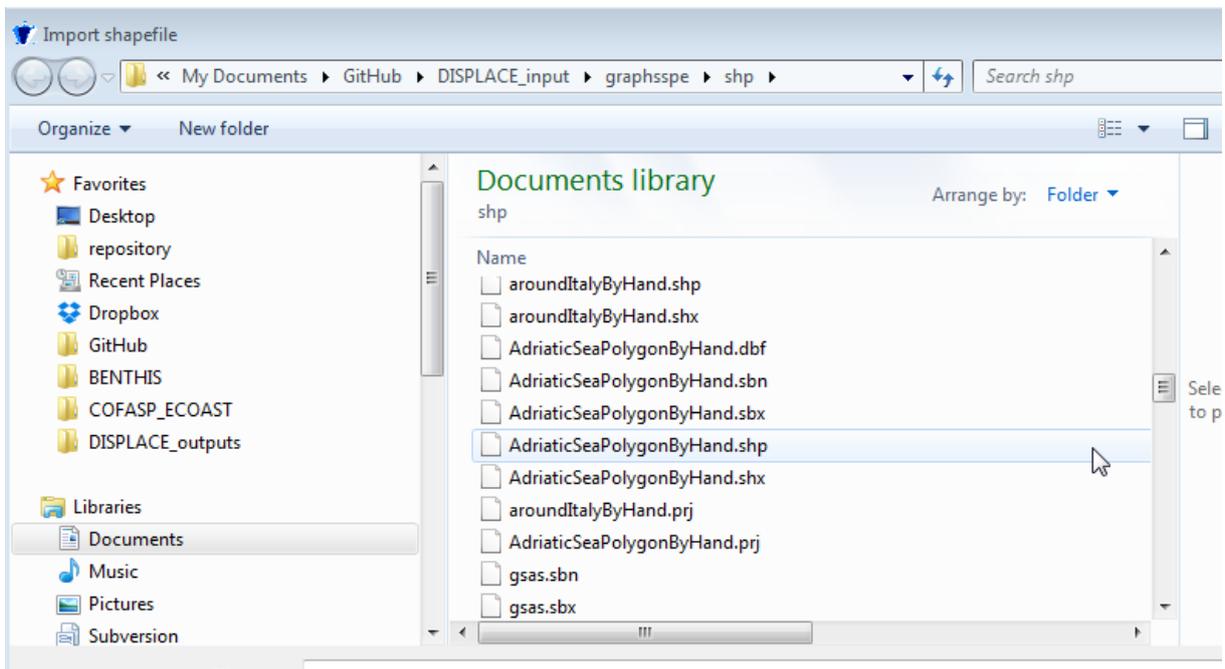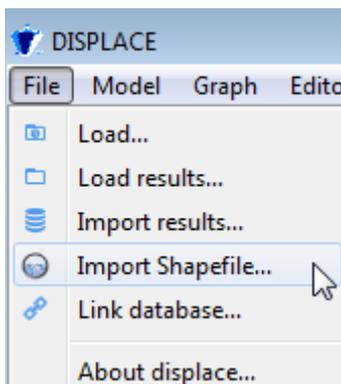**Step-by-step Guideline DISPLACE version 0.8.3**

Setup a new graph of nodes (Francois Bastardie & Federico Fuga)

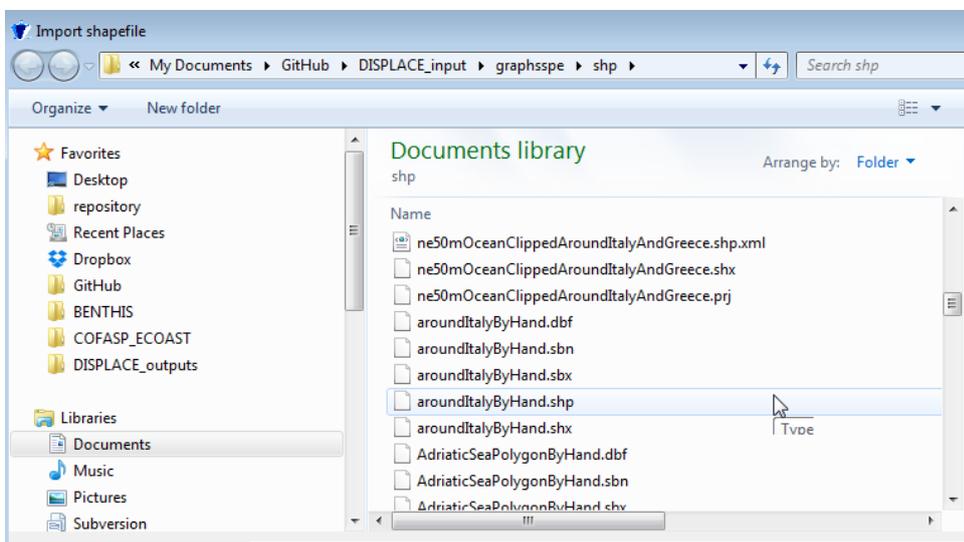**To build a new graph, for example for the Adriatic Sea,**

