

GEO4D 1

Digital mapping using LiDAR data

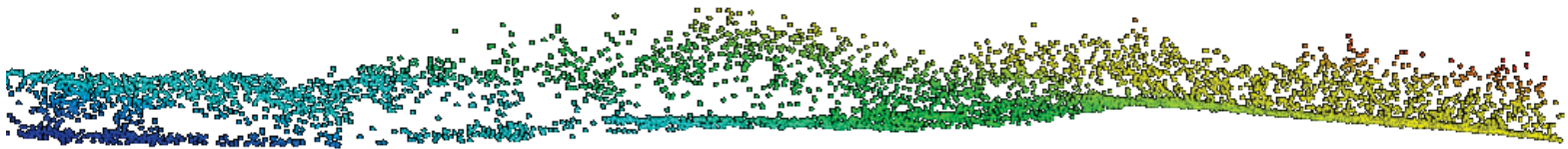
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Ponferrada, León



P3 LiDAR data interpolation

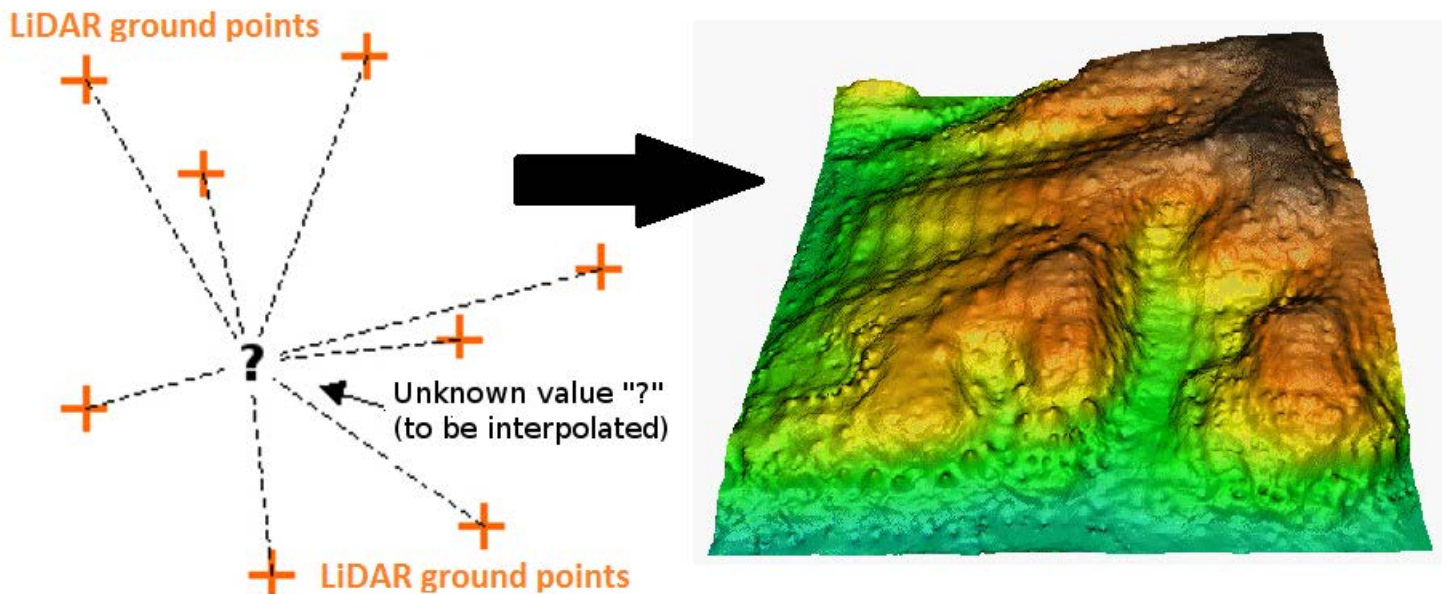
STEPS TO CREATE A Digital Elevation Model (DEM)

