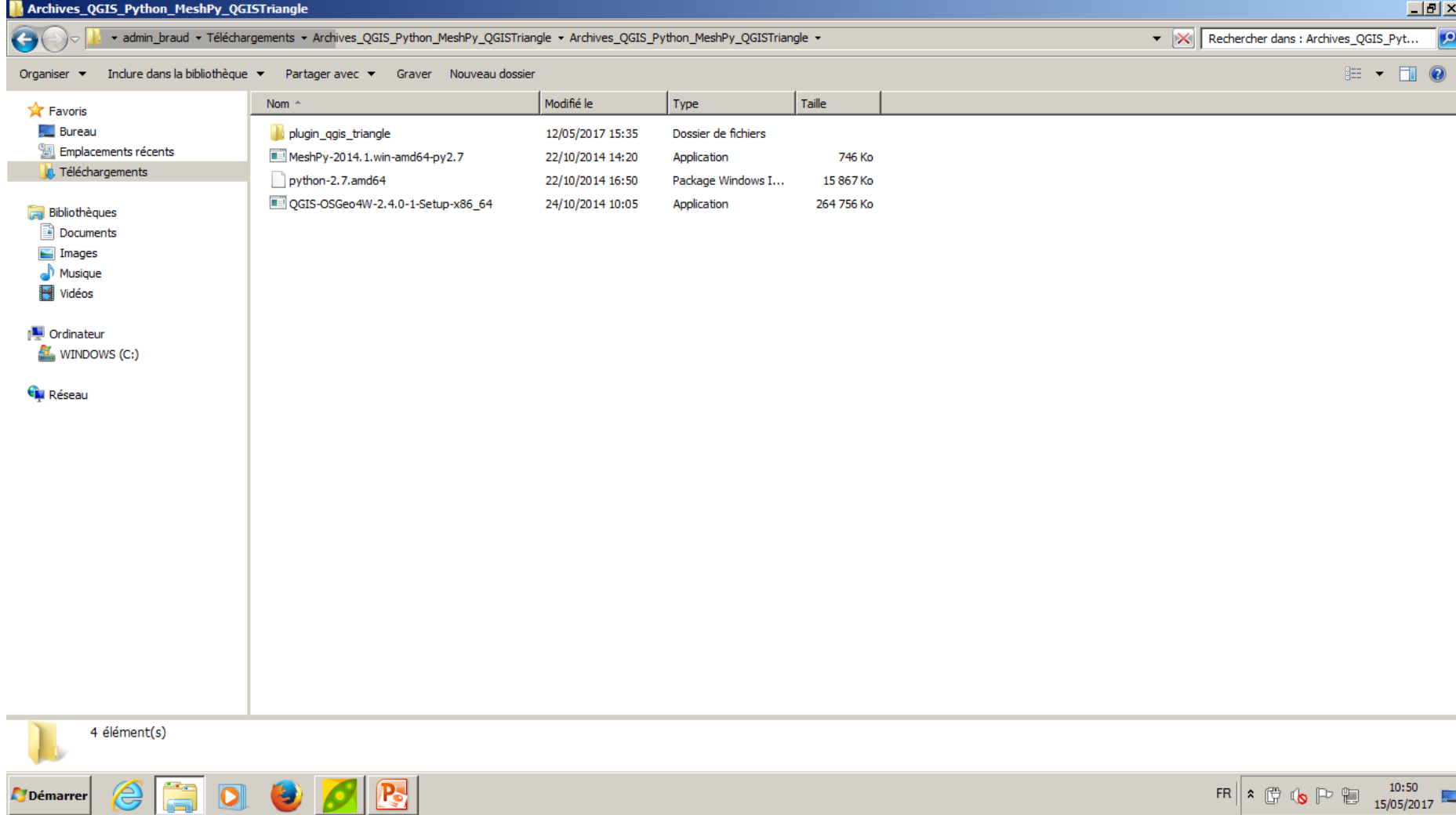
Nom de l'ordinateur :	LYP1163
Nom complet :	LYP1163.lyon.irstea.priv
Description de l'ordinateur :	
Domaine :	irstea.priv

[Modifier les paramètres](#)

Voir aussi

- [Centre de maintenance](#)
- [Windows Update](#)
- [Informations et outils de performance](#)

Presentation of the general characteristics of the computer

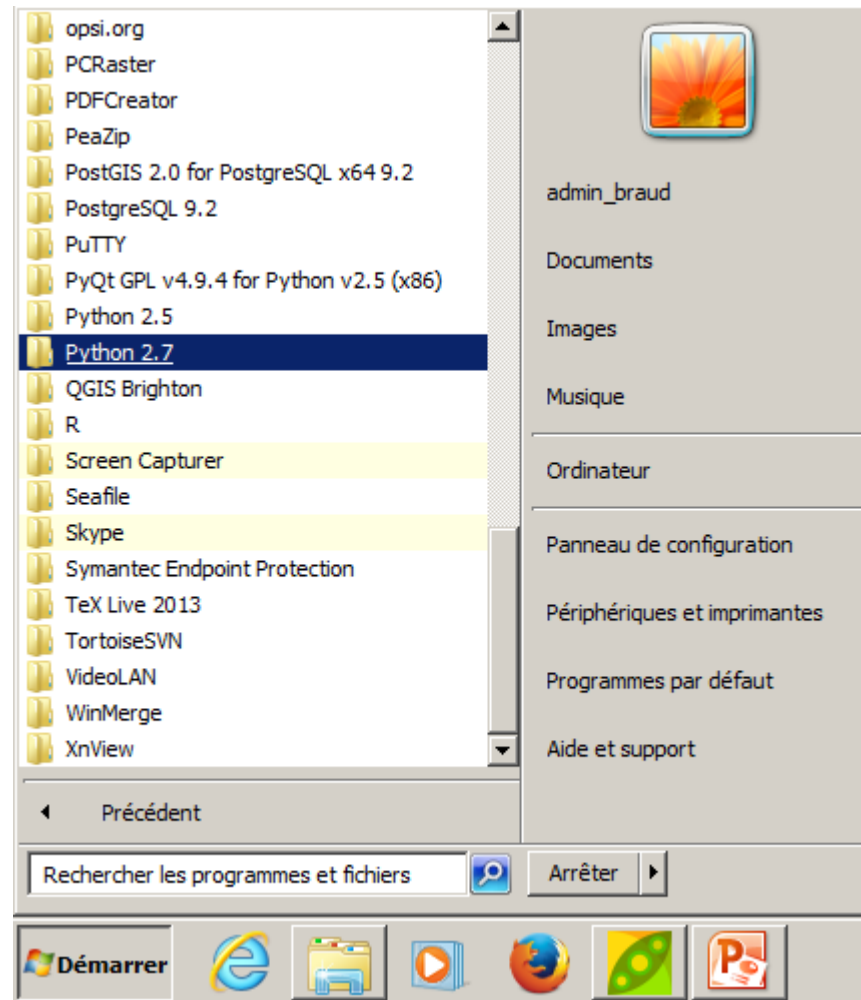
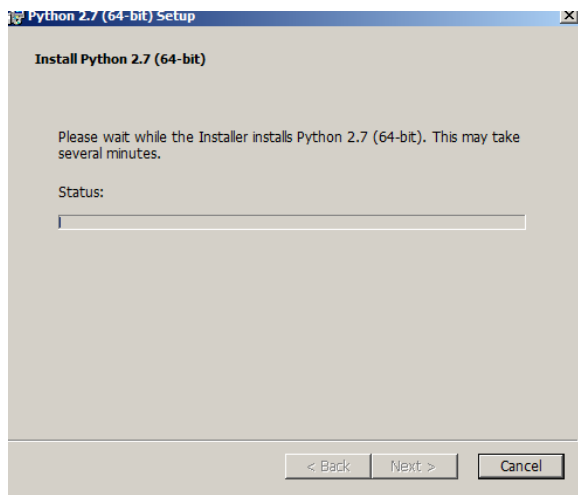


Folder containing the installation archive of QGIS, Python, MeshPy et QGISTriangle:

Install QGIS 2.4 or higher

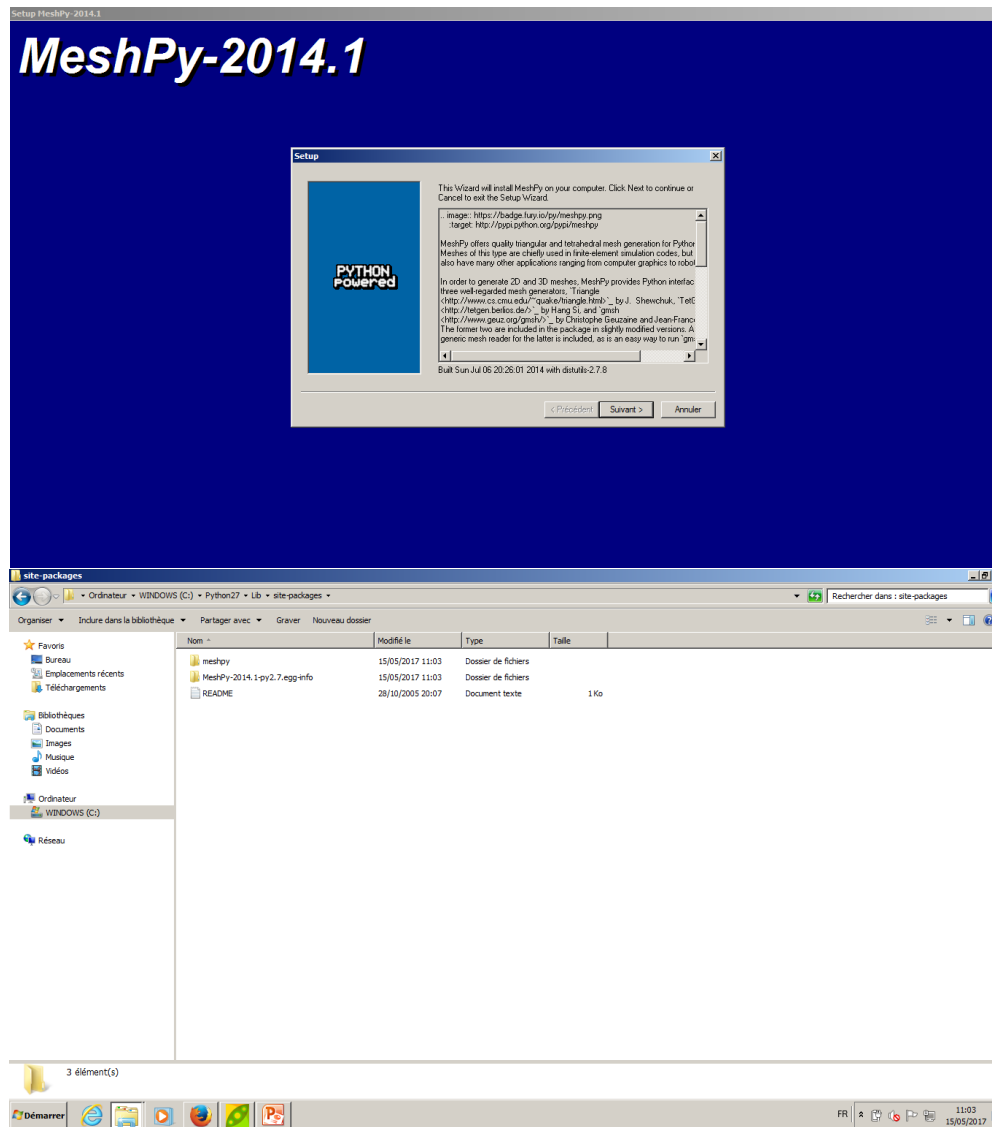
Install Python 2.7

Install MeshPy



Step: Installation of Python 2.7

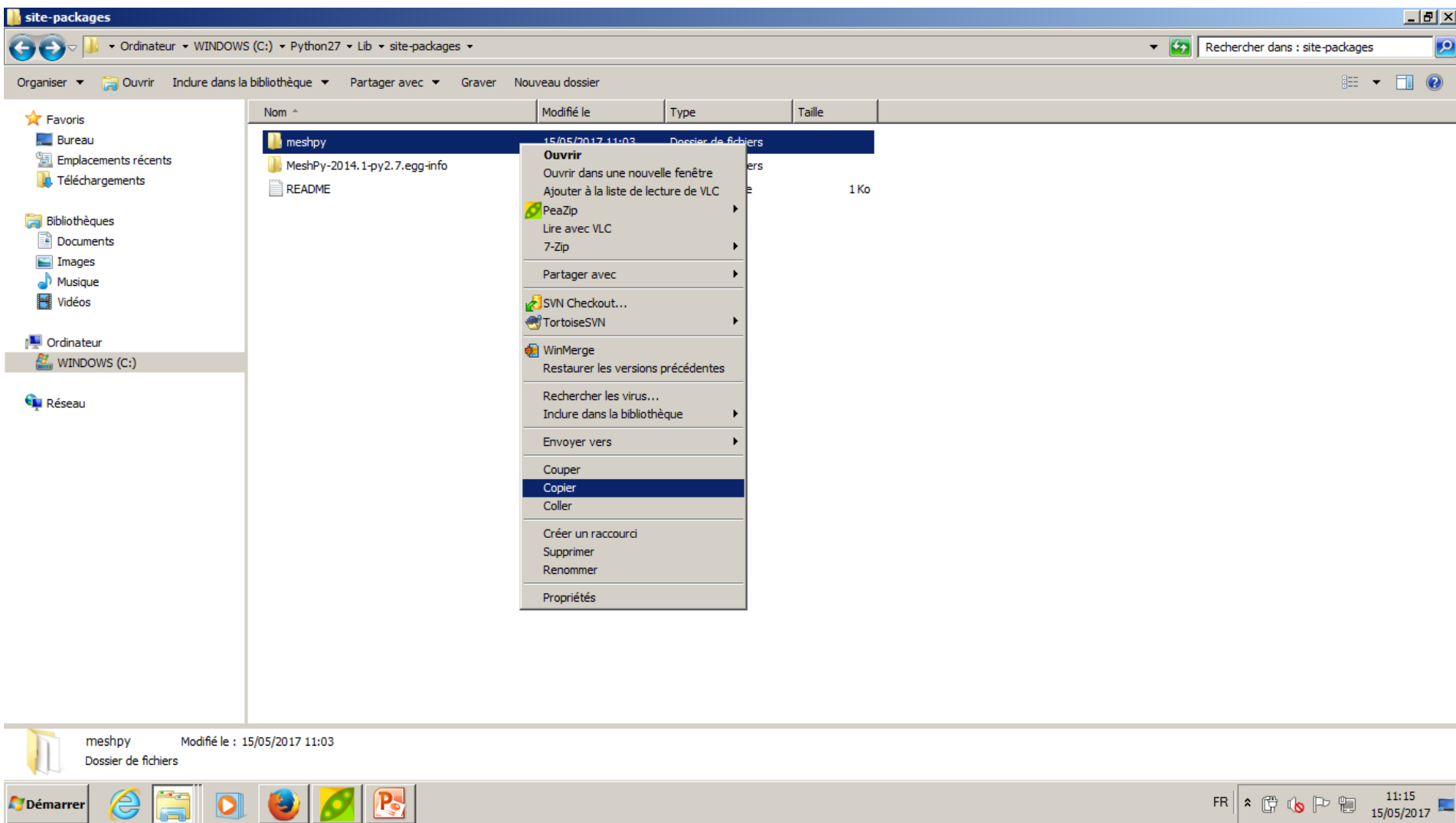
Verify that Python is correctly installed in the starting bar menu



Step: Installation of MeshPy

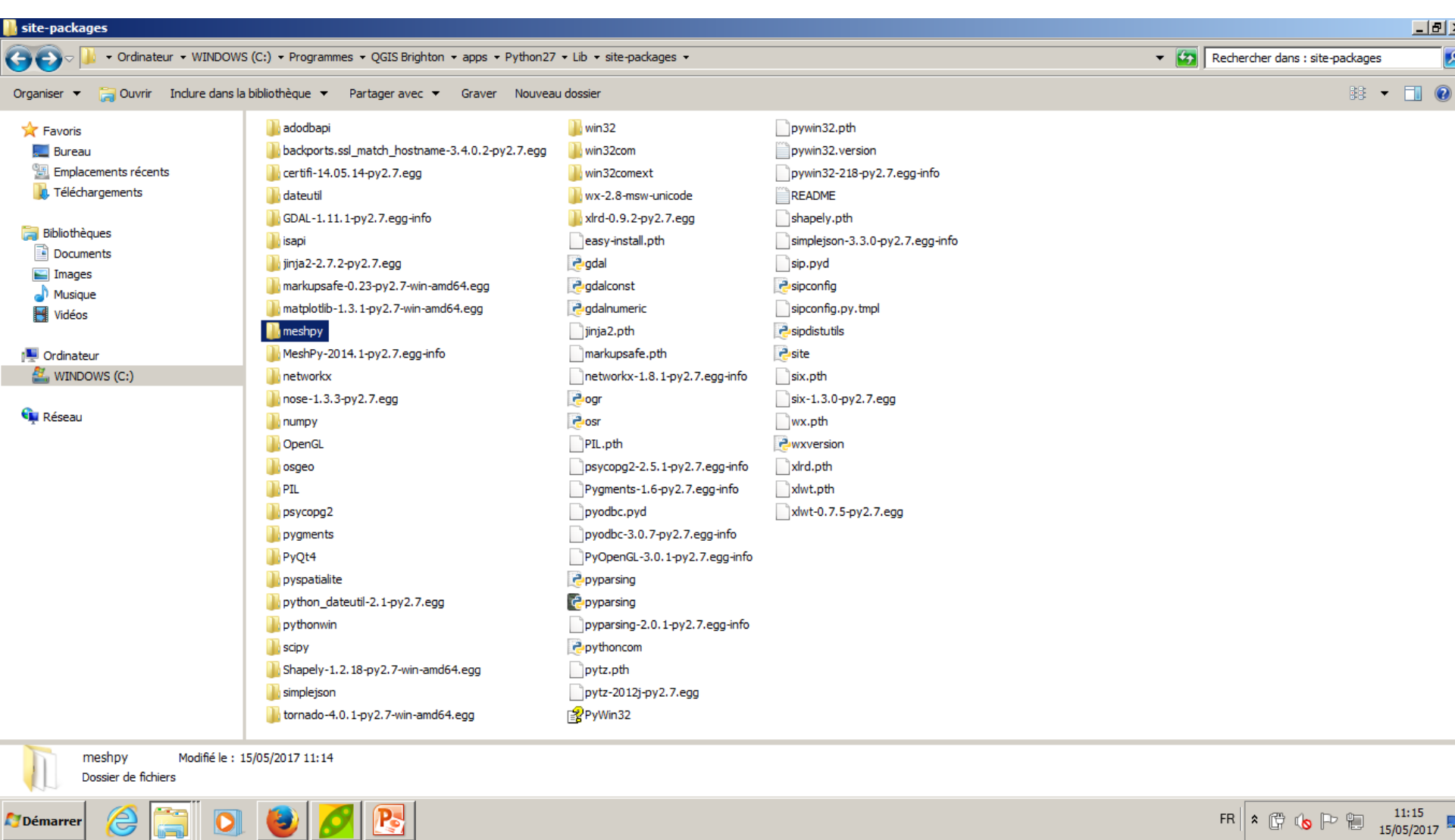
If everything is OK, the MeshPy library should be in the folder:

C:\Python27\Lib\site-packages



Step: Installation of MeshPy in QGIS

Copy the MeshPy folder from the folder: C:\Python27\Lib\site-packages



Step: Installation of MeshPy in QGIS

Copy the MeshPy folder in the folder:

C:\Program Files\QGIS Brighton\apps\Python27\Lib\site-packages

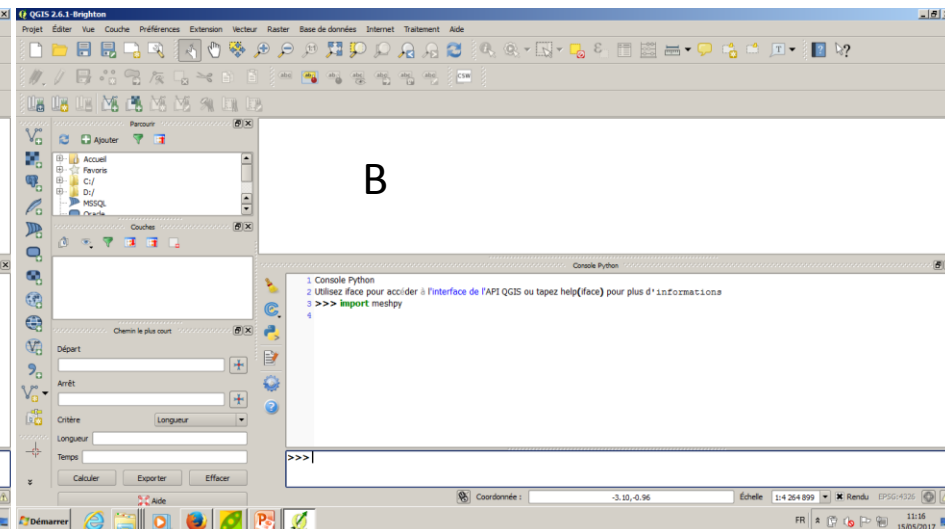
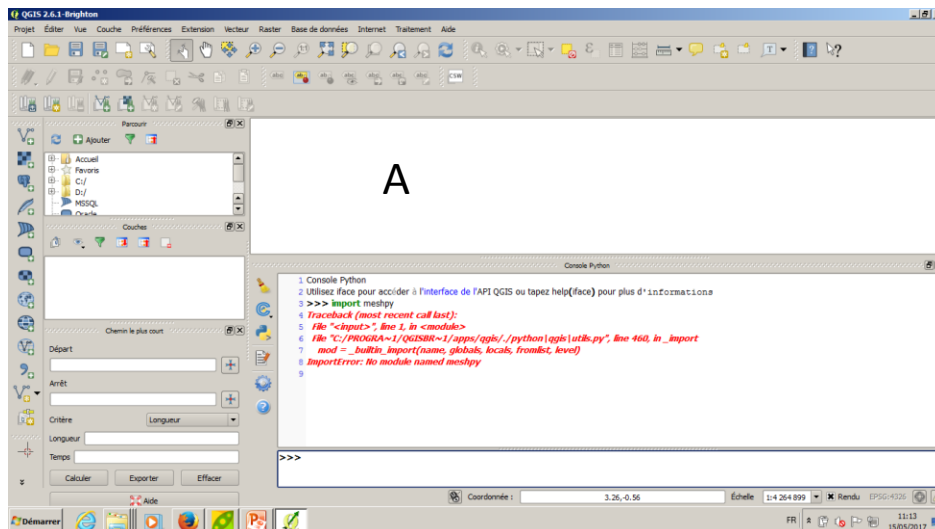
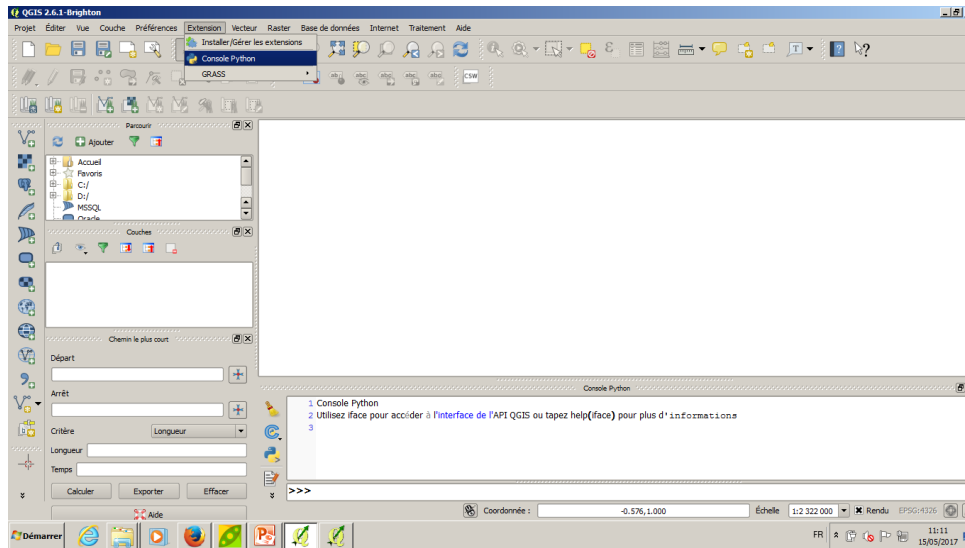
Step: Verify that the library is well installed in the Python from QGIS:

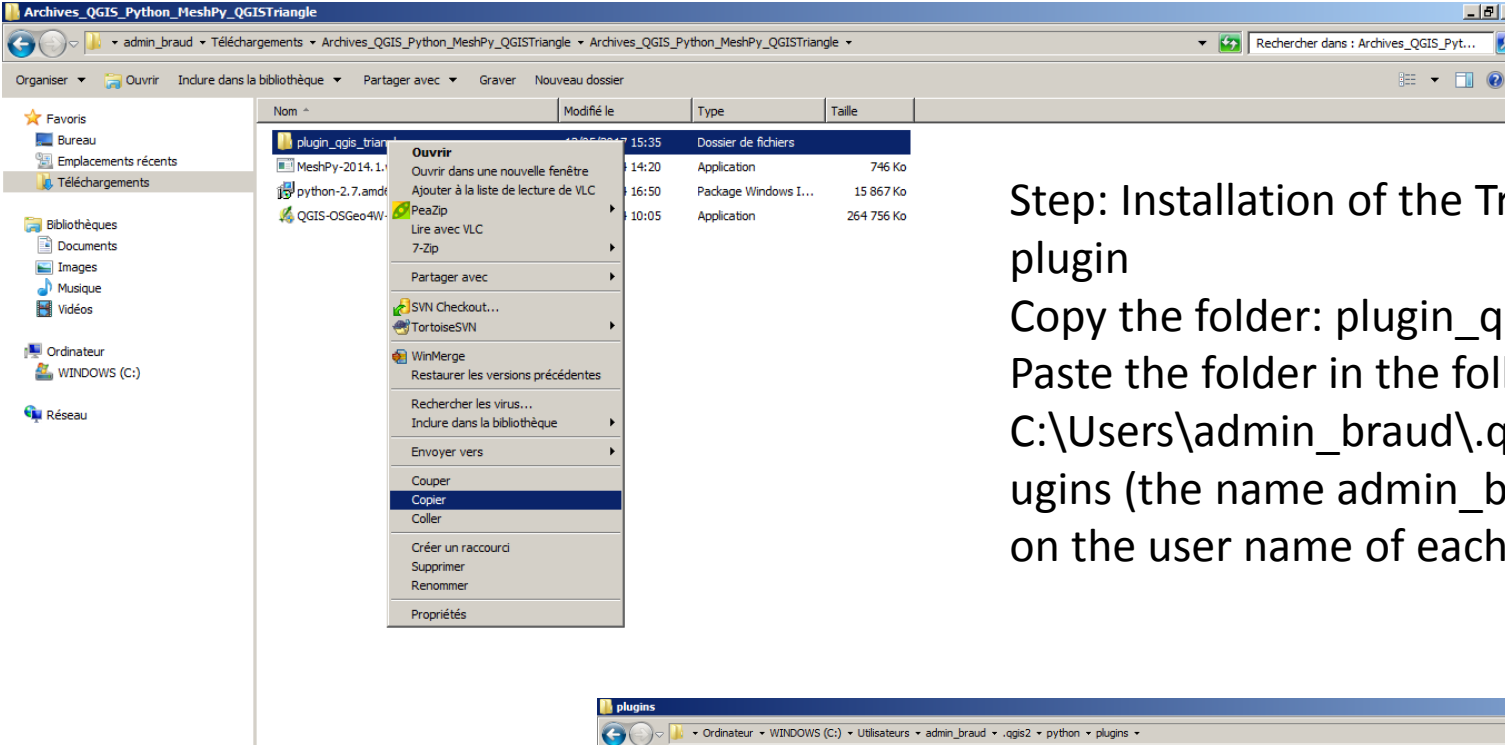
- Open QGIS
- Open the Python console
- Type: `import meshpy`

If the library is not well copied, the user gets Figure A;

If the library is well installed, the user gets Figure B

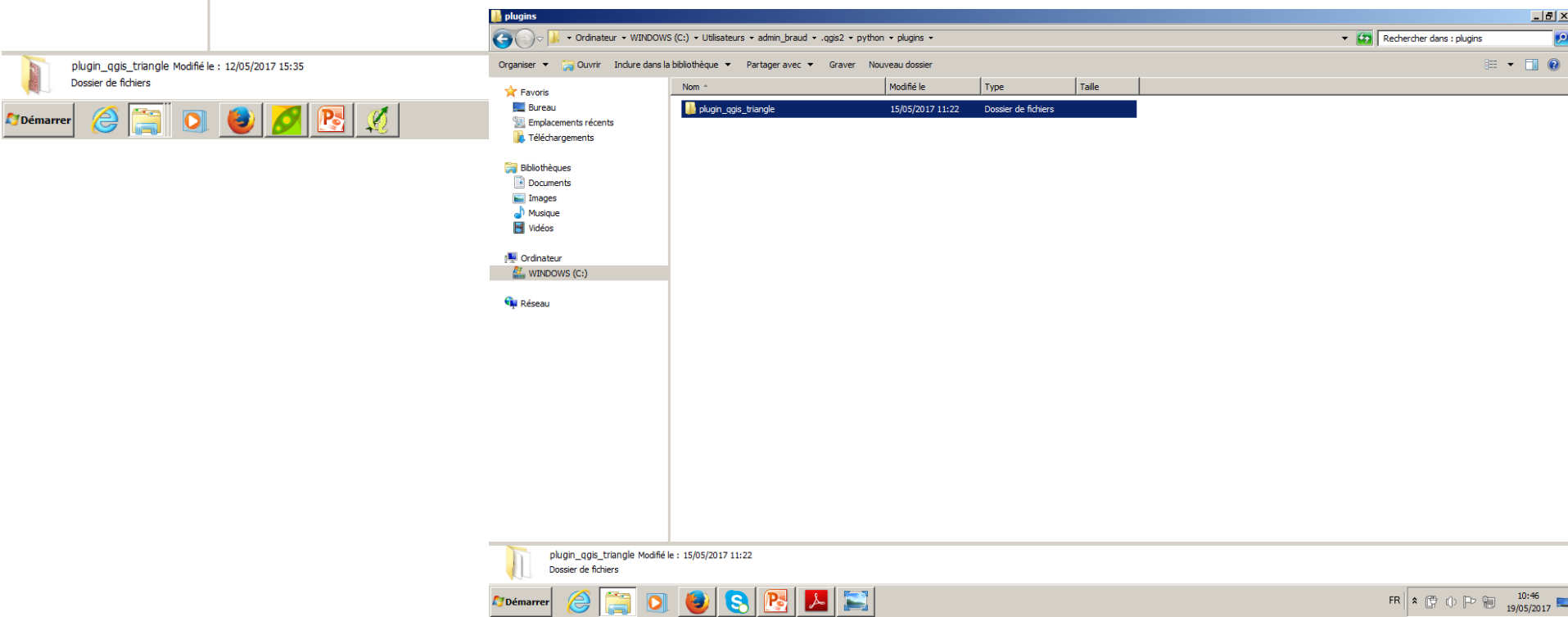
Once this step is finalized, QGIS must be closed to proceed with the installation of TriangleQGIS

