GIS Assignment 3

Digital elevation models

Values with colour ramp

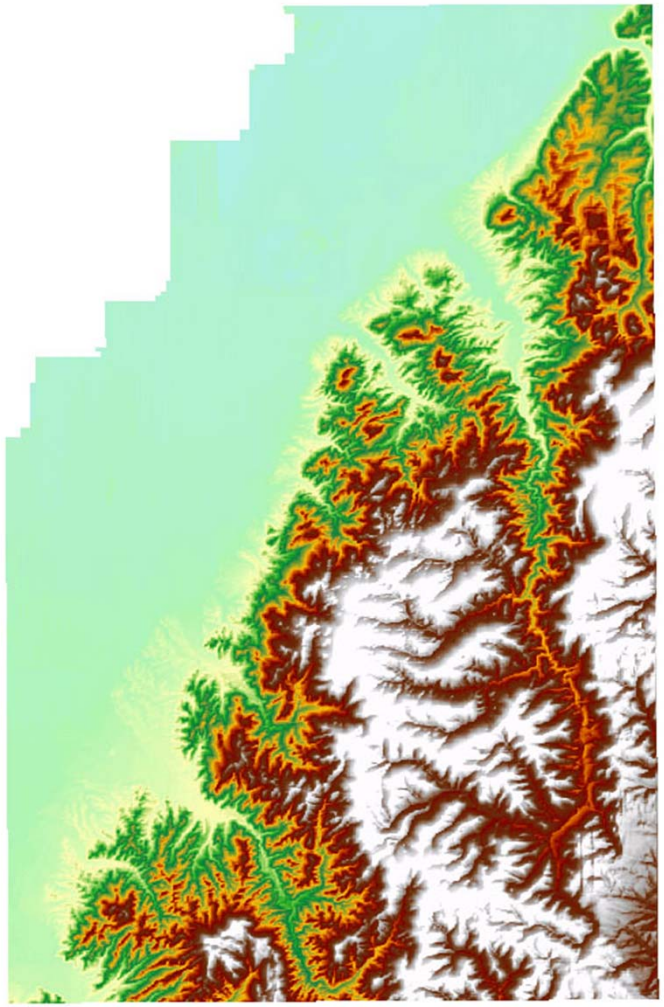

Fig 1 : 2d representation of buehl (resolution: 50m/pixel)

1. The digital Evelvation Model (DEM) for „buehl“ was selected from ArcScene
2. The chage of colour ramp was selected by using layer properties> tools > symbology to represent the maximam visuability of different elevation ranges. A 2d representation of top view was completed at Fig 1.
3. A 3d representation of Fig 1 was developed through the ArcScene as properties> tools > Base Heights > z conversion of 10 for the better visuability of the DEM. This will allow easily to correlate the colour ramp to the variations of the terrain. Fig 2 shows the perspective view of 3d presentation of buehl.
4. The shade effects were selected from the Rendering the Properties tools to visualize most stable variations of the 3d of DEM

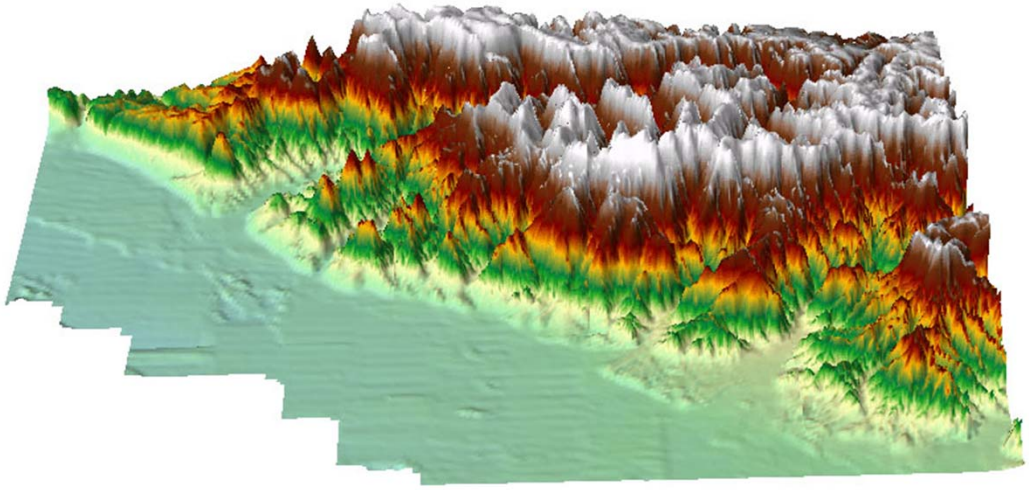

Fig 2 : 3d representation of buehl (resolution: 50m/pixel)