 1 OUTLIER
DETECTION & REMOVAL

 2 FILTERING

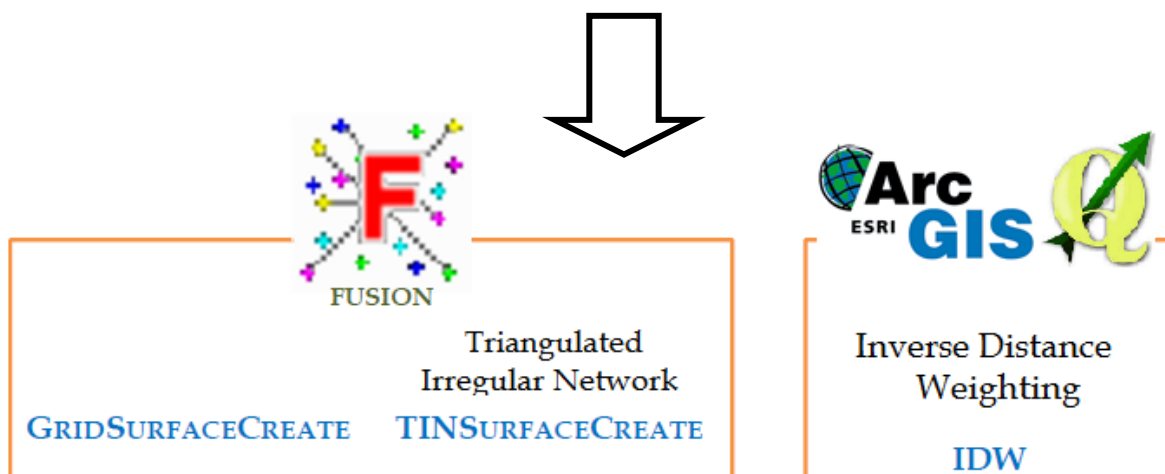
 3 INTERPOLATION 

SUMMARY OF PRACTICAL #3



INPUT DATA:

C:\...\GEO4D\Results\04_Filtering\BE_subset.las



OUTPUT FILES (DEM):

C:\...\GEO4D\Results\05_Interpolation



INTERPOLATION (I)



TOOL in FUSION: **GRIDSURFACECREATE** =

TOOL IN
FUSION

/SWITCHES

OUTPUT
FILE

PARAMETERS

INPUT FILE



gridsurfacecreate.txt



Apply a median filter to the model using a # by # window

C:\FUSION\gridsurfacecreate.exe /median:3

C:\...\GEO4D\Results\05_Interpolation\DEM_GS.dtm 2 M M
1 29 0 0 C:\...\GEO4D\Results\04_Filtering\BE_subset.las

SAVE AS...



gridsurfacecreate.bat



DEM_GS.dtm

PARAMETERS

Grid cell size	2
XY units	M
Z unit	M
Coord. system	1
Zone	29
Horizontal datum	0
Vertical datum	0

CHECK POINTS:

- BUILDINGS
- BRIDGES
- FORESTED AREAS

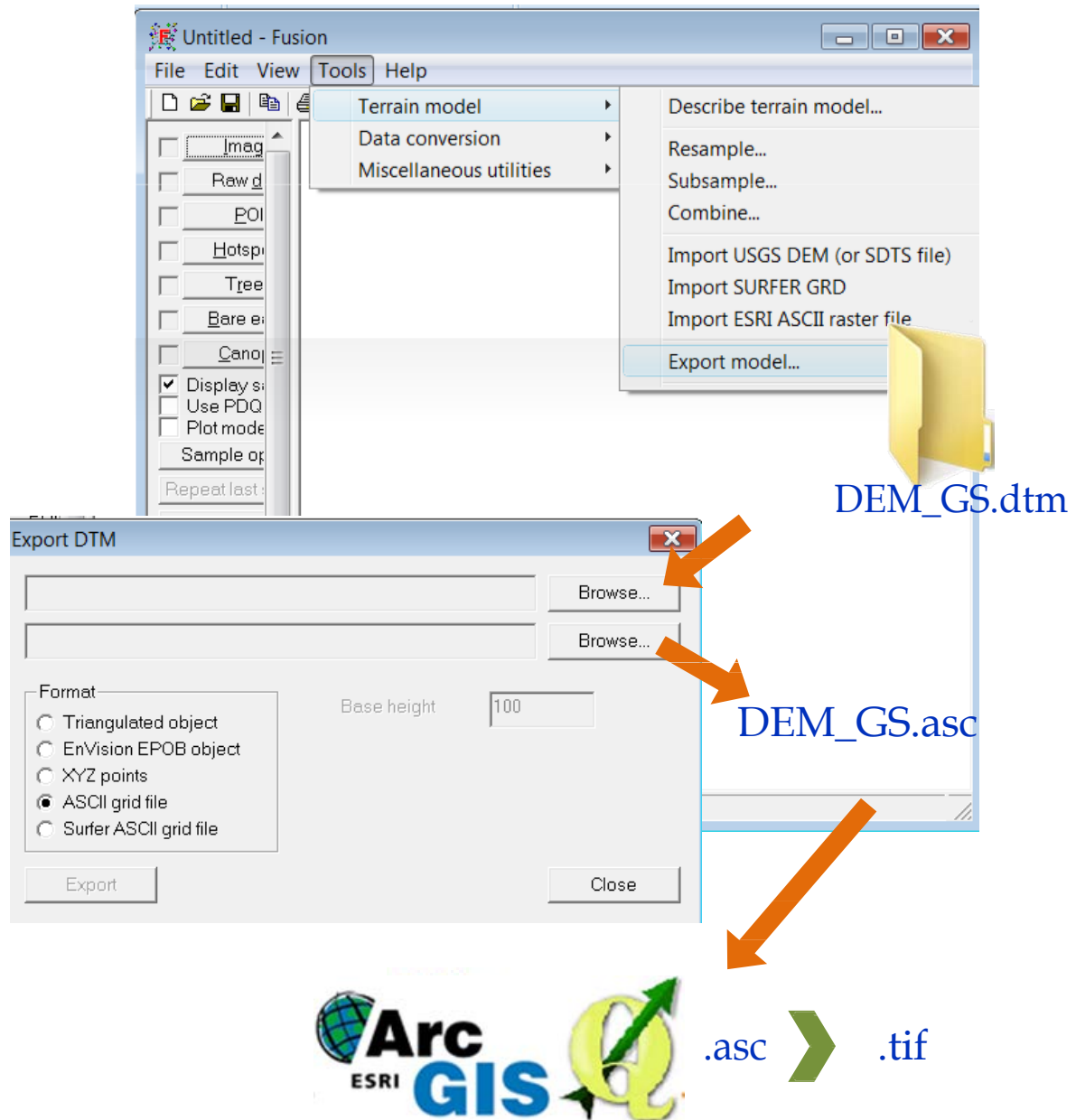


WHAT ARE THE
ADVANTAGES/DISADVANTAGES OF
INCREASING THE /MEDIAN PARAMETER?

WHAT ARE THE RISKS OF USING A TOO
SMALL/TOO LARGE GRID CELL SIZE?

TO VISUALIZE THE DEM IN A GIS WE HAVE TO EXPORT THE .DTM TO .ASC

TOOLS | TERRAIN MODEL | EXPORT MODEL





INTERPOLATION (II)



TOOL in FUSION: TINSURFACECREATE :

TOOL IN
FUSION

/SWITCHES

OUTPUT
FILE

PARAMETERS

INPUT FILE

tinsurfacecreate.txt

C:\FUSION\tinsurfacecreate.exe

C:\...\GEO4D\Results\05_Interpolation\DEM_TS.dtm 2 M M 1 29 0 0

C:\...\GEO4D\Results\04_Filtering\BE_subset.las

SAVE AS...



tinsurfacecreate.bat



DEM_TS.dtm

PARAMETERS

Grid cell size	2
XY units	M
Z unit	M
Coord. system	1
Zone	29
Horizontal datum	0
Vertical datum	0

CHECK POINTS:

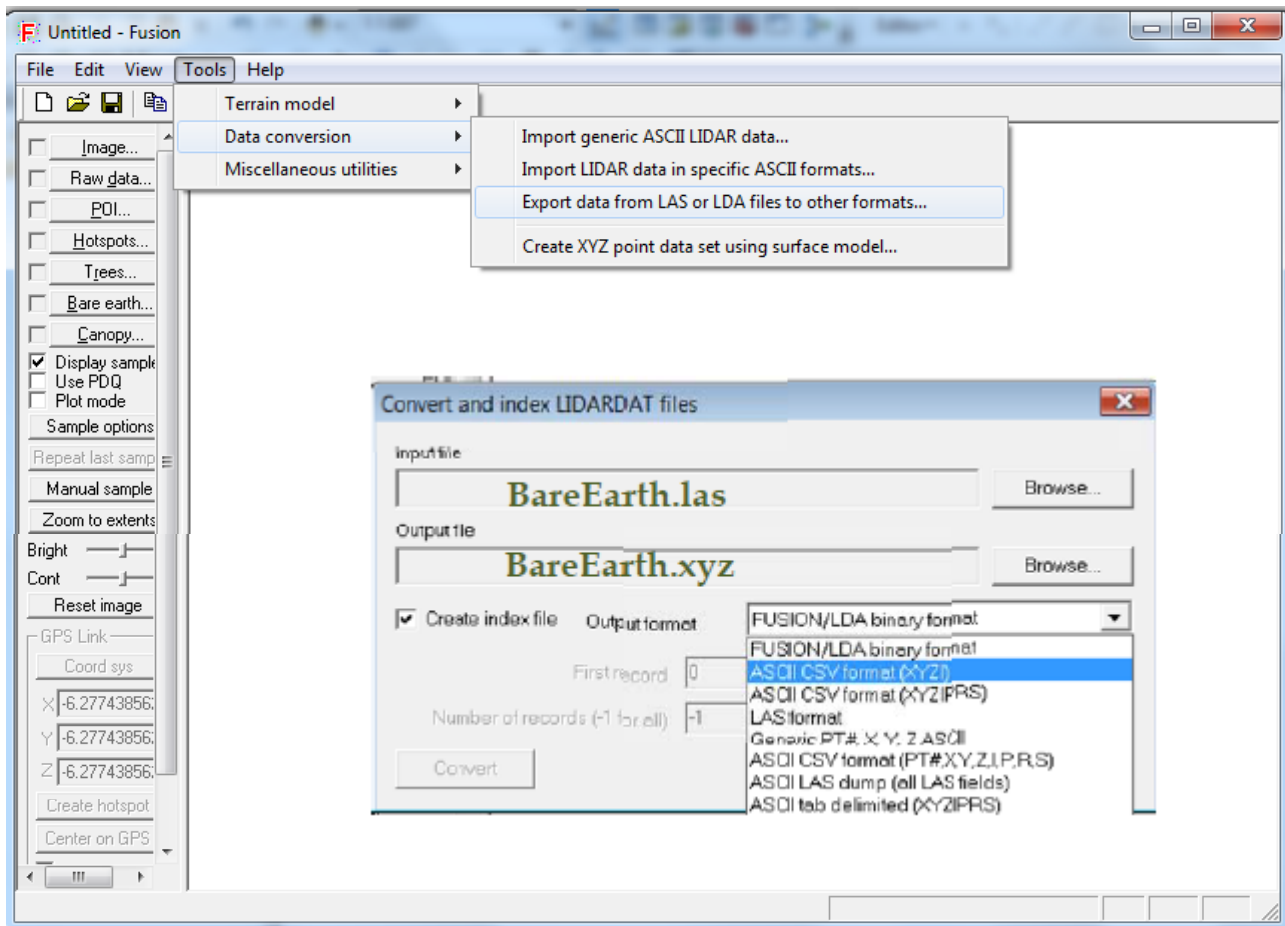
- BUILDINGS
- BRIDGES
- FORESTED AREAS

3

