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



🌹 Import shapefile					
✓ ✓ ✓ Wy Documents ► Gi	tHub ► DISF	PLACE_input > graphsspe > shp >	✓ Search shp		
Organize 🔻 New folder			8==	•	
ጵ Favorites 📃 Desktop		Documents library	Arrange by: Folder 🔻		
repository		Name		*	
Recent Places	=	aroundItalyByHand.shp			
Stopbox		aroundItalyByHand.shx			
鷆 GitHub		AdriaticSeaPolygonByHand.dbf			
BENTHIS		AdriaticSeaPolygonByHand.sbn			Sele
COFASP_ECOAST		AdriaticSeaPolygonByHand.sbx			to p
DISPLACE_outputs		AdriaticSeaPolygonByHand.shp	N		
		AdriaticSeaPolygonByHand.shx	4		
词 Libraries		aroundItalyByHand.prj			
Documents		AdriaticSeaPolygonByHand.prj			
👌 Music		gsas.sbn			
Pictures		gsas.sbx		-	
🗐 Subversion	+ 4			Þ.	



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)

🍸 Create Graph	A D ZAGENEVE DOCZ			?
Corner 1	Long:	7.500000	🗧 Lat:	21.000000
Corner 2	Long:	41.000000	🚔 Lat:	47]
Shape				
Geodesic Hex		\odot	Geodesic Quad	

Select to build a Planar Hex grid

Shape	
e	
Geodesic Hex	
Planar Hex	

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

l	vones				
	Include points outsid	le all shapefiles	Step	3.00 km	*
	1st Inclusion Shapefile	Shapefile AdriaticSeaPolygonByHand.shp	▼ Step	3.00 km	* *
	2nd Inclusion Shapefile	Shapefile aroundItalyByHand.shp	▼ Step	200.00 km	* *
	Exclusion Shapefile	Shapefile aroundItalyByHandInversed.shp	🔹 🗹 R	emove edges traversing this shapefile	

Options for some filtering/cleaning:

Options	
Leave at least n links to any node	1
☑ Limit the number of links per node to	8
Remove edges longer than	210 km

then the entire window looks like:

Create Graph							? 🛛
Corner 1	Long:	7.500000		-	Lat:	21.000000	. .
Corner 2	Long:	41.000000		* *	Lat:	47.000000	* *
Shape							
Geodesic Hex			🔘 Geo	desic (Quad		
Planar Hex			Plan	iar Qui	ad		
Zones							
Include points outside	le all shapefiles			Step	3.00 km		*
1st Inclusion Shapefile	Shapefile AdriaticSeaPolygon	ByHand.shp	-	Step	3.00 km		*
2nd Inclusion Shapefile	Shapefile aroundItalyByHand	l.shp	-	Step	200.00 km		*
Exclusion Shapefile	Shapefile aroundItalyByHand	Inversed.shp	•	🔽 R	emove edges traversing thi	is shapefile	
Options							
Leave at least n link	s to any node		1				
Limit the number of	inks per node to		8				
Remove edges long							
			210100				
			Cano	el		Ok	

Click OK:

Ok C

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:



فيليقيني فيقبله فيليقهم	
	Name: at sea id: 12015
	Coords: 42.7423 14.6847
	Landscape: 0
	Adjacencies
	Node 12016 weight 2
	Node 12149 weight 3
	Node 12148 weight 3
	Node 11879 weight 3

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:

Grap	h Editor	Utilities	Windows
×	Clear Graph		
	Load		
Ħ	Save		
	From a sta	13	

Give a number to name it and select the graphsspe folder to store it:

🍸 Dialog	8	×
Graph Name	2	
Output folder	ers/fbas/Documents/GitHub/DISPLACE_input/graphsspe	
Output optio	ne	6

Output options	Area codes file			
Closed polygon:	S			
Output names				
Customize				
Graph File	graph2.dat			
Coordinates file	coord2.dat			
Landscape file	coord2_with_landscape.dat			
Area codes file	ie code_area_for_graph2_points.dat			
Closed polygon files	nodes_in_polygons_a_graph2_quarter?.dat			

Have a look at the graph-related files now saved:

graphsspe
Name
🐌 shp
📄 graph2.dat
code_area_for_graph2_points.dat
coord2.dat
coord2_with_landscape.dat
nodes_in_polygons_a_graph2_quarter1.dat
nodes_in_polygons_a_graph2_quarter2.dat
nodes_in_polygons_a_graph2_quarter3.dat
nodes_in_polygons_a_graph2_quarter4.dat

For information, some refinements to the graph can be made by using the graph editor facilities:

For example, first load an existing graph:

Grap	h Editor Utilities Windows		
*	Clear Graph		
	Load		
si 🖪	Save		
; 🕨 GitHu	ıb ► DISPLACE_input ► graphsspe ►	🔻 🍫 Search grapi	hssp
			:==
	Documents library	Arrange by: Folde	er 🔻
	≡ Name i shp		
	graph2.dat		
	code_area_for_graph2_points.dat		
	coord2.dat		
	nodes in polygons a graph2 guarter1.dat		
	nodes_in_polygons_a_graph2_quarter2.dat		
	nodes_in_polygons_a_graph2_quarter3.dat		
	nodes_in_polygons_a_graph2_quarter4.dat		
	<pre>code_area_for_graph1_points.dat</pre>		
	▼		
graph2.da	at		
		Open	-

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:



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