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Hillshading

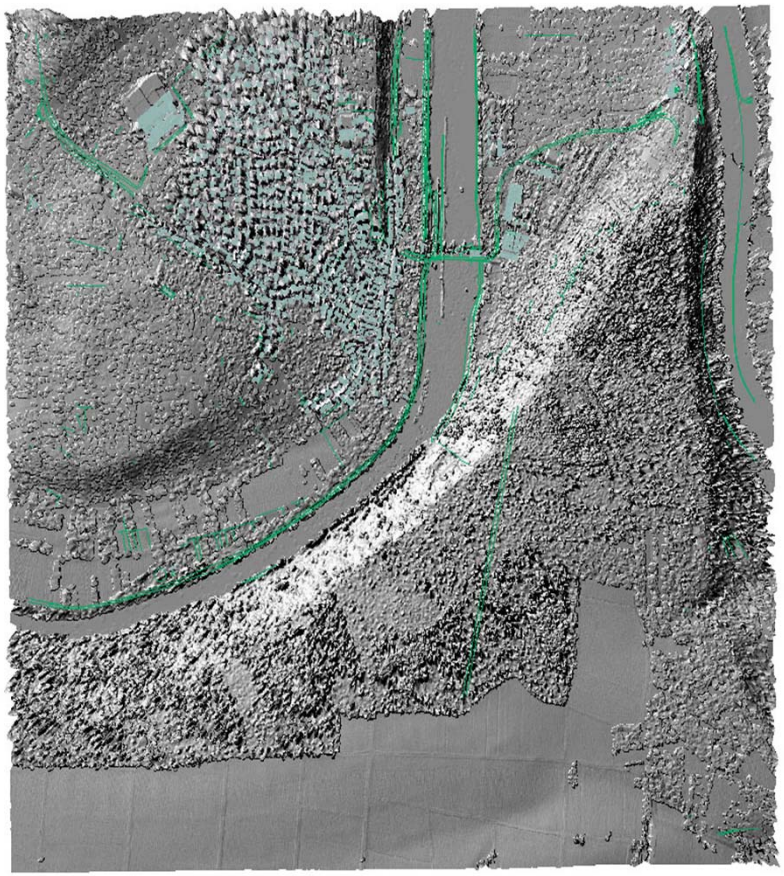

Fig 3 : 3d Top View of Hillshading of Hessigheim (1m/pixel) with additional layers

1. Added Hessigheim in ArcScene so that a 3d modeling approach could be generated with Hillshading.
2. Used the Hillshading tool in the 3d analyst extension to complete the hillshading. Two additional layers of buildings and lines were overlayed together to represent the 3d view of Hillshading in fig 3.
3. The Figure 4 illustrates the 3d perspective view of Hillshading of Hessigheim.