INTERPOLATION (III)

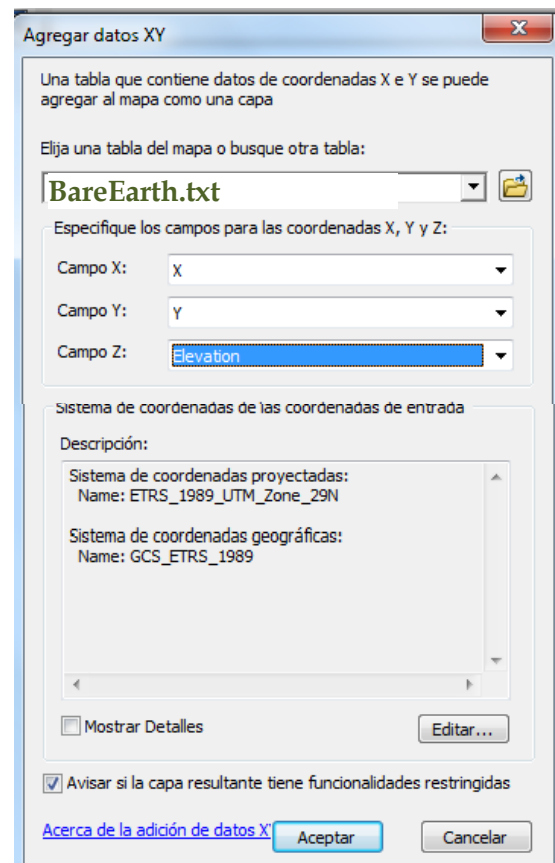
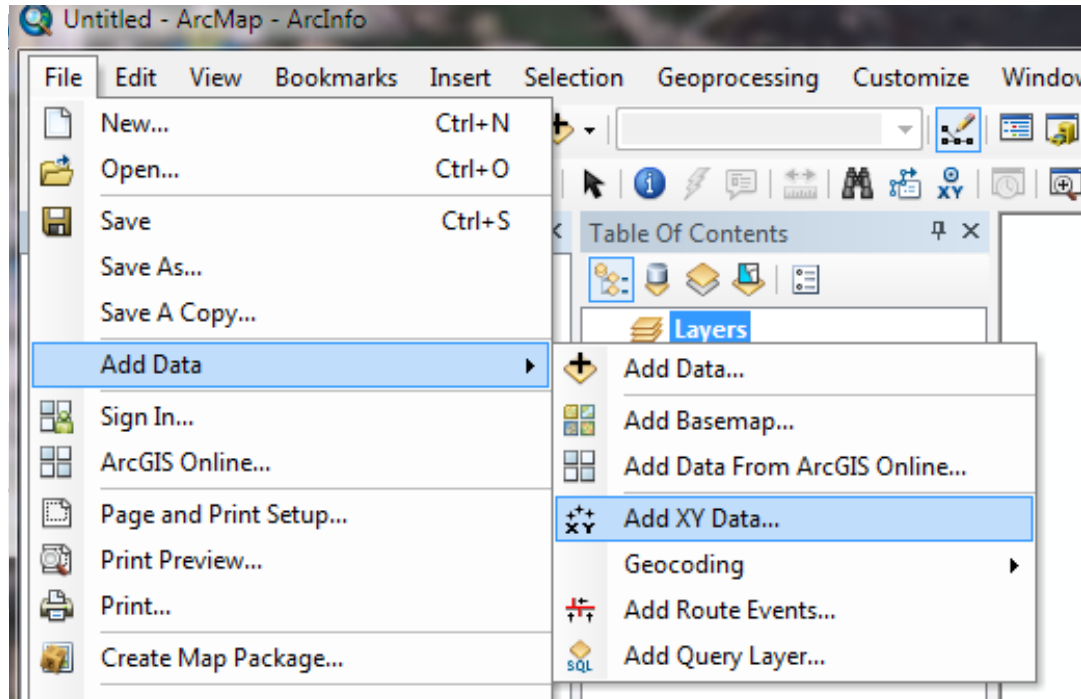