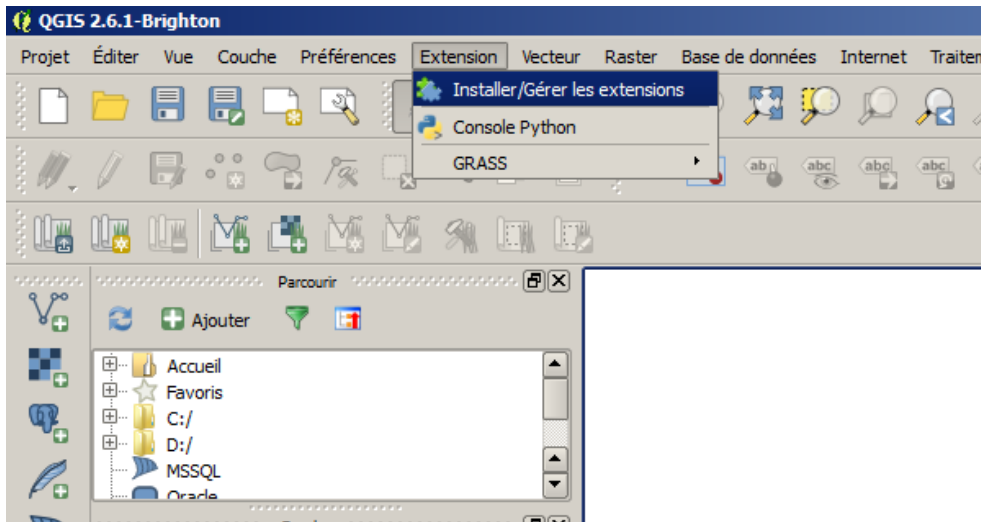




Step: Installation of the TriangleQGIS plugin

Copy the folder: plugin_qgis_triangle
Paste the folder in the following folder:
C:\Users\admin_braud\.qgis2\python\plugins (the name admin_braud depends on the user name of each computer)



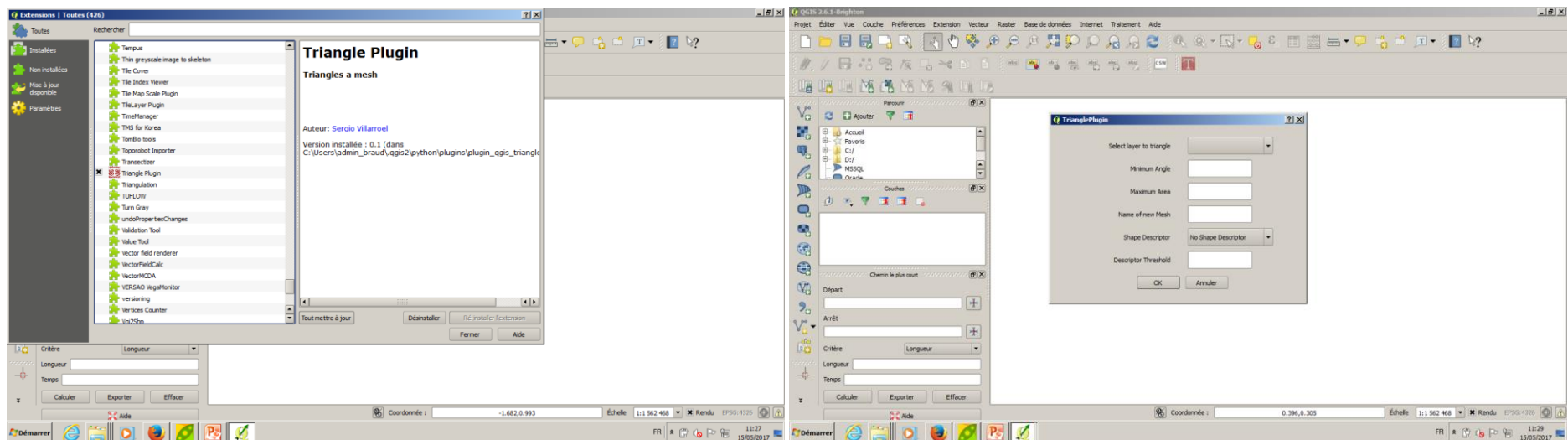


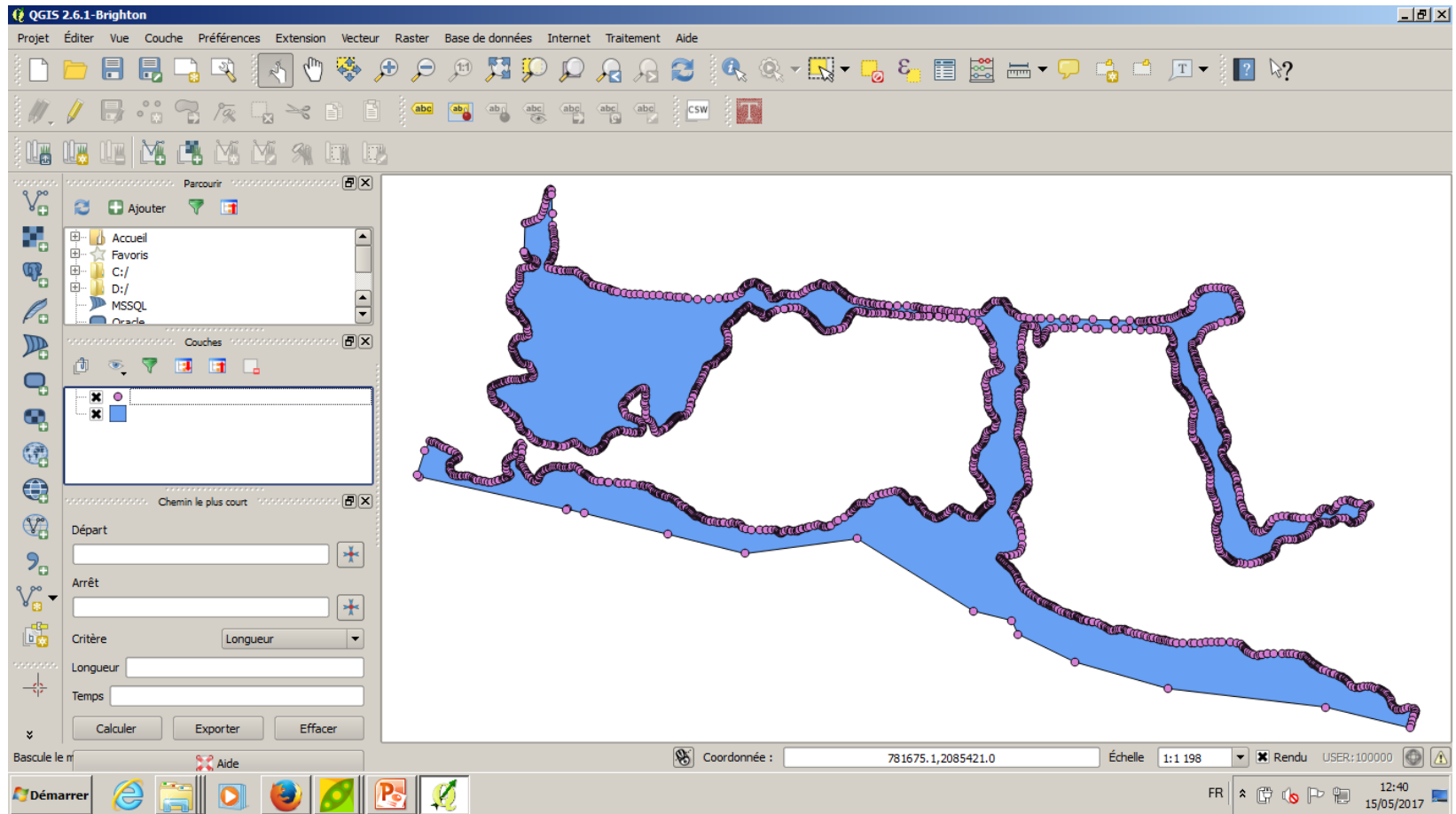
Step: Activation of the TriangleQGIS plugin

-Select Extension-> Install/Manage extensions

-Select Triangle with a click

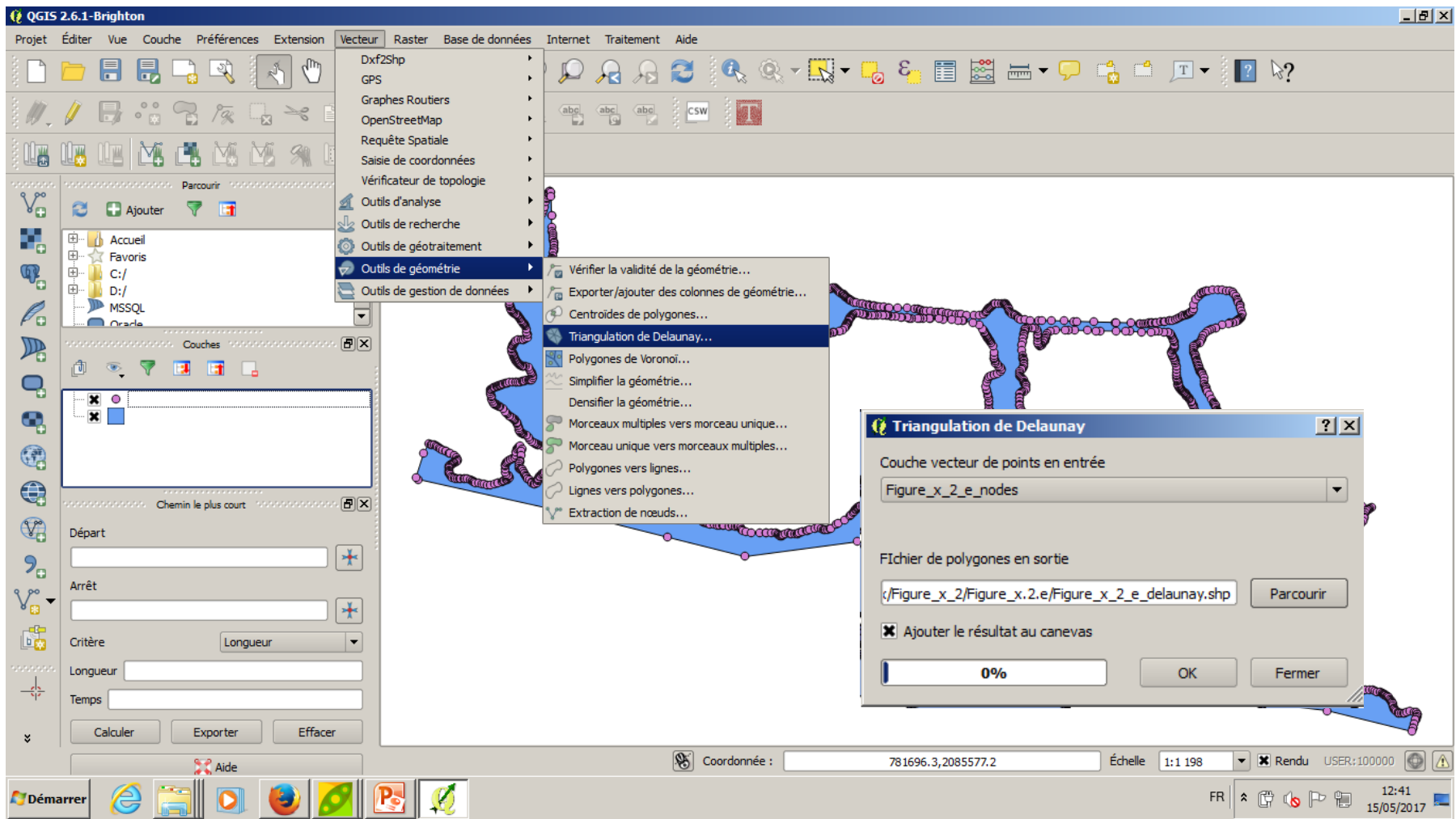
Once installed, the Triangle icon appears as well as the interface to manage the the triangulation





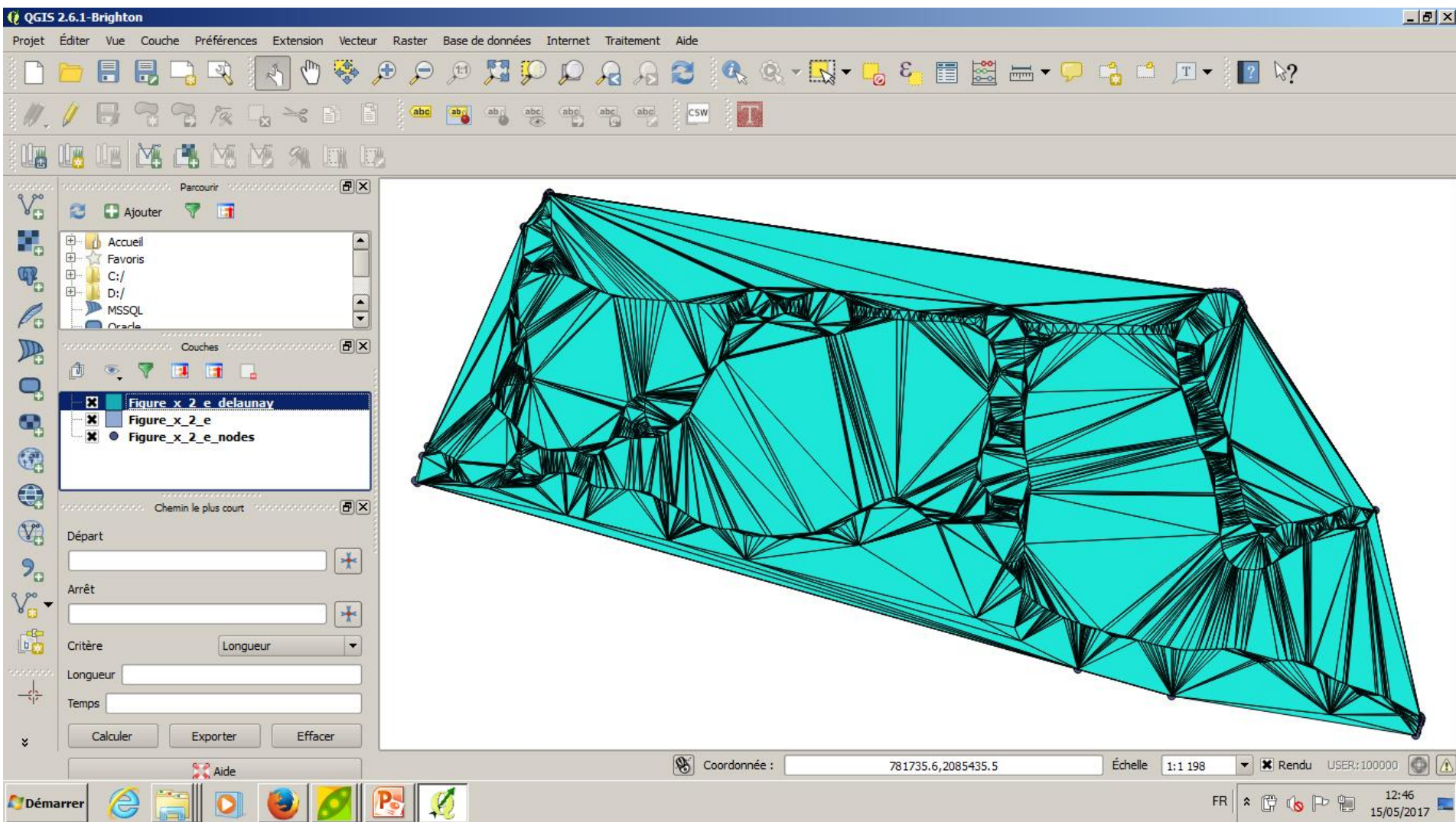
Step: Triangulation of a green area

-Load the shape Figure_x_2_e and Figure_x_2_e_nodes that is located in the folder: C:\Users\admin_braud\Downloads\Couches Vectorielles Chapitre x\Figure_x_2\Figure_x.2.e

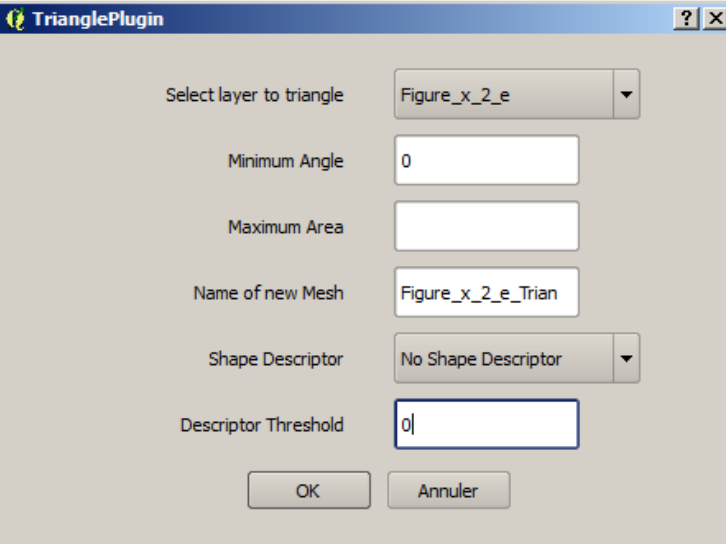


Step: Triangulation of a green area with the option Delaunay triangulation in QGIS

-Select the vectorial tool Vector-> Delaunay Triangulation; the input layer is Figure_x_2_e_nodes

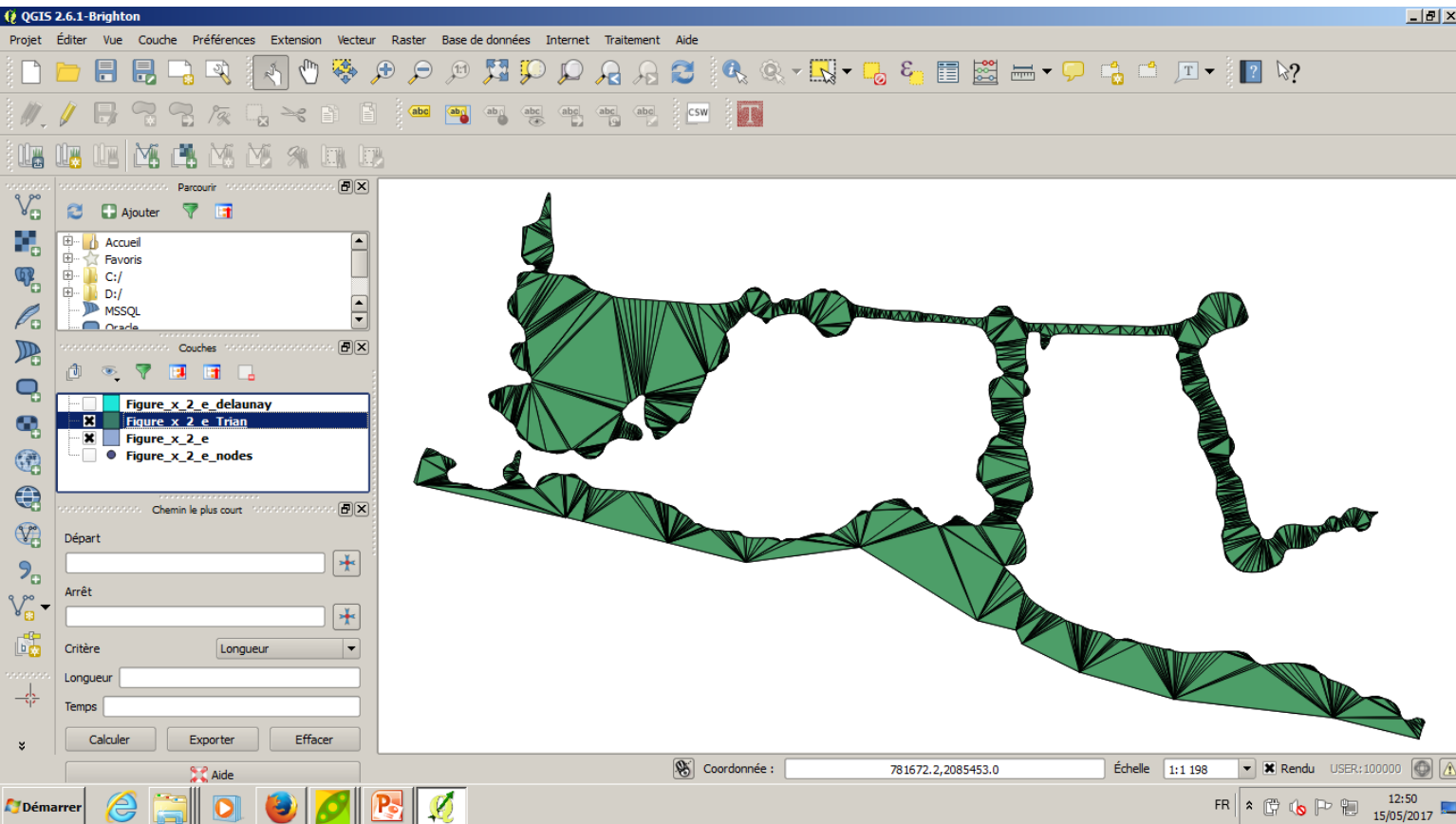


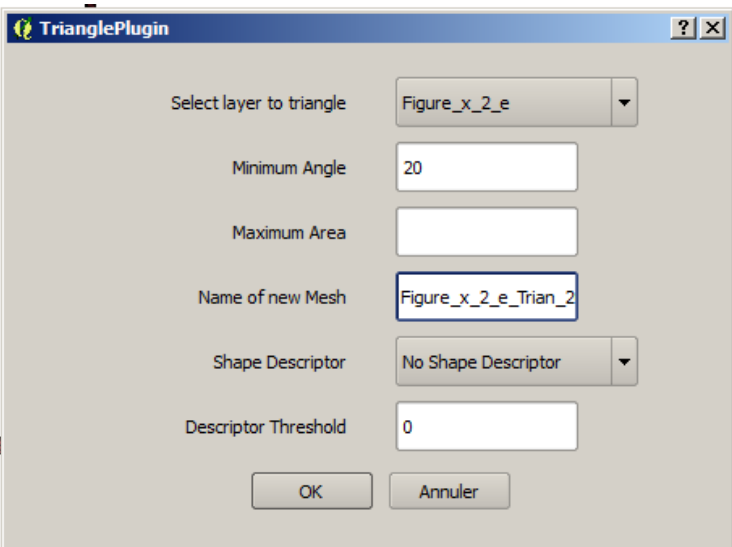
Step: Triangulation of a green area with the option Delaunay triangulation in QGIS (getting Figure x.5.b)
-The result of the Triangulation Delaunay option in figure (4667 triangles)



Step: Triangulation of a green area in Triangle (getting Figure x.5.c)

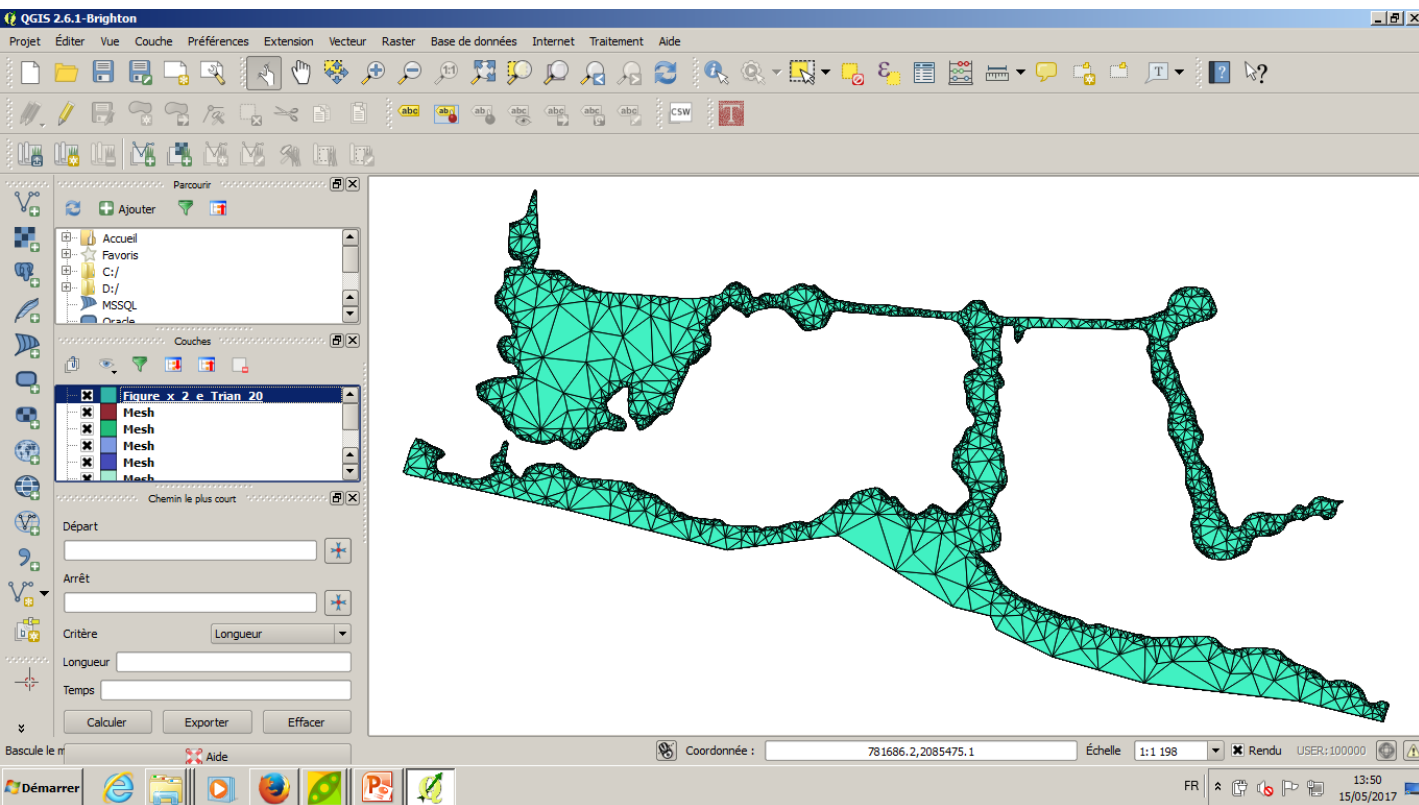
Option Delaunay Triangulation with constraints
-The triangulation of the green area generates triangles inside the polygon (2340 triangles) respecting the initial boundary of the initial polygon





Step: Triangulation of a green area in Triangle (getting Figure x.5.d) with option conformal Triangulation (Maximum angle 30°)

- The triangulation of the green area generates triangles inside the polygon (5247 triangles) with a restriction on the interior angle of 20° maximum