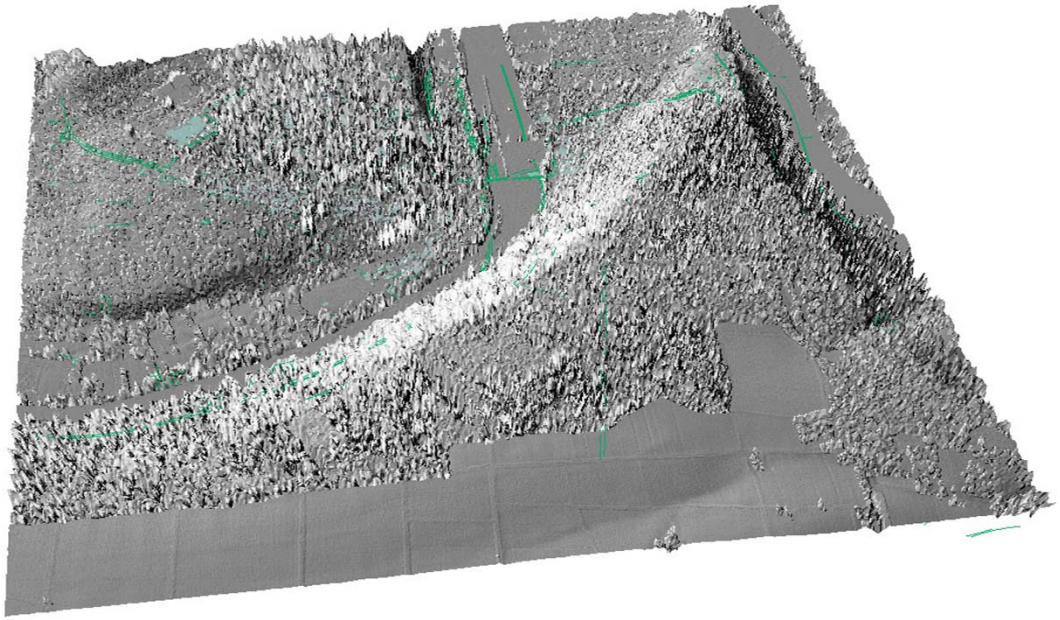

Fig 4 : 3d perspective View of Hillshading of Hessigheim (1m/pixel) with additional layers

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Contour lines

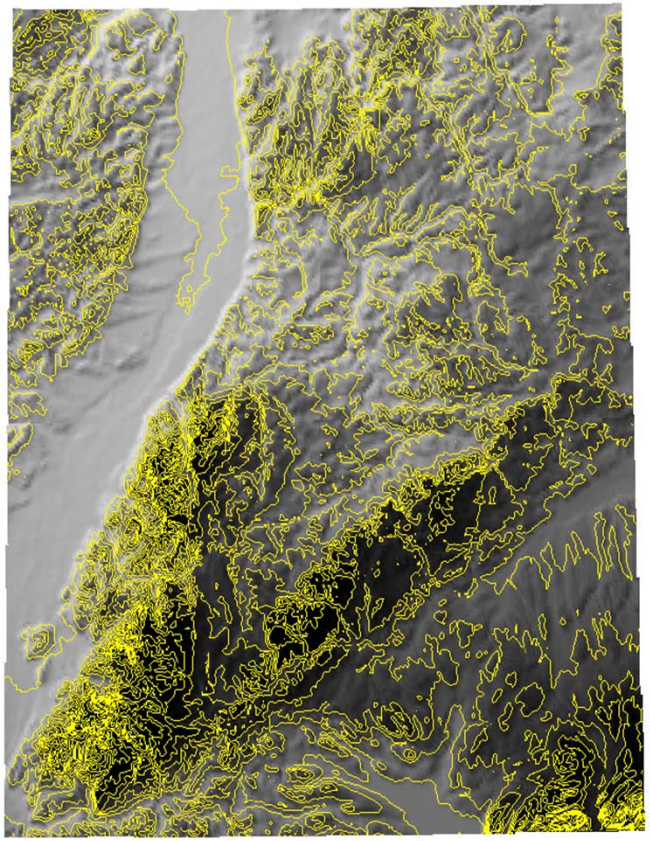

Fig : 5 3d top view of the ba-wue 770m/pixel

1. Added the ba-wue DEM to ArcScene to enable it for the 3d modelling with the contour lines.
2. Created 100 m of contour interval from the 3d analyst extension by using the surface analysis. In oder to better visualization and understanding the elevation, the base contour was set as 0 and the z factor as 1. Figure 5 represents the 3d top view of the ba-wue with different contour lines.
3. Figure 6 shows the 3d representation of ba-wue DEM. The 3d modellign was done by using the Scene Properties wit the vertical exaggeration of 20. So it can show the better visuability of perspective view of the 3d Modelling.

