

Instruction of reproducing the results of paper “Finding Optimal Sequences for Area Aggregation—A[★] vs. Integer Linear Programming”.

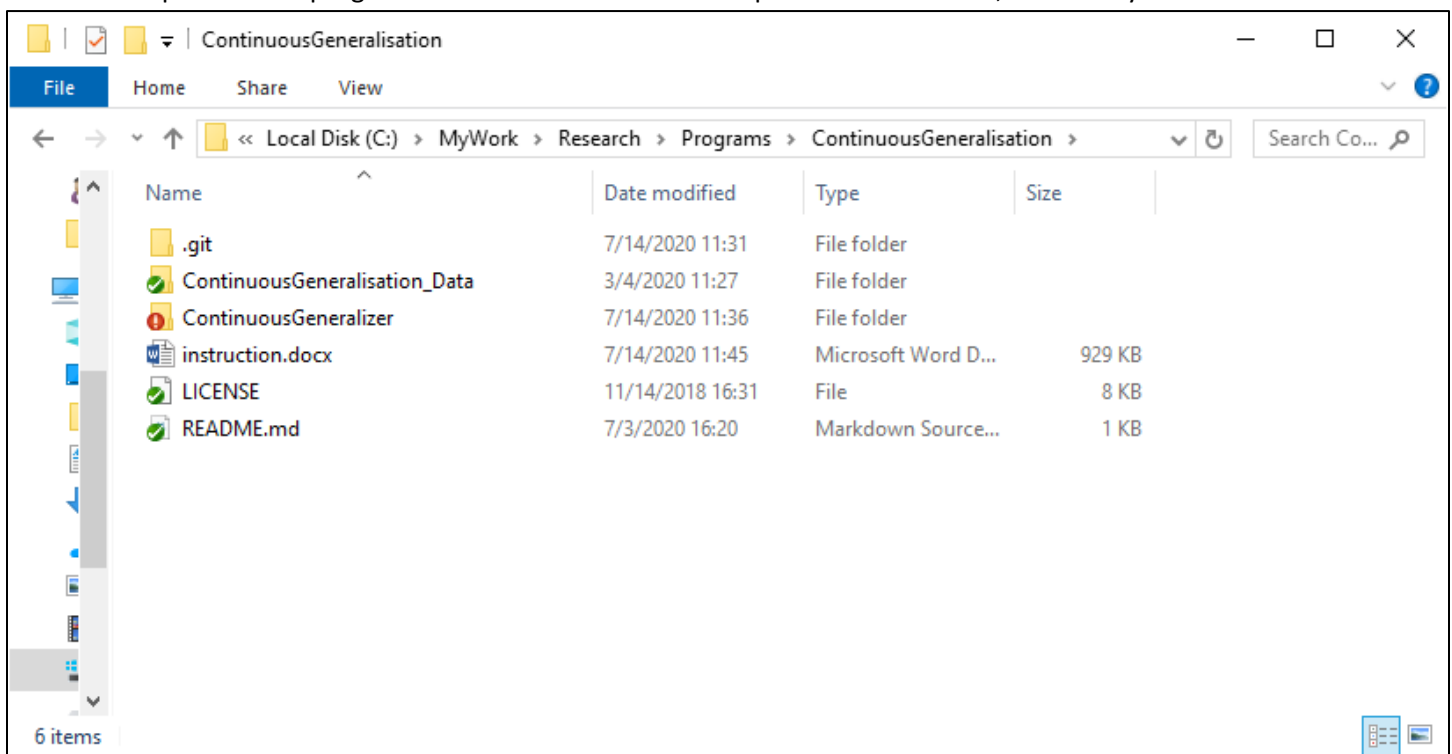
Donlgang Peng (orcid: 0000-0001-6848-3545)