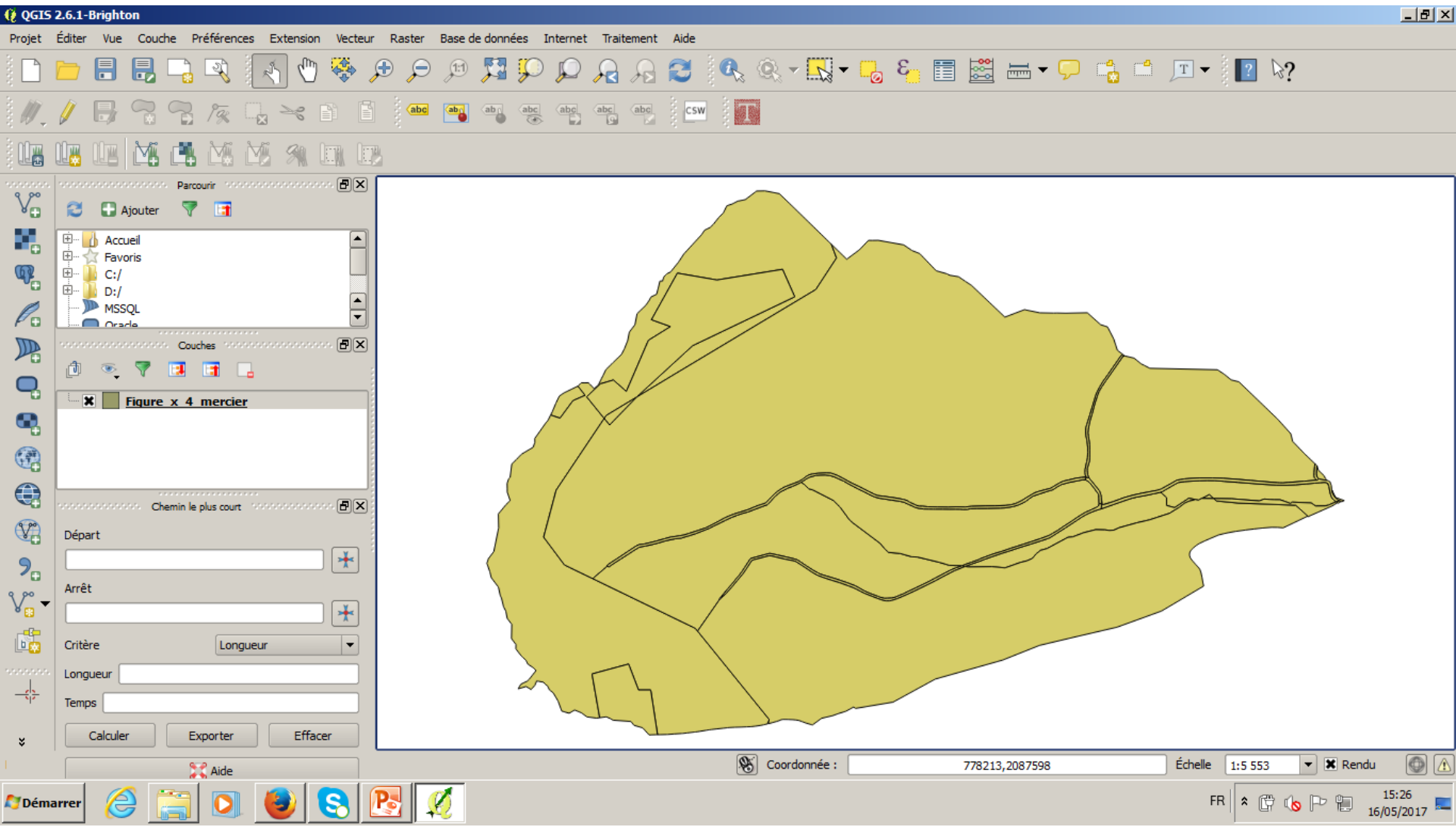


Step: Triangulation of a periurban catchment: the Mercier catchment

The corresponding .shape, Figure_x_4_mercier.shp, is located in the folder

C:\Users\admin_braud\Downloads\Couches Vectorielles Chapitre x\Figure_x_4

It shows a periurban sub-catchment composed of 23 elements



Step: Selection of bad-shaped irregular polygons without shape format (cf Figure x.4)

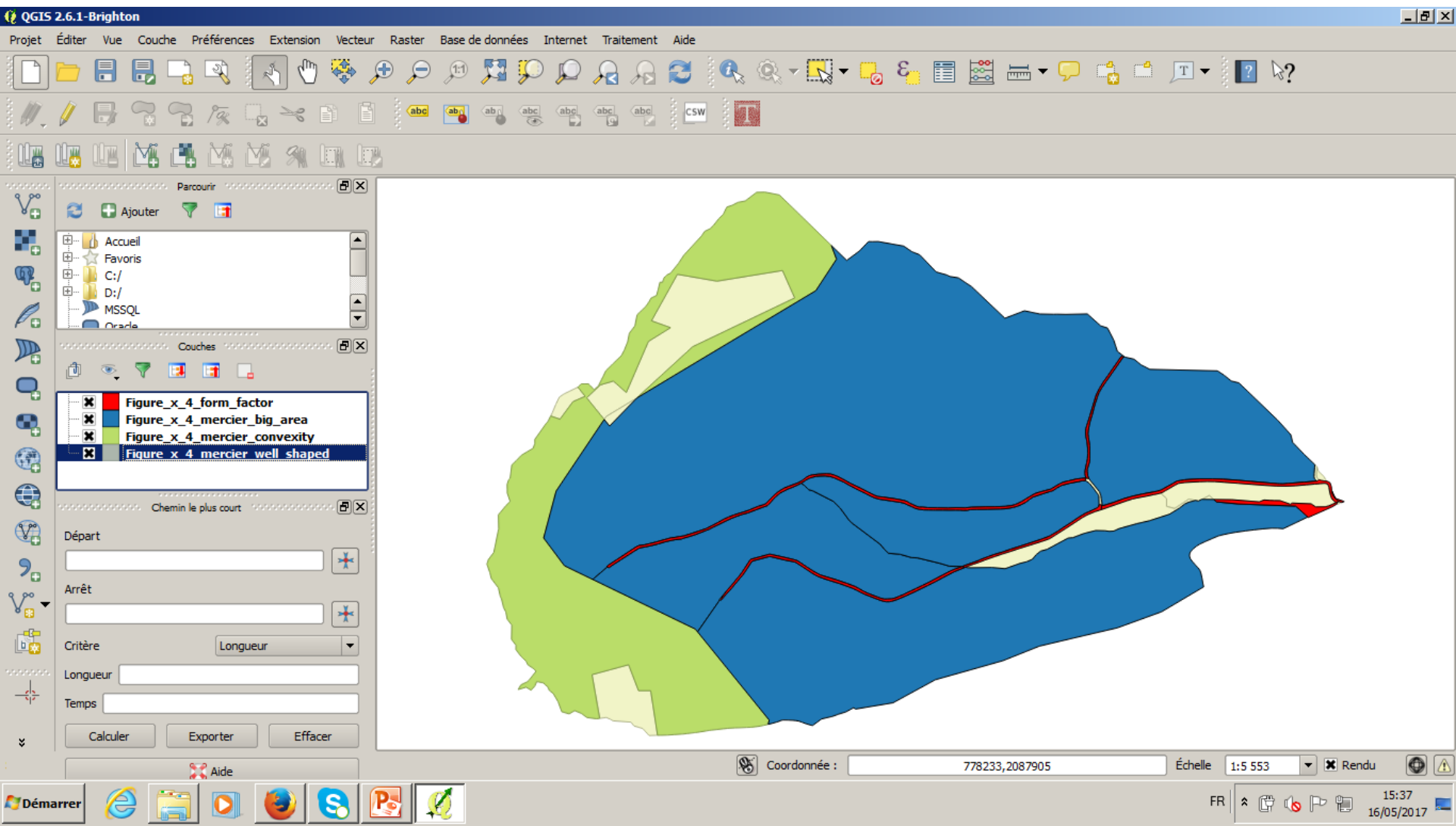
Polygons of the Mercier are divided into four groups:

Layer Figure_x_4_mercier_convexity.shp: shows the polygons with a convexity $< 0,75$

Layer Figure_x_4_form_factor.shp : shows the polygons with a form factor $< 0,20$

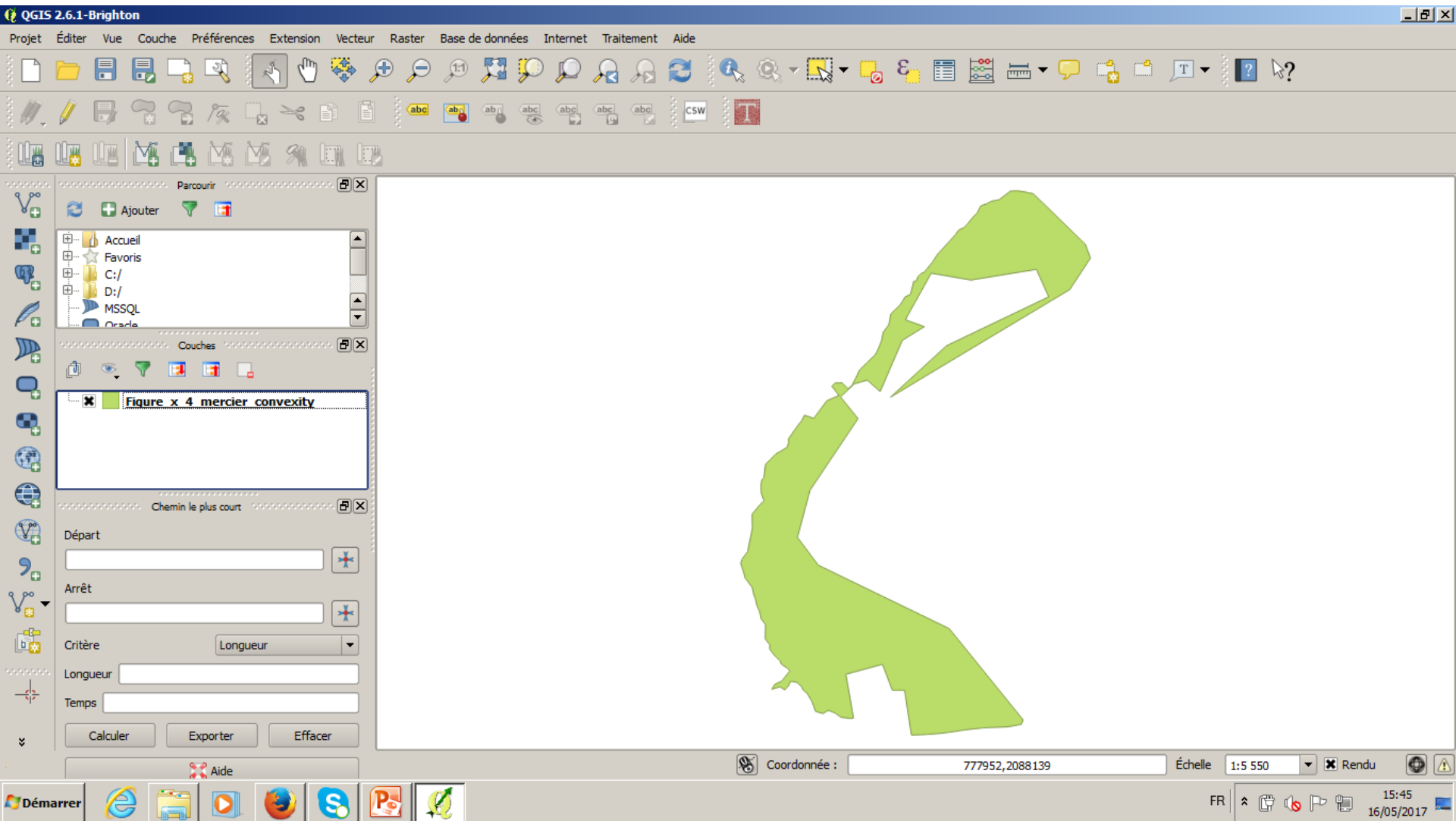
Layer Figure_x_4_mercier_big_area.shp : shows the elements with area > 2 ha

Layer Figure_x_4_mercier_well_shaped.shp : shows the elements without shape problem



Step: Triangulation of non-convex elements (Getting figure x.30.a)

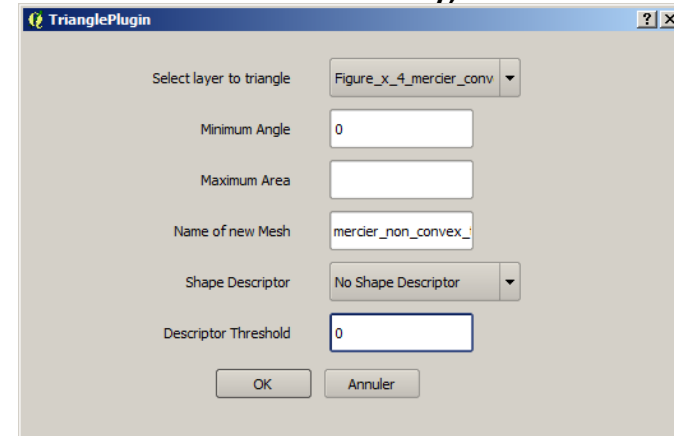
-Load the .shp: Figure_x_4_mercier_convexity.shp



Step: Triangulation of non-convex elements (Getting figure x.30.b)

-load the .shp: Figure_x_4_mercier_convexity.shp

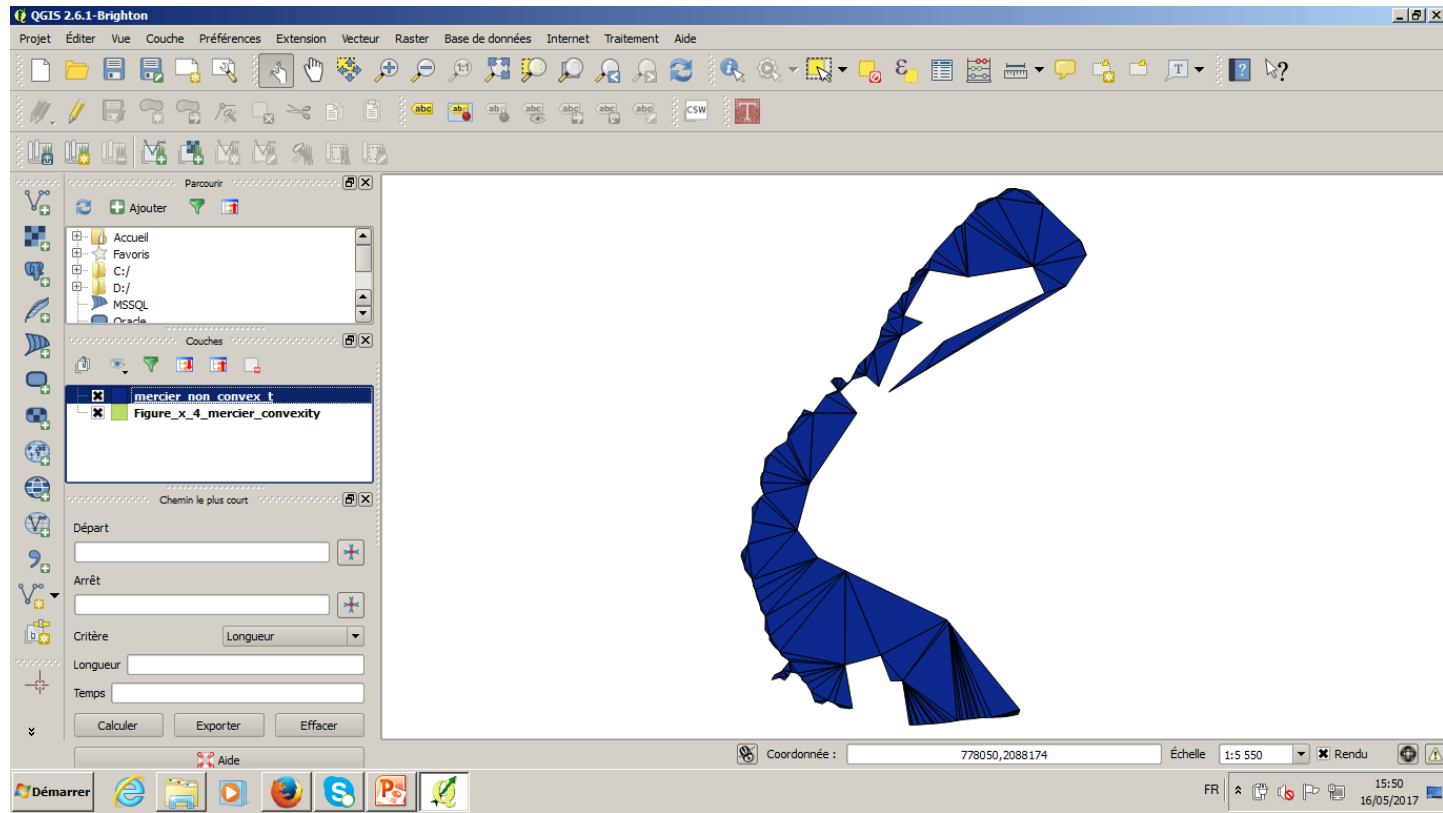
-to get a triangulation that preserve the initial non-convex boundary, the following options are used:



This figure is part

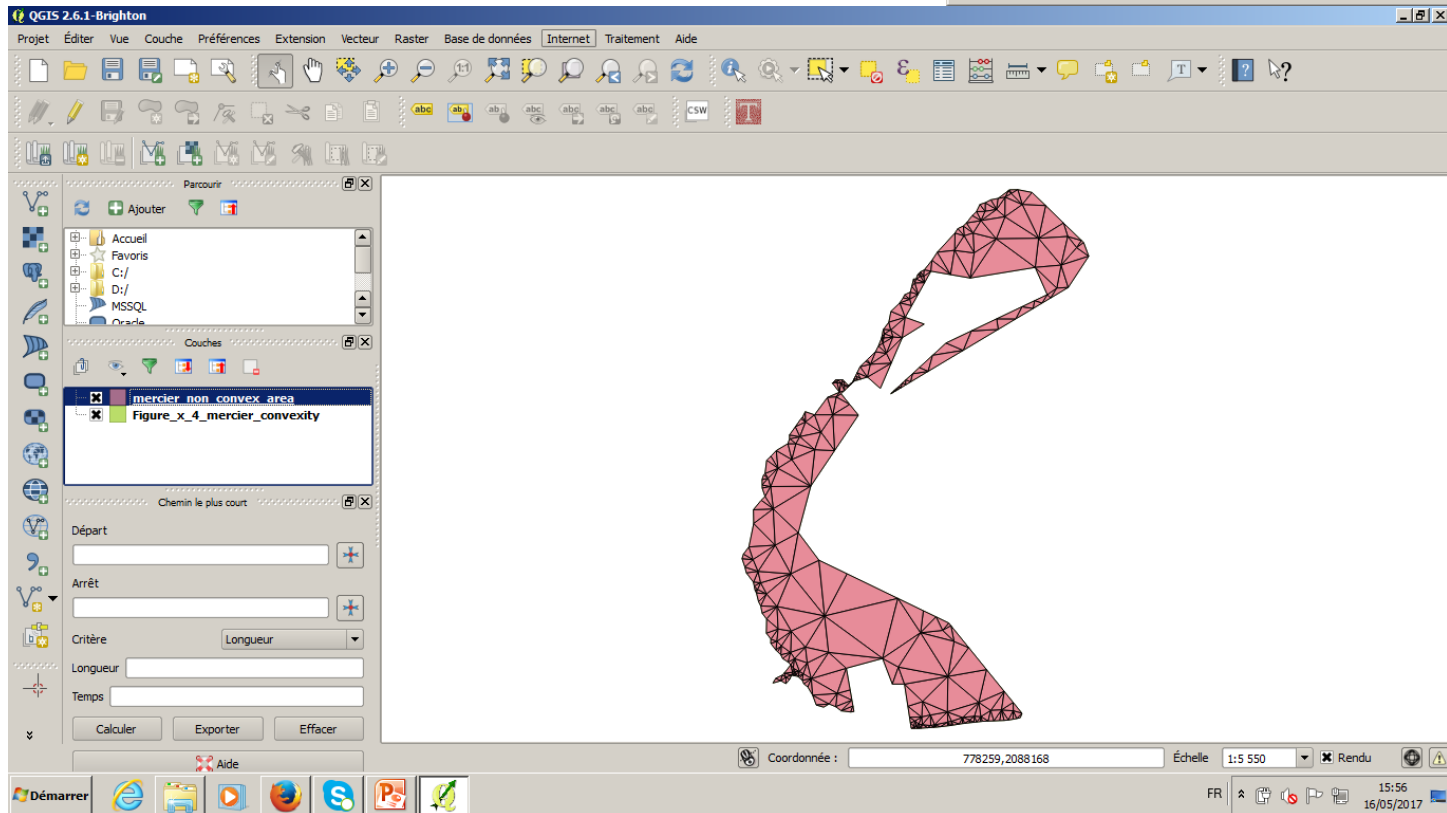
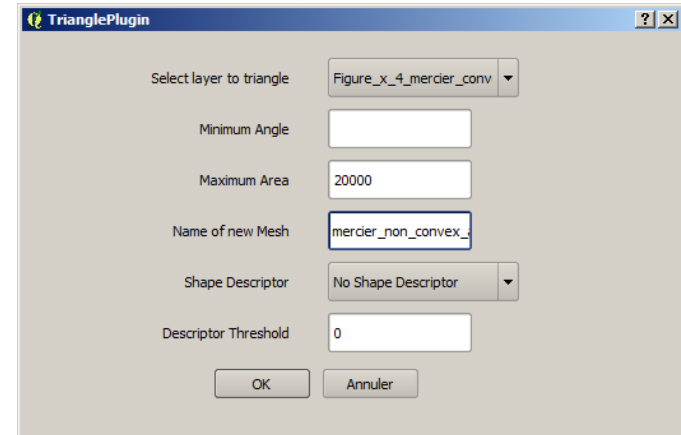
Figure x.33

Non-convex element



Step: Triangulation of non-convex elements (Getting figure x.30.c)

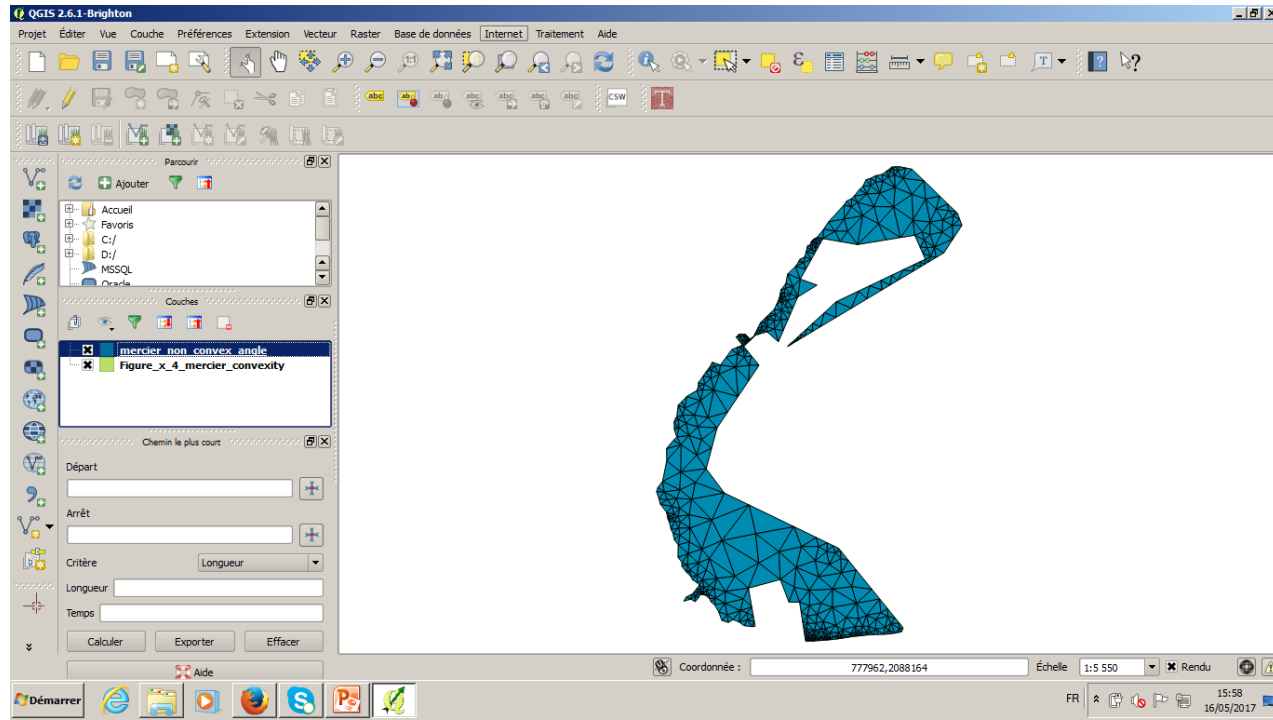
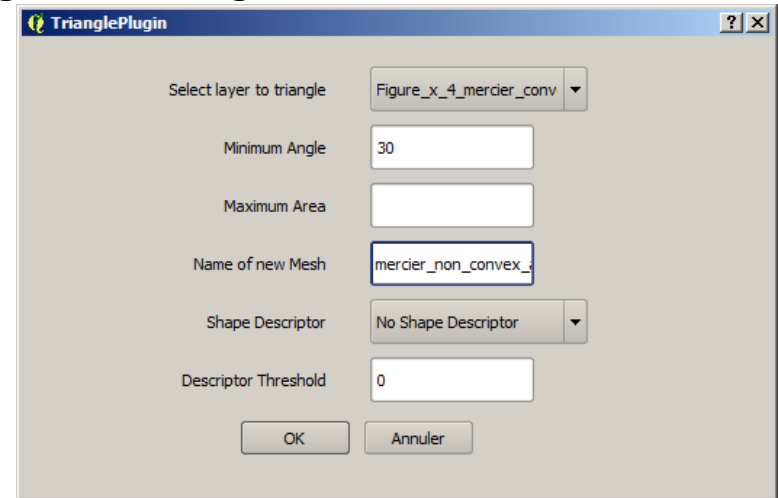
- Load the .shp: Figure_x_4_mercier_convexity.shp
- To get a triangulation that only generates triangles with an area larger than 20000 m2 the following options are used:



Step: Triangulation of non-convex elements (Getting figure x.30.d)

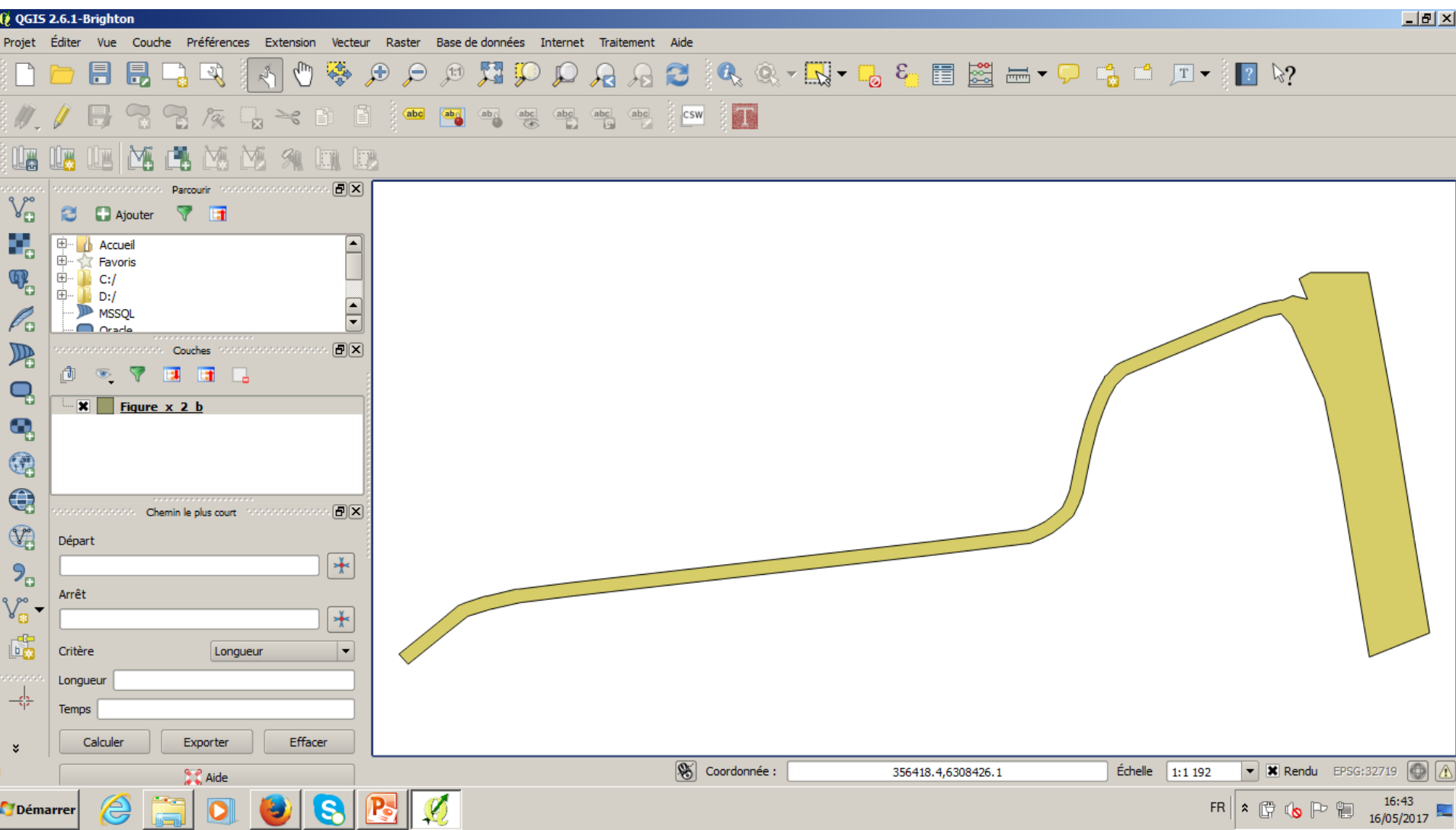
-Load the .shp: Figure_x_4_mercier_convexity.shp

-to get the triangulation that only contains triangles with angles lower than 30° , the following options are used:



Step: Triangulation of a long and thin element (Getting Figure x.31.a)