TO INTERPOLATE IN ARCGIS/QGIS THE FILTERED DATA
(GROUNDFILTER) WE SHOULD EXPORT
.LAS TO .TXT



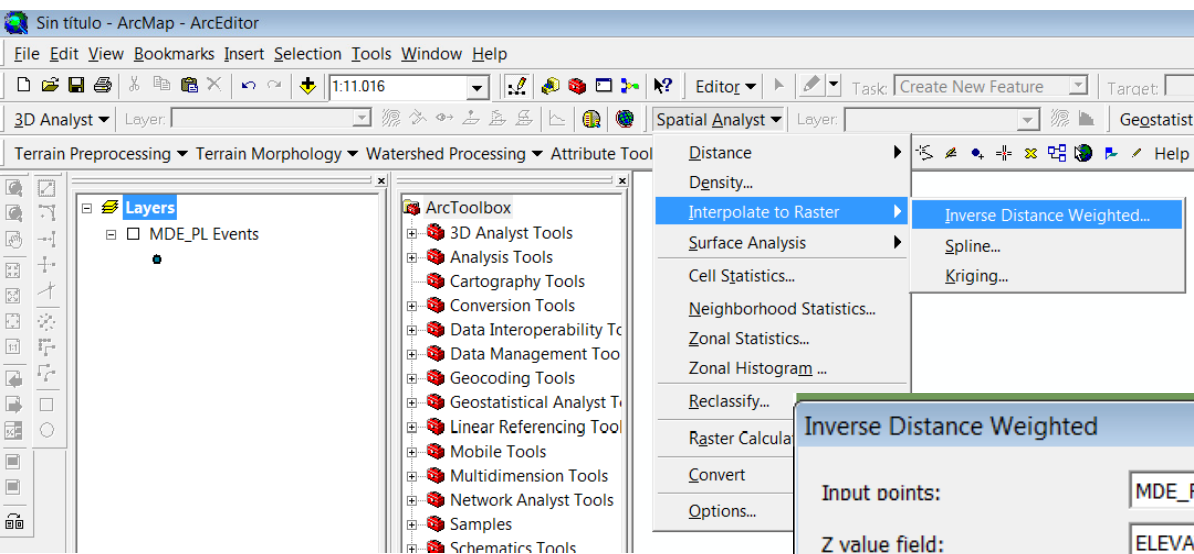


INTERPOLATION (III) (IDW)