July 14, 2020

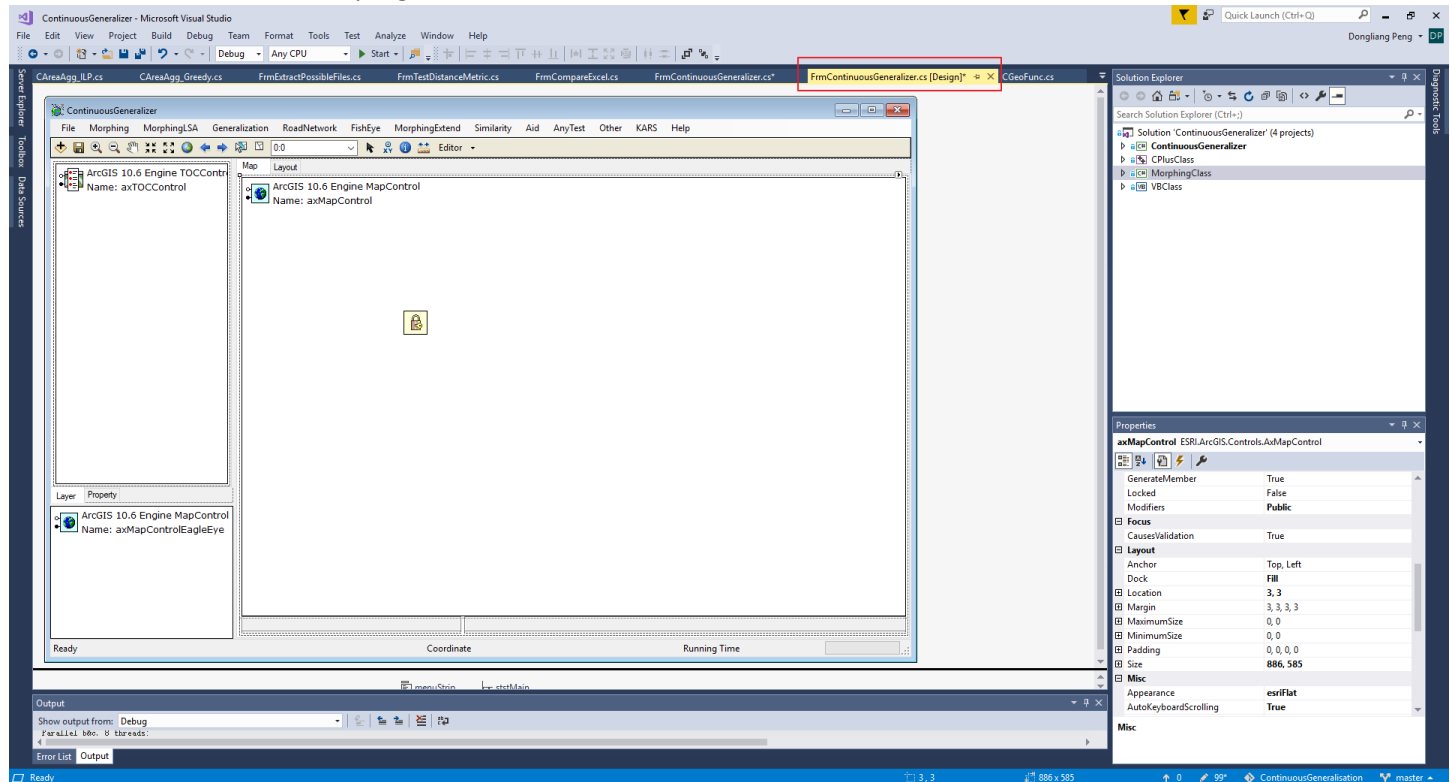
This instruction illustrates how to prepare the environment in Windows 10 to generate aggregation sequences by “ContinuousGeneralizer”. The repository for this prototype is at <https://github.com/IGNF/ContinuousGeneralisation>.

To reproduce the results on your own computer, please go through the following steps.