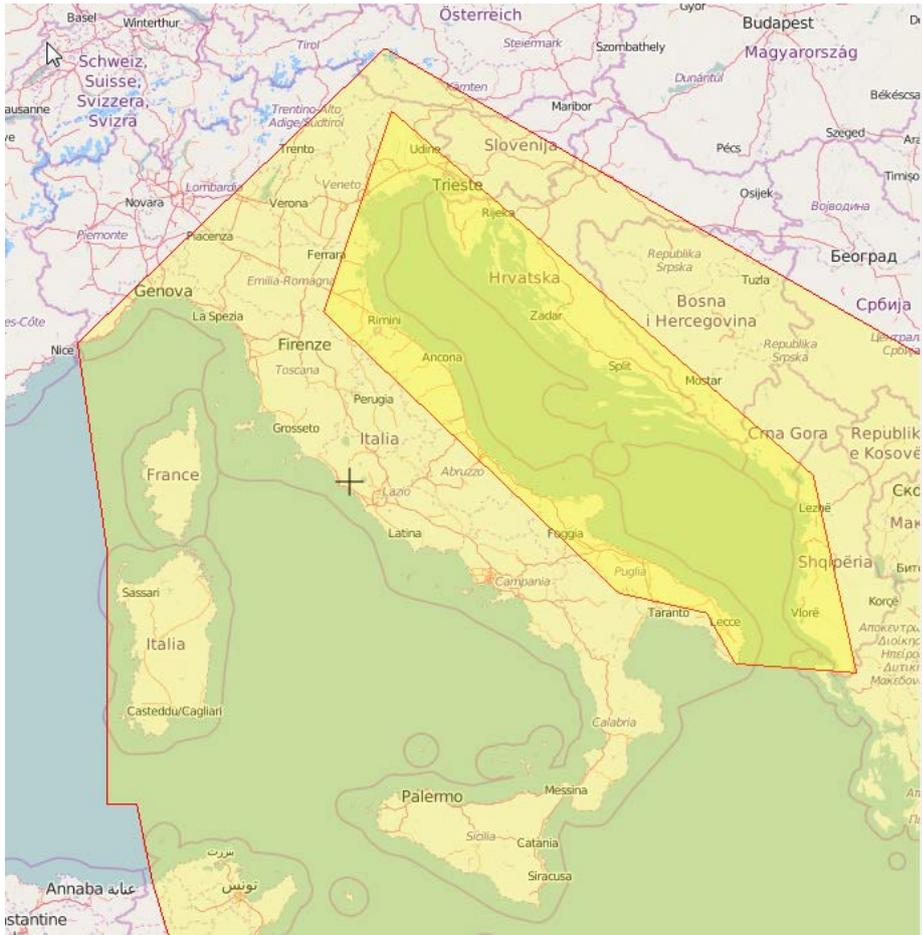**you´ll first need all the required GIS .shp shapefiles loaded**

This shape file has been built "by hand" within a GIS device (i.e. outside DISPLACE). We aim at creating a fine grid of nodes within this polygon.

