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**Assignment 3**

# Harmonisation of spatial data retrieved from the Internet and using them for an Internet map service

## Learning aim

The spatial data is provided through the internet free from various sources. One aim of this exercise is to find such different sources and to learn how to use them. Additional emphasis is laid on the harmonization of spatial data and its presentation on the Internet using map server (ESRI ArcIMS 9.3)

## Sources of Data

The following web site addresses were selected to download spatial data of Switzerland.

| Name | Source | Data type | |
|---|---|---|---|
| Buildings | www.mapcruzin.com | Vector | Zipped |
| Natural features | www.mapcruzin.com | Vector | Zipped |
| Points of interest | www.mapcruzin.com | Vector | Zipped |
| Railway | www.mapcruzin.com | Vector | Zipped |
| Road | www.mapcruzin.com | Vector | Zipped |
| Water bodies | www.mapcruzin.com | Vector | Zipped |
| DEM | www.srtm.csi.cgiar.org | Raster | Zipped |
| Administrative border | www.eca.europa.eu | Vector | Zipped |

Fig1: sources of the spatial data

## Description of the Steps

**Step 1:** The first step was to download the spatial data of Switzerland which were selected as in the above website to present its spatial distribution according to the country border, roads, railway, waterbodies, important buildings, Digital Elevation Models. After downloading the files, the zipped files were unzipped and added to the ArcMap.

**Step 2:** The next step was to match the DEMs and identify the border of the Switzerland according to the administrative boundaries. In order to do this a srtm_39_03 and srtm_38_03 were selected and the clip function was done by extracting through the Mask. ArcToolbox>Spatial analyst tools>Extract>Extract my mask. Fig2 shows the combination of two DEMs together and Fig3 shows the extraction of the exact boundary according to the administrative boundary of Switzerland.

