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PS Spatial Analysis
Assignment #2 | Spatial Analysis

Paris-Lodron-Universität Salzburg
Department of Geoinformatics

Objective

The objective is to use spatial analysis techniques to analyze Salzburg and the terrain of Salzburg with the methods of terrain analysis in ArcGIS online and ArcGIS Pro.

When performing spatial analyses please take care to have an eye on the environment settings – especially the processing extent!

Assignment:

The tasks listed below are listed in a way that you can easily find out what to deliver in order to receive a certain grade. The tasks are building on each other – meaning for a grade 2 (“Gut”) you have to deliver the tasks for grade 4, grade 3 and grade 2.

Please prepare a new map that contains the following datasets:

- DEM of Salzburg: dgm5m.asc (as used in the course)
- Catchments_Salzburg (https://zgis.maps.arcgis.com/home/item.html?id=3dfdaf154803453795c632a98c26da3e)

- **Task 1 > grade 4:**
  Select a Catchment Area in Salzburg using the “Catchment_Area” Layer hosted by Z_GIS organization (link is above). Please be aware to select a catchment area and not a sub-catchment area. A single catchment area of a river (similar to the river “Taugl” in the course) can be identified using the attribute “HZB_Code”.
  Please select a catchment area of reasonable size (similar to Fig. 3 or even larger in size).

  The selected catchment area is your area of interest for the following tasks:
  - Create a hillshade for the selected area
  - Create a map showing the color coded elevation of the area

	HZB_CODE	AREA_KM	Shape *
163	2 8272285 91 4 0 0 0	2.149183	Polygon
164	2 8272 77 4 0 0 0 0	2.657085	Polygon
165	2 8272 67 12 4 0 0 0	0.124341	Polygon
166	2 8272115 27 2 0 0 0	3.268729	Polygon
167	2 8272103 8 0 0 0 0	1.016688	Polygon
168	2 8272 77 5 0 0 0 0	2.452182	Polygon

Fig. 1: HZB_Code identifying the catchment areas.

28	2 8270 1 0 0 0 0 0	5.40812	Polygon
29	2 8270 2 1 0 0 0 0	5.871281	Polygon
30	2 8270 2 4 0 0 0 0	1.747948	Polygon
31	2 8270 3 0 0 0 0 0	2.796125	Polygon
32	2 8270 14 1 0 0 0 0	5.42	Polygon
33	2 8270 14 2 0 0 0 0	3.539968	Polygon
34	2 8270 28 0 0 0 0 0	8.710288	Polygon
35	2 8270 34 1 0 0 0 0	2.71197	Polygon
36	2 8270 34 2 0 0 0 0	0.824028	Polygon
37	2 8270 66 1 1 0 0 0	7.052206	Polygon
38	2 8270 66 1 6 0 0 0	2.965374	Polygon

Fig. 2: HZB Codes that identify catchment areas (are found at the beginning of the code)

