SVF mapping tool – Users Guide

The method is described in Gál and Unger 2014. It is free to use for any purpose, but please cite Gál and Unger 2014 if you used it.

The program do not needs installing, but it needs Java runtime environment to run: http://www.oracle.com/technetwork/java/javase/downloads/java-se-jre-7-download-432155.html

The place of the input and output files can be defined in inputDirectory.txt.



After the modification of the inputDirectory.txt the program can be started with SVFCalc.jar.

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First the input files have to be defined.

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Building footprints with height in ESRI Shapefile format.

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Shape column means the geometry. The name is always the geom.

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Height column is the height or elevation of the buildings. It can be metres above sea level or meters above ground.

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Choose points shp		_
Shape column		-
Height column		-
	Add the search angle and the search radius	
Search angle (degree)	1	
Search radius (meter)	200	
	Use free shapes	
	Calculate	

Points is the point type shapefile what contains the places where we want to calculate the SVF. It can be regular grid or random points also.



Shape column is again the_geom. Height column is the height of the points where we want to calculate the SVF. It have to be meters above sea level if we use meters above sea level for buildings, or it have to be a column with 0 in each lines if we use meters above ground in the building heights.

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Search angle (degree)	1	
Search radius (meter)	200	
	Use Tree shapes	
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Search angle and radius can be changed, but these two values are optimal for the calculation time and precision. For further information about these valus see Unger (2009).

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Next step is the setup of the tree dataset. This is optional.

The process is similar to the building input.

Choose the shape file con	tains the buildings, than select the colum of the shapes and the he	3- ght		
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Height is similar to buildings also. If we use meters above sea level for buildings, than we have to use the same here.

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Choose the shape file of	contains the trees, than select the column of the shapes and height					
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Shape column	the_geom	•				
Height column	HC	-				
	Add the transition of the trees					
Transmittance (0 - 1)	0.6					
	Calculate					

Transmittance represents that how high amount of the radiation can get trough the tree-crown. It should be 0.863591 according to Gál and Unger 2014.

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Choose the shape file contains the buildings, than select the colum of the shapes and the height						
Choose building shp	building.shp					
Shape column	the_geom	-				
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Choose points shp	POLshp					
Shape column	the_geom	-				
Height column	z	-				
	Add the search angle and the search radius					
Search angle (degree)	1					
Search radius (meter)	200					
	✓ Use Tree shapes					
Choose the shape file of	contains the trees, than select the column of the shapes and height					
Choose tree shp						
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	Add the transition of the trees					
Transmittance (0 - 1)	0.863591					

Than press calculate. After it, the program reads the input files. The calculation starts with Data -> Calculate

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buildi	ng.4	MULTIP	0L	21280007	2	81.6	94.1	100.8	2
buildi	ng.5	MULTIP	0L	21280008	2	81.5	97.2	101.8	4
buildi	ng.6	MULTIP	0L	21280010	2	81.5	97.9	101.7	4
buildi	ng.7	MULTIP	0L	21280011	1	81.5	90.2	0.0	8
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When the calculation is ready, the program asks the destination of the output file. The calculation may take time (minutes, hours, days depends on the size of the input files and number of points), and there is no feedback about the progress. Be patient and wait.

Gál T, Unger J, 2014: A new software tool for SVF calculations using building and tree-crown databases. Urban Climate, DOI: 10.1016/j.uclim.2014.05.004

Unger J, 2009: Connection between urban heat island and sky view factor approximated by a software tool on a 3D urban database. *International Journal of Environment and Pollution, Vol. 36, 59-80.*