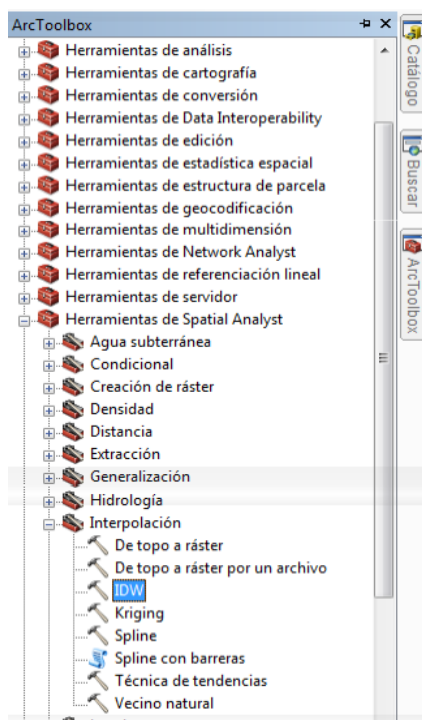
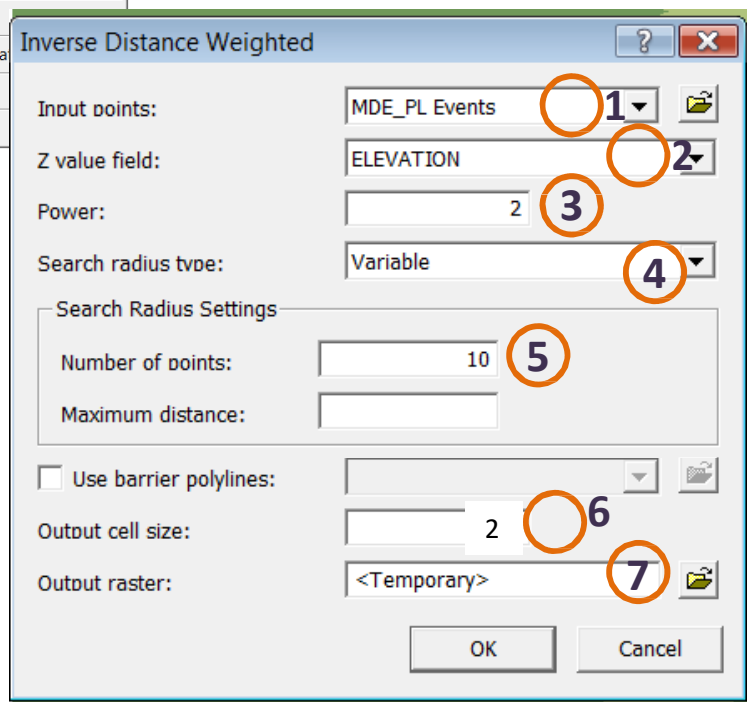




INTERPOLATION ALGORITHM IDW



- 1 Input data (points)
- 2 Field to interpolate
- 3 Parameter w (power)
- 4 Search radius
- 5 Number of neighbouring points to use
- 6 Cell size
- 7 Output file



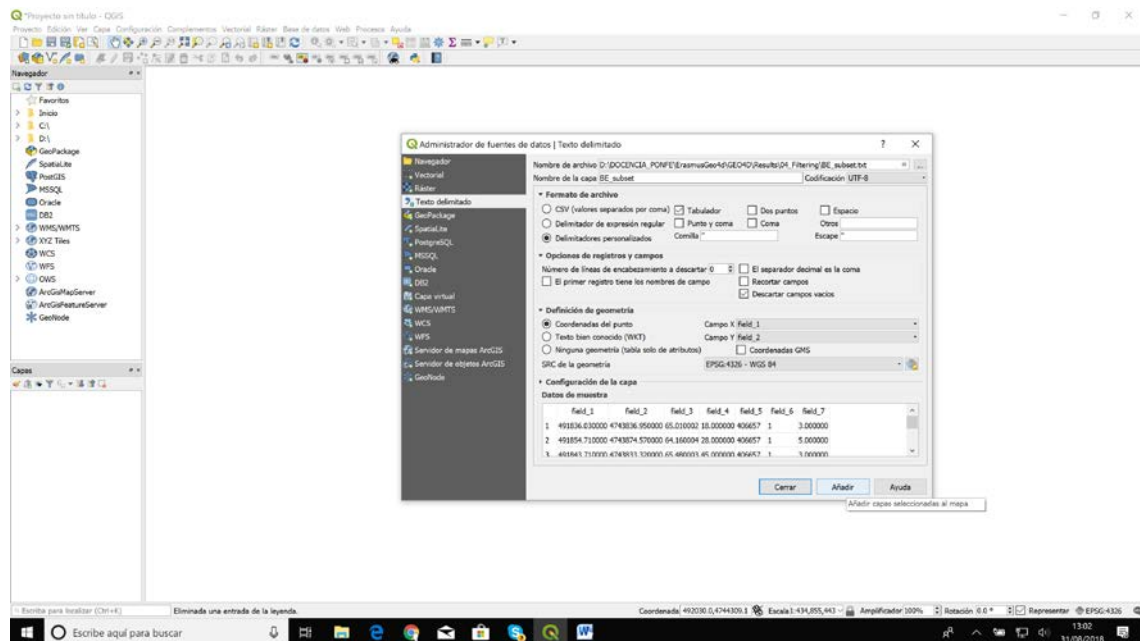
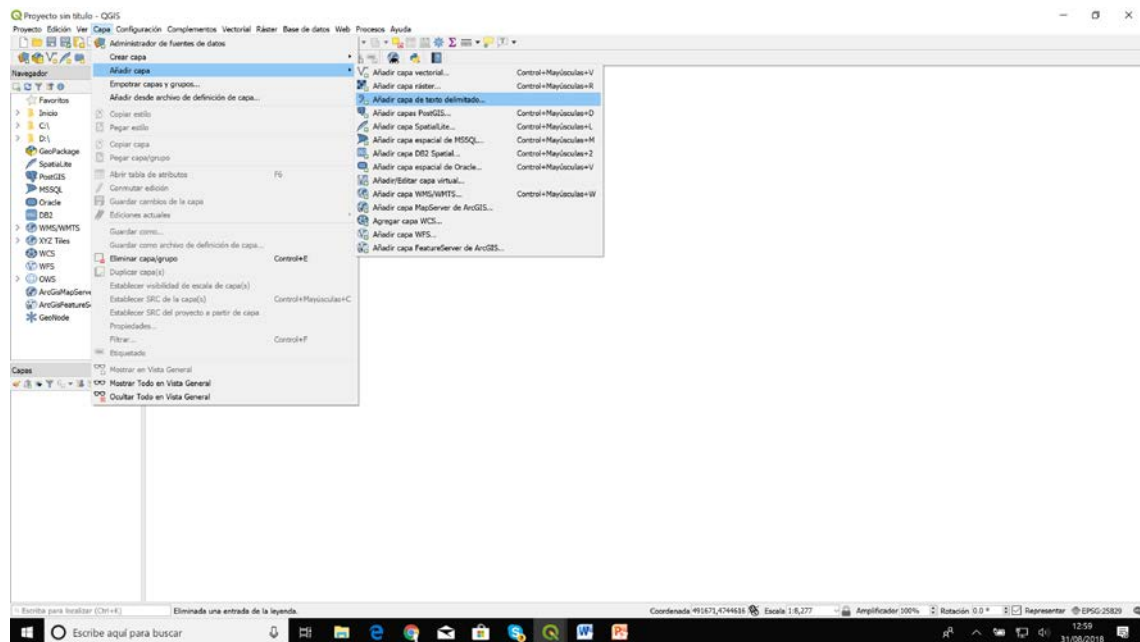
DEM_IDW