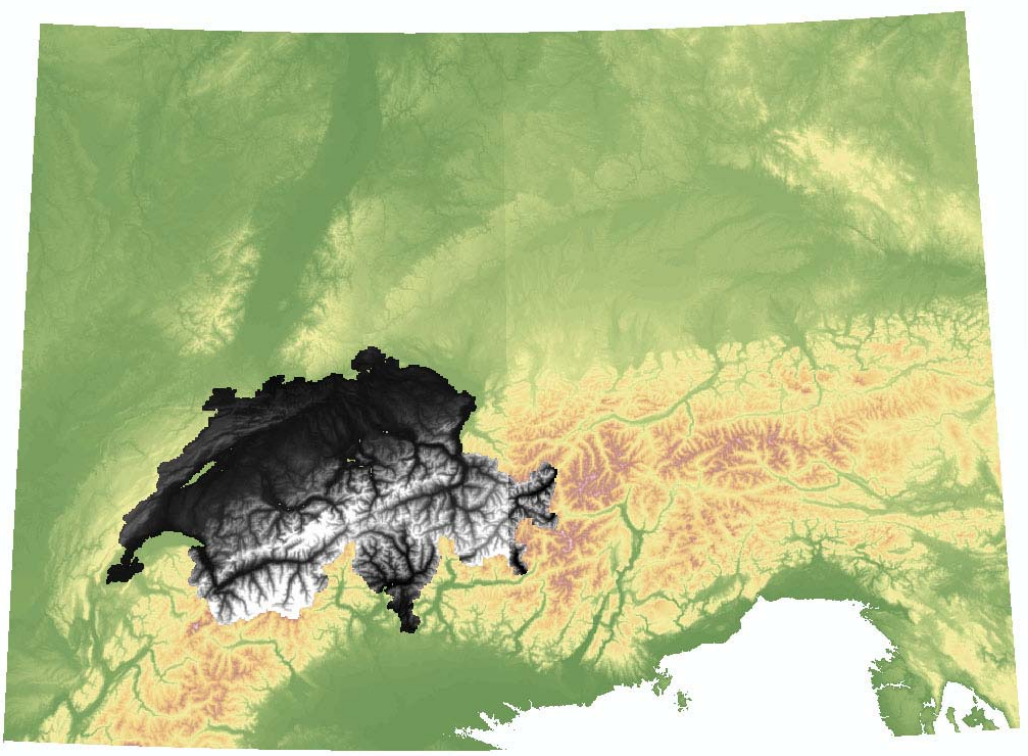

Fig2: The combination of two DEMs

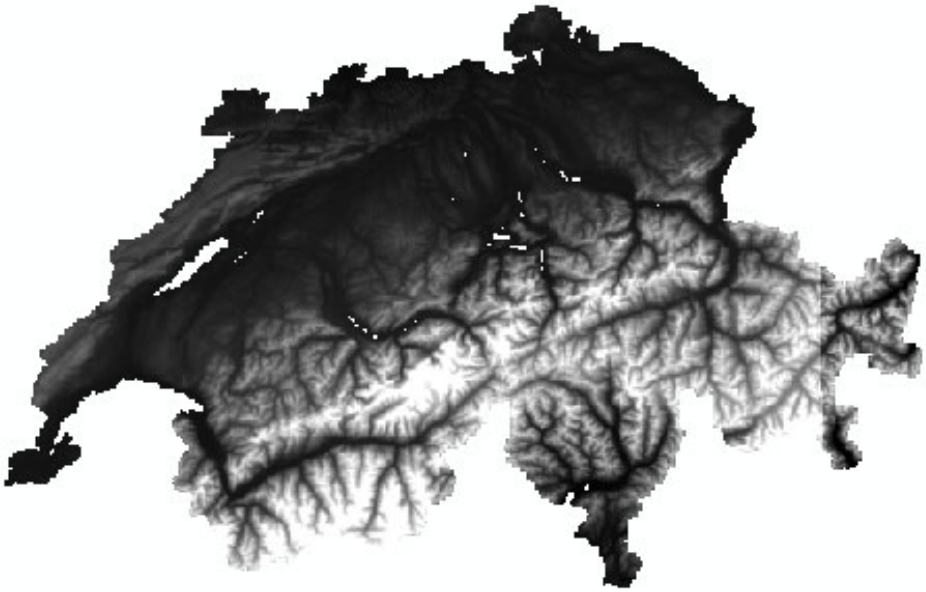

Fig 3: Extraction of the exact boundary

**Step 3:** The next step was to mosaic the two different layers by acquiring one single layer. It represents the homogeneous presentation of two different layers into one single layer. This was done through the Data management tools>Raster>Raster Dataset>Mosaic to new Raster. Fig 4 shows the mosaicking of 2 different Raster set into one layer.

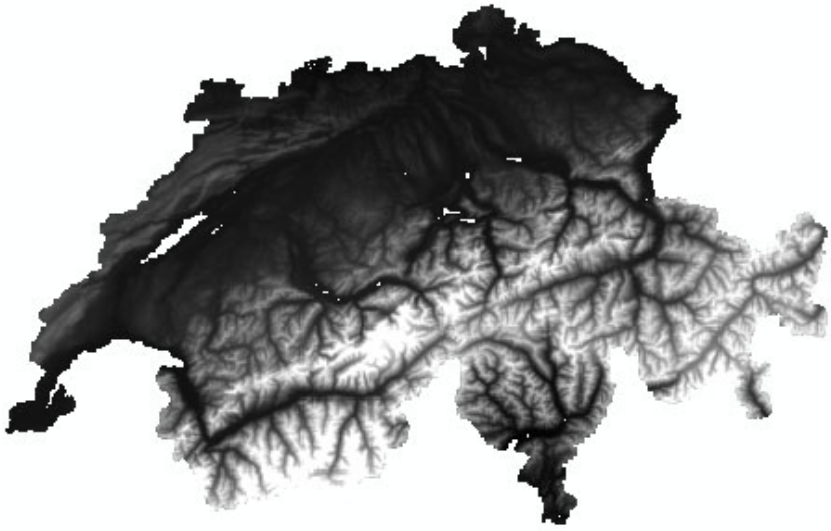

Fig 4: mosaicking of 2 different Raster sets into one new raster layer

**Step 4:** The next step was to generalize the extracted data with the selected of attribute table. Especially the Major roads, Camp site and the universities of Switzerland were selected from the attribute table to represent them with new layer.