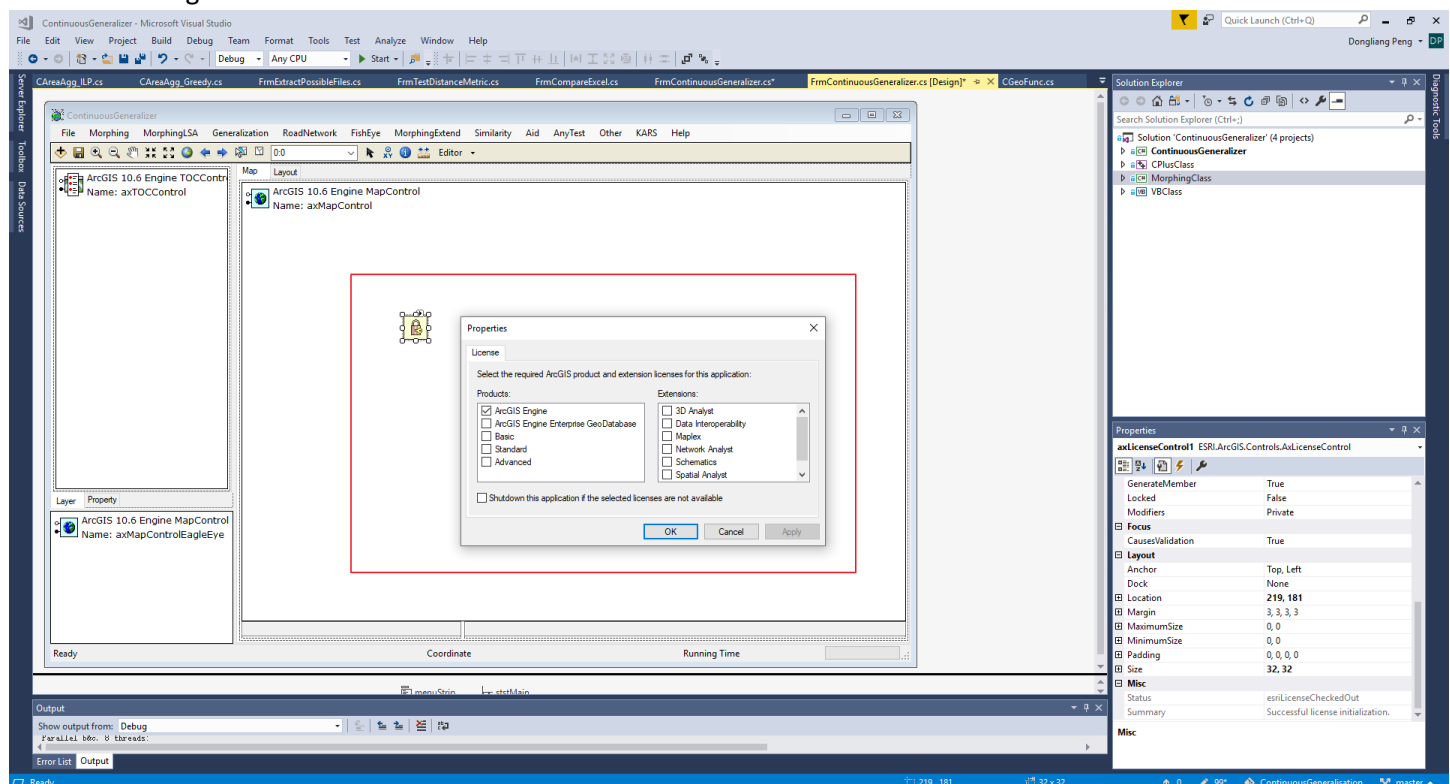
1. Please install Microsoft Visual Studio 2017, ArcObjects SDK 10.6, IBM ILOG CPLEX Optimization Studio 12.6.3.0 (32 bits), and Microsoft Office 2016. Please use default paths when installing.
2. Please put the program, ContinuousGeneralizer, under path “C:\MyWork\Research\Programs\ContinuousGeneralisation”. We suggest using the path because we may use some absolute paths in the program. If ContinuousGeneralizer is put somewhere else, errors may occur.



