Cross Section Processor – Tutorial #4 –

TUTORIAL 4

aviolo.grd WRITING A FILE WITH CSS LOCATION ALONG THE CN Most of the instructions presented in this tutorial have already been explained in Tutorial 1. These instructions are needed to give completeness to the Tutorial. Accordingly, new instructions will be written in blue within the text.

Run the CSP program by clicking on the CSP.exe icon.

Let us consider the case of *Aviolo.grd*. In this case we will show the use of command 4 to select the location of CSs along the CN. Select command 1;

 In/Out
 CSP module for the extraction of Cross-Sections from DEM - marco.pilotti@ing.unibs.it

 In/Out
 Channel and Cross Section extraction
 Local data
 Cross Section Editor

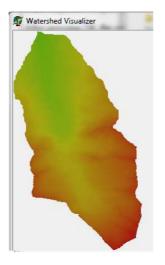
 Select DEM
 1
 lower color range
 0
 upper color range
 90

 10
 0.9
 brightness [0-1]
 0.65
 light direction
 225
 Visualize

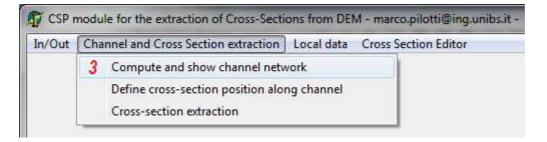
 1A
 Reset default values
 1B

Using 1A, select the file *aviolo.grd*;

By pressing 1B, the basin is shown on the screen, according to the magnification ratio 1C;



As already explained in Tutorial 1, the basin is shown without the basin relief, because in the /in/ directory there is not yet the file that is needed to obtain this effect. Since this file is computed and written on disk while extracting the basin SFDN, let's go on by selecting command 3;

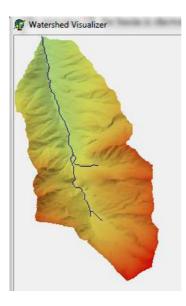


the following panel is shown

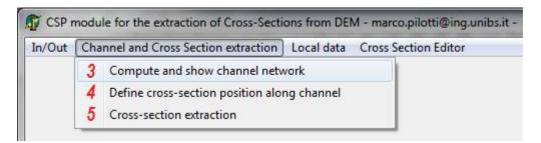
👔 CSP r	module for the extraction of Cross-S	ections from D	EM - marco.pilotti@ing.unibs.it -
In/Out	Channel and Cross Section extract	on Local data	a Cross Section Editor
	e channel network old Area on channel network [Kmq]	1 Co	nfirm choice

Let us choose a constant area threshold $=1 \text{ km}^2$ and let us press 3A;

If we now quit the program, run it again and repeat the same set of commands (1A, 1B, 3, 3A), the basin shown on the screen will look like in the following panel



Select command 4



The following panel will be shown on the screen

🗗 CSP module for the extraction of Cross-Sections from DEM - marco.pilotti@ing.unibs.it -				
In/Out Channel and Cross Section extraction Local data Cross Section Visualizer				
Set up of a file with cross-section location along the channel				
This section gives the possibility to write a file containing the stations along the channel where a cross-section (CS) will be extracted. The file contains the distance of the CS from the outlet				
Name of the file (with .s extension): C:\WRR_CS\in\	4A			
Start direct cross-section selection along channel (select points moving downstream) 4B				
Stop direct cross-section selection along channel and write file 4C				

In 4A, we add to the written path the name of the file where the location of the stations will be written. The extension of this file must be .s: e.g., *aviolo.s*

Name of the file (with .s extension): C:\WRR_CS\in\aviolo.s

By pressing 4B, we activate the selection of the position of the CS along the CN.

Set up of a file with cross-section location along the channel					
This section gives the possibility to write a file containing the stations along the channel where a cross-section (CS) will be extracted. The file contains the distance of the CS from the outlet					
Name of the file (with .s extension):	C:\WRR_CS\in\aviolo.s				
Start direct cross-section selection along channel (select points moving downstream)					
Stop direct cross-section selection along channel and write file					

Now we can start with the left key of the mouse to select the stations. The program will operate a snap-to-point along the CN. It may happen that the selected point is too far from the CN. In such a case a warning will appear on the Task List panel

'WARNING ! Point not found: repeat selection';

Do not terminate the selection process without a valid point, otherwise the program will not be able to locate the end-point of the CN

When the point selection is succesful, a red point will appear on the screen in correspondence of the selected station on the CN.