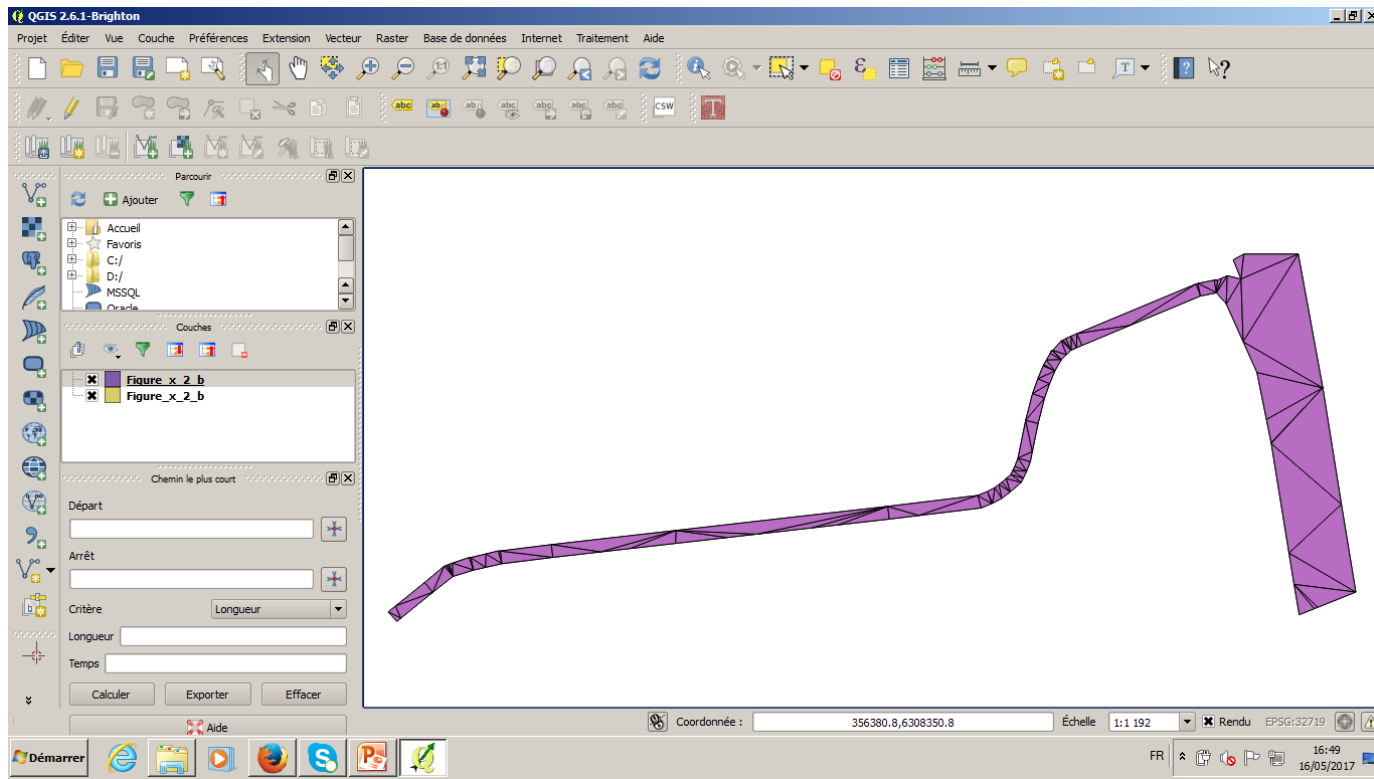
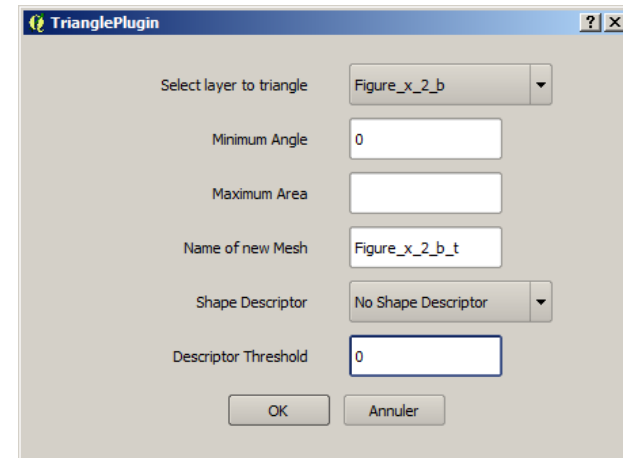
-Load the .shp: Figure_x_2_b.shp



Step: Triangulation of a long and thin element (Getting Figure x.31.b)

-Load the .shp: Figure_x_2_b.shp

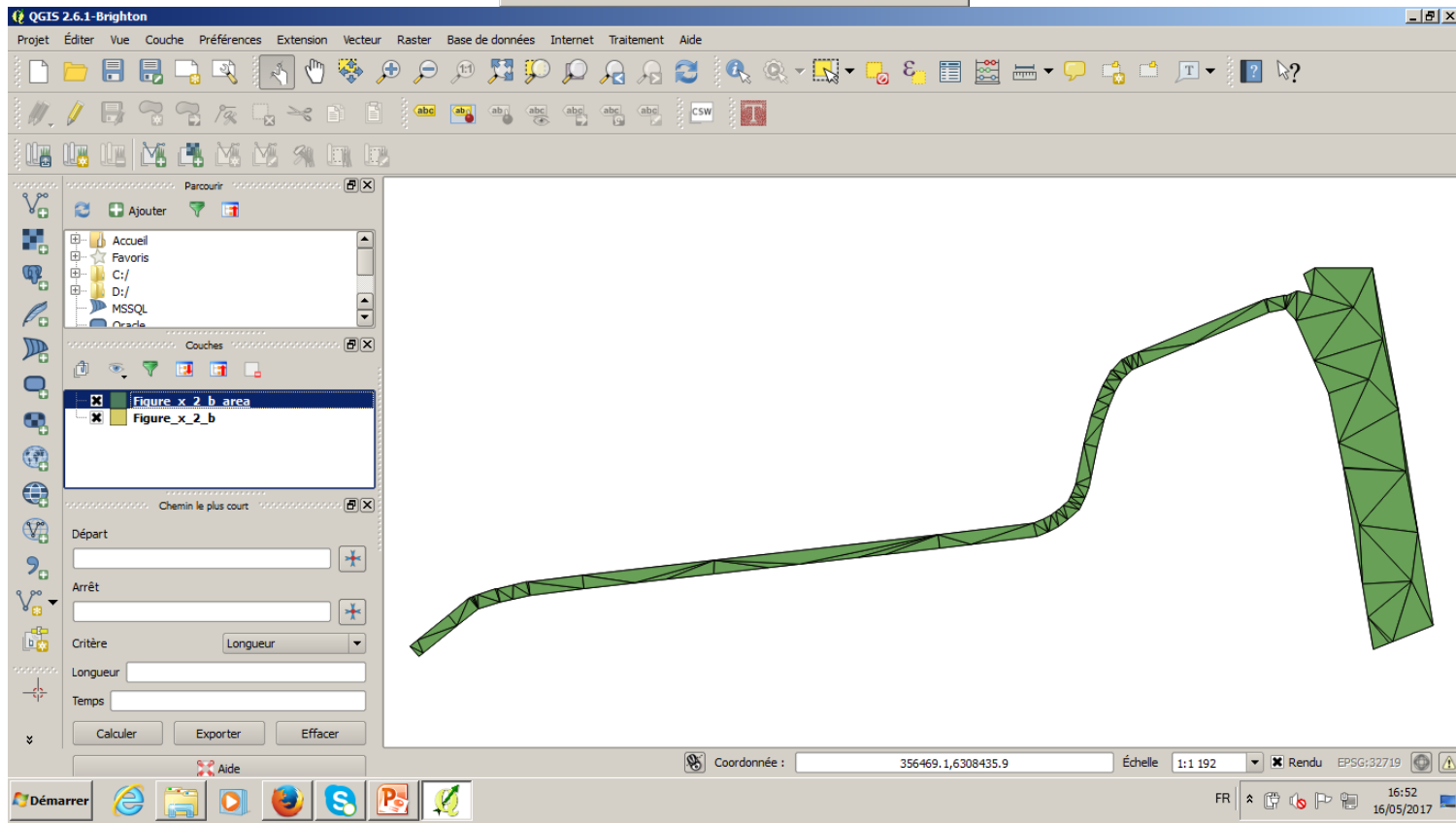
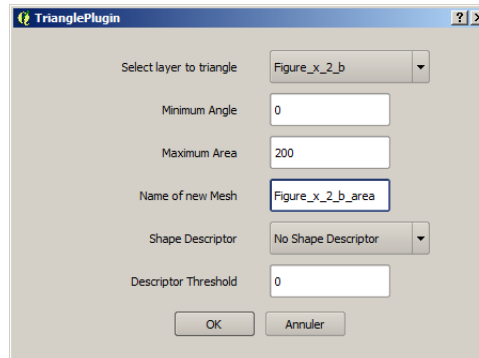
- to get a triangulation that preserve the initial polygon boundary, the following options are used :



Step: Triangulation of a long and thin element (Getting Figure x.31.c)

-Load the .shp: Figure_x_2_b.shp

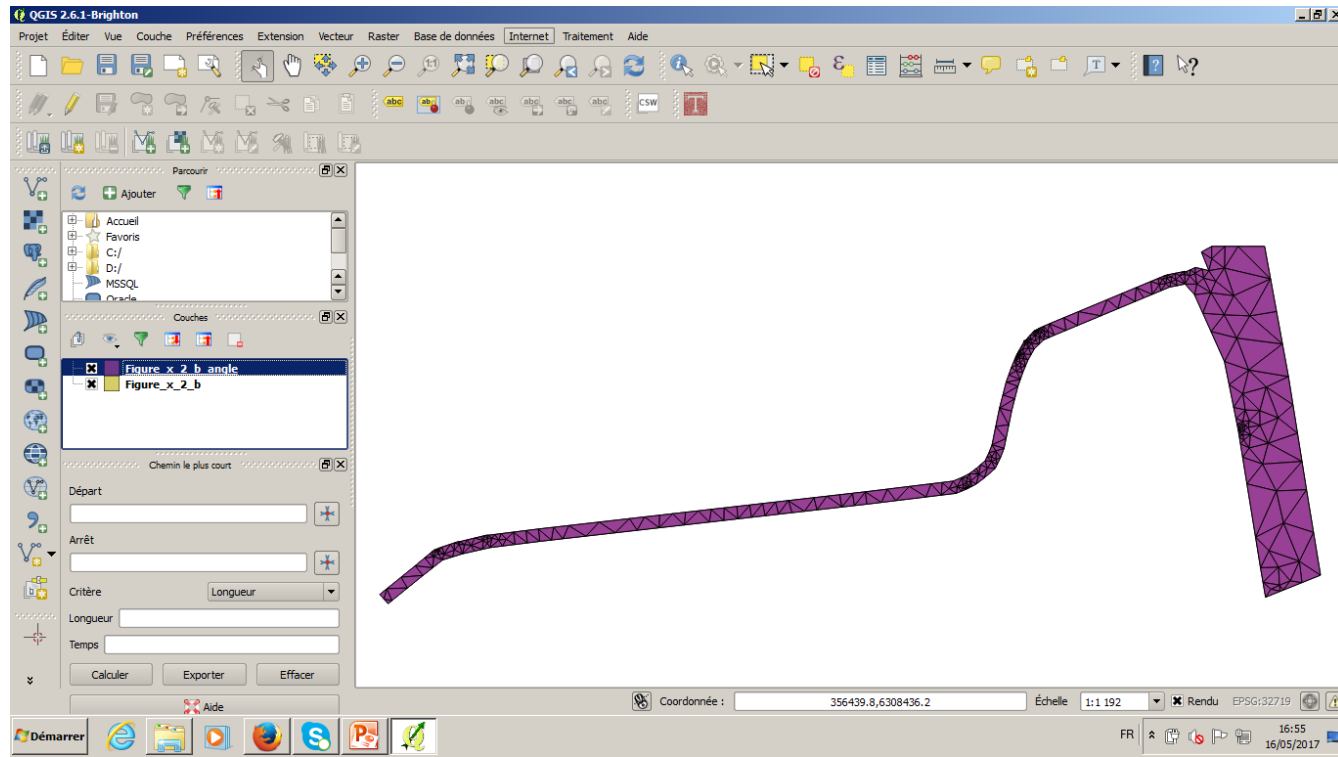
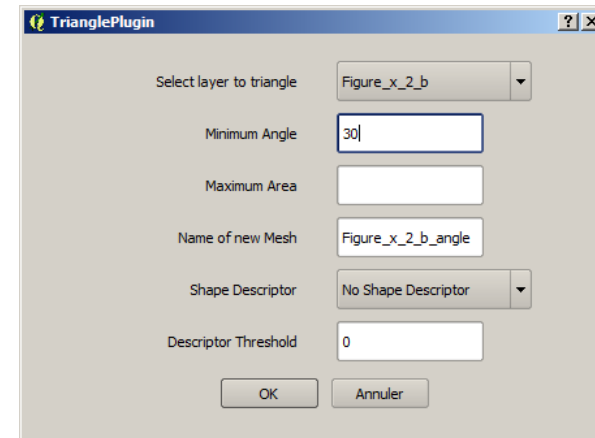
-To get a triangulation that only generates triangles with an area larger than 200 m2 the following options are used:



Step: Triangulation of a long and thin element (Getting Figure x.31.d)

-Load the .shp: Figure_x_2_b.shp

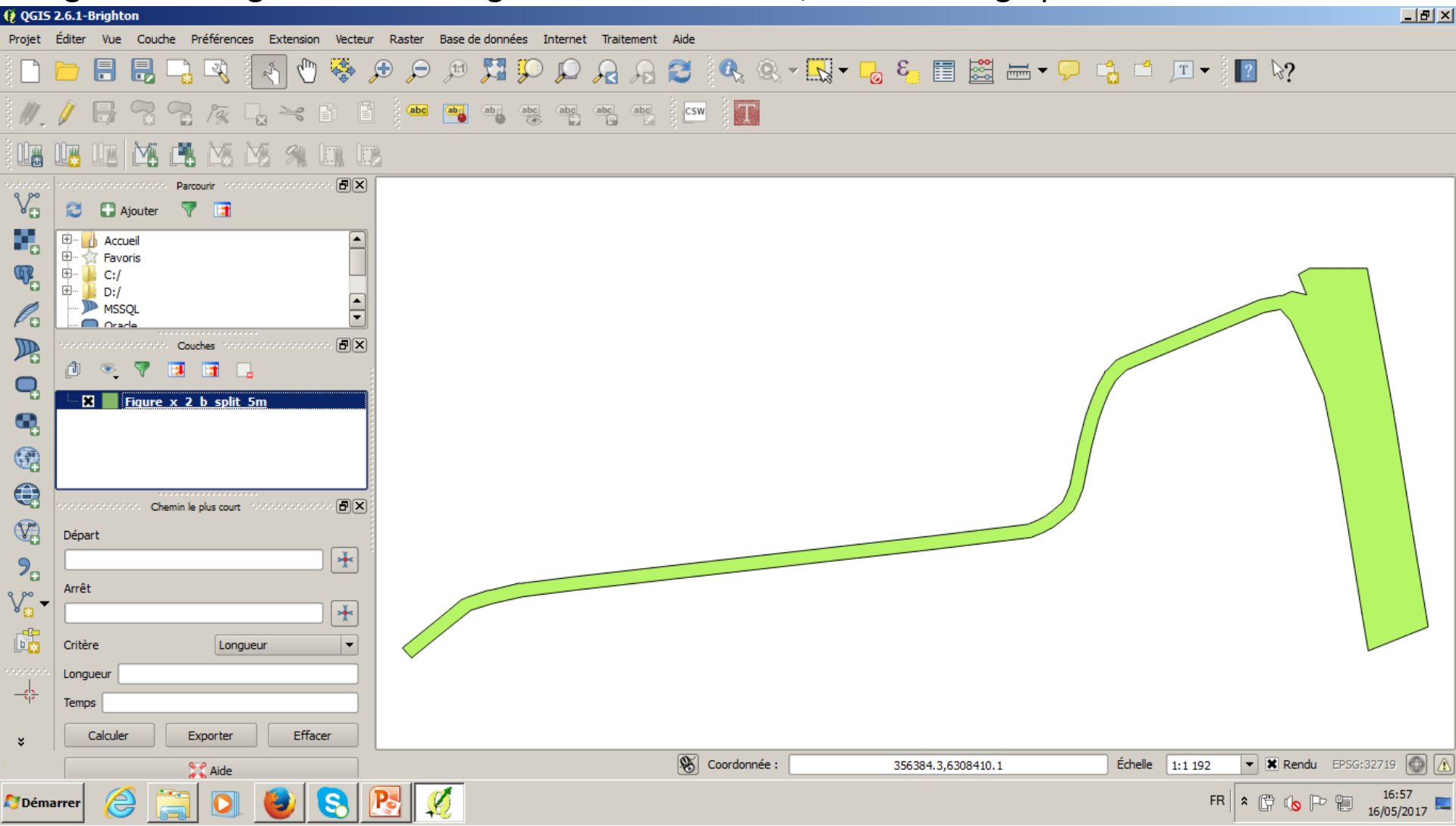
- to get the triangulation with angles restriction of 30°, the following options are used:



Step: Triangulation of a long and thin element with nodes separated by a maximum distance of 5 m (Getting Figure x.31.e)

-Load the .shp: Figure_x_2_b_split_5m.shp (The .shp where additional points are already inserted is given. To do that, the user will have to use the v.split function from Grass (see p.32 of the Geo-PUMMA Users' Manual)

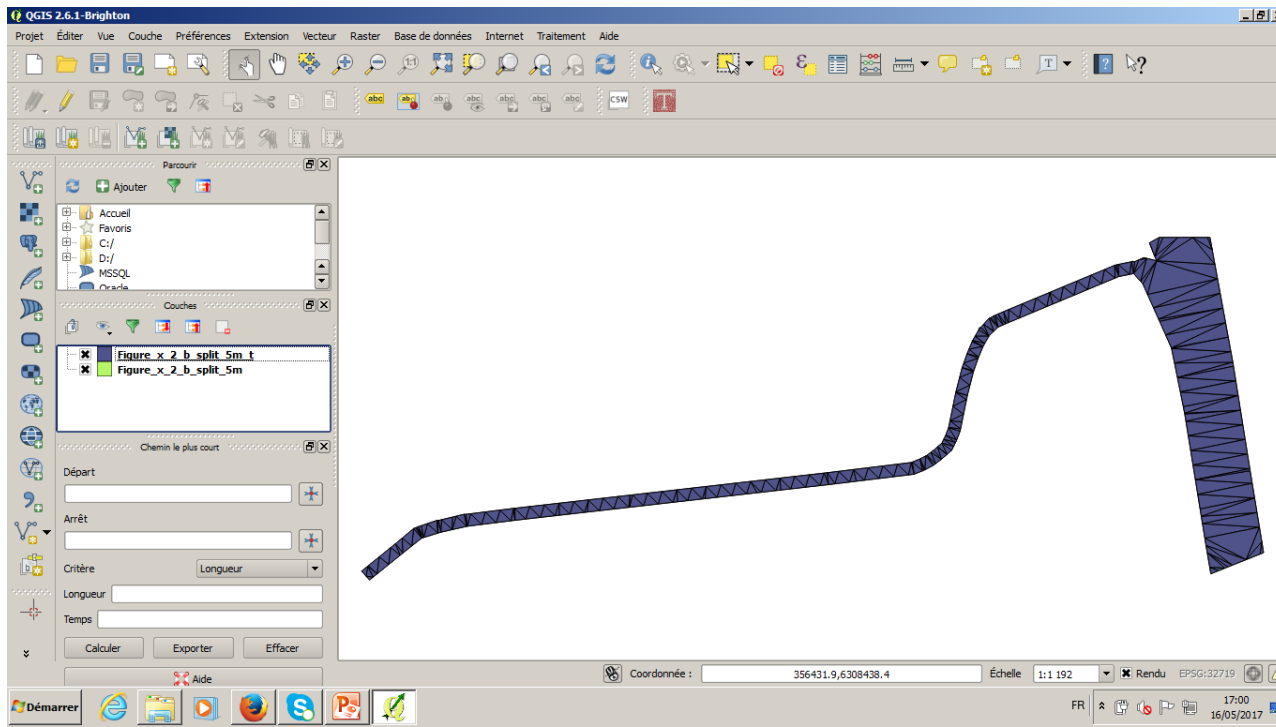
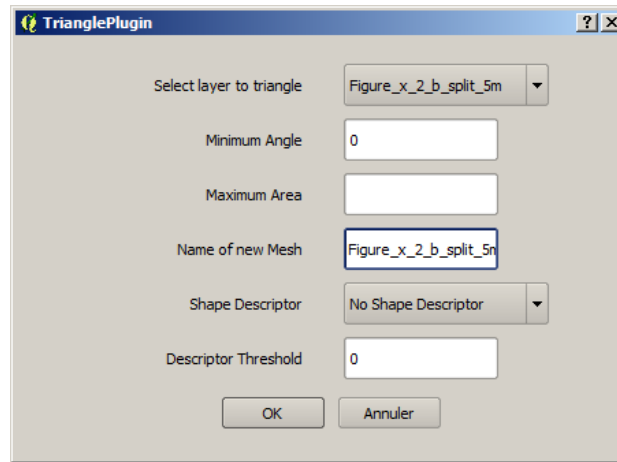
-to get the triangulation with angles restriction of 30° , the following options are used:



Step: Triangulation of a long and thin element (Getting Figure x.31.f)

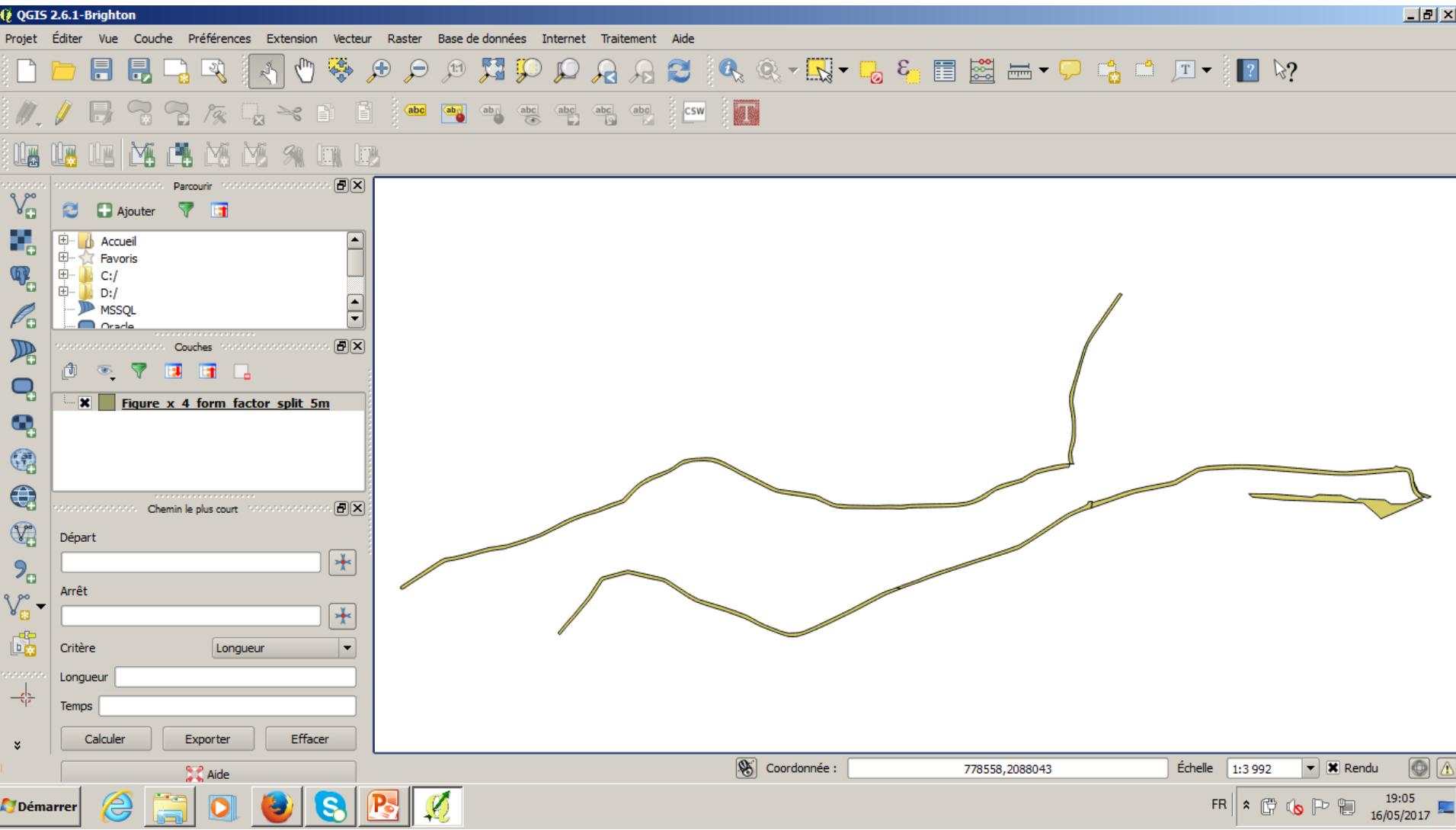
-Load the .shp: Figure_x_2_b_split_5m.shp

-to get a triangulation without restriction on surface and angle, use the following options:



Step: Triangulation of a long and thin element from the Mercier

-Load the layer Figure_x_4_form_factor_split_5m.shp that is located in the folder:
C:\Users\admin_braud\Downloads\Couches Vectorielles Chapitre x\Figure_x_4



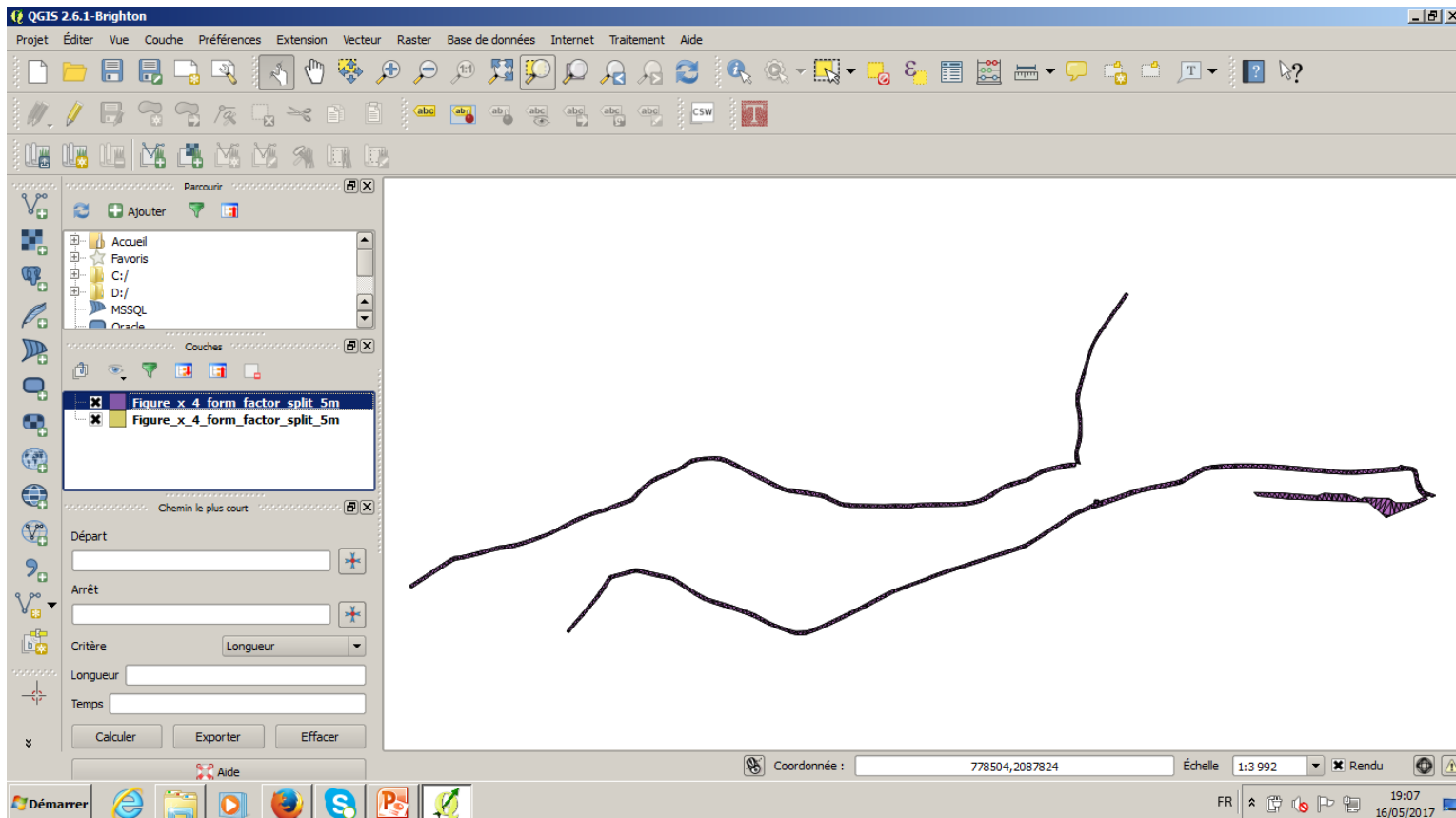
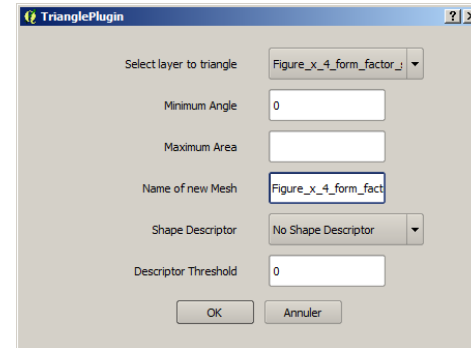
Step: Triangulation of a long and thin element from the Mercier

-to get a triangulation without restriction on area and angle, use the following options:

This figure is part of

Figure x.33

Long and thin element



Step: Triangulation of a polygon with a too large area

-Load the .shp: Figure_x_4_mercier_big_area.shp

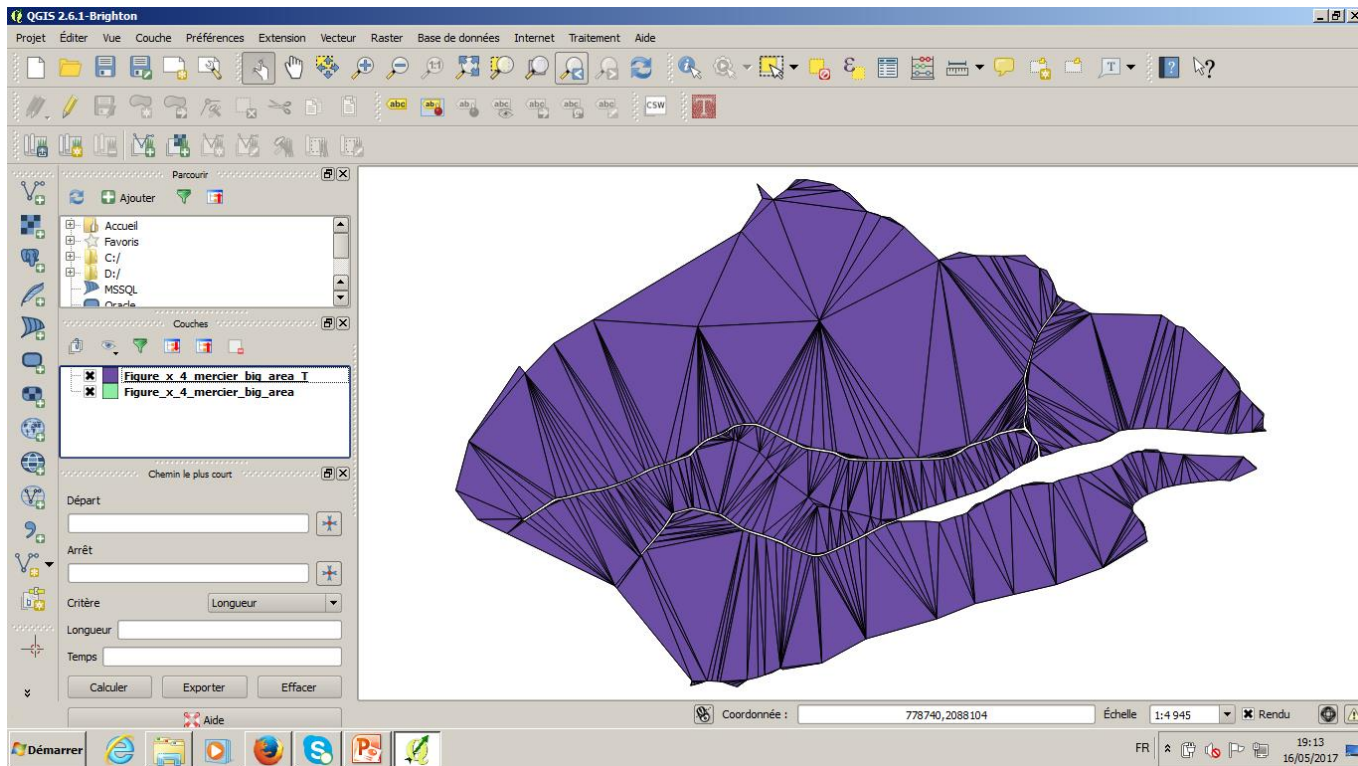
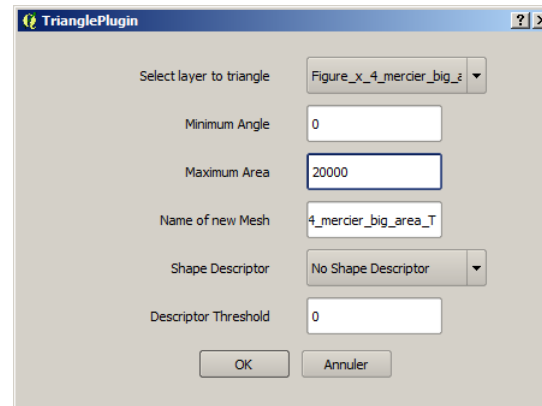
-to get a triangulation with area restriction of 2ha, use the following options:

This figure is part of

Figure x.33

Too large element

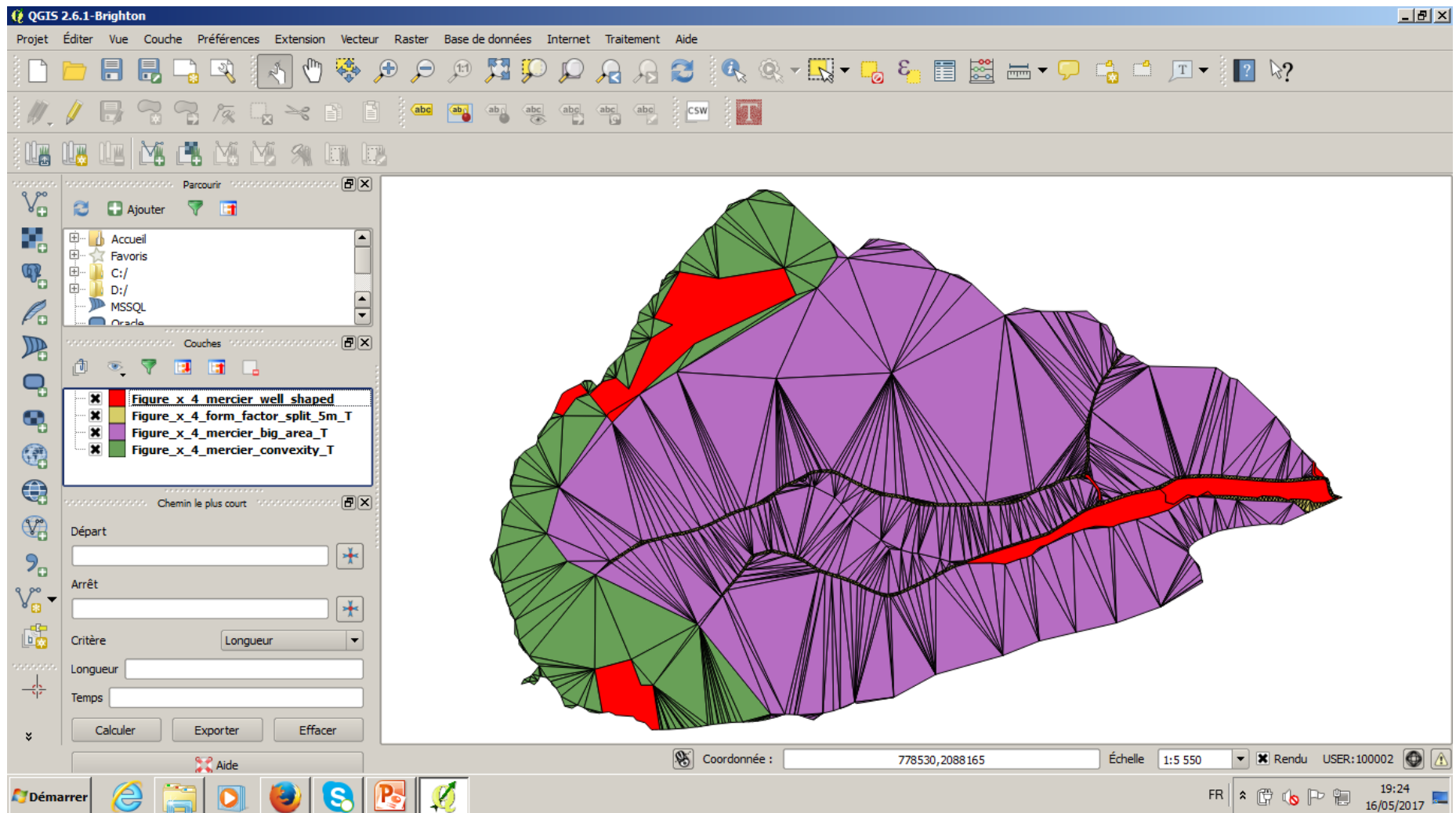
Restriction on the area



Step: Triangulation of the Mercier mesh

The following GIS layers are available: (Figure x.33)

- Figure_x_4_mercier_big_area_T
- Figure_x_4_form_factor_split_5m_T
- Figure_x_4_mercier_convexity_T
- Figure_x_4_mercier_well_shaped



Part B: (QGIS-GRASS-Virtual box)

Dissolution of the triangulation and application to
the Mercier catchment

Step: download the GeoPUMMA Virtual box

-This downloading can be performed on the following web site:

<http://DOI.org/10.5281/zenodo.821563>

And for the source codes

<https://forge.irstea.fr/projects/geopumma>

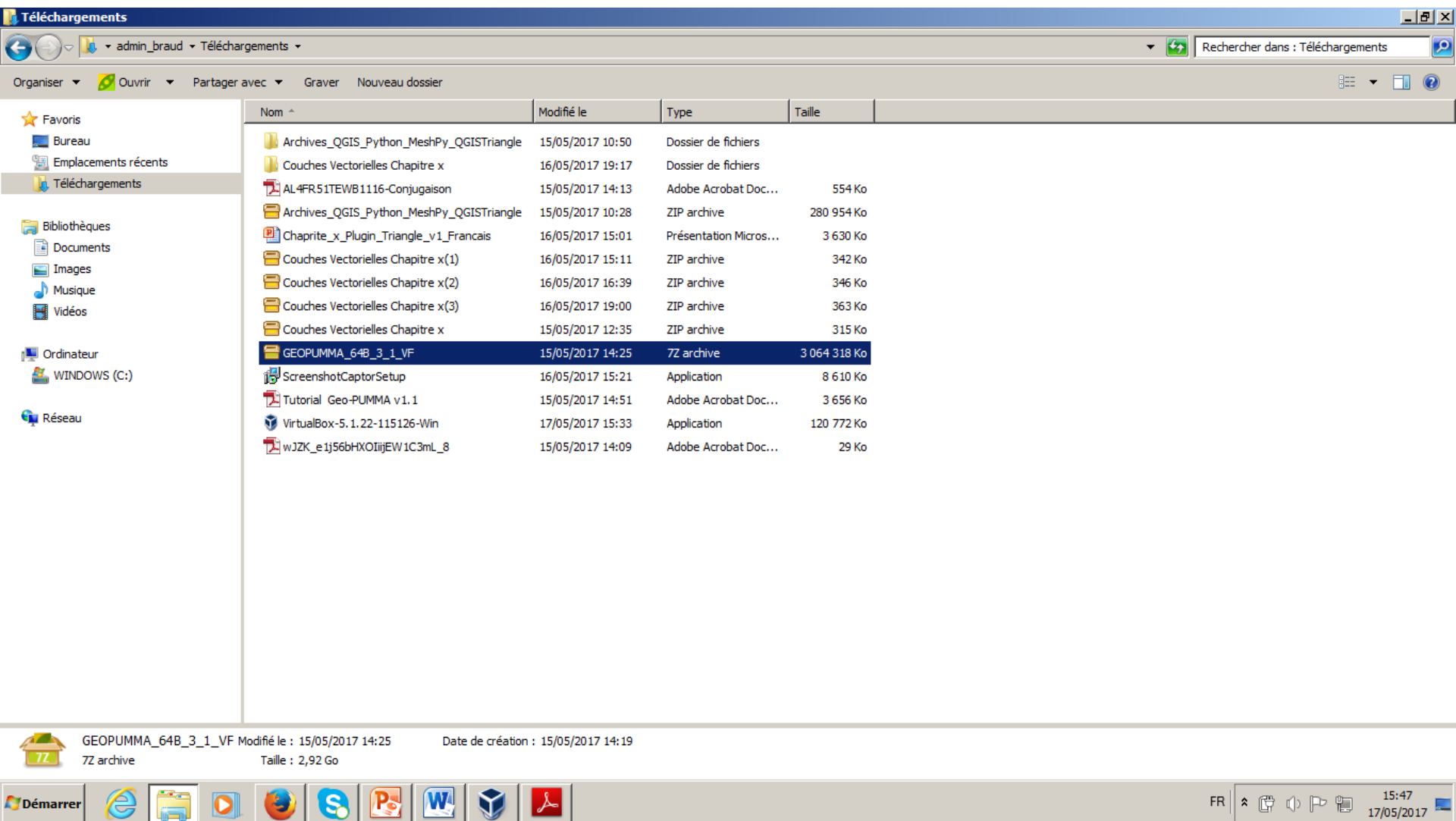
If more information is required, the user can download the detailed tutorial
Geo-PUMMA v1.1.pdf:

<https://forge.irstea.fr/projects/geopumma/files>

Step: Download the GeoPUMMA virtual box

-If the download was successful, the following file should be available in the download folder

-Then the virtual box, available in the .7zip archive must be decompressed



Step: Installation of the Virtual box

Select Downloads



Vámonos - Lila Downs y C... x Chapitre_Sanzana_et_al_201... x Recibidos (95) - pedropablosa... x Re: Chapitre - ppsanzana@u... x Oracle VM VirtualBox x +

https://www.virtualbox.org

VirtualBox

search...
Login Preferences

VirtualBox

Welcome to VirtualBox.org!

VirtualBox is a powerful x86 and AMD64/Intel64 [virtualization](#) product for enterprise as well as home use. Not only is VirtualBox an extremely feature rich, high performance product for enterprise customers, it is also the only professional solution that is freely available as Open Source Software under the terms of the GNU General Public License (GPL) version 2. See "[About VirtualBox](#)" for an introduction.

Presently, VirtualBox runs on Windows, Linux, Macintosh, and Solaris hosts and supports a large number of [guest operating systems](#) including but not limited to Windows (NT 4.0, 2000, XP, Server 2003, Vista, Windows 7, Windows 8, Windows 10), DOS/Windows 3.x, Linux (2.4, 2.6, 3.x and 4.x), Solaris and OpenSolaris, OS/2, and OpenBSD.

VirtualBox is being actively developed with frequent releases and has an ever growing list of features, supported guest operating systems and platforms it runs on. VirtualBox is a community effort backed by a dedicated company: everyone is encouraged to contribute while Oracle ensures the product always meets professional quality criteria.

Download VirtualBox 5.1

Hot picks:

- Pre-built virtual machines for developers at [Oracle Tech Network](#)
- **Hyperbox** Open-source Virtual Infrastructure Manager [project site](#)
- **hbnVirtualBox** AIX web interface [project site](#)

News Flash

- **New April 28th, 2017**
VirtualBox 5.1.22 released!
Oracle today released a 5.1 maintenance release which improves stability and fixes regressions. See the [Changelog](#) for details.
- **Important December 2nd, 2016**
We're hiring!
Looking for a new challenge? We're looking for a [System administrator\(Germany\)](#).
- **New July 12th, 2016**
VirtualBox 5.1 released!
Many enhancements and improvements. Read more in the [announcement](#).

[More information...](#)

Démarrer e f p S P W

FR 15:30 17/05/2017

Step: Installation of the Virtual box

-Download the version for Windows



The screenshot shows a web browser window with the VirtualBox website. The browser's address bar shows the URL <https://www.virtualbox.org/wiki/Downloads>. The page features the VirtualBox logo on the left and a large heading "VirtualBox" in the center. Below the heading is the section "Download VirtualBox" with a subheading "VirtualBox binaries". The page contains a list of download links for different operating systems and a section for the Oracle VM VirtualBox Extension Pack. The browser's taskbar at the bottom shows various application icons, including the Start button, Internet Explorer, and several open windows.

VirtualBox

[About](#)
[Screenshots](#)
[Downloads](#)
[Documentation](#)
 [End-user docs](#)
 [Technical docs](#)
[Contribute](#)
[Community](#)

Download VirtualBox

Here, you will find links to VirtualBox binaries and its source code.

VirtualBox binaries

By downloading, you agree to the terms and conditions of the respective license.

- **VirtualBox 5.1.22 platform packages.** The binaries are released under the terms of the GPL version 2.
 - [Windows hosts](#)
 - [OS X hosts](#)
 - [Linux distributions](#)
 - [Solaris hosts](#)
- **VirtualBox 5.1.22 Oracle VM VirtualBox Extension Pack** [All supported platforms](#)
Support for USB 2.0 and USB 3.0 devices, VirtualBox RDP, disk encryption, NVMe and PXE boot for Intel cards. See [this chapter from the User Manual](#) for an introduction to this Extension Pack.
The Extension Pack binaries are released under the [VirtualBox Personal Use and Evaluation License \(PUEL\)](#).
Please install the extension pack with the same version as your installed version of VirtualBox:
*If you are using **VirtualBox 5.0.40**, please download the extension pack [here](#).*
- **VirtualBox 5.1.22 Software Developer Kit (SDK)** [All platforms](#)

See the [changelog](#) for what has changed.

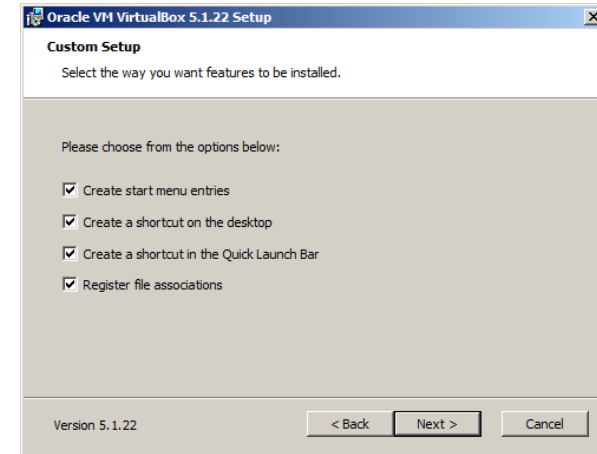
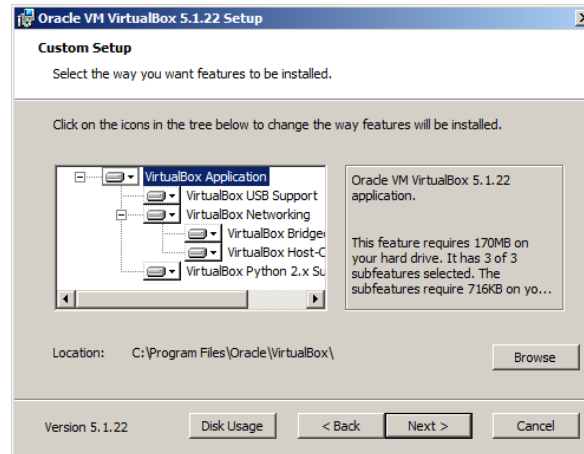
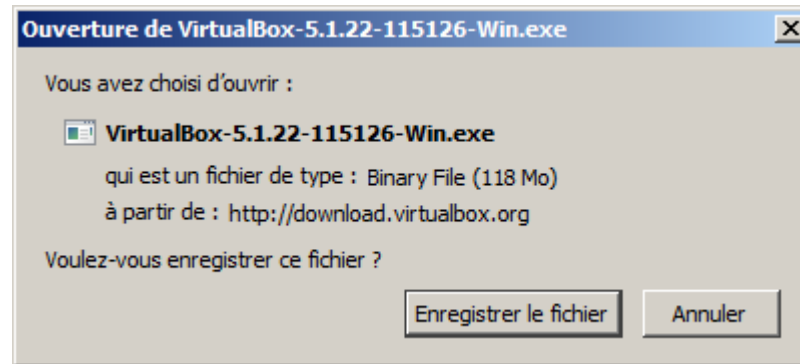
You might want to compare the [SHA256](#) checksums or the [MD5](#) checksums to verify the integrity of downloaded packages. *The SHA256 checksums should be favored as the MD5 algorithm must be treated as insecure!*

Note: After upgrading VirtualBox it is recommended to upgrade the guest additions as well.

[User Manual](#)

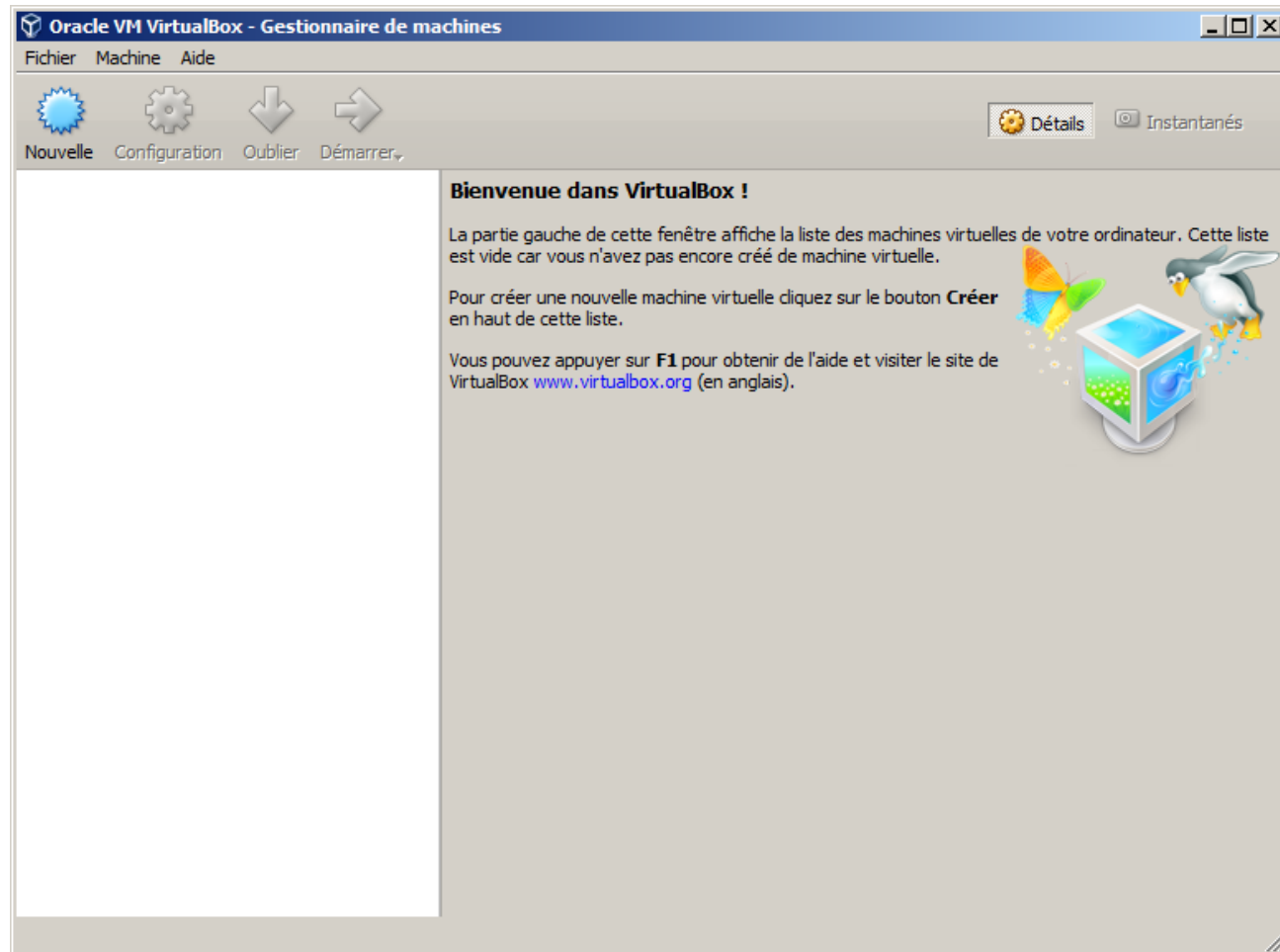
Step: Installation of the Virtual box

-Select « Save » and accept all the default installation options in all the windows that will open later:



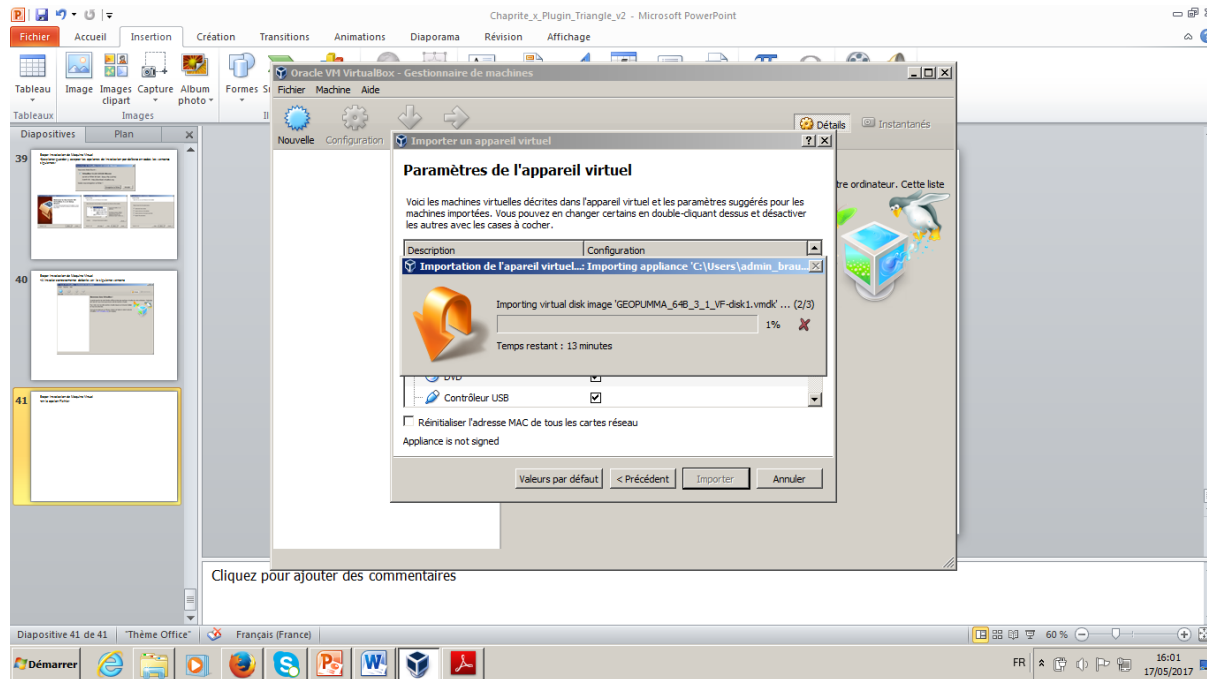
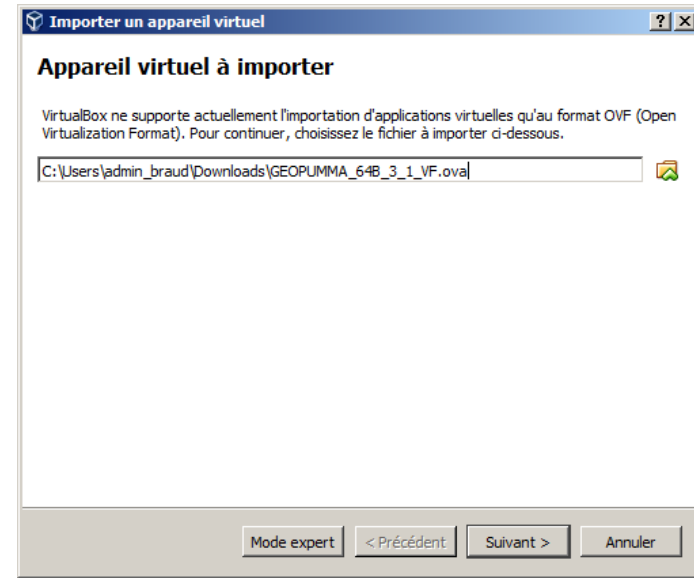
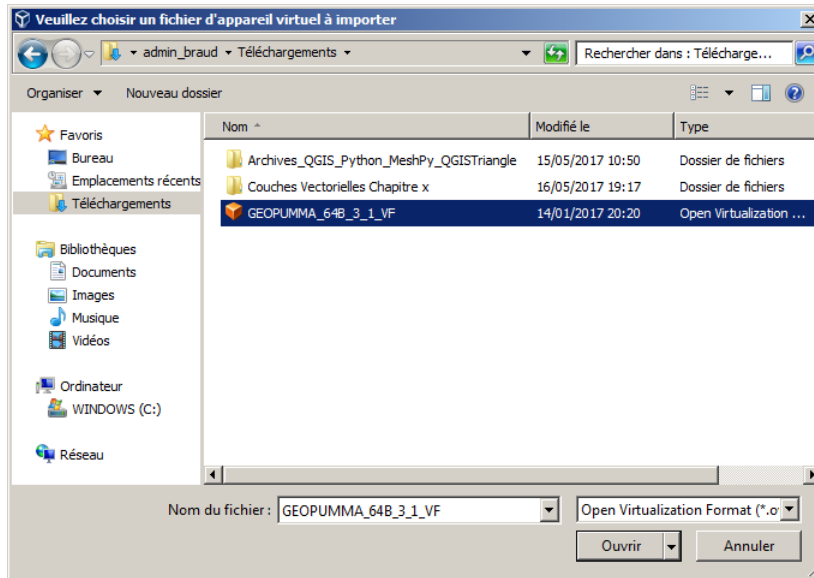
Step: Installation of the Virtual box

-If the installation ran correctly, the following window should appear:



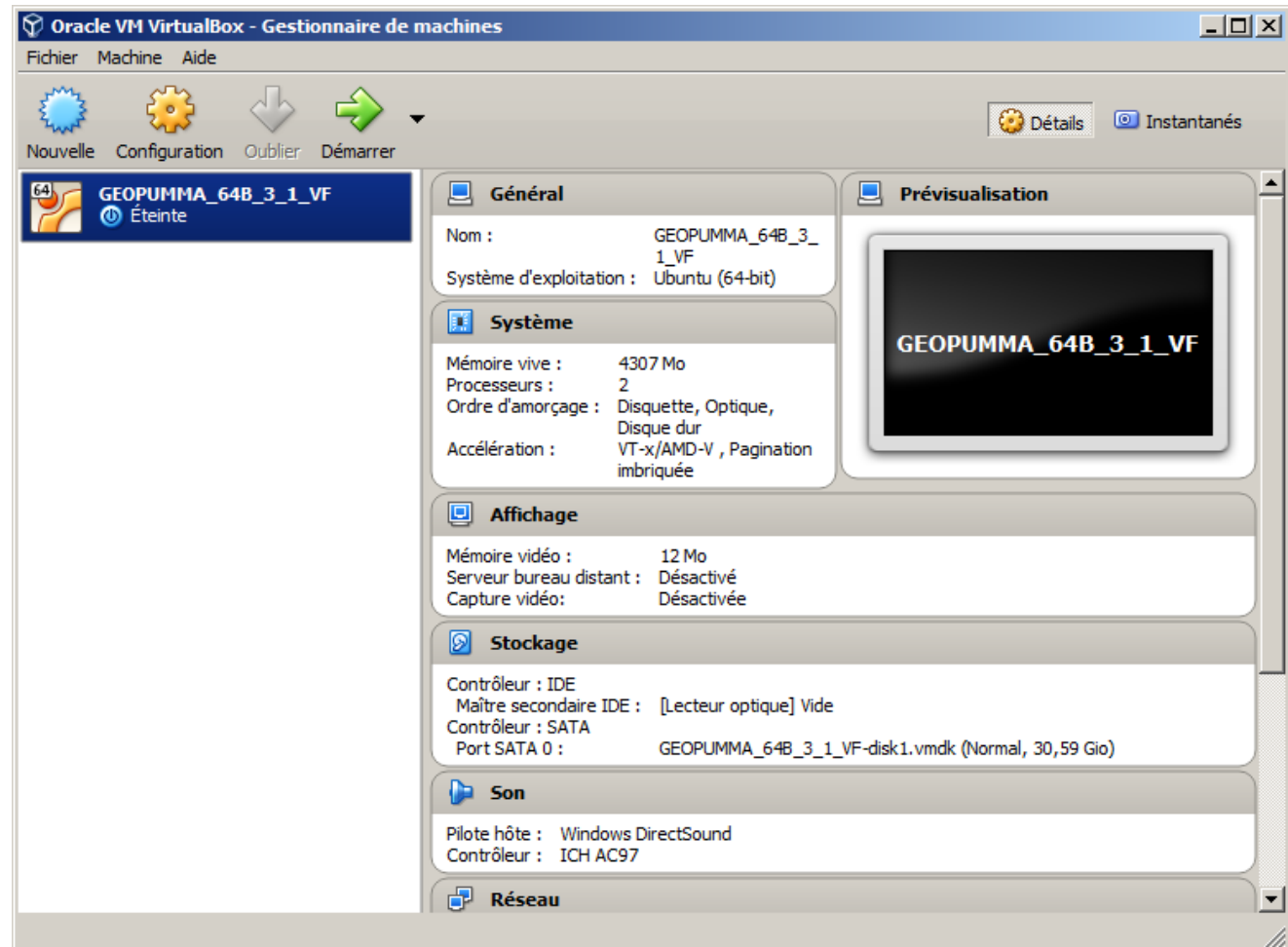
Step: Installation of the Virtual box

-In the « File » option



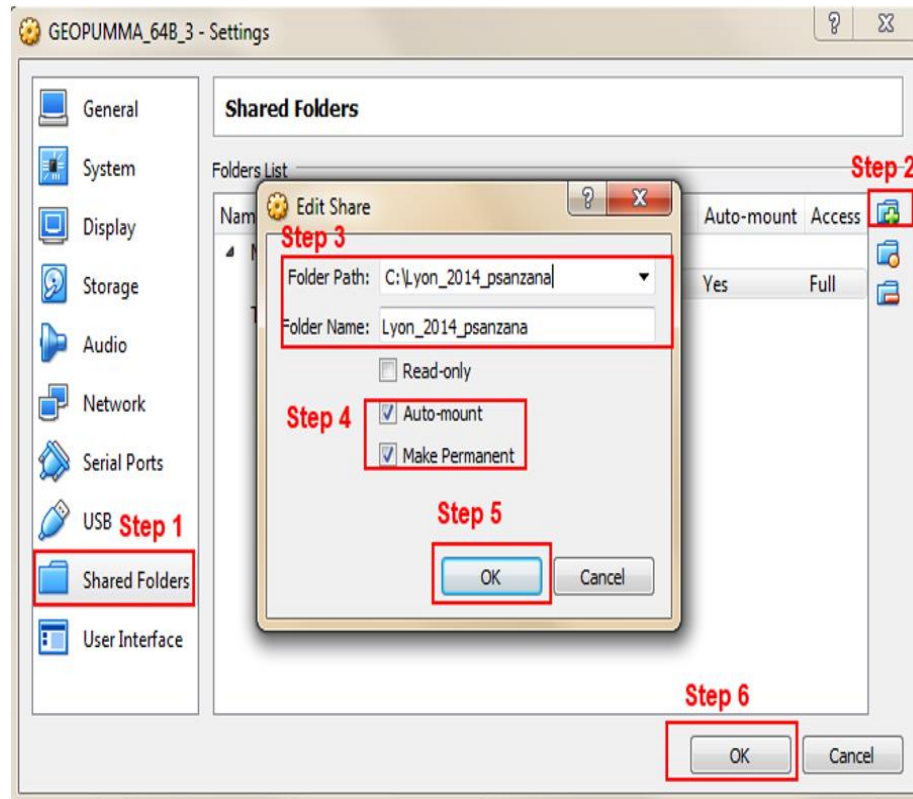
Step: Installation of the Virtual box

-Select « Initialize the Virtual box ». In case of problem in this step, it is possible to find solutions on this web page <https://forge.irstea.fr/projects/geopumma/files> and to download the tutorial [Tutorial Geo-PUMMA v1.1.pdf](#)



Define a shared folder that can be accessed from the Virtual Box and the main system. To achieve that:

- Go to “Shared folders” (Step 1)
- Select the wished folder (Step 2) and click the icon “add a folder”
- Create a folder named “Lyon_2014_psanzana” in the example(Step 3)
- Select also options “Auto-mount” and “Make permanent” (Step 4).
- Then click “Ok” to close the window (Step 5)
- Then click “Ok” again to add the folder (Step 6).



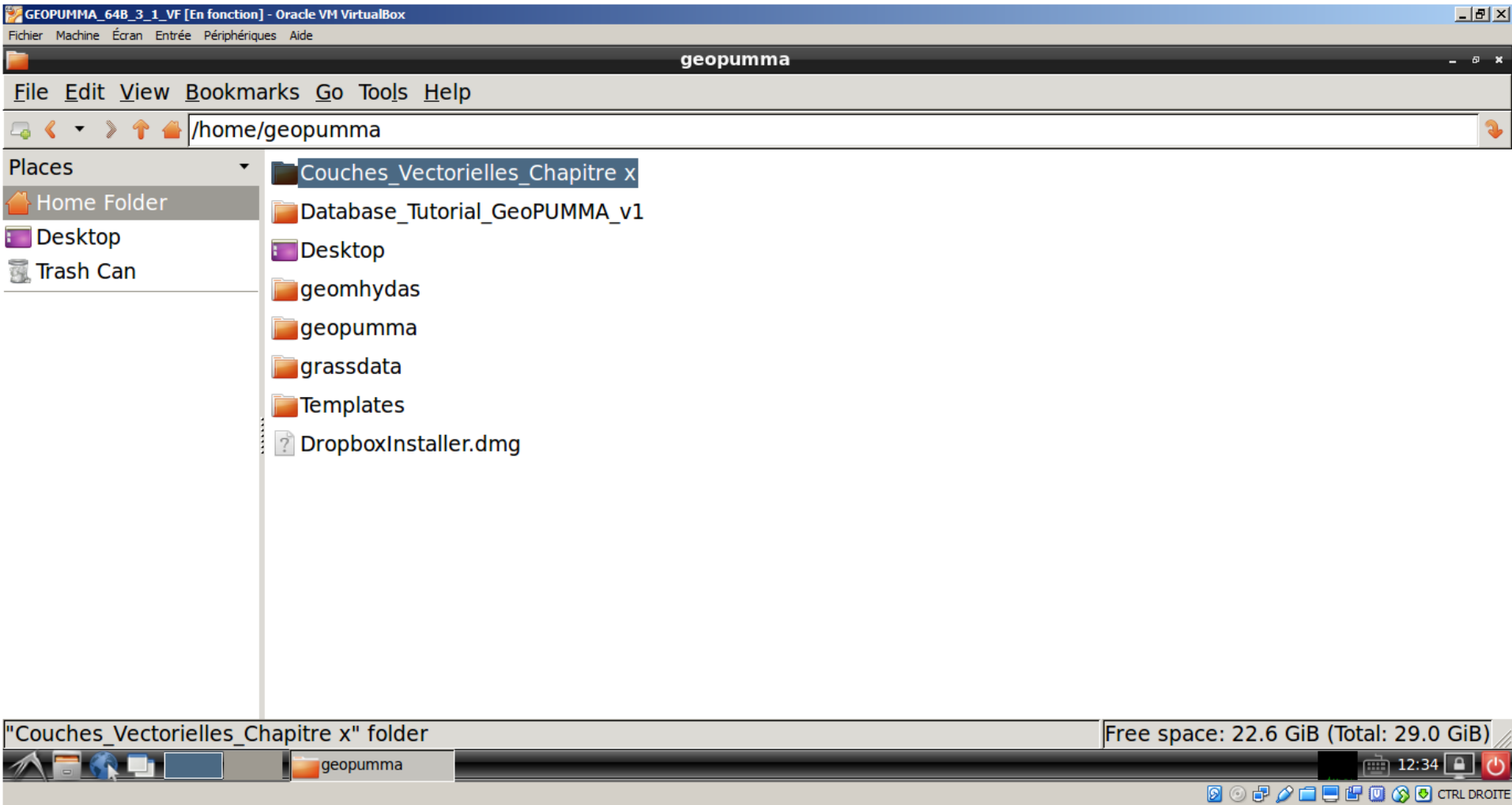
Step: Installation of the Virtual box

-Once the virtual box is launched, the following screen should appear:



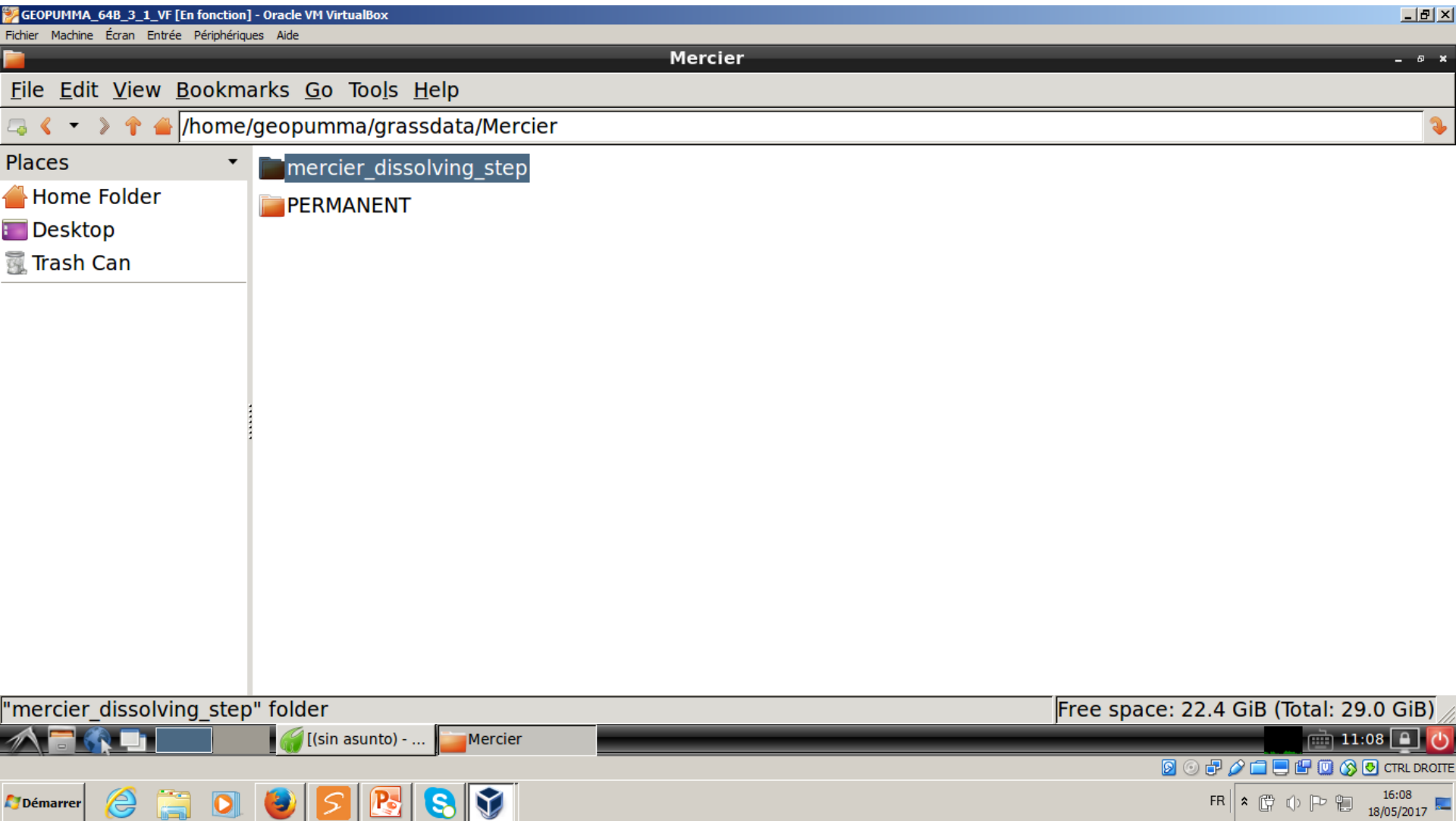
Step: Dissolution of triangulated elements

-Copy the archive Couches_Vectorielles_Chapitre_x in the folder /home/geopumma as shown in the figure below



Step: Dissolution of triangulated elements

- Select the folder archive and copy it in the folder /grassdata/Mercier as shown in the figure below



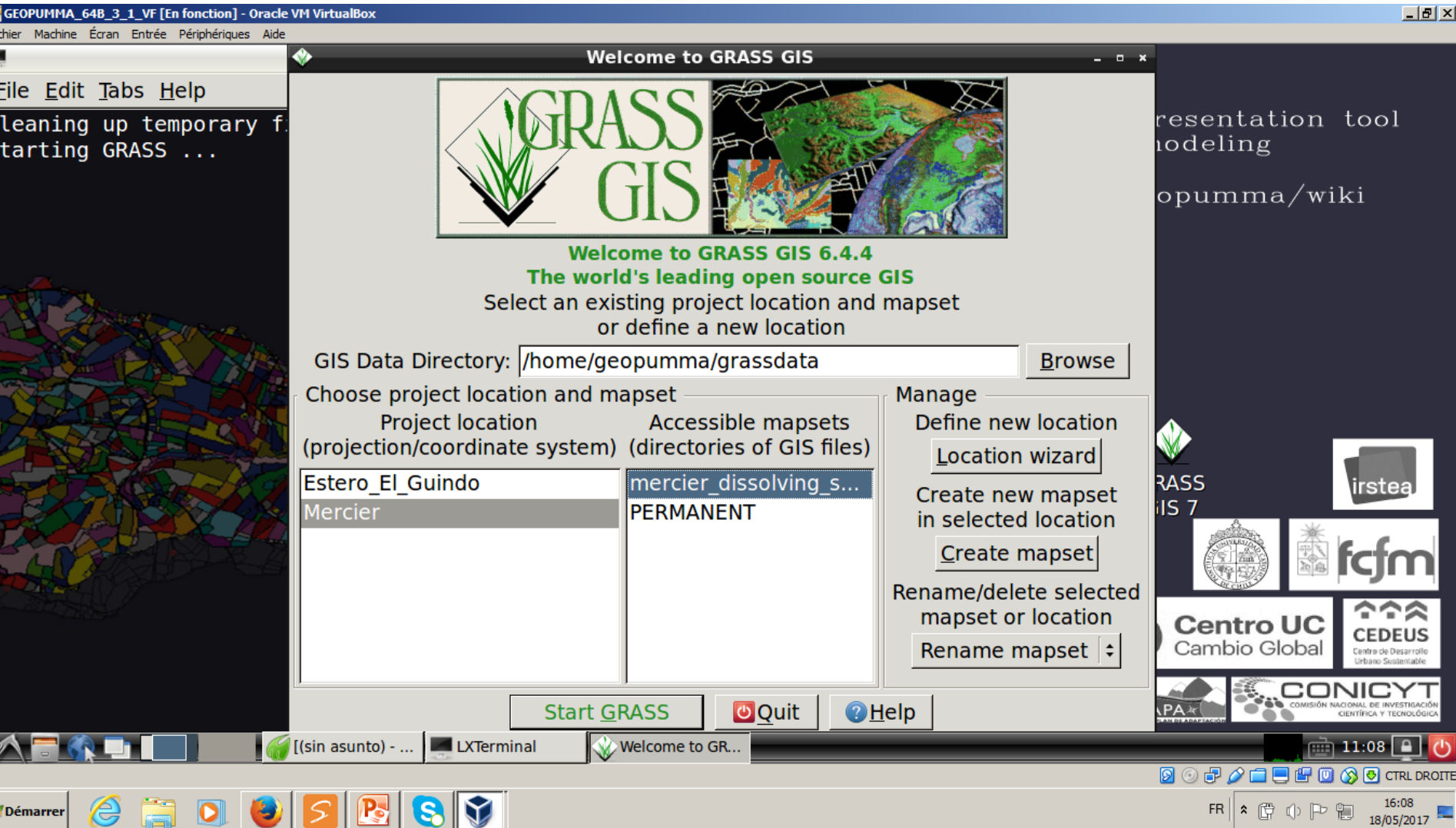
Step: Dissolution of triangulated elements

-Select the GRASS GIS icon that corresponds to the 6.4 version:

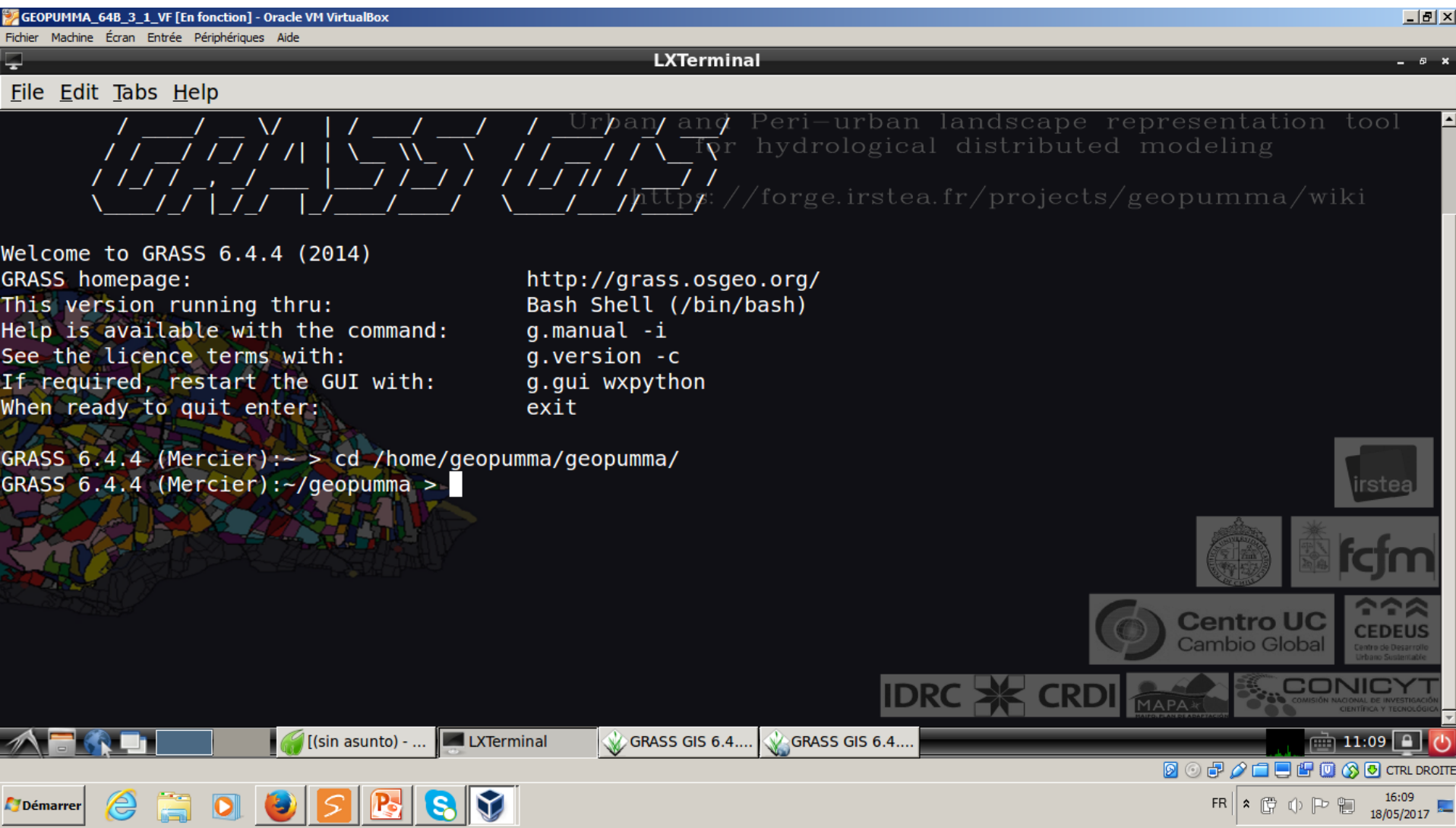


Step: Dissolution of triangulated elements

-Select the Mercier and the mercier_dissolving_step folder

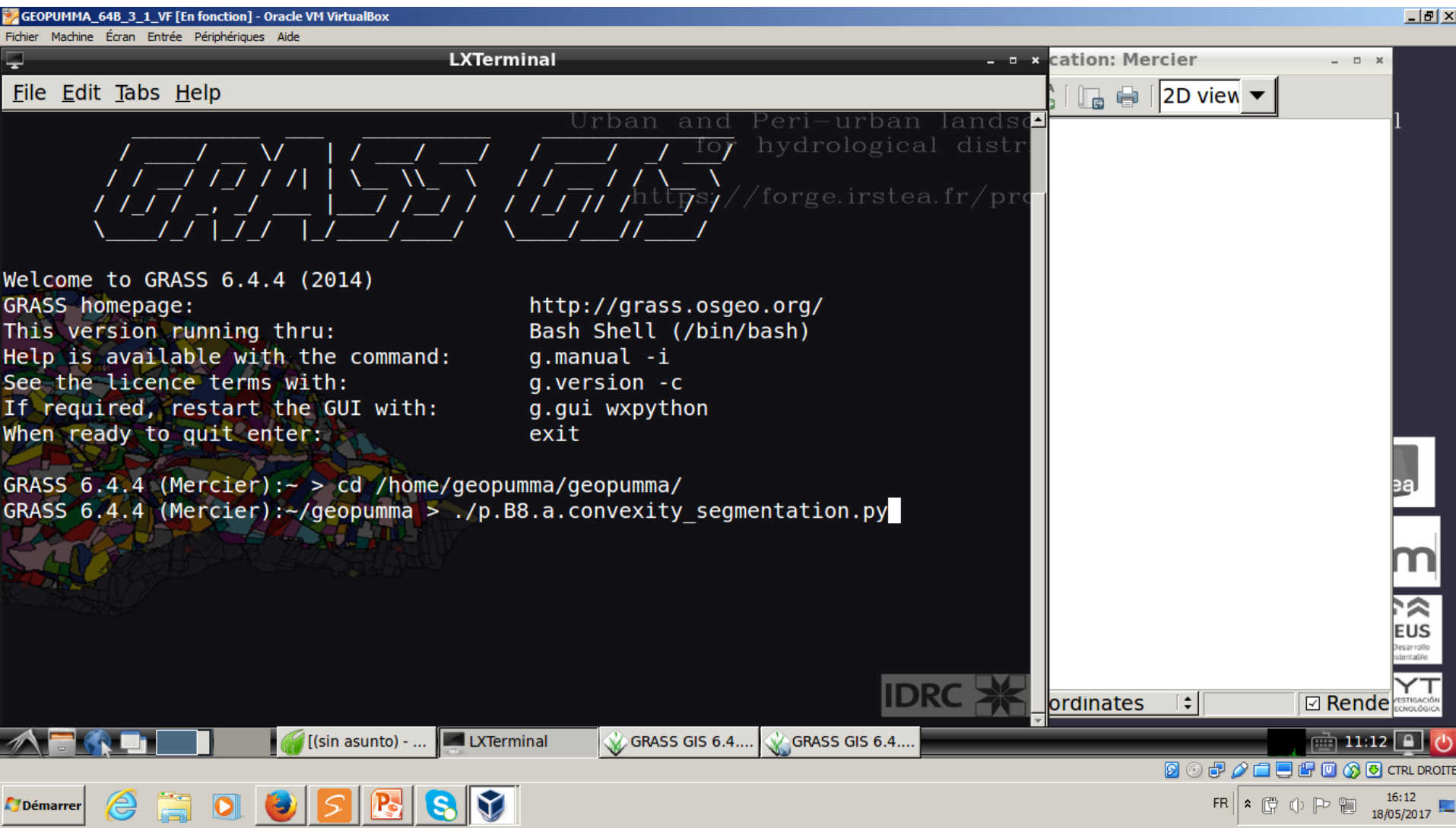


-Once GRASS is open, run the following commands



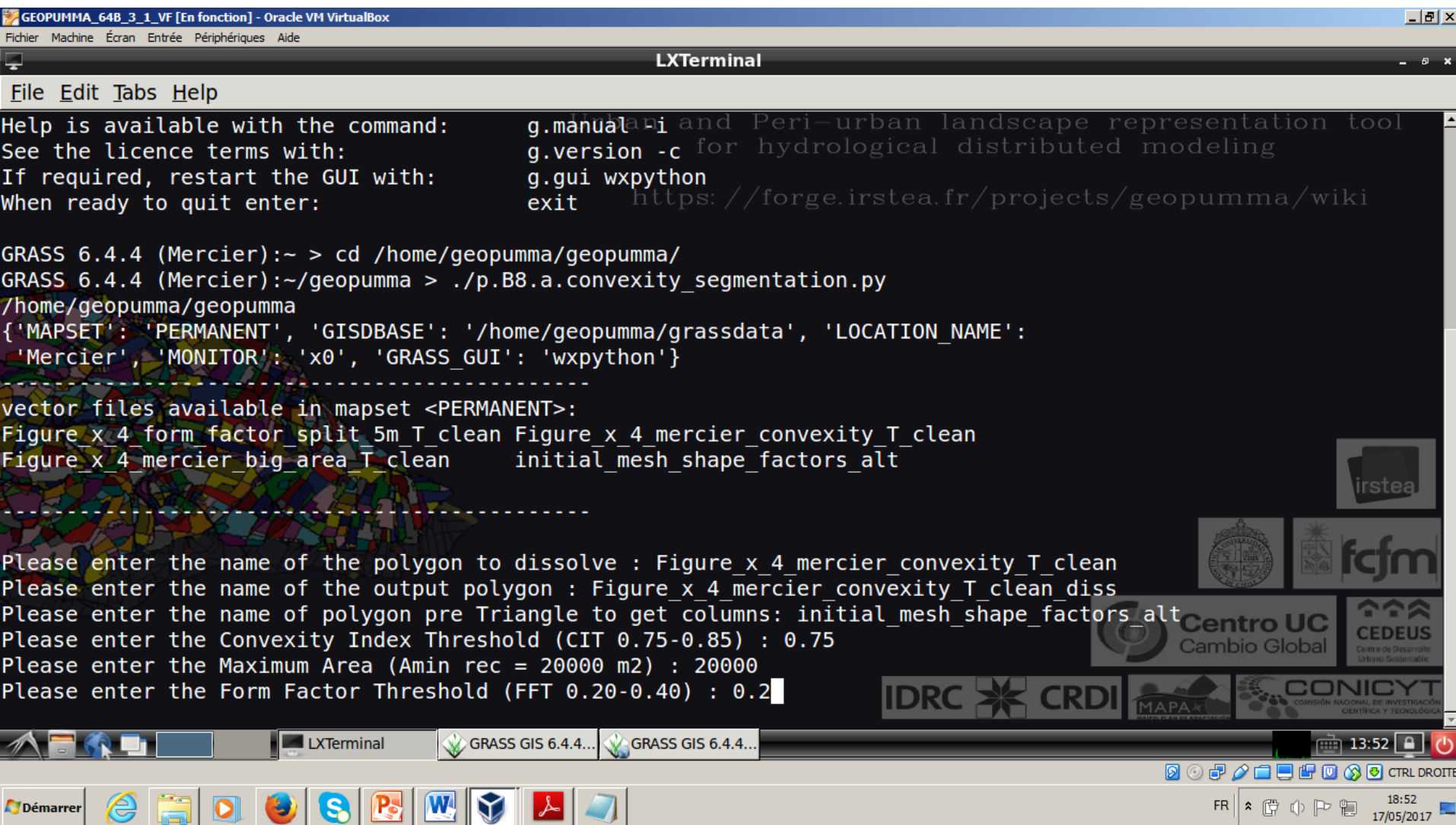
Step: Dissolution of triangulated elements

- Type `cd /home/geopumma/geopumma/` in the command line
- Type `./p.B8.a.convexity_segmentation.py` in the command line