We also want a grid outside the core of the model with more spaced nodes:
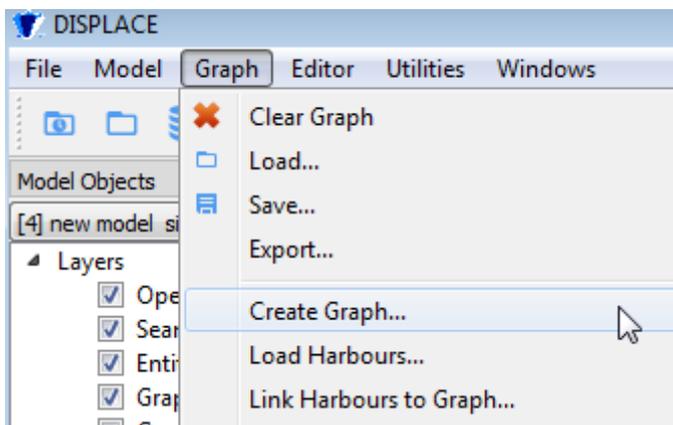
In this case we miss some land polygons also defining the coastline (useful to exclude all nodes on land and all links across land):
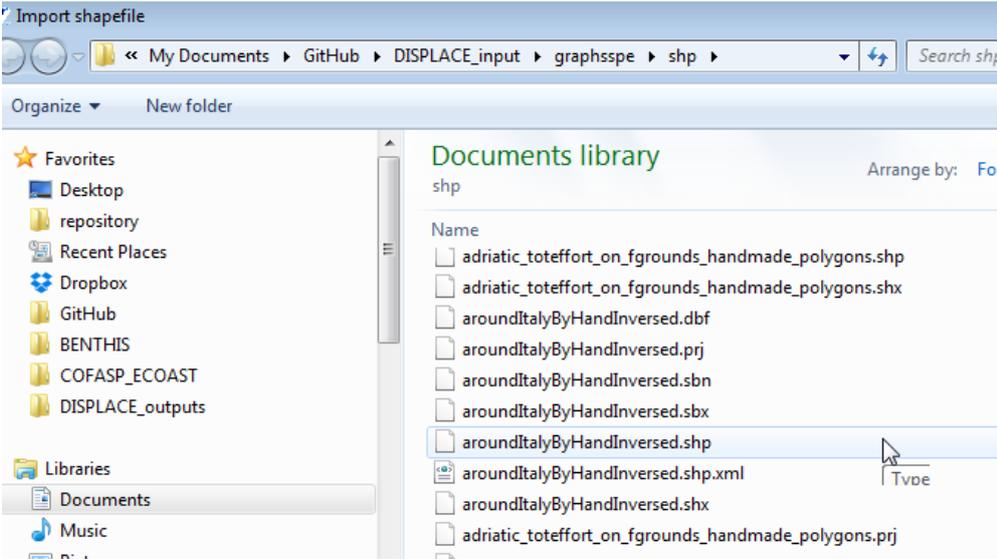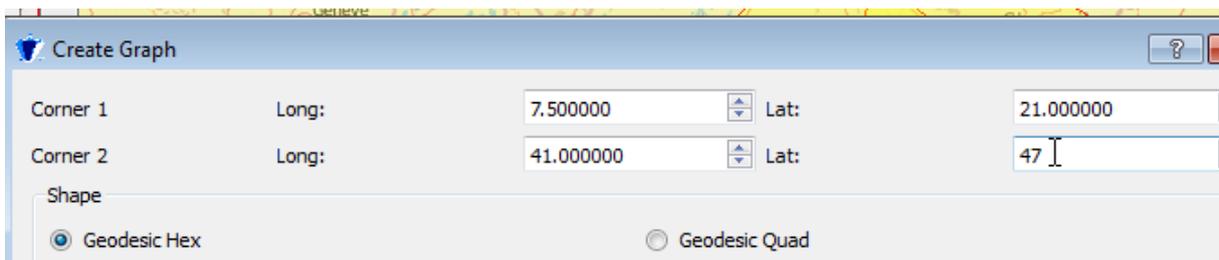

Then after loading our 3 shapefiles it looks like:

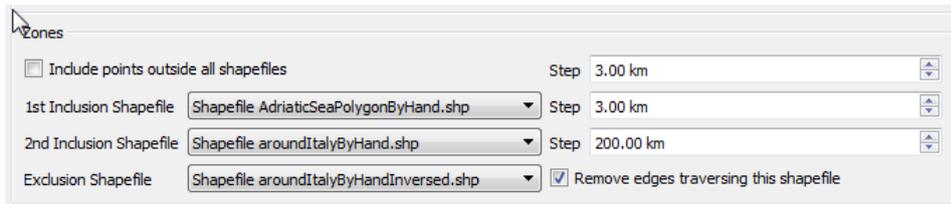**We can now create a DISPLACE graph from there:**