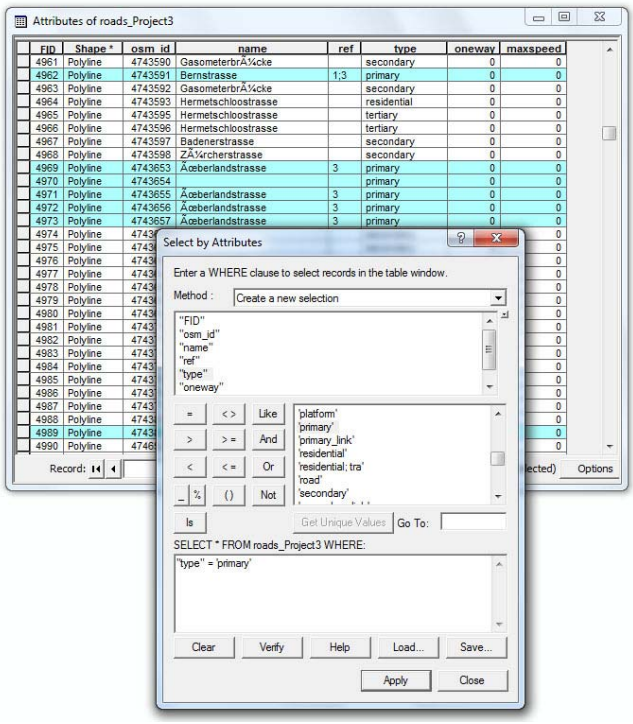


Fig 5: extraction of features by selecting the attributes

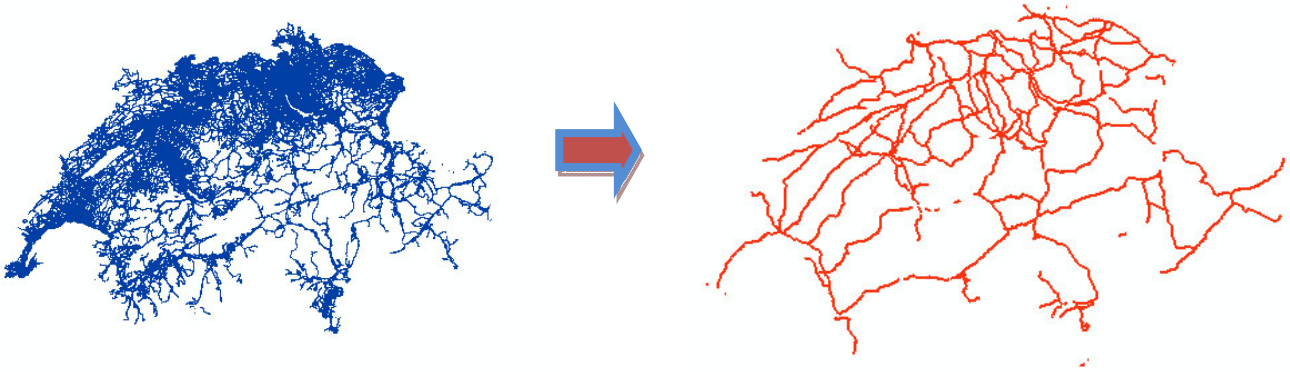

Fig 6: view of before and after the selection of major roads from the attributes

**Step 5:** The next step was to change the projection of all the layers in order to represent them into same projection. This was done through the data management tools>projection and transformations>feature>project for the vector data and data management tools>projection and transformations> raster>define projection for the raster data. The "WGS_1984_UTM_Zone_32N" projection was selected for all of the layers.

**Step 6:** Creation of Hillshade was the next step to get the spatial distribution of the area. It was done through the activation of spatial analyst tool in to menu bar. This was performed through 3d analyst tool>raster surface>Hillsahde.