Step: Dissolution of triangulated elements

-Select the following options for the polygons selected according to the convexity criterion



```
GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox
Fichier Machine Écran Entrée Périphériques Aide

LXTerminal

File Edit Tabs Help

Help is available with the command: g.manual
See the licence terms with: g.version -c
If required, restart the GUI with: g.gui wxpython
When ready to quit enter: exit https://forge.irstea.fr/projects/geopumma/wiki

GRASS 6.4.4 (Mercier):~ > cd /home/geopumma/geopumma/
GRASS 6.4.4 (Mercier):~/geopumma > ./p.B8.a.convexity_segmentation.py
/home/geopumma/geopumma
{'MAPSET': 'PERMANENT', 'GISDBASE': '/home/geopumma/grassdata', 'LOCATION_NAME':
'Mercier', 'MONITOR': 'x0', 'GRASS_GUI': 'wxpython'}

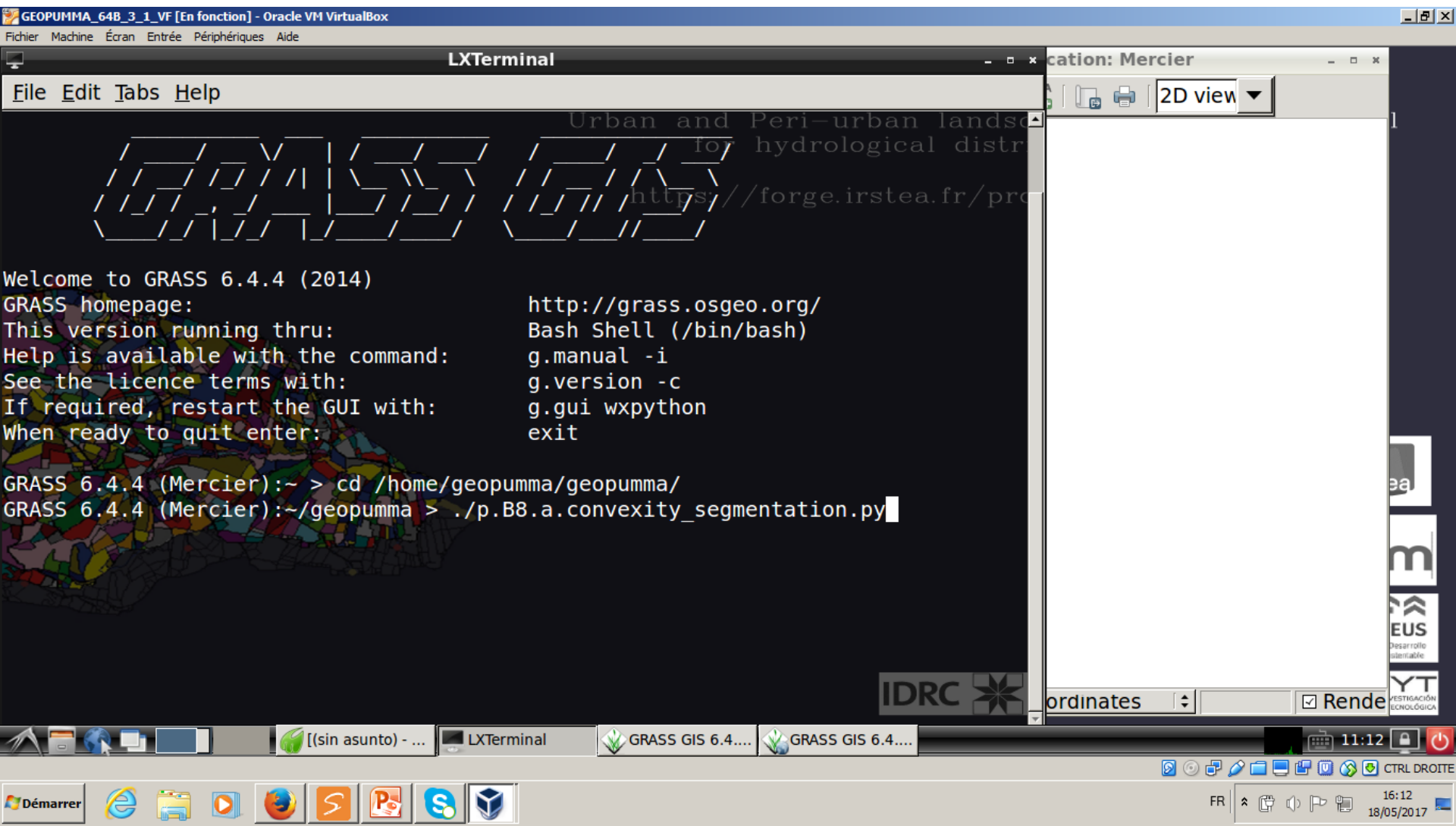
-----
vector files available in mapset <PERMANENT>:
Figure_x_4_form_factor_split_5m_T_clean Figure_x_4_mercier_convexity_T_clean
Figure_x_4_mercier_big_area_T_clean initial_mesh_shape_factors_alt

-----
Please enter the name of the polygon to dissolve : Figure_x_4_mercier_convexity_T_clean
Please enter the name of the output polygon : Figure_x_4_mercier_convexity_T_clean_diss
Please enter the name of polygon pre Triangle to get columns: initial_mesh_shape_factors_alt
Please enter the Convexity Index Threshold (CIT 0.75-0.85) : 0.75
Please enter the Maximum Area (Amin rec = 20000 m2) : 20000
Please enter the Form Factor Threshold (FFT 0.20-0.40) : 0.2
```

The screenshot shows a Linux desktop environment. At the top, a window titled "GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox" is visible. Below it, a "LXTerminal" window is open, displaying the execution of a GRASS GIS script. The terminal output shows the script's path, environment variables, and a list of vector files in the 'PERMANENT' mapset. The user is prompted to enter the name of the polygon to dissolve, the output polygon name, the polygon pre-triangle for columns, the Convexity Index Threshold (CIT), the Maximum Area (Amin rec), and the Form Factor Threshold (FFT). The desktop background features a colorful, abstract pattern. The taskbar at the bottom includes icons for various applications like Firefox, LibreOffice, and a file manager. The system tray on the right shows the date and time as 18:52 on 17/05/2017.

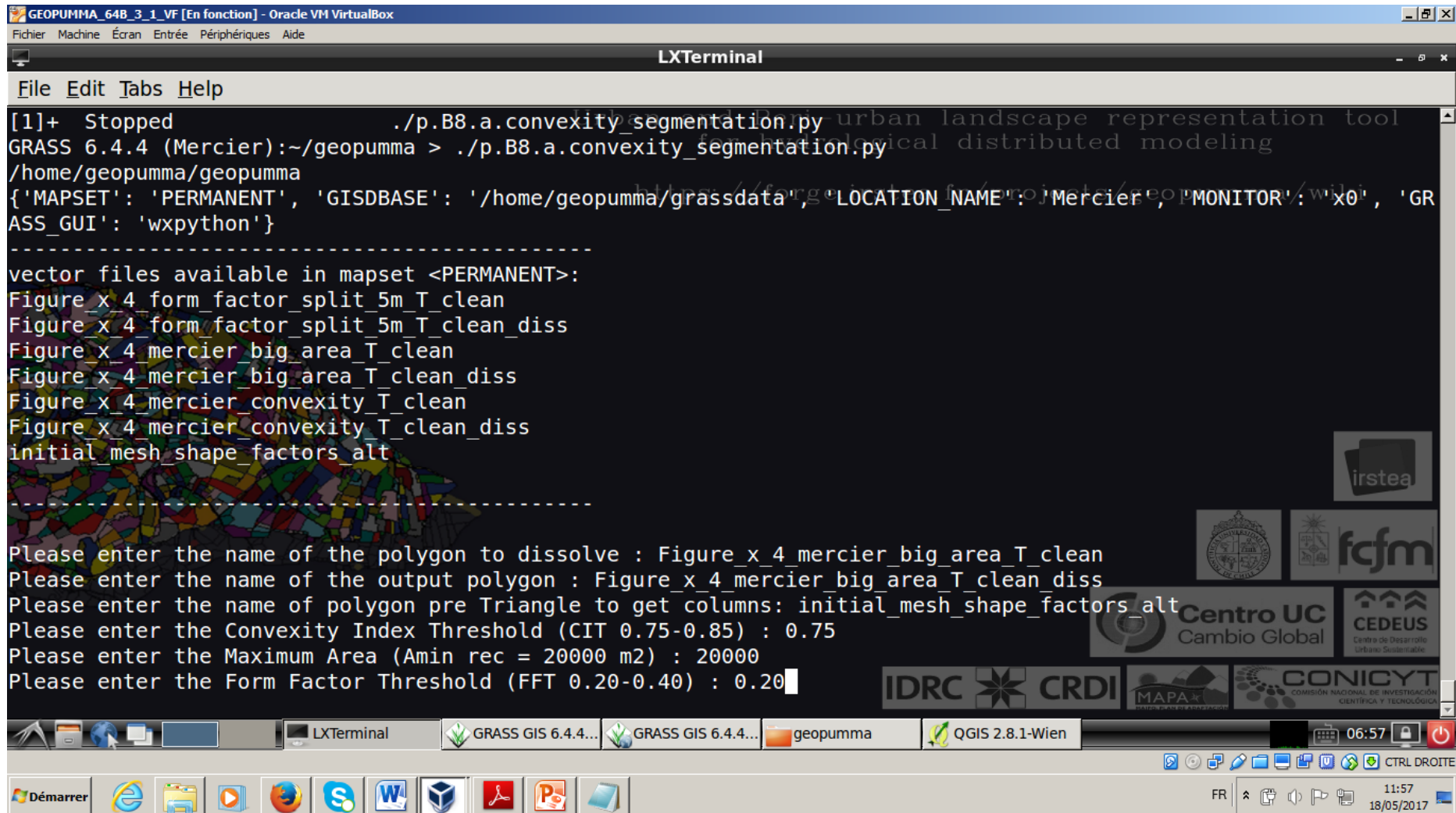
Step: Dissolution of triangulated elements

- Type `cd /home/geopumma/geopumma/` in the command line
- Type `./p.B8.a.convexity_segmentation.py` in the command line



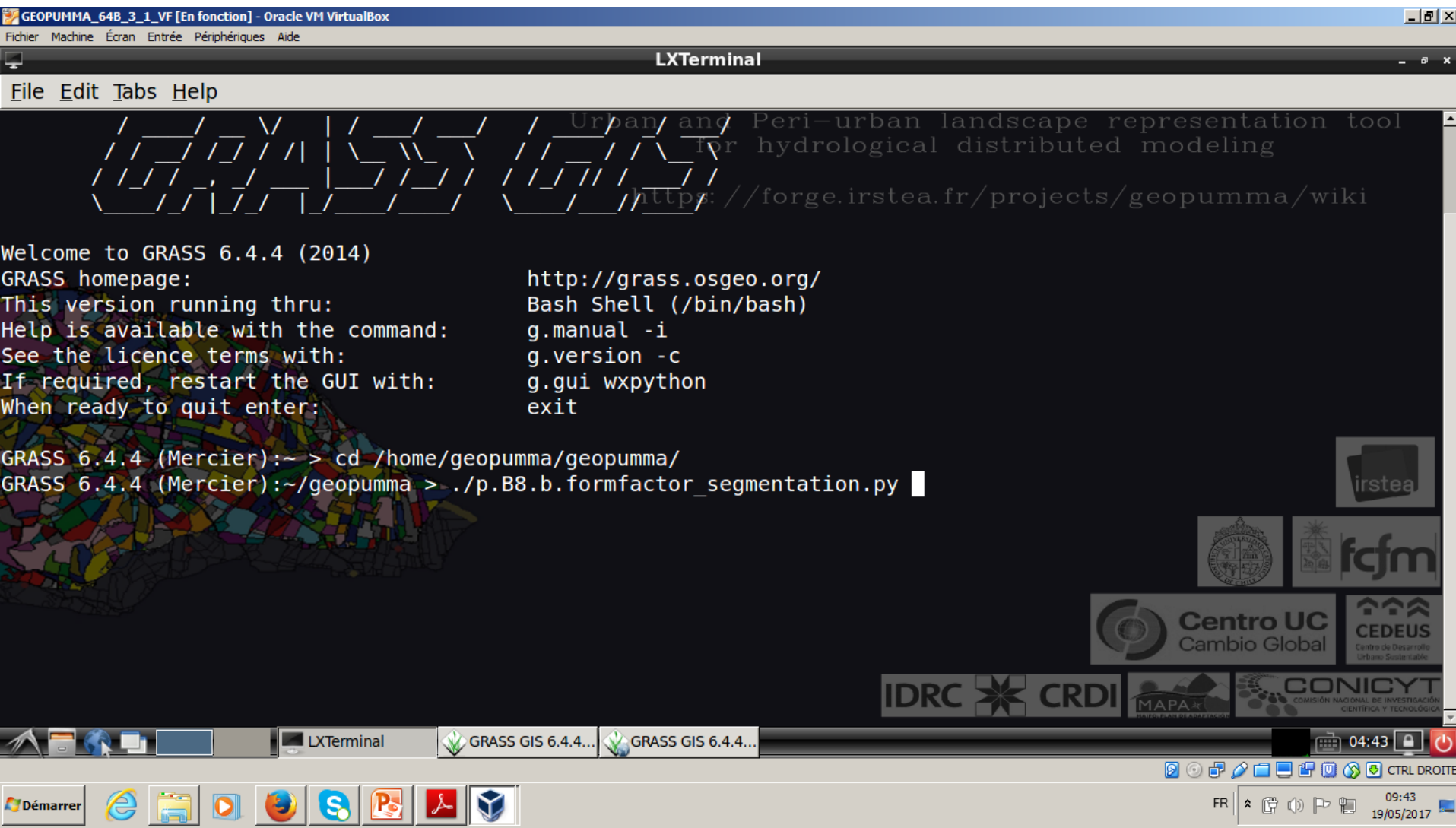
Step: Dissolution of triangulated elements

-Select the following options for the polygons selected according to the area criterion



Step: Dissolution of triangulated elements

- Type `cd /home/geopumma/geopumma/` in the command line
- Type `./p.B8.b.formfactor_segmentation.py` in the command line



Etape: Dissolution d'éléments triangulés

-Select the following options for the polygons selected according to the form factor criterion

GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox

Fichier Machine Écran Entrée Périphériques Aide

LXTerminal

File Edit Tabs Help

Repeted Value 23

<^Z

[4]+ Stopped

GRASS 6.4.4 (Mercier):~/geopumma > ./p.B8.b.formfactor_segmentation.py

/home/geopumma/geopumma

{'MAPSET': 'PERMANENT', 'GISDBASE': '/home/geopumma/grassdata', 'LOCATION_NAME': 'Mercier', 'MONITOR': 'x0', 'GRASS_GUI': 'wxpython'}

vector files available in mapset <PERMANENT>:

Figure_x_4_form_factor_split_5m_T_clean

Figure_x_4_form_factor_split_5m_T_clean_diss

Figure_x_4_mercier_big_area_T_clean

Figure_x_4_mercier_big_area_T_clean_diss

Figure_x_4_mercier_convexity_T_clean

Figure_x_4_mercier_convexity_T_clean_diss

initial_mesh_shape_factors_alt

Please enter the name of the polygon to dissolve : Figure_x_4_form_factor_split_5m_T_clean

Please enter the name of the output polygon : Figure_x_4_form_factor_split_5m_T_clean_diss

Please enter the Form Factor Threshold (0.20-0.40) : 0.20

Please enter the Maximum Area (Amax rec = 20000 m2) : 20000

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<https://formfactor.irstea.fr/projects/geopumma/wiki>

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Centro UC

Cambio Global

CEDEUS

Centro de Desarrollo Urbano Sostenible

IDRC

INTERNATIONAL DEVELOPMENT RESEARCH CENTER

CRDI

Canadian International Development Research Centre

MAPA

Ministerio de Planificación y Desarrollo

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LXTerminal

GRASS GIS 6.4.4...

GRASS GIS 6.4.4...

geopumma

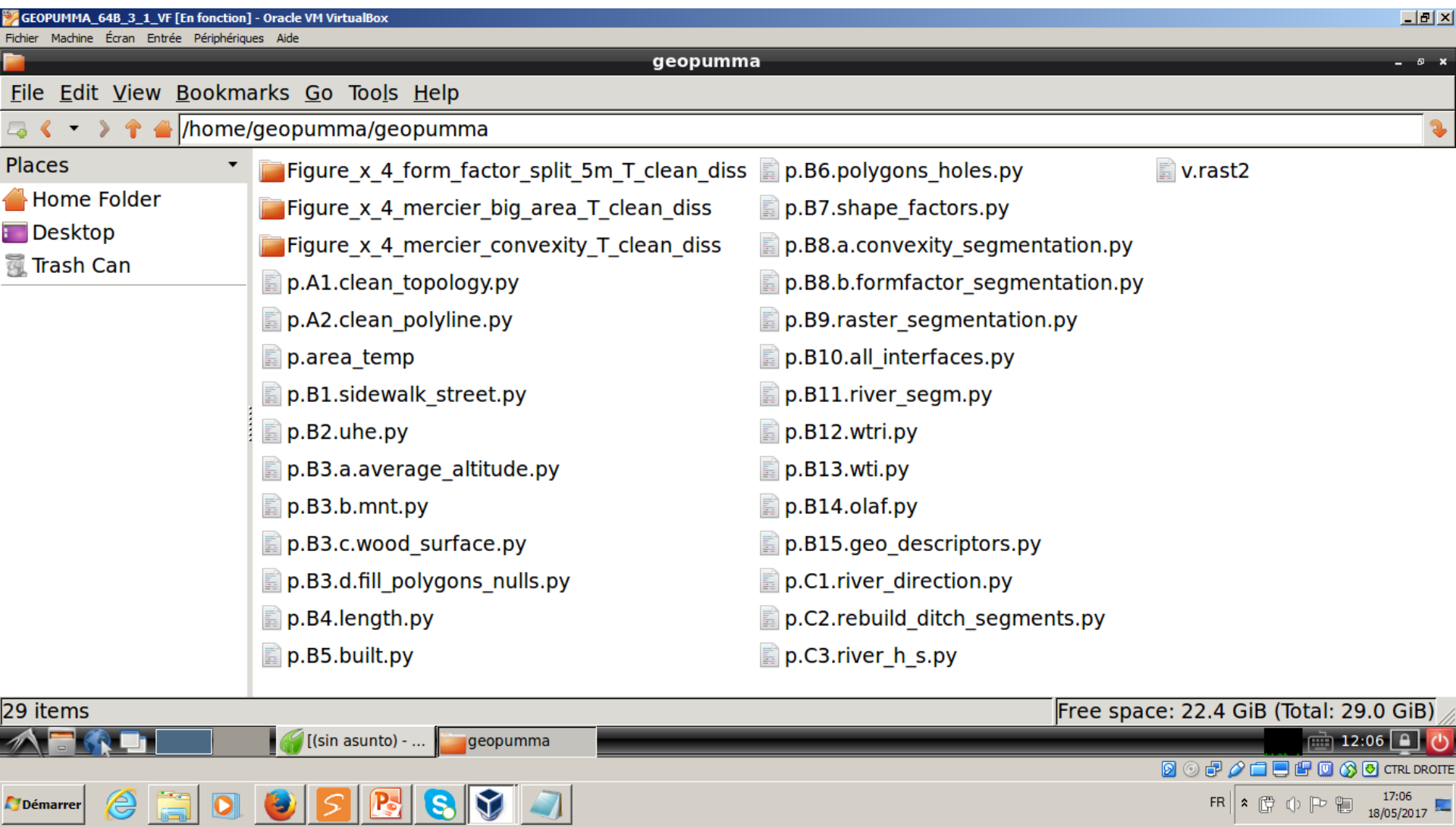
QGIS 2.8.1-Wien

06:58

18/05/2017

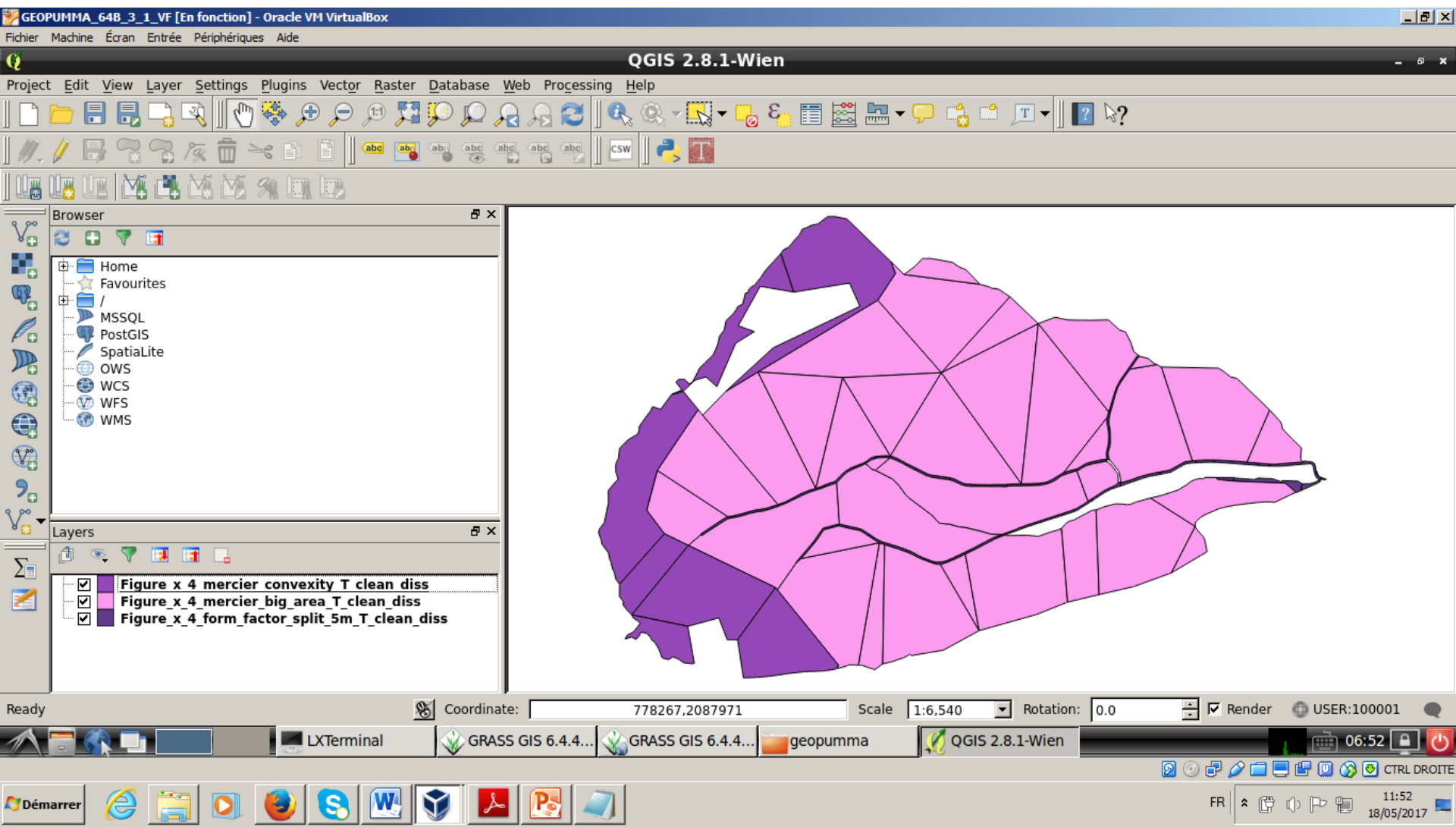
Step: Dissolution of triangulated elements

- The result leads to the following folders



Step: Dissolution of triangulated elements

-Each folder contains the following .shp layers (Figures x.34 x.35 y x.36)



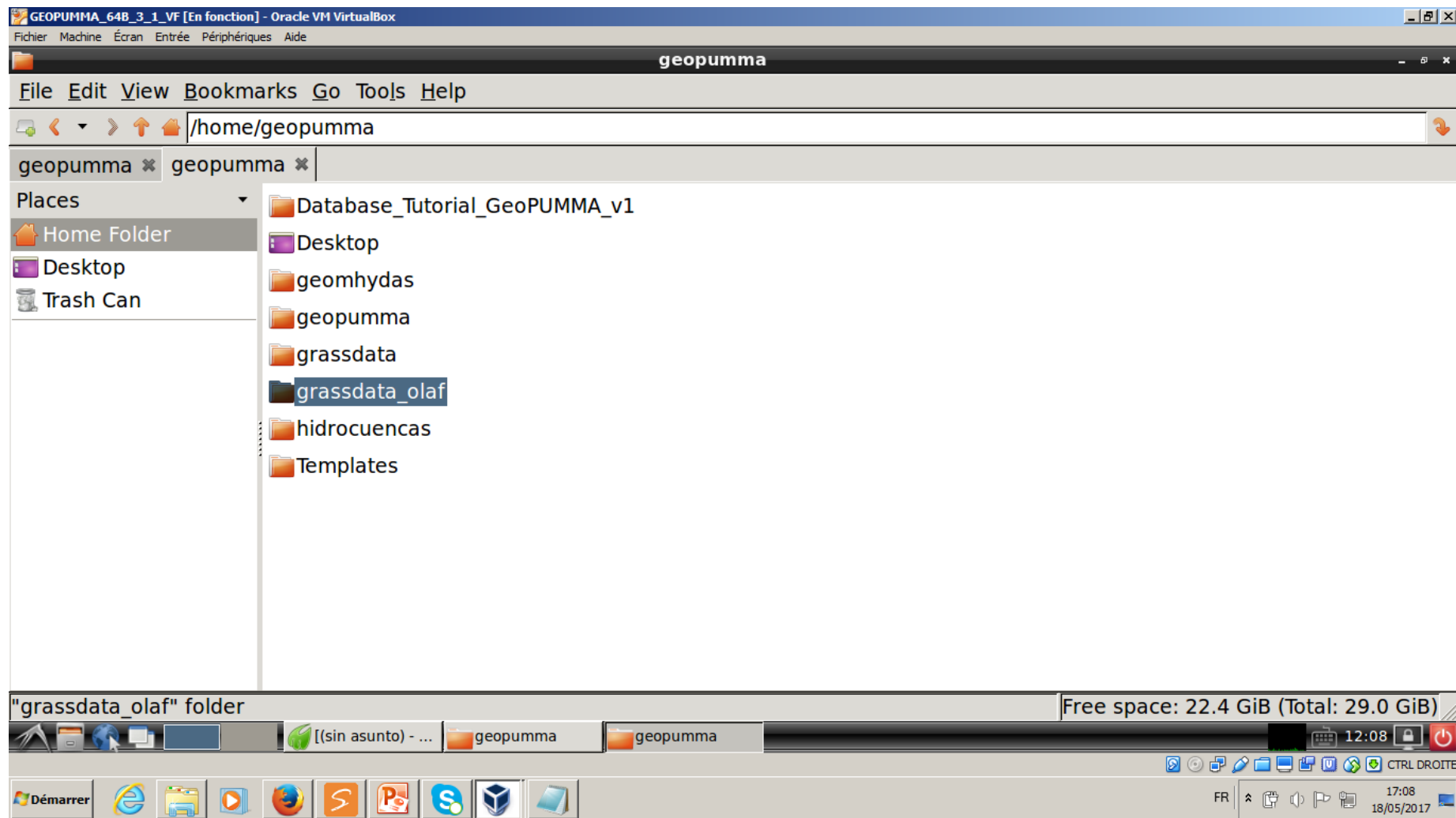
With these .shape files, it is possible to get the mesh of Figure x.37:

- Improved mesh on convexity and area criteria
- Improved mesh on form factor criterion

Step: Détermination of flow directions between elements (routing)

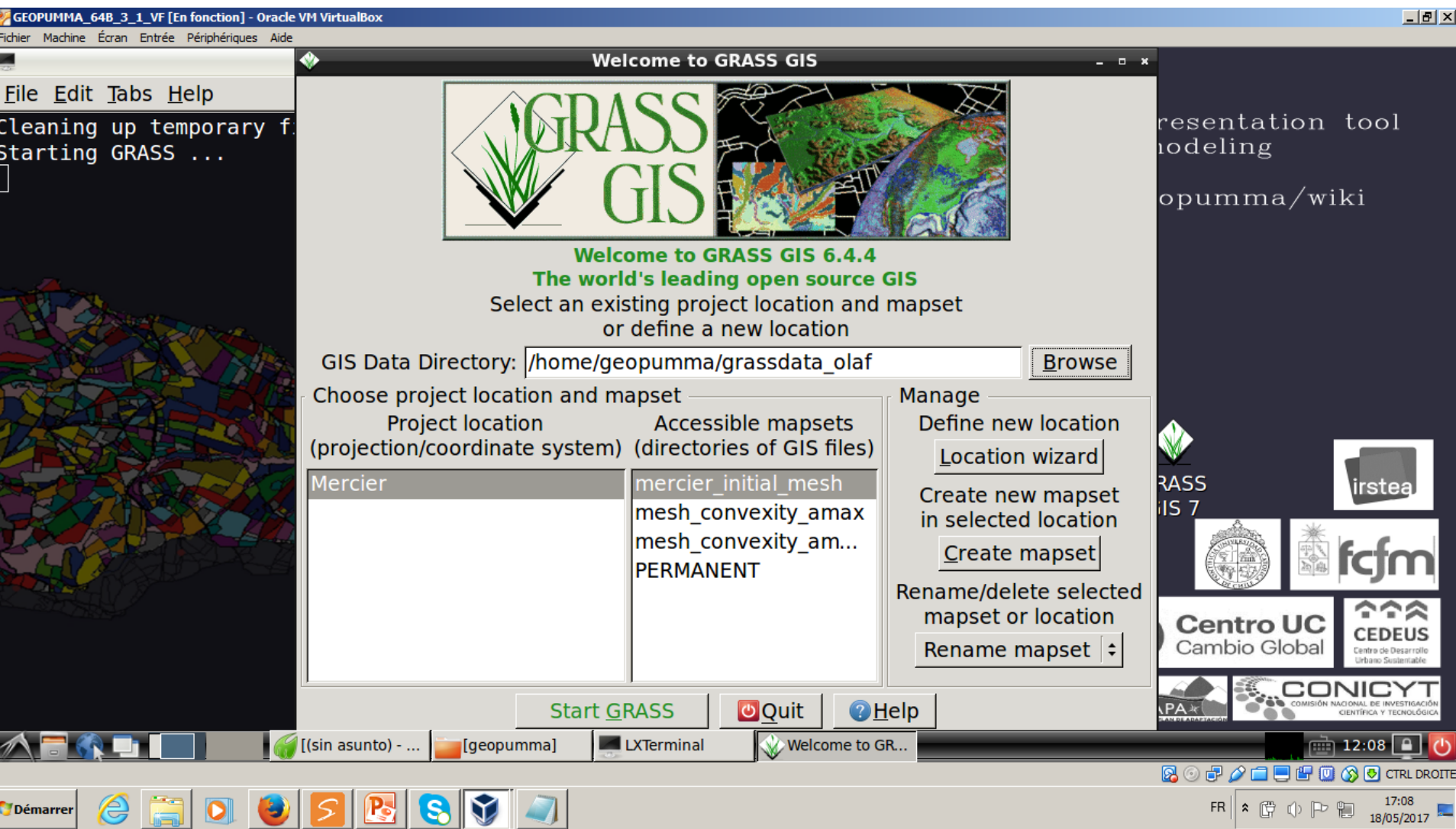
A folder with the three mesh model mesh has been prepared. The following steps only aim at illustrating how to perform the flow routing. We do not show how to get all the layers (other commands from GeoPUMMA should be used for that), but we provide the resulting layers which are outputs of these scripts. For more details about intermediary steps, the user can read the GeoPUMMA V1,1 users' manual.