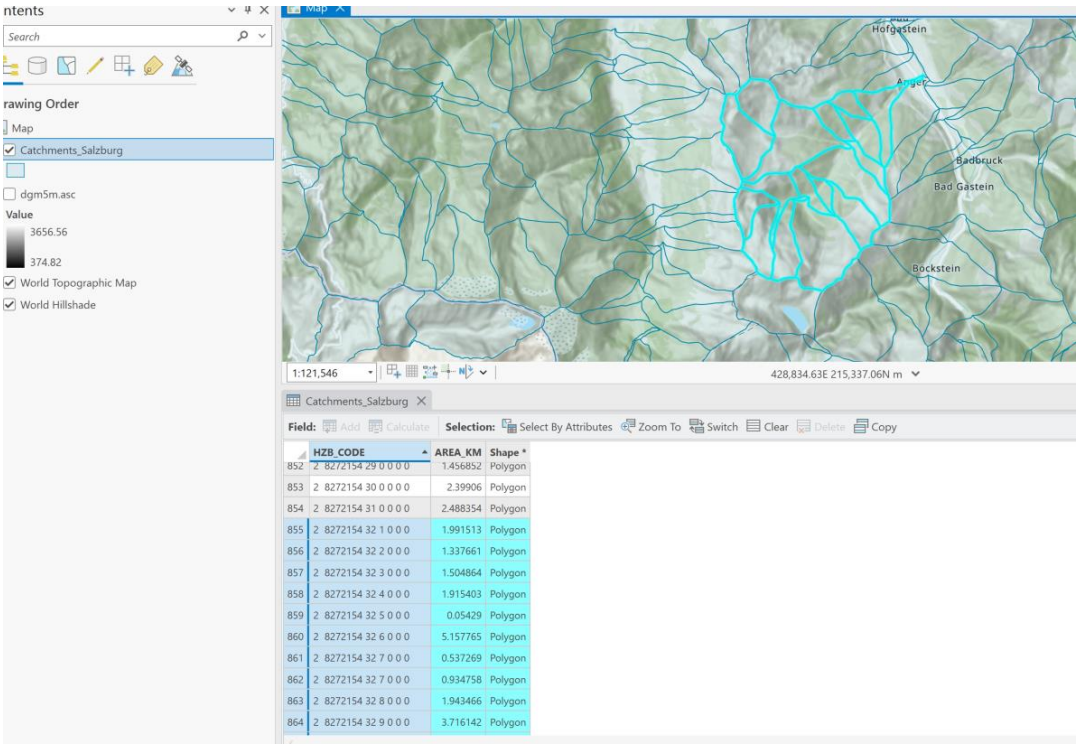

Fig. 3: Catchment Area of 8272154 32

- **Task 2 > grade 3:**
  Calculate a map showing slope and aspect. Calculate average slope and provide a slope histogram. Please explain the histogram accordingly.

- **Task 3 > grade 2:**
  Calculate the average slope for each elevation zone (you can choose between 200m/500m elevation intervals), and provide a slope histogram for each elevation zone. (Hint: use the tool “contour” to generate the elevation interval polygons – use contour type “contour polygon”).

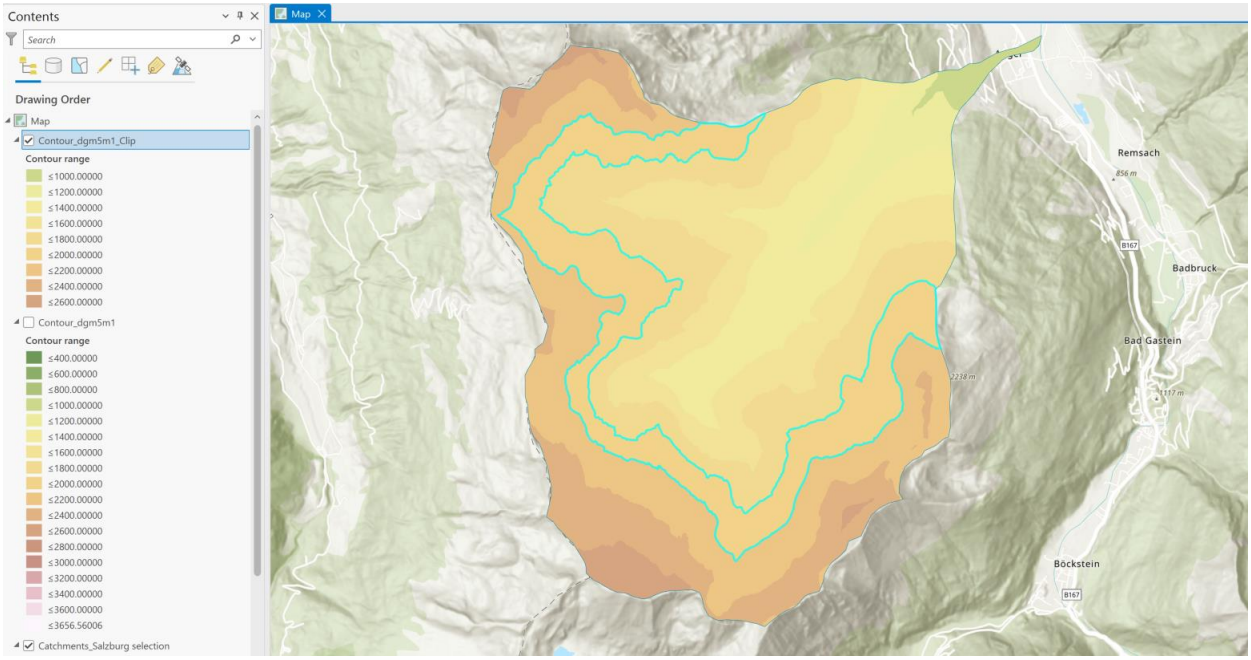

Fig. 4: Example of elevation zones as polygons

- **Task 4 > grade 1:**
  Evaluate the average slope per elevation zone for different elevation raster resolution (5m – 10m – 100m). Please provide the average slope for each elevation zone and a histogram. Please explain your results accordingly!

What and how to hand in?

Please create a detailed report with screenshots of the maps and hand in a PDF file of your report using Blackboard System!

Please hand in your written report using Blackboard System until December 21, 2023, 11:59pm!

Johannes Scholz, November 20, 2023