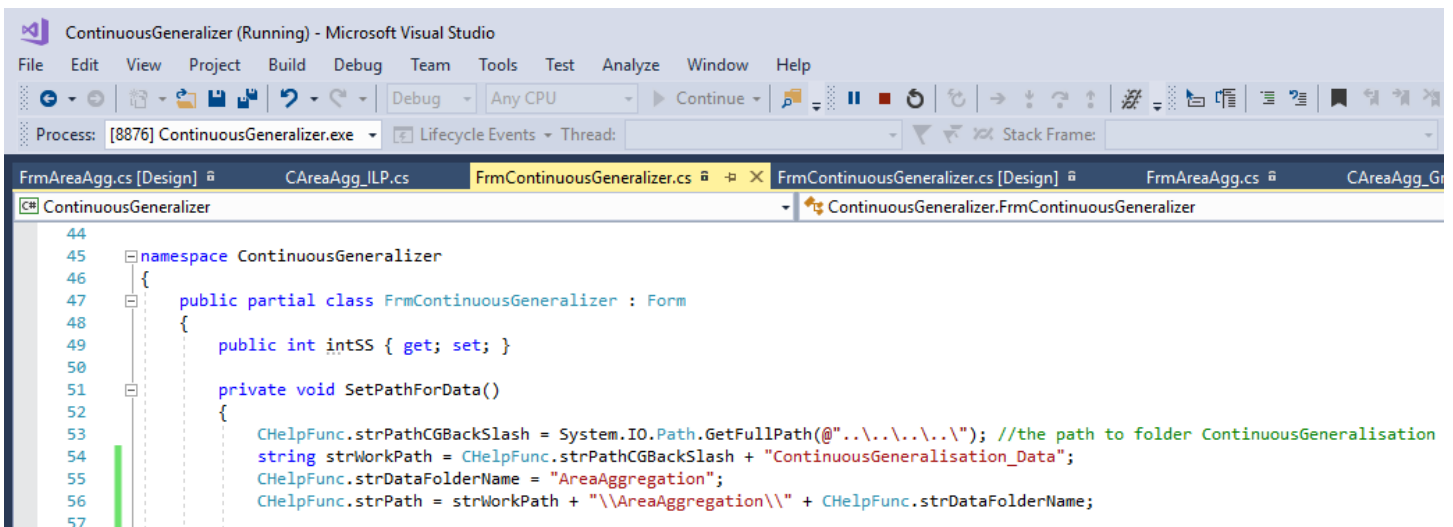
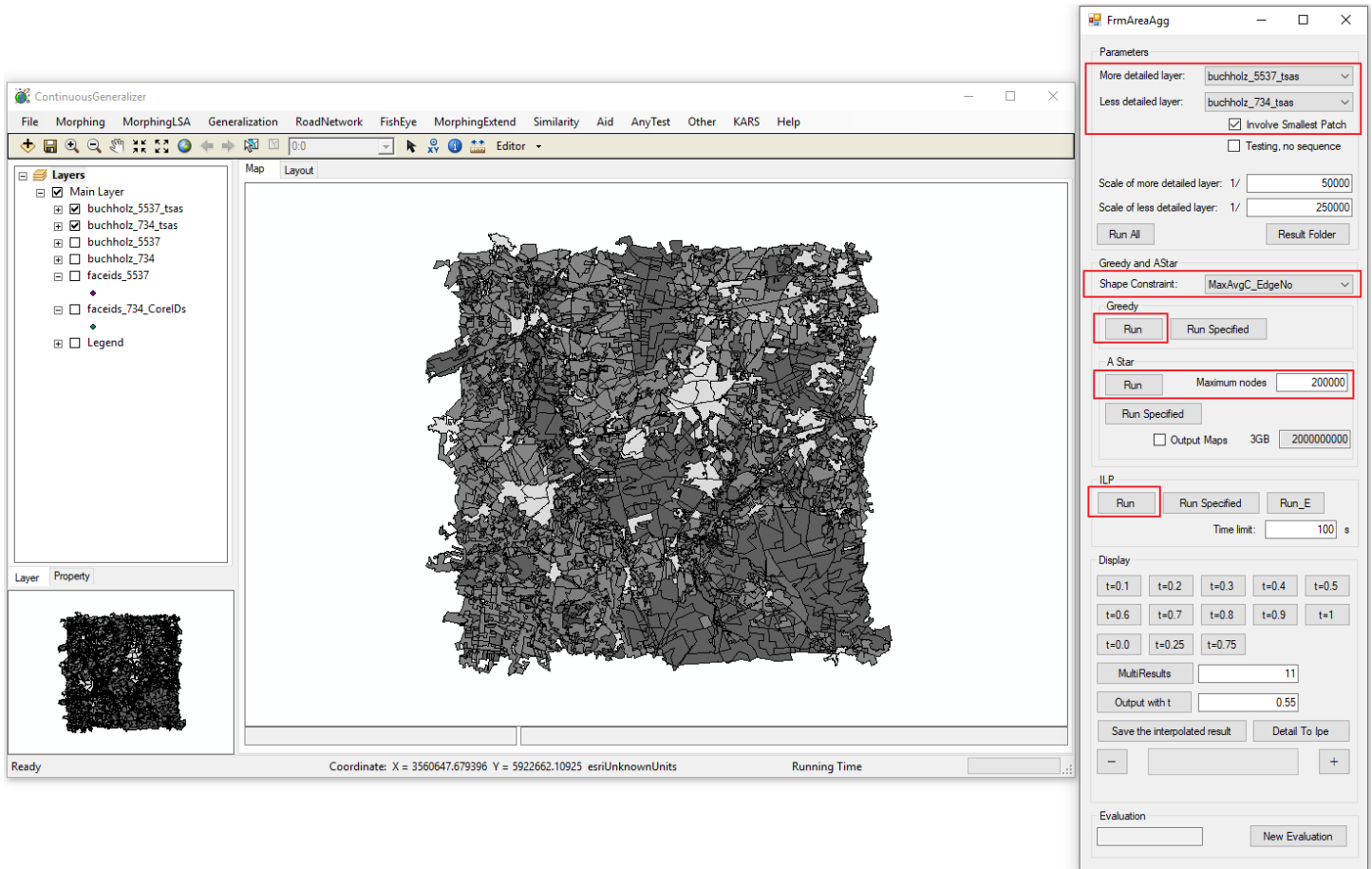
3. The main window of our program is “FrmContinuousGeneralizer”

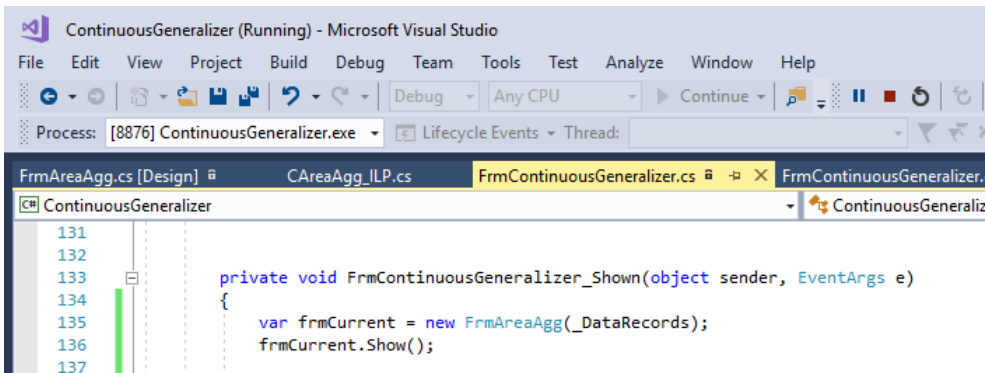


4. You may need to set the licenses. Right click the icon of 'the lock and key', go to properties, then check the licenses as following.