-Copy the folder grassdata_olaf in the folder: /home/geopumma



Step: Flow routing of the initial mesh

Select LOCATION: Mercier and MAPSET: mercier_initial_mesh



Step: Flow routing of the initial mesh

Change directory

GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox

Fichier Machine Écran Entrée Périphériques Aide

LXTerminal

File Edit Tabs Help

Urban and Peri-urban landscape representation tool
for hydrological distributed modeling
<https://forge.irstea.fr/projects/geopumma/wiki>

Welcome to GRASS 6.4.4 (2014)
GRASS homepage: <http://grass.osgeo.org/>
This version running thru:
Help is available with the command:
See the licence terms with:
If required, restart the GUI with:
When ready to quit enter:

g.manual -i

g.version -c

g.gui wxpython

exit

GRASS 6.4.4 (Mercier):~ > cd /home/geopumma/geopumma/

GRASS 6.4.4 (Mercier):~/geopumma >

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GRASS GIS 6.4....

GRASS GIS 6.4....

12:31

CTRL DROITE

Démarrer

Internet Explorer

Explorateur

Media Center

Firefox

Skype

PowerPoint

Word

Visual Studio

FR

17:31

18/05/2017

Step: Flow routing of the initial mesh

Run the olaf command

GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox

FichierMachineÉcranEntréePériphériquesAide

LXTerminal

FileEditTabsHelp

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for hydrological distributed modeling
<https://forge.irstea.fr/projects/geopumma/wiki>

Welcome to GRASS 6.4.4 (2014)
GRASS homepage: <http://grass.osgeo.org/>
This version running thru:
Help is available with the command: `g.manual -i`
See the licence terms with: `g.version -c`
If required, restart the GUI with: `g.gui wxpython`
When ready to quit enter: `exit`

GRASS 6.4.4 (Mercier):~> cd /home/geopumma/geopumma/
GRASS 6.4.4 (Mercier):~/geopumma > ./p.B14.olaf.py

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CRDI

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GRASS GIS 6.4....

GRASS GIS 6.4....

12:31

CTRL DROITE

Démarrer

FR

17:31
18/05/2017

Enter the following options

The image shows a Windows desktop environment with a virtual machine running. The main window is 'LXTerminal', which displays the GRASS GIS 6.4.4 command line interface. The user is in the directory /home/geopumma/geopumma/ and has run the command ./p.B14.olaf.py. The output shows the mapset 'mercier_initial_mesh' and lists available vector files. The desktop background features a colorful abstract pattern and several logos, including irstea, fcfm, Centro UC Cambio Global, CEDEUS, IDRC, CRDI, MAPA, and CONICYT. The taskbar at the bottom shows various application icons and the system clock indicating 17:32 on 18/05/2017.

Enter the following options

Fichier Machine Écran Entrée Périphériques Aide

File Edit Tabs Help

CHARACTER | module

DOUBLE PRECISION|slp_std

CHARACTER | ID

DOUBLE PRECISION | solidity

DOUBLE PRECISION | compact

DOUBLE PRECISION|centr_dist

DOUBLE PRECISION|n_centr

INTEGER|id_mesh

INTEGER|id temp

Please enter the name of the wtri : initial mesh shape factors alt wtri

Please enter the name of the wti : initial mesh shape factors alt wti

Please enter the name of the segmented river : Initial Ditch river segm

Please enter the name of the olaf output vector : initial mesh shape factors alt olaf

Urban and Peri-urban landscape representation tool
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cfm




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Educativo, Científico y
Tecnológico



MAPA
MINISTERIO DE AGRICULTURA, GANADERÍA Y PESQUERÍA




CONICYT
COMISIÓN NACIONAL DE INVESTIGACIÓN
CIENTÍFICA Y TECNOLÓGICA

 [Recibidos (1.0...

geopumma

 LXTerminal GRASS GIS 6.4....

GRASS GIS 6.4....

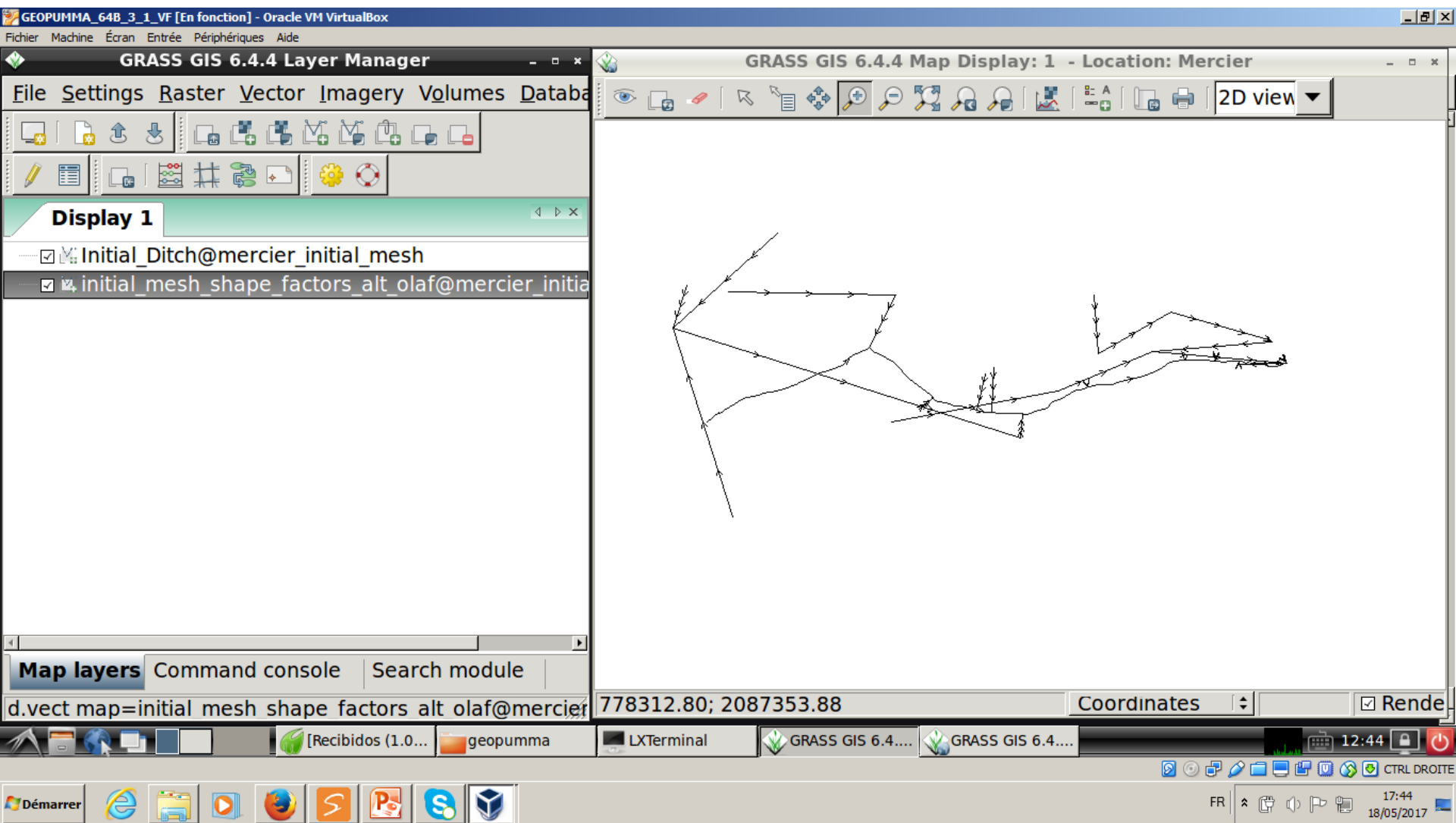
12:41 

FR 17:41
18/05/2017

Step: Flow routing of the initial mesh

Visualize the vectorial layers corresponding to the surface drainage network in GRASS

These elements belong to the drainage network shown in Figure x.37.b



Step: Flow routing of the initial mesh

Select LOCATION: Mercier and MAPSET: mercier_convexity_amax


GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox

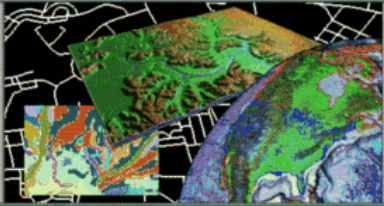
FichierMachineÉcranEntréePériphériquesAide

FileEditTabsHelp

Cleaning up temporary files
Starting GRASS ...

Welcome to GRASS GIS





Welcome to GRASS GIS 6.4.4
The world's leading open source GIS
Select an existing project location and mapset
or define a new location

GIS Data Directory: /home/geopumma/grassdata_olaf

Browse

Choose project location and mapset

Project location
(projection/coordinate system)

Accessible mapsets
(directories of GIS files)

Mercier

mercier_initial_mesh
mesh_convexity_amax
mesh_convexity_am...
PERMANENT

Manage

Define new location

Location wizard

Create new mapset
in selected location

Create mapset

Rename/delete selected
mapset or location

Rename mapset

Start GRASS


Quit


Help


LXTerminal


Welcome to GR...


Démarrer




















FR

10:11

19/05/2017

resentation tool
odeling

opumma/wiki



GRASS
GIS 7





fcfm



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APA

Step: Flow routing of the initial mesh

Change directory

GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox

Fichier Machine Écran Entrée Périphériques Aide


LXTerminal






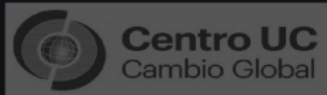


File Edit Tabs Help

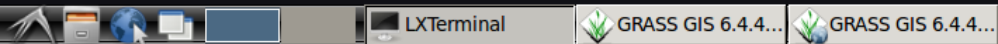
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for hydrological distributed modeling
<https://forge.irstea.fr/projects/geopumma/wiki>


Welcome to GRASS 6.4.4 (2014)
GRASS homepage: <http://grass.osgeo.org/>
This version running thru:
Bash Shell (/bin/bash)
Help is available with the command:
g.manual -i
See the licence terms with:
g.version -c
If required, restart the GUI with:
g.gui wxpython
When ready to quit enter:
exit

GRASS 6.4.4 (Mercier):~ > cd /home/geopumma/geopumma/










FR



Execute the olaf command

GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox

Fichier Machine Écran Entrée Périphériques Aide

LXTerminal

File Edit Tabs Help

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for hydrological distributed modeling
<https://forge.irstea.fr/projects/geopumma/wiki>

Welcome to GRASS 6.4.4 (2014)
GRASS homepage: <http://grass.osgeo.org/>
Bash Shell (/bin/bash)
This version running thru:
Help is available with the command: `g.manual -i`
See the licence terms with: `g.version -c`
If required, restart the GUI with: `g.gui wxpython`
When ready to quit enter: `exit`

GRASS 6.4.4 (Mercier):~ > cd /home/geopumma/geopumma/
GRASS 6.4.4 (Mercier):~/geopumma > ./p.B14.olaf.py

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fcjm

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Urbano Sostenible

IDRC

CRDI

MAPA

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CIENTÍFICA Y TECNOLÓGICA

05:15

FR

10:15
19/05/2017

Step: Flow routing of the initial mesh

Enter the following commands

GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox

FichierMachineÉcranEntréePériphériquesAide

LXTerminal

FileEditTabsHelp

Help is available with the command:
See the licence terms with:
If required, restart the GUI with:
When ready to quit enter:

g.manual
g.version -c
g.gui wxpython
exit

Urban and Peri-urban landscape representation tool
for hydrological distributed modeling
<https://forge.irstea.fr/projects/geopumma/wiki>

GRASS 6.4.4 (Mercier):~ > cd /home/geopumma/geopumma/
GRASS 6.4.4 (Mercier):~/geopumma > ./p.B14.olaf.py
{'MAPSET': 'mesh_convexity_amax', 'GISDBASE': '/home/geopumma/grassdata_olaf', 'LOCATION_NAME': 'Mercier', 'MONITOR': 'x0', 'GRASS_GUI': 'wxpython'}
/home/geopumma/geopumma

vector files available in mapset <mesh_convexity_amax>:
Initial_Ditch
Initial_Ditch_segm_riv
mesh_convexity_0750_amax_2ha_alt_clean
mesh_convexity_0750_amax_2ha_alt_clean_all_inter
mesh_convexity_0750_amax_2ha_alt_clean_wti
mesh_convexity_0750_amax_2ha_alt_clean_wtri

Please enter the name of the map with polygon mesh : mesh_convexity_0750_amax_2ha_alt_clean

irstea

LXTerminalGRASS GIS 6.4.4...GRASS GIS 6.4.4...

05:15

FR

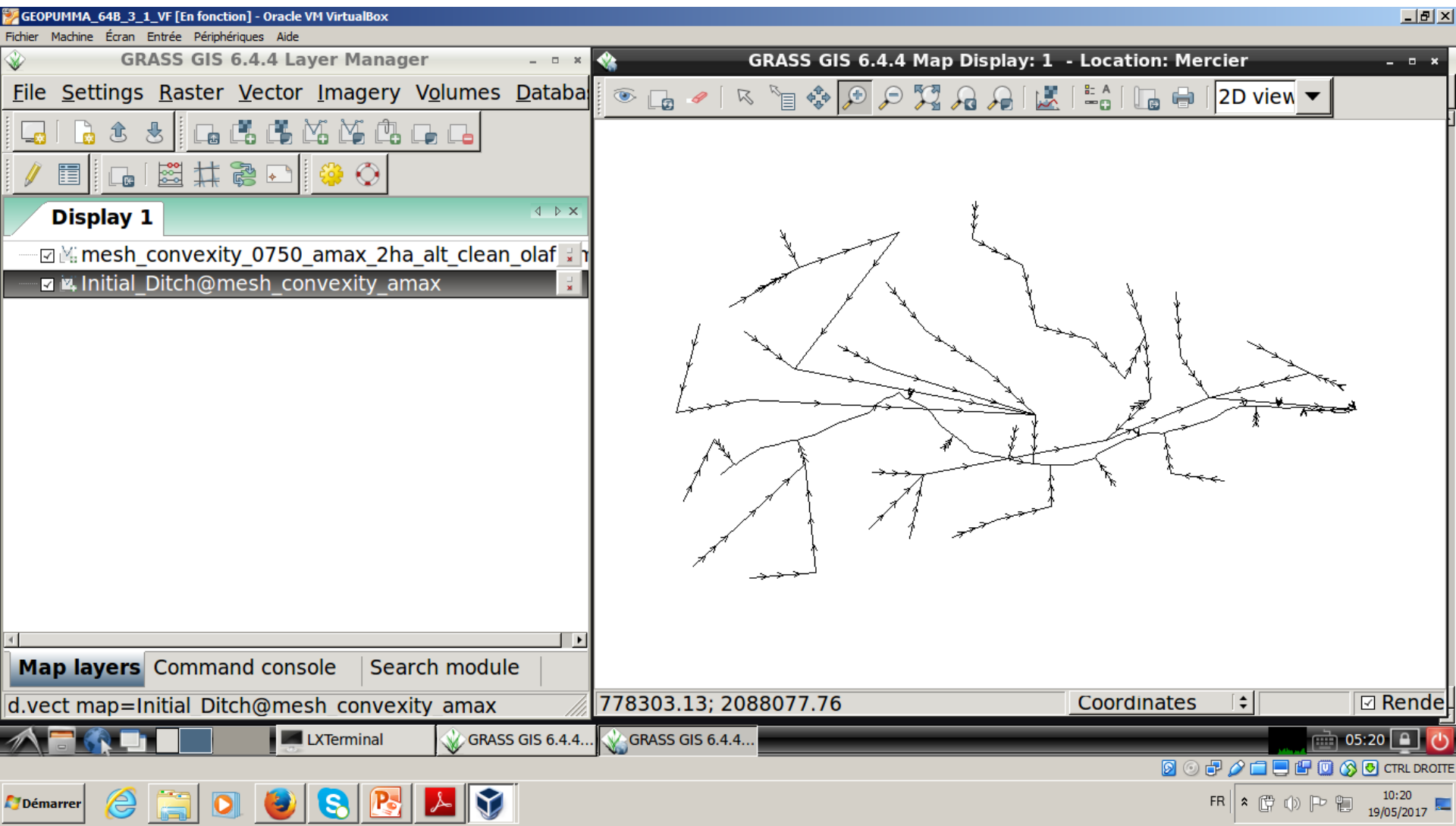
10:15
19/05/2017

Enter the following commands

Step: Flow routing of the initial mesh

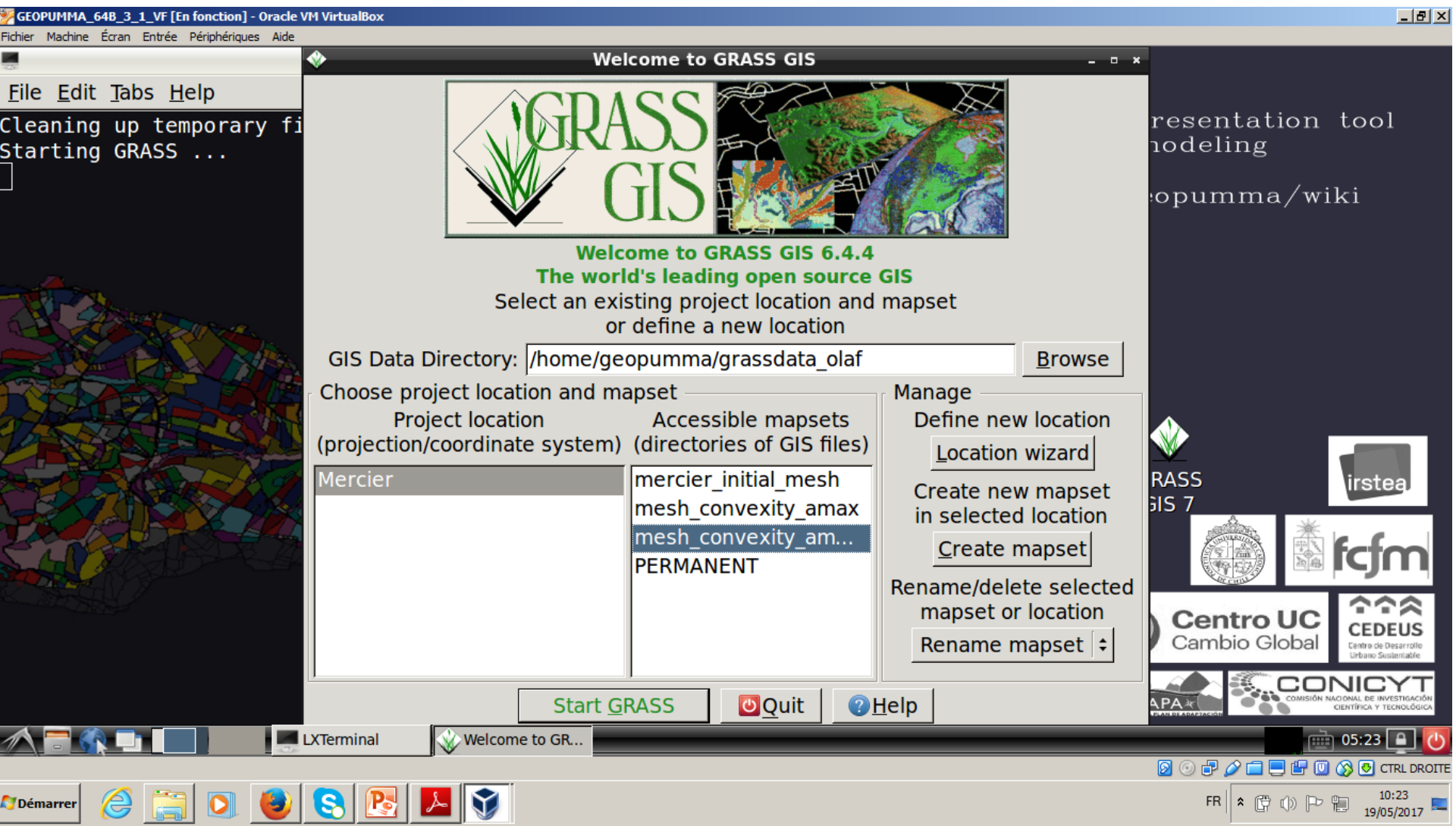
Visualize the vectorial layers corresponding to the surface drainage network in GRASS

These elements belong to the drainage network shown in Figure x.37.c



Step: Flow routing of the initial mesh

Select LOCATION: Mercier and MAPSET: mercier_convexity_amax_ff



Step: Flow routing of the initial mesh

Change directory

GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox

FichierMachineÉcranEntréePériphériquesAide


LXTerminal






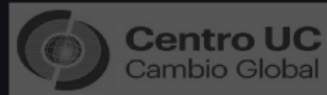


FileEditTabsHelp

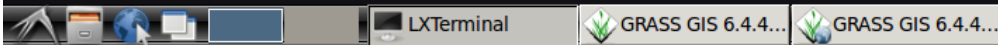
Urban and Peri-urban landscape representation tool
for hydrological distributed modeling
<https://forge.irstea.fr/projects/geopumma/wiki>

Welcome to GRASS 6.4.4 (2014)
GRASS homepage: <http://grass.osgeo.org/>
This version running thru: Bash Shell (/bin/bash)
Help is available with the command: g.manual -i
See the licence terms with: g.version -c
If required, restart the GUI with: g.gui wxpython
When ready to quit enter: exit


GRASS 6.4.4 (Mercier):~ > cd /home/geopumma/geopumma/
GRASS 6.4.4 (Mercier):~/geopumma >



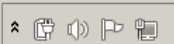





Démarrer



FR



10:23
19/05/2017



Step: Flow routing of the initial mesh

Execute the olaf command

GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox

FichierMachineÉcranEntréePériphériquesAide

LXTerminal

FileEditTabsHelp

Urban and Peri-urban landscape representation tool
for hydrological distributed modeling
<https://forge.irstea.fr/projects/geopumma/wiki>

Welcome to GRASS 6.4.4 (2014)
GRASS homepage: <http://grass.osgeo.org/>
This version running thru: Bash Shell (/bin/bash)
Help is available with the command: g.manual -i
See the licence terms with: g.version -c
If required, restart the GUI with: g.gui wxpython
When ready to quit enter: exit

GRASS 6.4.4 (Mercier):~ > cd /home/geopumma/geopumma/
GRASS 6.4.4 (Mercier):~/geopumma > ./p.B14.olaf.py

irstea

fcfm

Centro UC
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Urbano Sostenible

IDRC

CRDI

MAPA

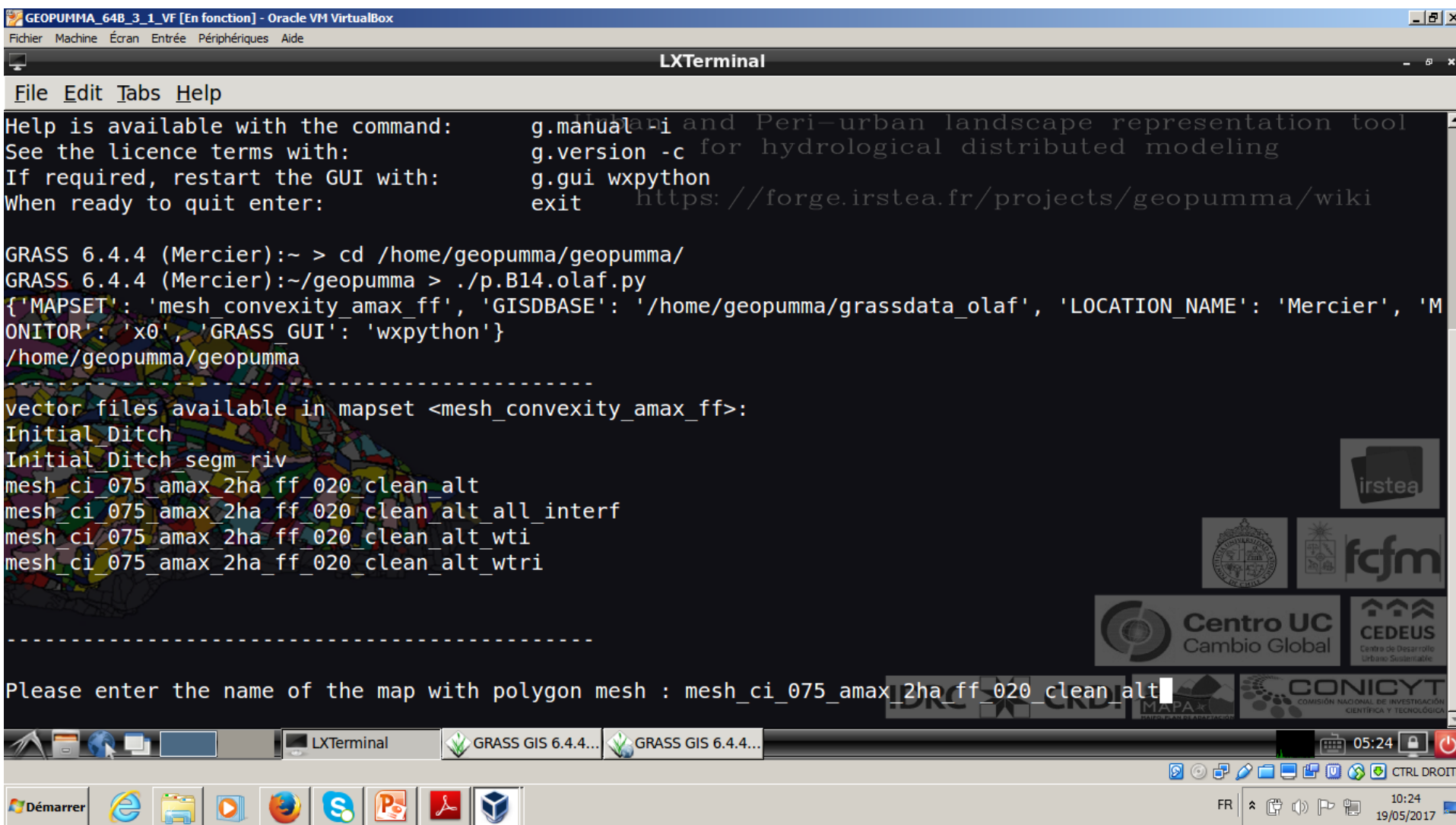
CONICYT
COMISIÓN NACIONAL DE INVESTIGACIÓN
CIENTÍFICA Y TECNOLÓGICA

LXTerminalGRASS GIS 6.4.4...GRASS GIS 6.4.4...

05:24

10:24
19/05/2017

Enter the following commands



Step: Flow routing of the initial mesh

Enter the following commands

GEOPUMMA_64B_3_1_VF [En fonction] - Oracle VM VirtualBox

Fichier Machine Écran Entrée Périphériques Aide

LXTerminal

File Edit Tabs Help

DOUBLE PRECISION|soil_id_3

DOUBLE PRECISION|geol_id_4

CHARACTER|module

DOUBLE PRECISION|dem_ave

DOUBLE PRECISION|slp_stdd

DOUBLE PRECISION|area

CHARACTER|ID

DOUBLE PRECISION|perimeter

DOUBLE PRECISION|solidity

DOUBLE PRECISION|convexity

DOUBLE PRECISION|compact

DOUBLE PRECISION|formfactor

DOUBLE PRECISION|centr_dist

DOUBLE PRECISION|e_centr

DOUBLE PRECISION|n_centr

DOUBLE PRECISION|d_average

INTEGER|id_mesh

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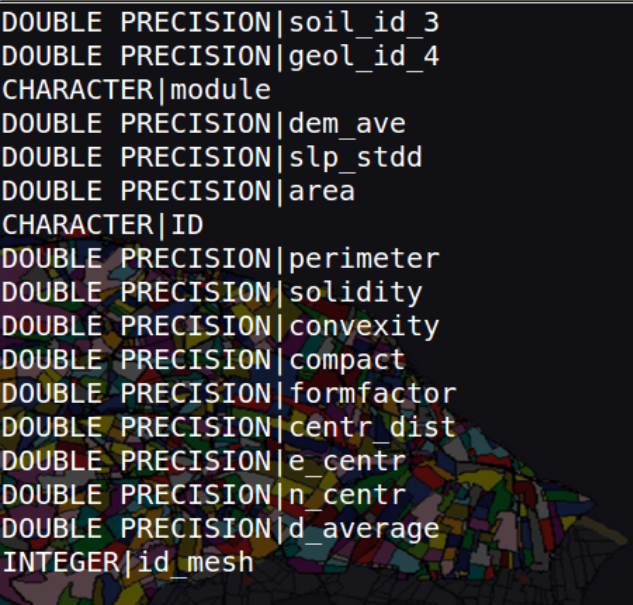
Please enter the name of the column with altitude value : d_average


Please enter the name of the wtri : mesh_ci_075_amax_2ha_ff_020_clean_alt_wtri


Please enter the name of the wti : mesh_ci_075_amax_2ha_ff_020_clean_alt_wti

Please enter the name of the segmented river : Initial_Ditch_segm_riv

Please enter the name of the olaf output vector : mesh_ci_075_amax_2ha_ff_020_clean_alt_olaf







LXTerminal

GRASS GIS 6.4.4...

GRASS GIS 6.4.4...

05:25

19/05/2017

Step: Flow routing of the initial mesh

Visualize the vectorial layers corresponding to the surface drainage network in GRASS

These elements belong to the drainage network shown in Figure x.37.d