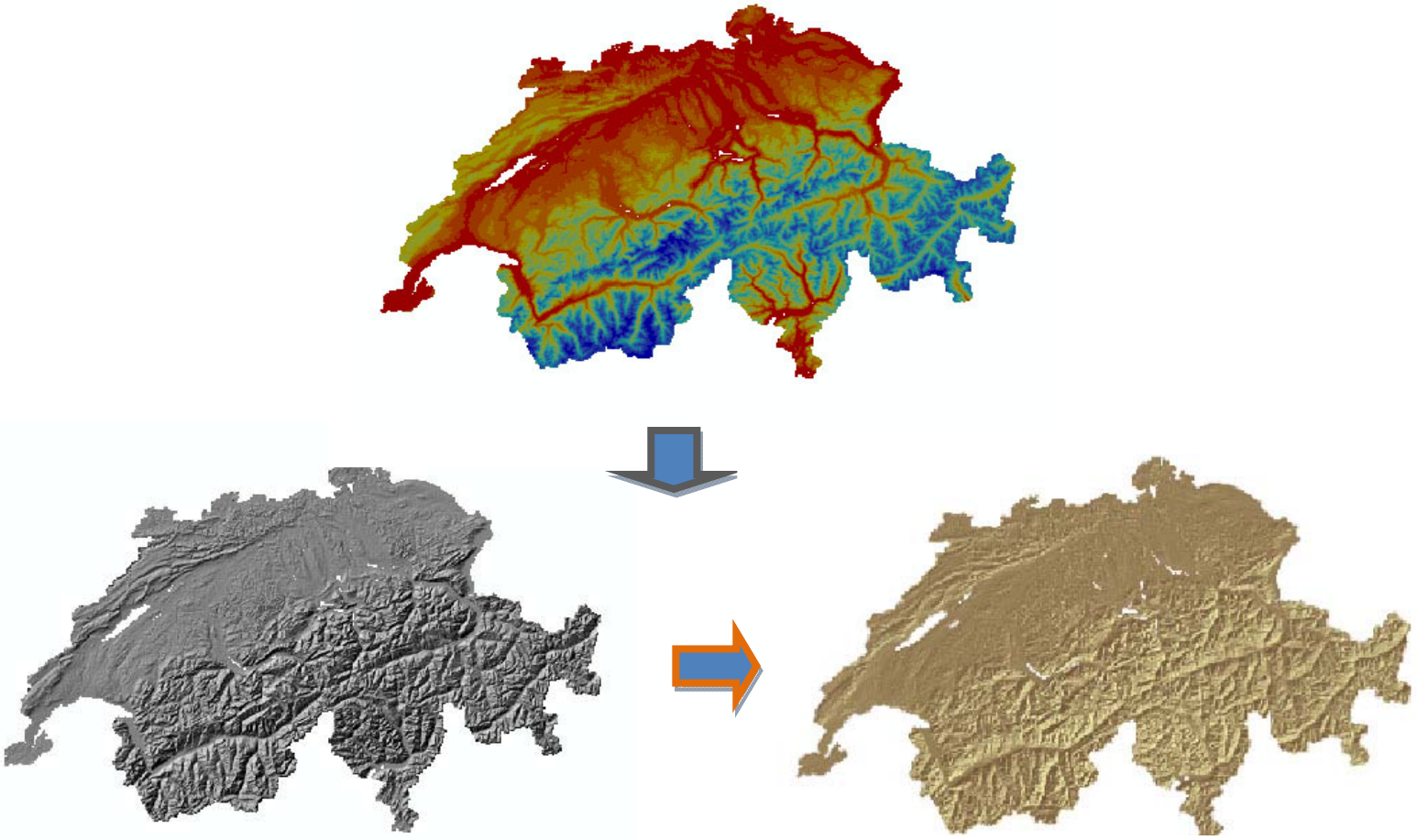

Fig 7: Hillshading of the DEM

**Step 7:** After creating the Hillsahding of the DEM, it was loaded into an empty ArcMap document and exported that as a TIFF file. The checkbox was selected as world file and the resolution was selected as 300 dpi.