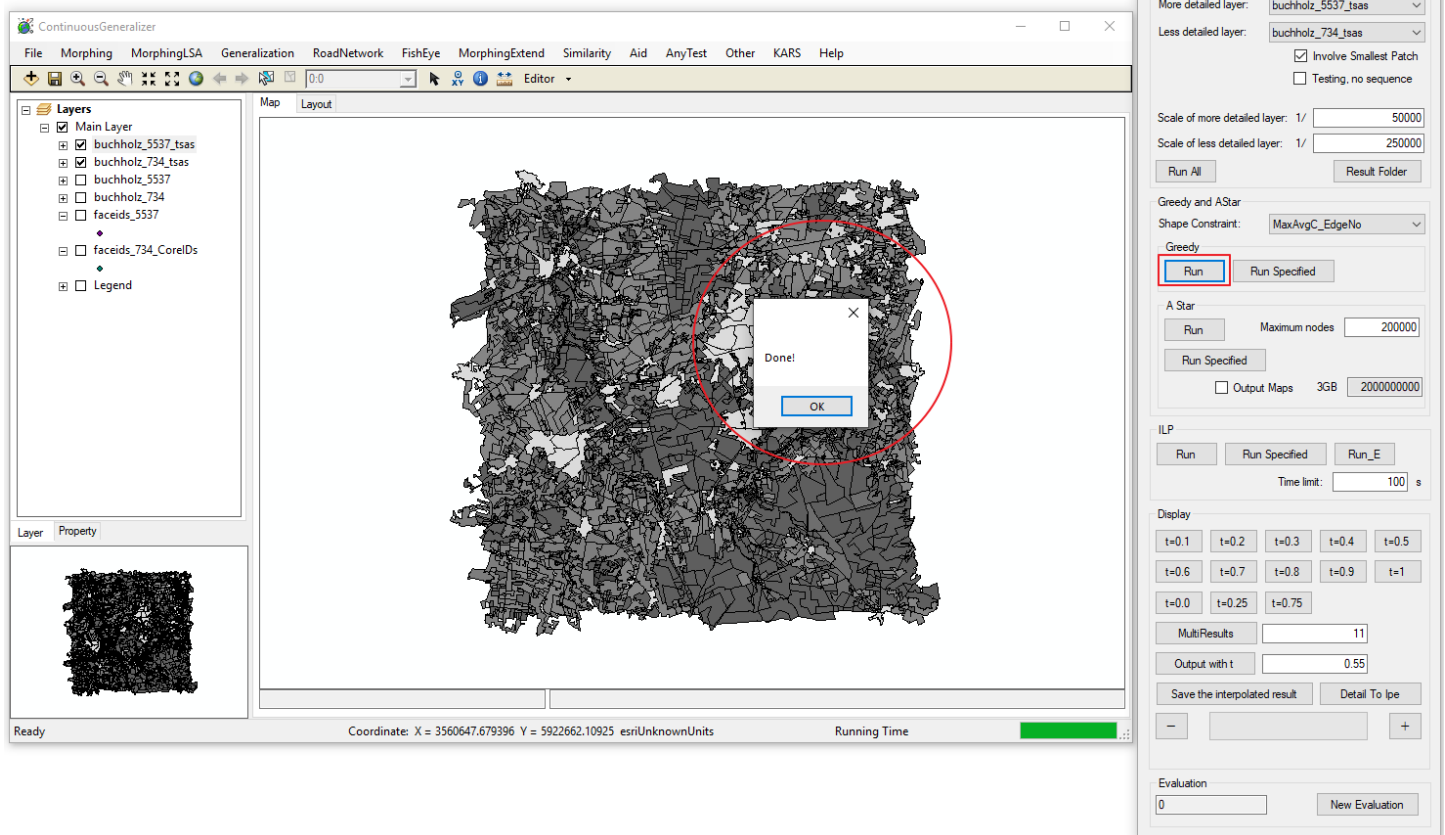


5. Please run the program. The data will be automatically loaded and panel “FrmAreaAgg” to specify a method will be automatically opened. This is because the settings in file FrmContinuousGeneralizer.cs (see the screenshots below). You can click the “Run” buttons to run the corresponding algorithms.