Once the raster file is created it has to be exported to *.tif, since it will be required for the validation process

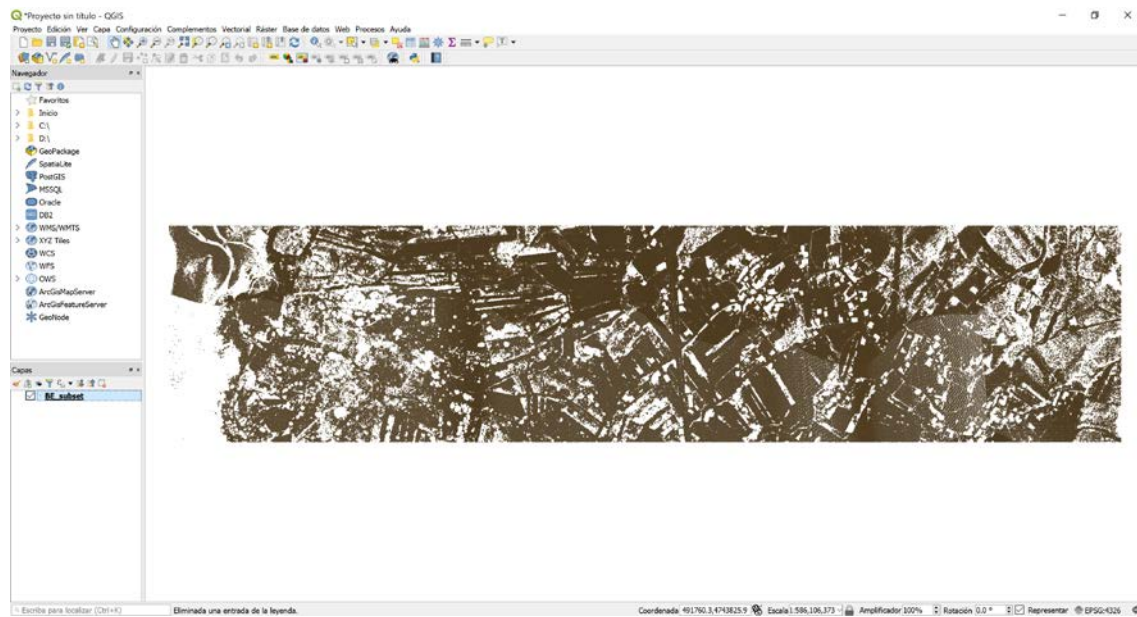
INTERPOLATION (IV): QGIS



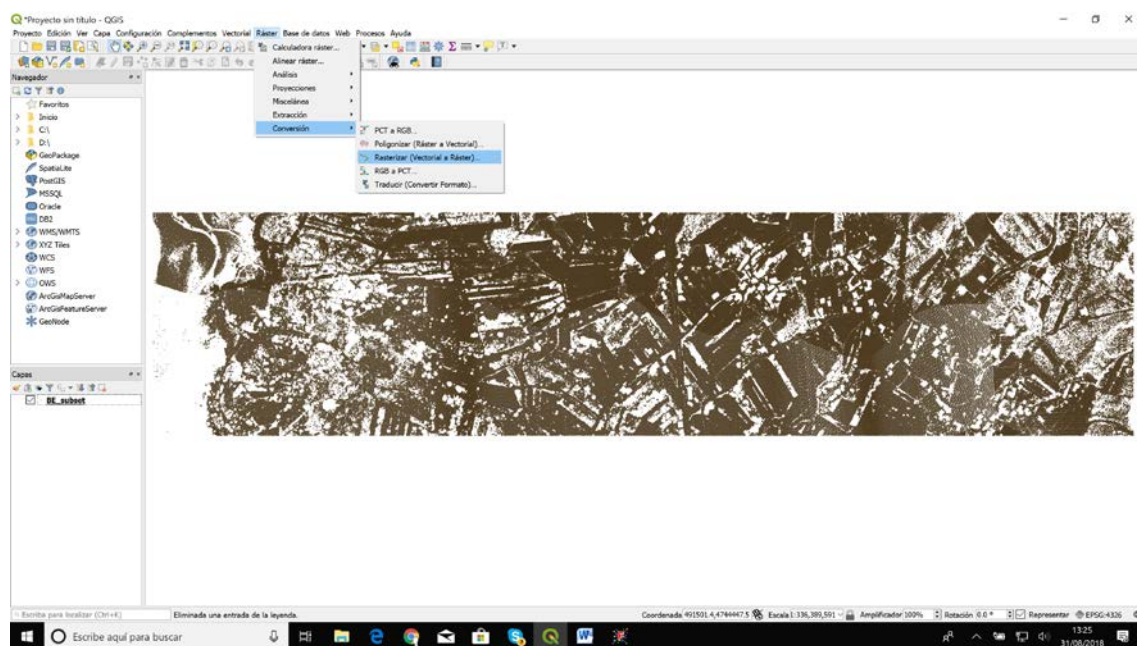
ADD XYZ DATASET



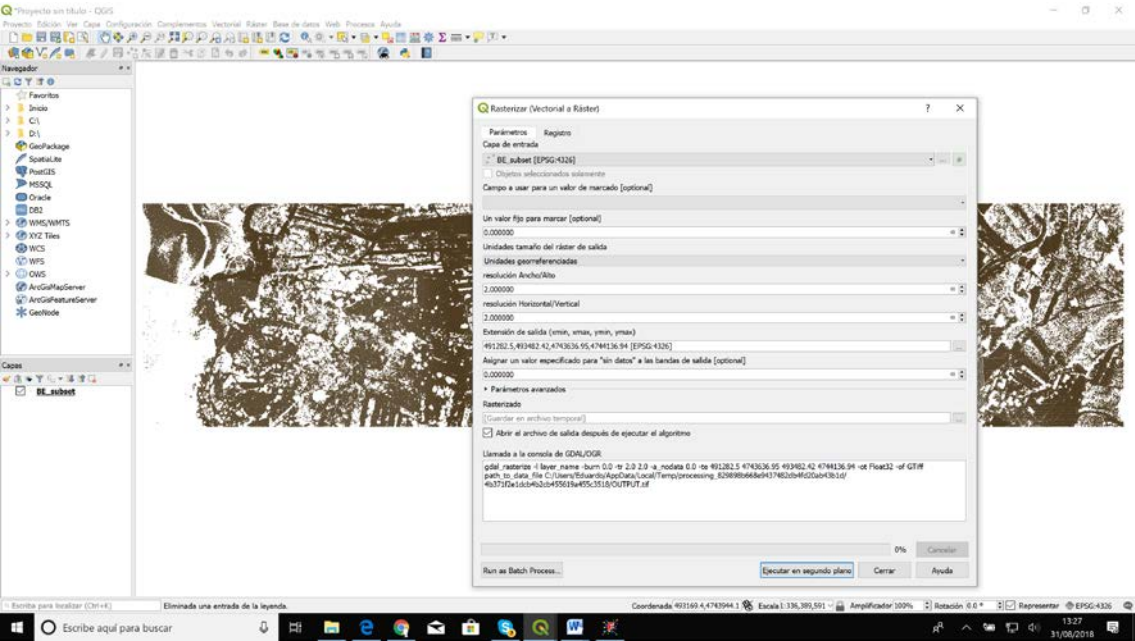
VISUALIZE XYZ DATASET



RASTERIZE XYZ DATASET



RASTERIZE XYZ DATASET



VISUALIZE RASTER