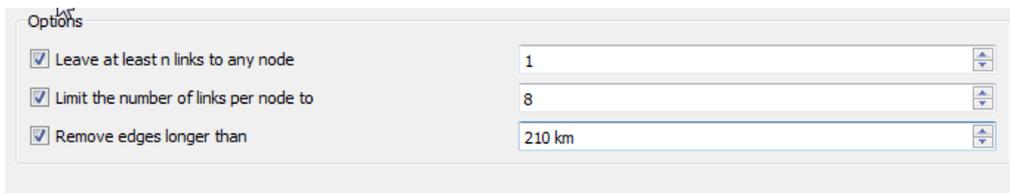**Fill in the longlat coordinates of the bounding box (e.g. for the Adriatic Sea)**
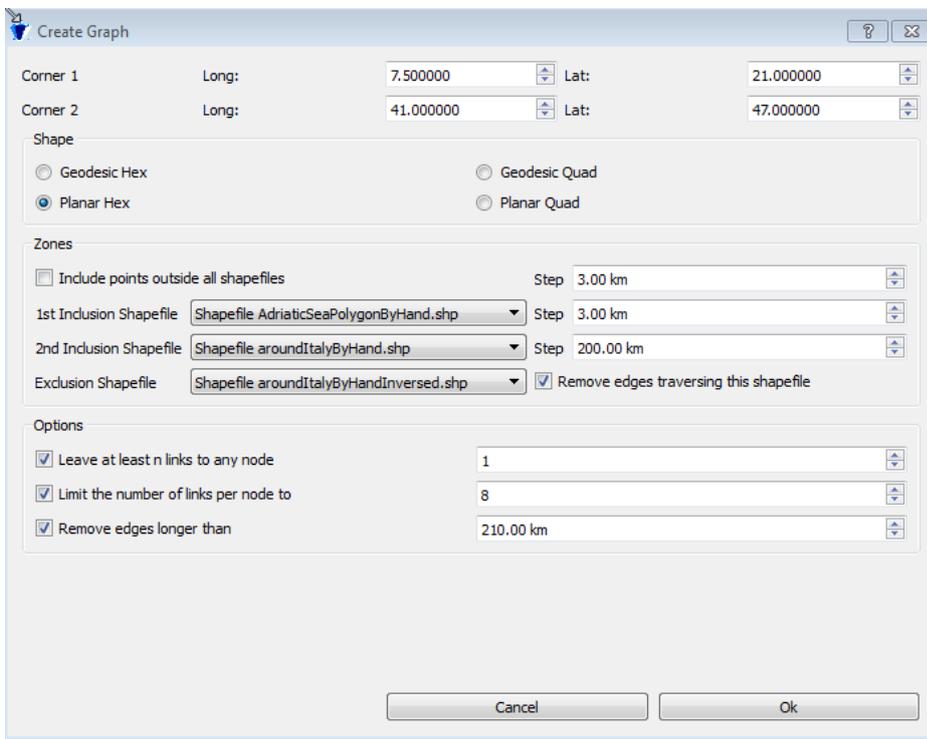
Select to build a Planar Hex grid

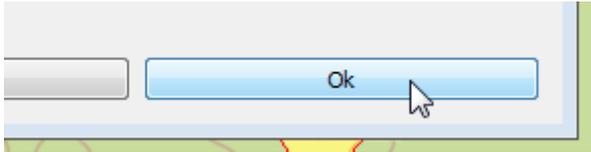**Then use the shape file and select the node spacing distance in km**
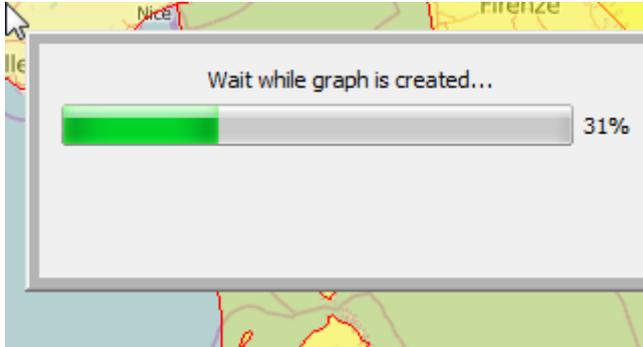