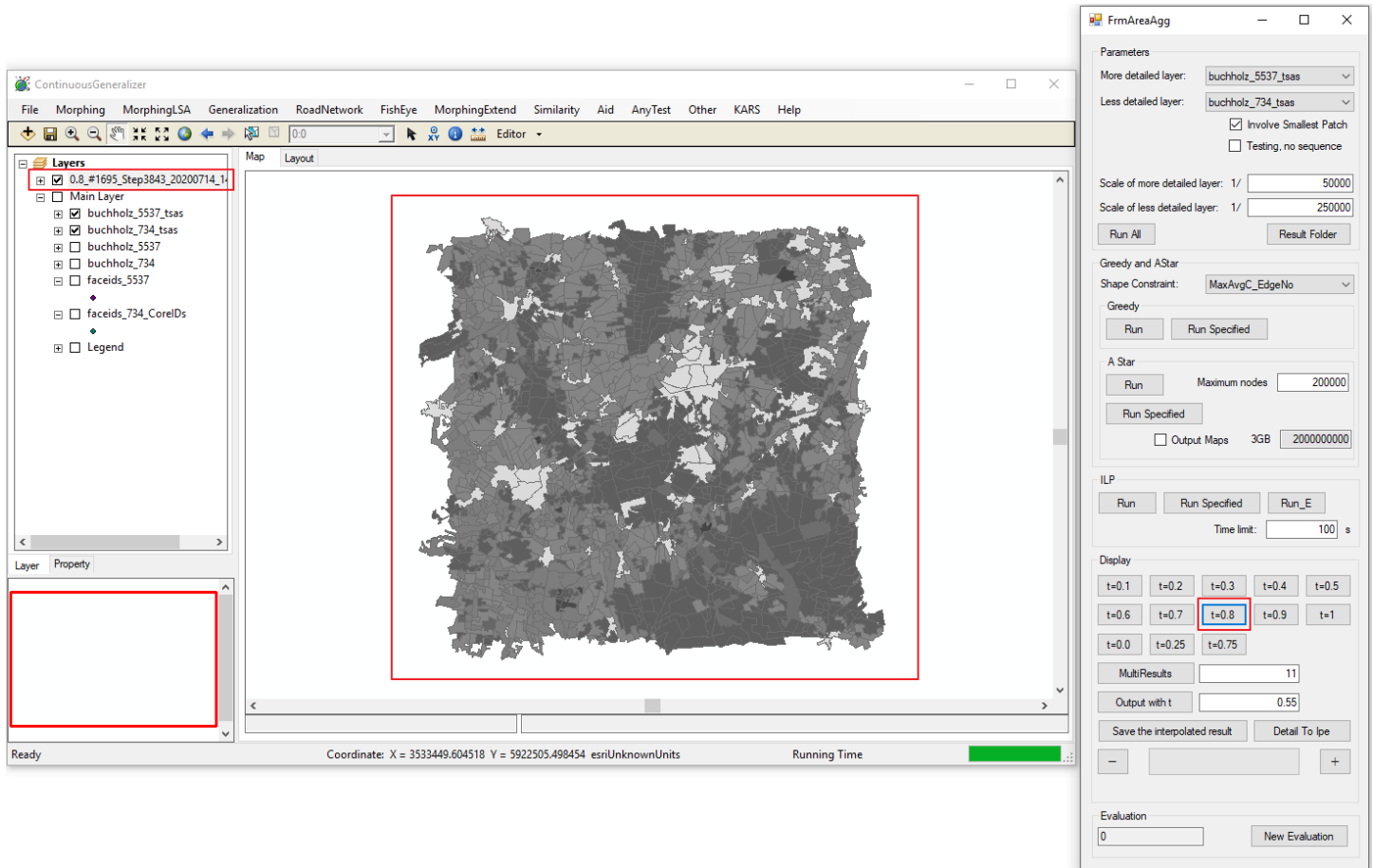




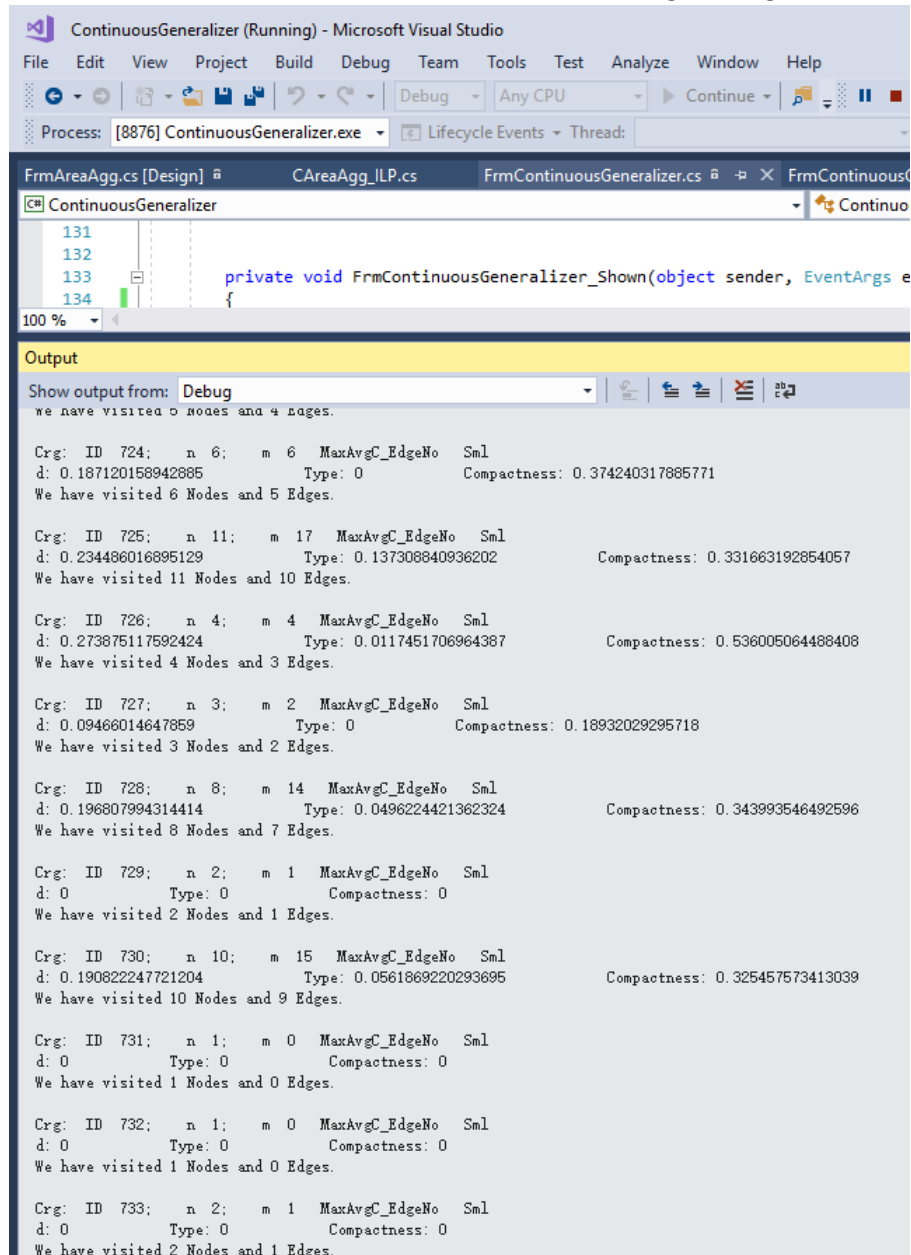
- If you click the “Run” button of the greedy algorithm, then the program will finish the computation in about 1 minute and the window with message “Done!” will show up.



7. If you click button, for example, “ $t=0.8$ ”, then a map at the corresponding time will be generated and presented. This button is not valid for the results of integer linear program (ILP) because ILP cannot find feasible solutions for some instances.



8. You can observe the details for each instance during running in window “Output” of Microsoft Visual Studio.



ContinuousGeneralizer (Running) - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Process: [8876] ContinuousGeneralizer.exe Lifecycle Events Thread:

ContinuousGeneralizer

```
131  
132  
133 private void FrmContinuousGeneralizer_Shown(object sender, EventArgs e  
134 {
```

100 %