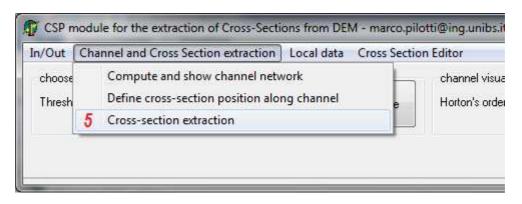


By pressing 4C,

Set up of a file with cross-section location along the channel					
This section gives the possibility to write a file containing the stations along the channel where a cross-section (CS) will be extracted. The file contains the distance of the CS from the outlet					
Name of the file (with .s extension):	lame of the file (with .s extension): C:\WRR_CS\in\aviolo.s				
Start direct cross-section	🔽 Done				
Stop direct c	🔽 Done				

the selection comes to an end and the file *aviolo.s* is created.

Now we can select command 5



The following panel will be shown on the screen

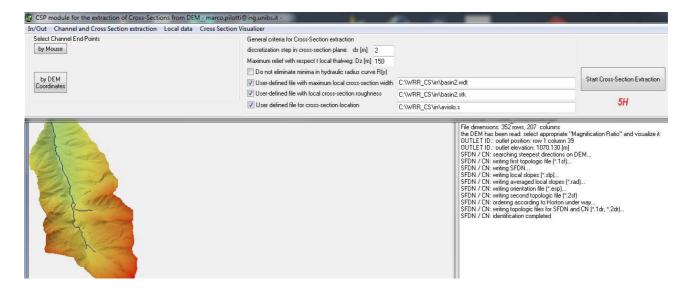
In/Out Channel and Cross Section extraction Local data	Cross Section Edi	itor	
Select Channel End-Points		General criteria for Cross-Section extraction	
by Mouse 5A		discretization step in cross-section plane: ds [m] 2	
		Maximum relief with respect t local thalweg: Dz [m] 150 50	
(5D	Donot eliminate minima in hydraulic radius curve R(y)	1 Contraction of the second se
by DEM 5B Coordinates	5E	User-defined file with maximum local cross-section width	Start Cross-Section Extraction
Coordinates	5F	User-defined file with local cross-section roughness	
	5G	User defined file for cross-section location	5H

From this point on we can proceed as already done in Tutorial 1 and 2. Otherwise, if we want to use the file Aviolo.s that we have just created, we can proceed as in Tutorial 3.

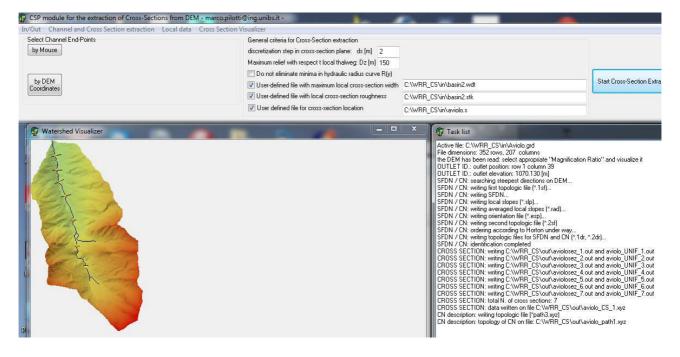
In both cases we have not a user defined file with the maximum local width, (5E) and a user defined file with the local roughness coefficient, (5F). For the sake of this example, we can use the files *basin2.wdt* and *basin2.stk* (by using a text editor, we could also create in the /in/ directory our own files *aviolo.wdt* and *aviolo.stk*)

General criteria for Cross-Section extraction			
discretization step in cross-section plane: ds [m]	2		
Maximum relief with respect t local thalweg: Dz [m]	150		
Do not eliminate minima in hydraulic radius curve R(y)			
Vser-defined file with maximum local cross-section	on width	C:\WRR_CS\in\basin2.wdt	
User-defined file with local cross-section roughness		C:\WRR_CS\in\basin2.stk	
User defined file for cross-section location			

we select (in 5G) the file *aviolo.s*, with the stations in correspondence of which the CSs will be extracted,



and we select 5H to start the extraction process. The planimetric outline of the CSs is then plotted on the screen as shown in the panel below.



and each CS can be explored as already done in previous Tutorials

TCross-section v	isualizer			
N° Cross-section	3 / 7 s Section			
move downstream				
Move up				
2		100		
Cross Section seq	uence 10			
East thalweg	1608890	0.000		
East 1* end point	5117970			
North thalweg	1609006	CS position along the CN	Thalweg profile with CS station	
North 1* end point	5117990	right bank	Cross Section profile looking upstream	left bank
East 2* end point	1608772		Cross Section profile looking upstream	
North 2* end point	5117990			1
s from upstream [m]	2088.53			1
Drained area [kmq]	9.597			
Z thalweg [m]	1463.279			-1
Z max. [m]	1492.08			/ /
Height [m]	28.80			1
Width [m]	234	-1		
discharge Q [mc/s]	10.870		/	
K Strickler				
local slope (m/m)				
Y [m]	<u> </u>		\leq	
actual Q [mc/s]		black line: current cross-sec	tion	
width of free surface [m]				