Options for some filtering/cleaning:
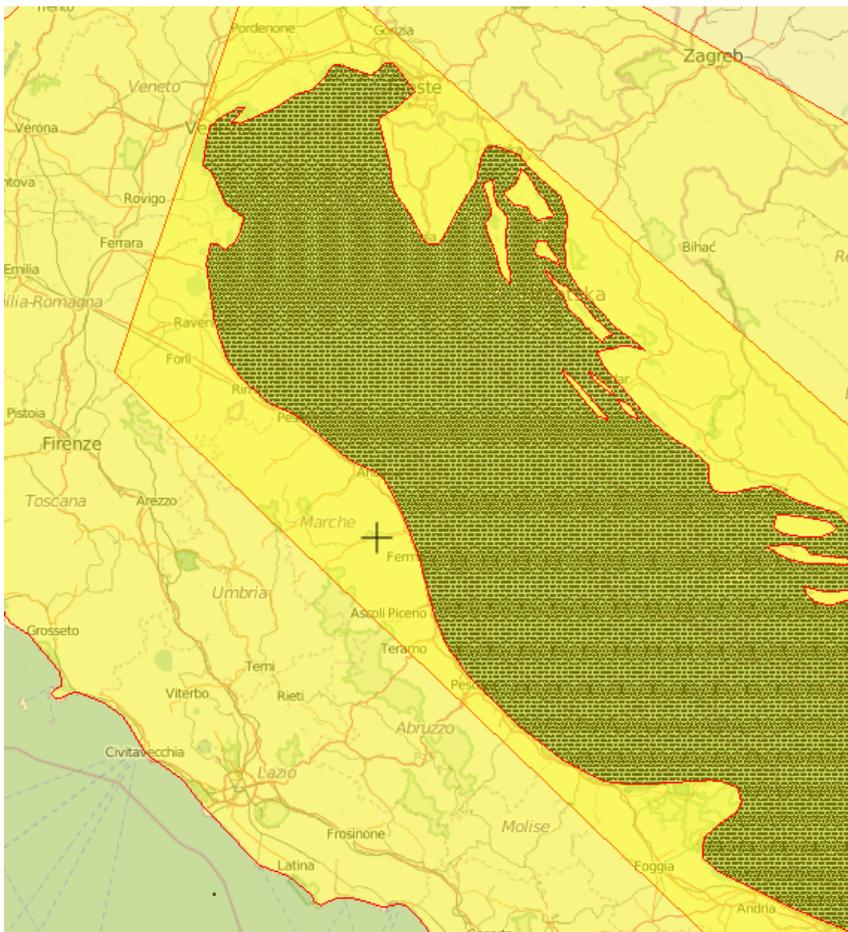

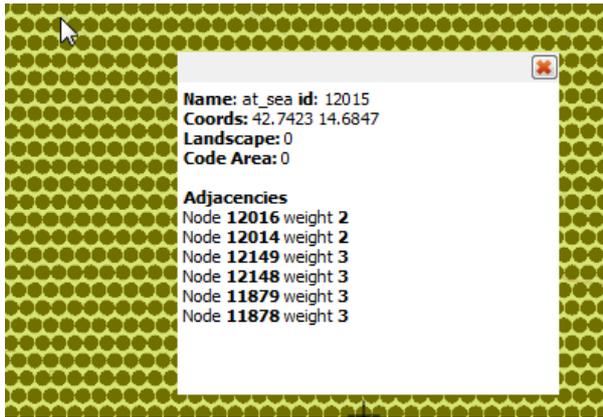**then the entire window looks like:**

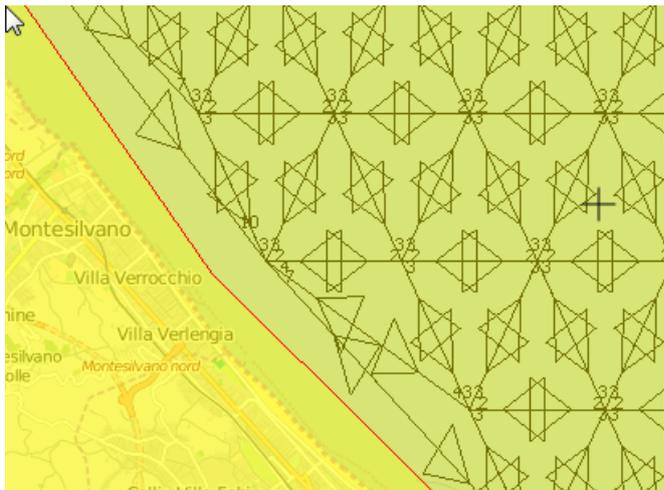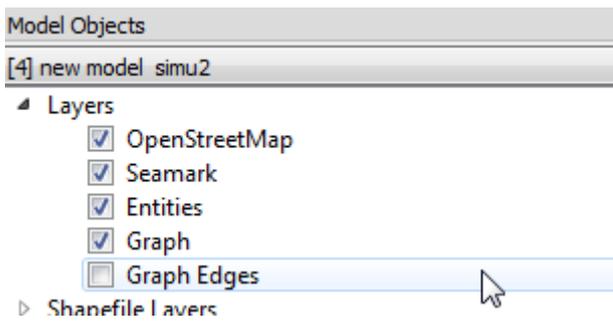**Click OK:**

And wait for the computation:

When completed (in this case after 10-15 min), you might have to zoom in to see the created nodes:
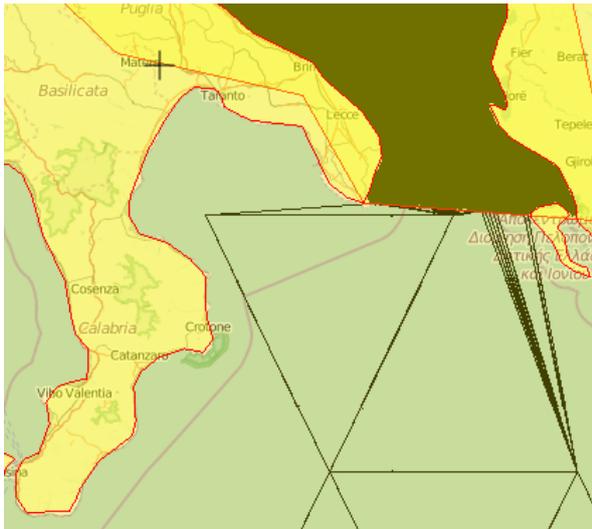
All the nodes are spaced by (at best) 3 km (but here rounded value and latitudinal bias when using a planar grid)
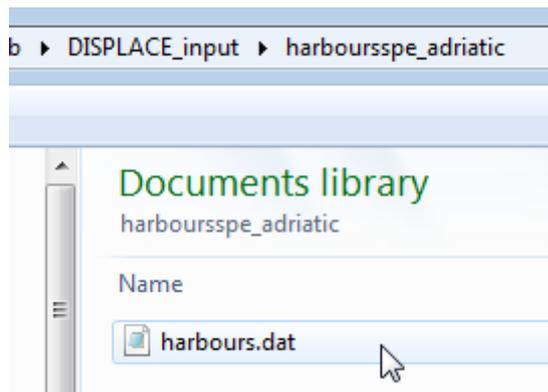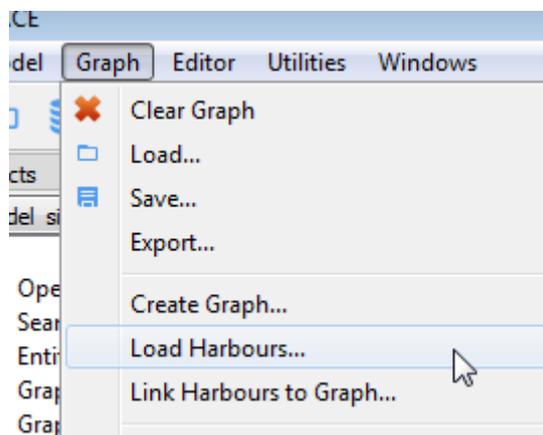
And go to the tree (DISPLACE left window) to tick the box to also see the bidirectional edges:
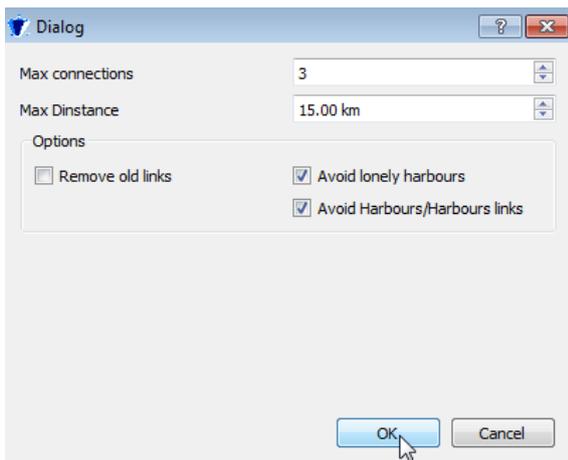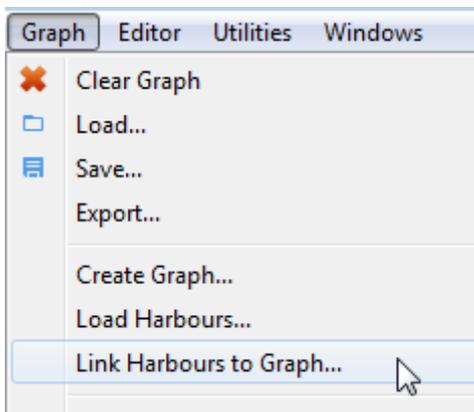

The subgrid is more spaced (200km in our case):

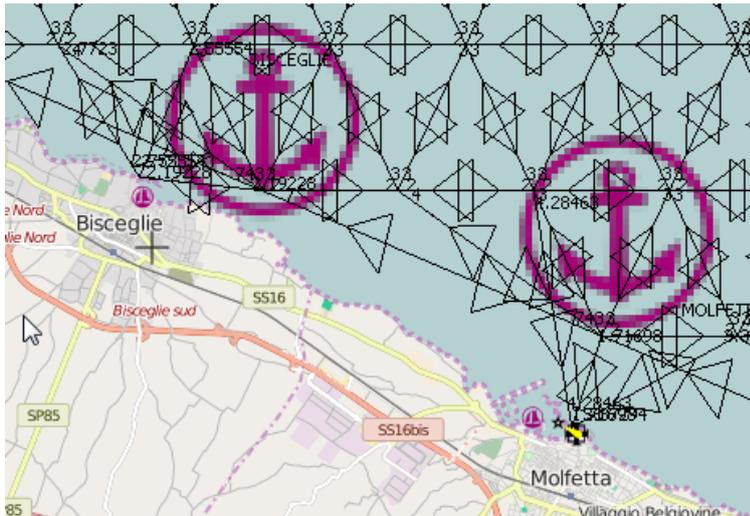**Then we want to load and link some harbours:**