Output

Show output from: Debug

We have visited 0 Nodes and 4 Edges.

Crg: ID 724; n 6; m 6 MaxAvgC_EdgeNo Sml
d: 0.187120158942885 Type: 0 Compactness: 0.374240317885771
We have visited 6 Nodes and 5 Edges.

Crg: ID 725; n 11; m 17 MaxAvgC_EdgeNo Sml
d: 0.234486016895129 Type: 0.137308840936202 Compactness: 0.331663192854057
We have visited 11 Nodes and 10 Edges.

Crg: ID 726; n 4; m 4 MaxAvgC_EdgeNo Sml
d: 0.273875117592424 Type: 0.0117451706964387 Compactness: 0.536005064488408
We have visited 4 Nodes and 3 Edges.

Crg: ID 727; n 3; m 2 MaxAvgC_EdgeNo Sml
d: 0.09466014647859 Type: 0 Compactness: 0.18932029295718
We have visited 3 Nodes and 2 Edges.

Crg: ID 728; n 8; m 14 MaxAvgC_EdgeNo Sml
d: 0.196807994314414 Type: 0.0496224421362324 Compactness: 0.343993546492596
We have visited 8 Nodes and 7 Edges.

Crg: ID 729; n 2; m 1 MaxAvgC_EdgeNo Sml
d: 0 Type: 0 Compactness: 0
We have visited 2 Nodes and 1 Edges.