**Step 8:** To represent the layers into the ArcIMS as a web based file, the ArcIMS Manager, ArcIMS Author, ArcIMS Designer, ArcIMS Administrator and Webserver G-237v were selected by following the further steps.

**Step 9:** The link of the web server G-237v was opened and two subfolders were created as "AXL" and "Data". All the required Data were copied to "data" folder through the Arc catalog.

**Step 10:** Connection has been made to drive Q for assigning the master_data and R for assigning "master_website".

**Step 11:** The next step was to work with the ArcIMS author, where the layer name, units of measurements were changed and also to setup the symbology of different layers.

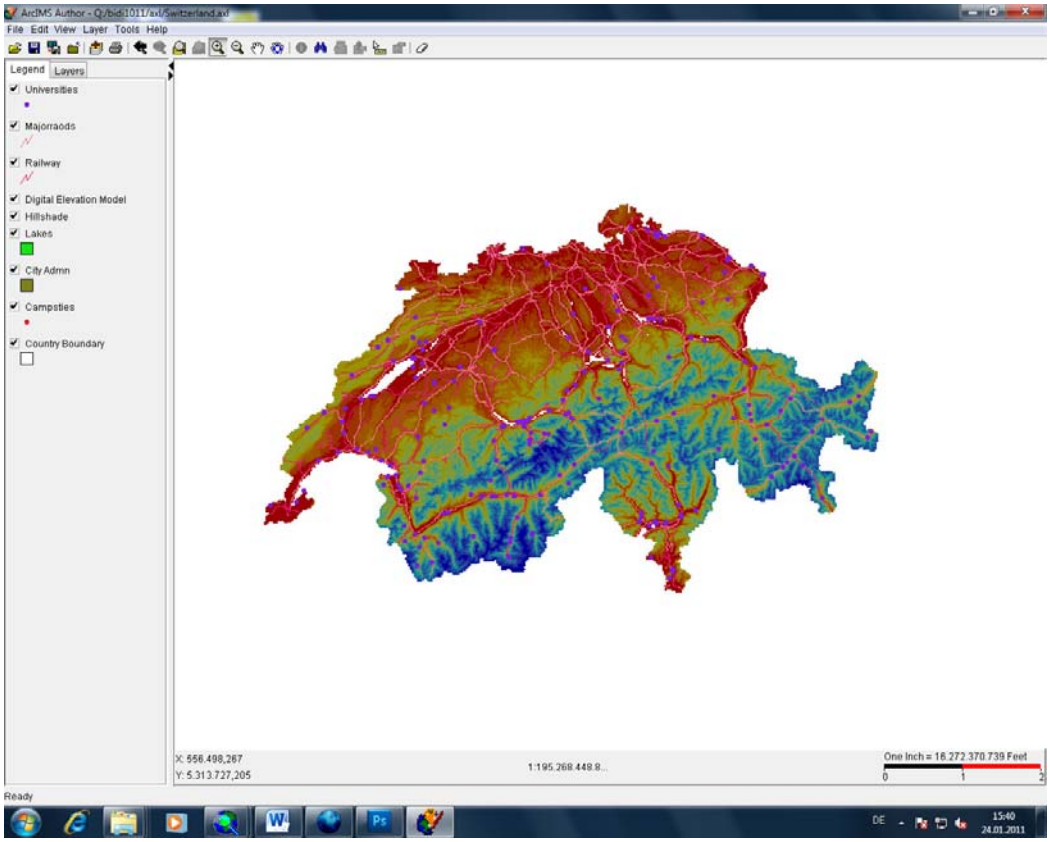


Fig 8: Representation of output through the ArcIMS author

**Step 12:** Opened the AXL file and it was saved as txt file as "Q:\bidi1011\AXL". The file name was selected as Switzerland.axl. After that the axl file was opened through the text editor and the key words "SHAPEWORKSPACE" and "IMAGEWORKSPACE" were changed according to the following

directory = "Q:\group1\data" to directory = "\\G-237v\master_data\bidi1011\data"

**Step 13:** The next step was to work with the ARCIMS Administration by logging the account and password with “admin” and creation of new service by following the following steps.