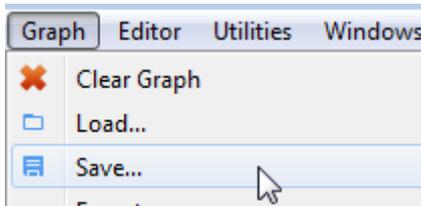**Harbour icons are popping up on the map:**

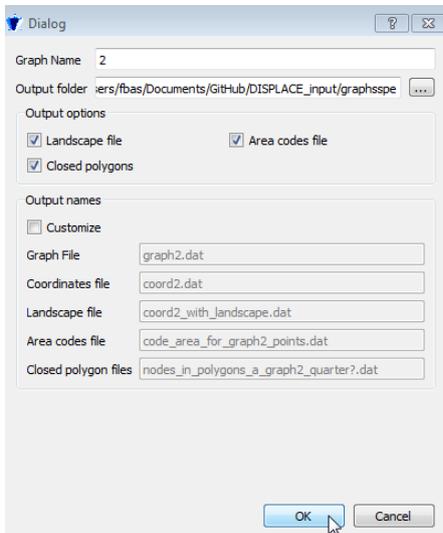**But the harbour nodes are not connected to the graph so we need to link them:**
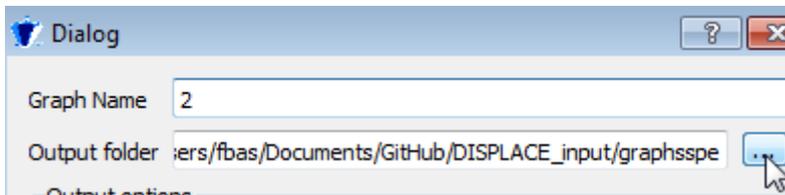

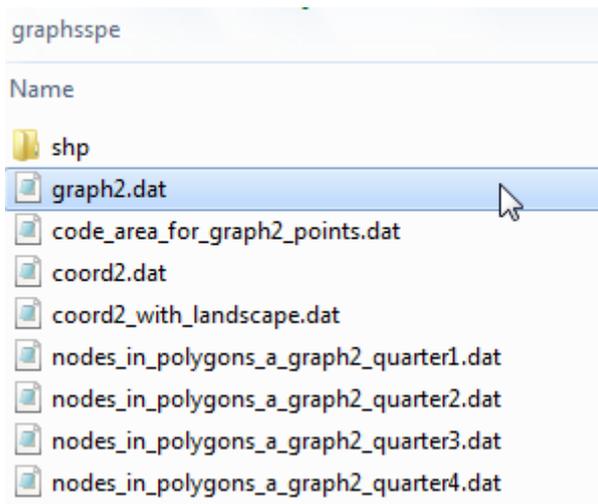

Each harbour is now connected:

The graph is ready to be save/exported:

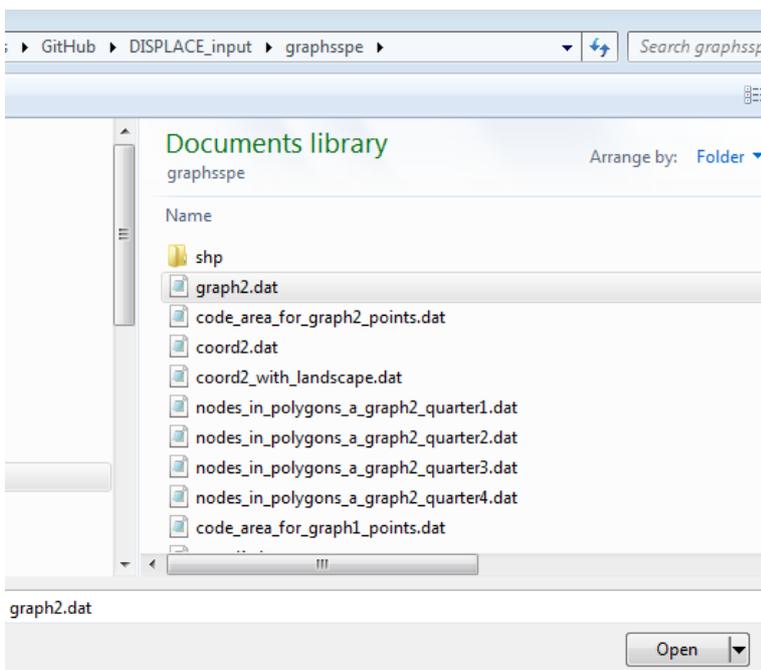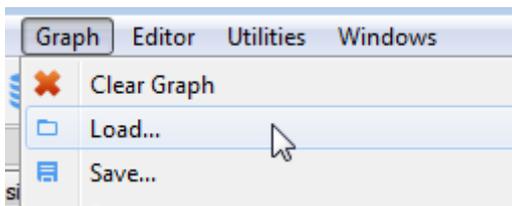**Give a number to name it and select the graphsspe folder to store it:**
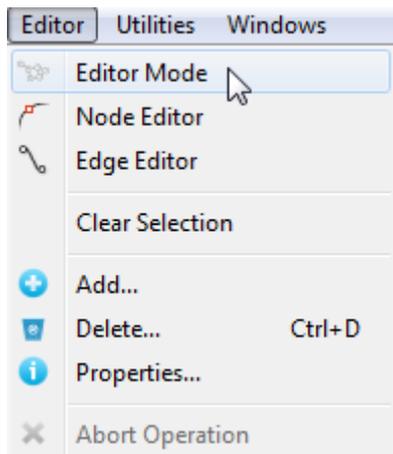
Have a look at the graph-related files now saved:

For information, some refinements to the graph can be made by using the graph editor facilities:
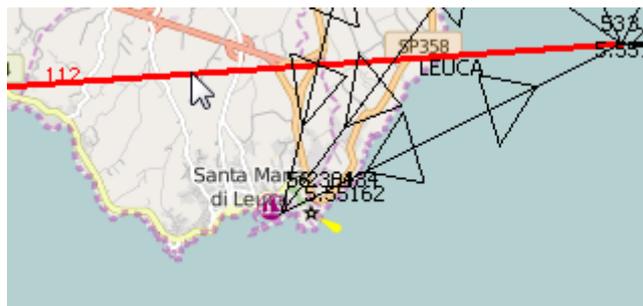
For example, first load an existing graph:
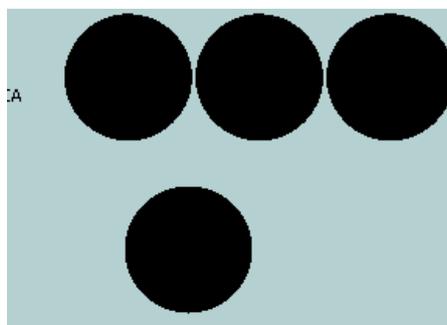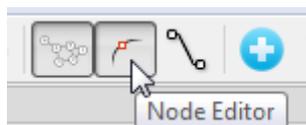
Then play with the graph editor:

For example deleting a graph edge at odd:
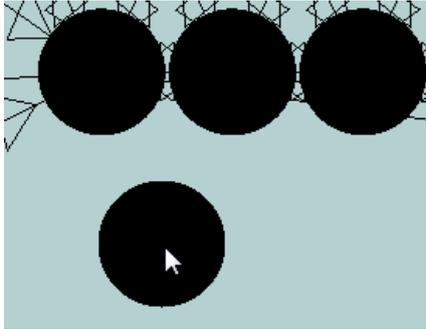

(Rq: You´ll have to delete twice because edges are bidirectional)

Or adding a node:

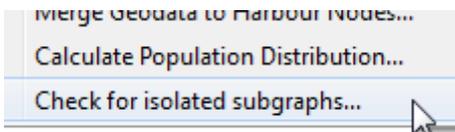**And links, from:**

To:
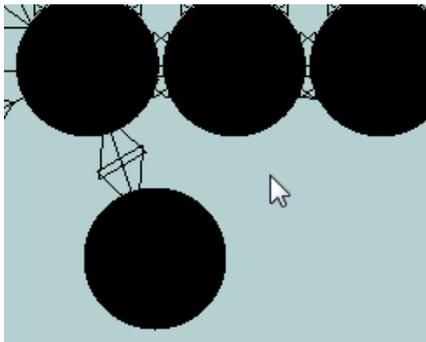
As a final step it will be important to:

Merge Geodata to Harbour Nodes...

Calculate Population Distribution...

Check for isolated subgraphs...

And fix by creating edges when necessary to avoid disconnected subgraph at all cost.