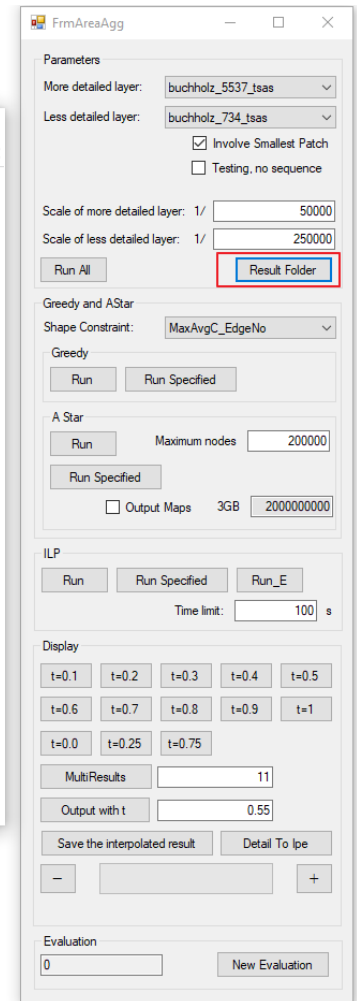
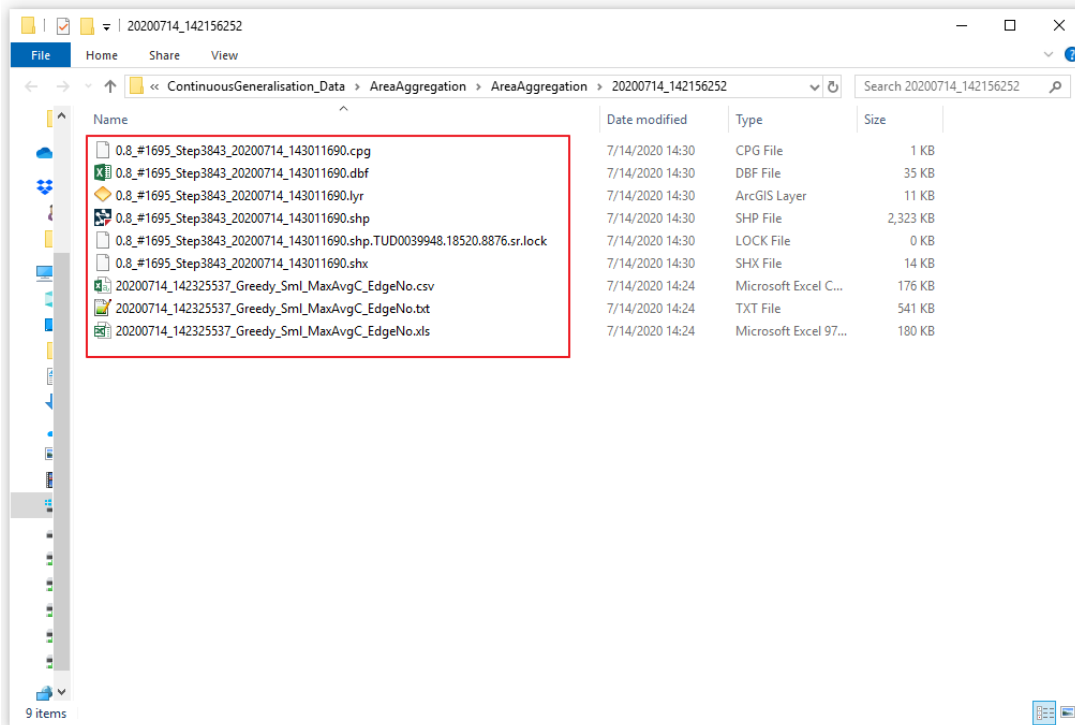
Crg: ID 730; n 10; m 15 MaxAvgC_EdgeNo Sml
d: 0.190822247721204 Type: 0.0561869220293695 Compactness: 0.325457573413039
We have visited 10 Nodes and 9 Edges.

Crg: ID 731; n 1; m 0 MaxAvgC_EdgeNo Sml
d: 0 Type: 0 Compactness: 0
We have visited 1 Nodes and 0 Edges.

Crg: ID 732; n 1; m 0 MaxAvgC_EdgeNo Sml
d: 0 Type: 0 Compactness: 0
We have visited 1 Nodes and 0 Edges.

Crg: ID 733; n 2; m 1 MaxAvgC_EdgeNo Sml
d: 0 Type: 0 Compactness: 0
We have visited 2 Nodes and 1 Edges.

9. You can find more results if you click button “Result Folder”.



10. If you experience the following errors, then please unblock the zip file before unzipping it (also see <https://stackoverflow.com/questions/51348919/couldnt-process-file-resx-due-to-its-being-in-the-internet-or-restricted-zone-o>).