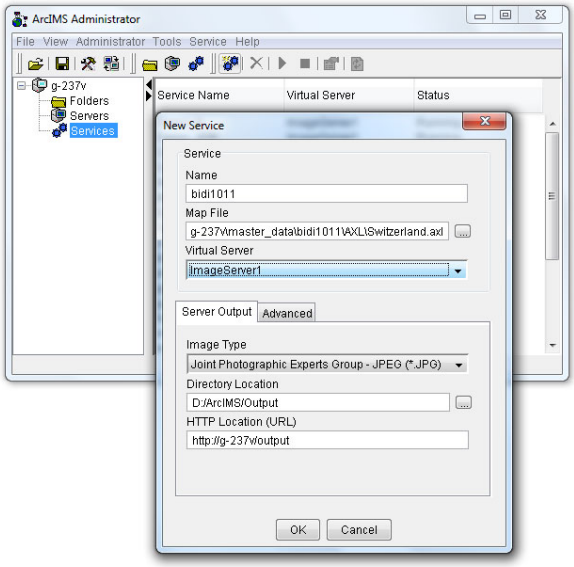


Fig 9: Creation of new service through the ArcIMS Administration

**Step 14:** The next step was to create web site directory for “bidi1011”. The further steps were performed by following the steps from the given handout. Finally the web browser internet explorer was used to represent the output as a web site on “http:\\g-237v\master\bidi1011”. The final output is shown in the fig 10.

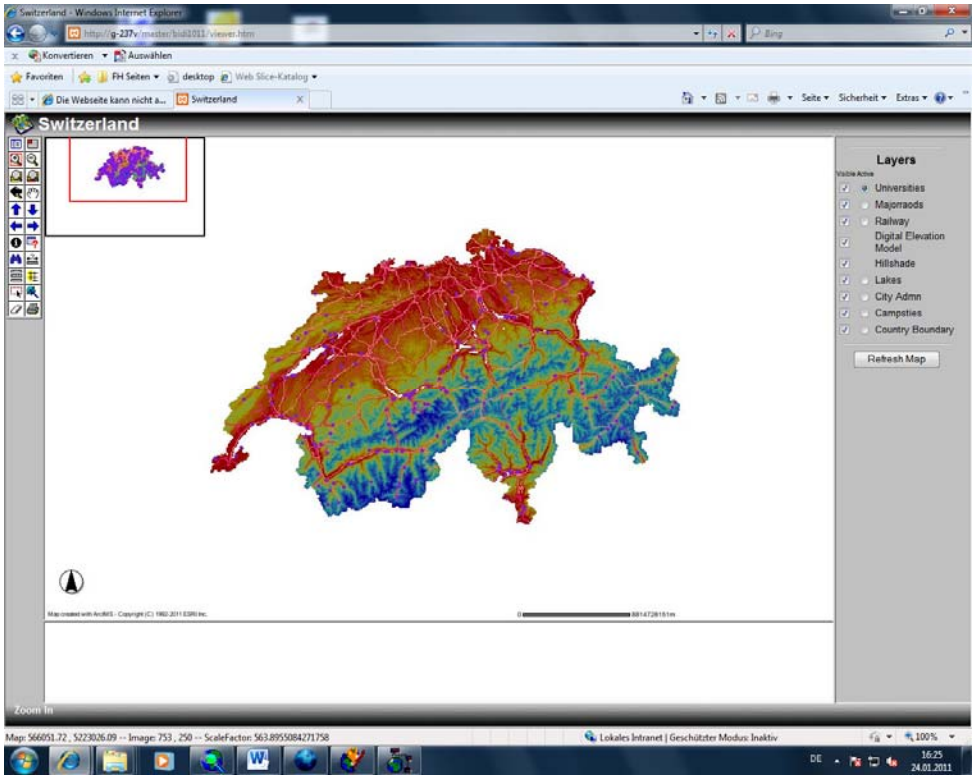


Fig 10. Presentation of Switzerland showing different layers