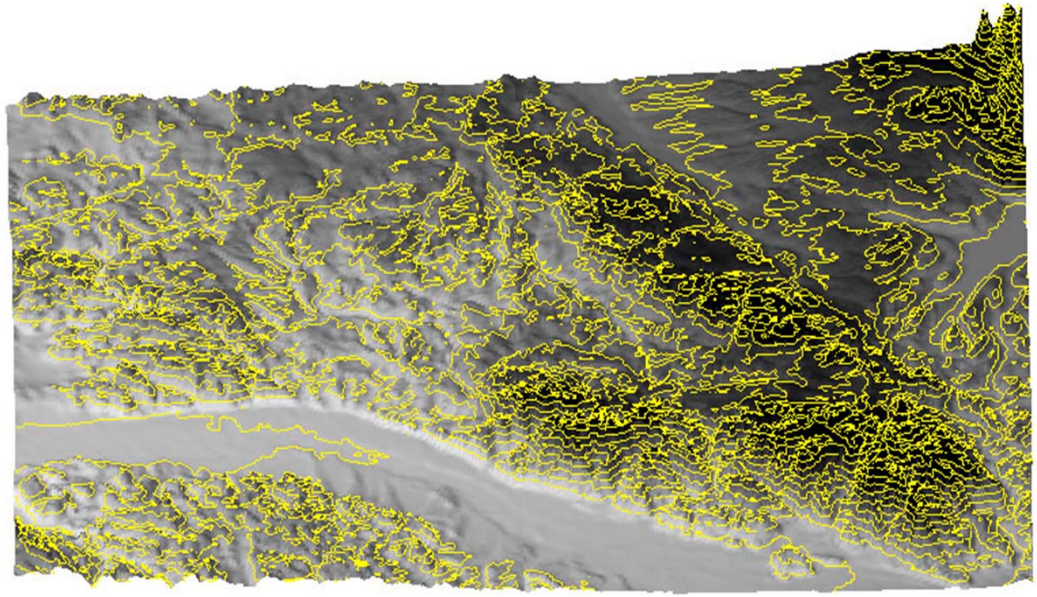

Fig : 6 3d perspective view of the ba-wue 770m/pixel

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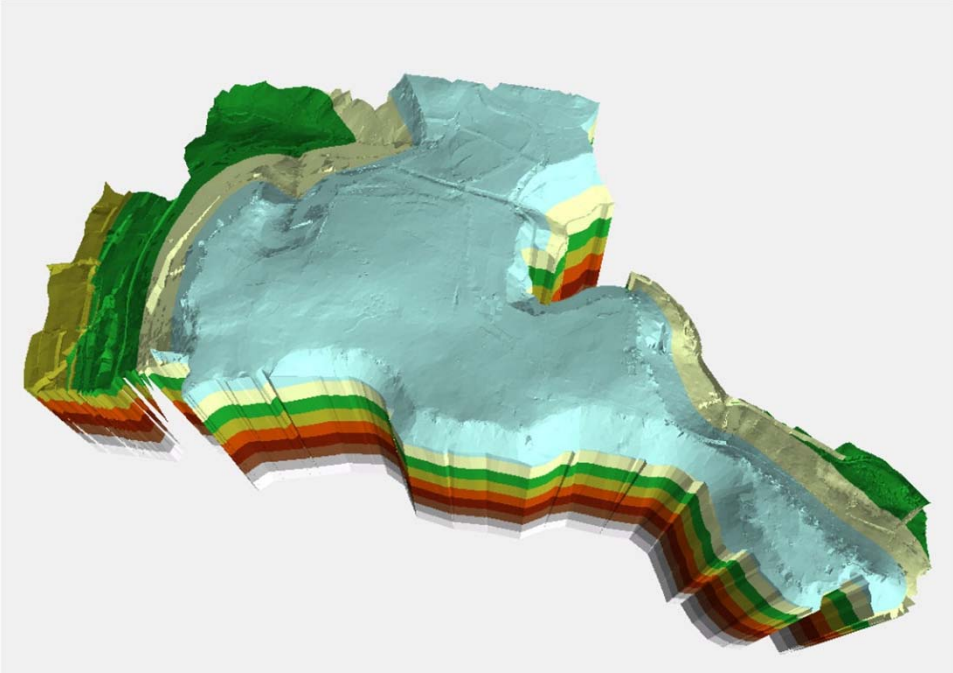

Fig: 7 Devleopment of 3d Triangular Irregular Network (TIN) from Erkenbrechtsweiler (Geodatabase) using „Mass Point“.

Legend

Elevation in Meters

- 661,44 - 744,12
- 578,76 - 661,44
- 496,08 - 578,76
- 413,4 - 496,08
- 330,72 - 413,4
- 248,04 - 330,72
- 165,36 - 248,04
- 82,68 - 165,36
- 0 - 82,68

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Triangular Irregular Network (TIN)

1. Added mass points of the Erkenbrechtsweiler Geodatabase) to ArcScene project to perform a 3d modelling
2. Created a TIN eleveation model from the mass point evelvation data using 3d Analyst.
3. Symbolized the TIN by using a graduated colour ramp for the face elevation
4. In oder to refine the accuracy of the TIN, the break lines
5. were used to the model as hard breaks and also by using the provided clip layer to remove triangels outside of the boundaries of the elevated data.
6. A Legend is added to understand the base heights of the elevations in Fig 7.

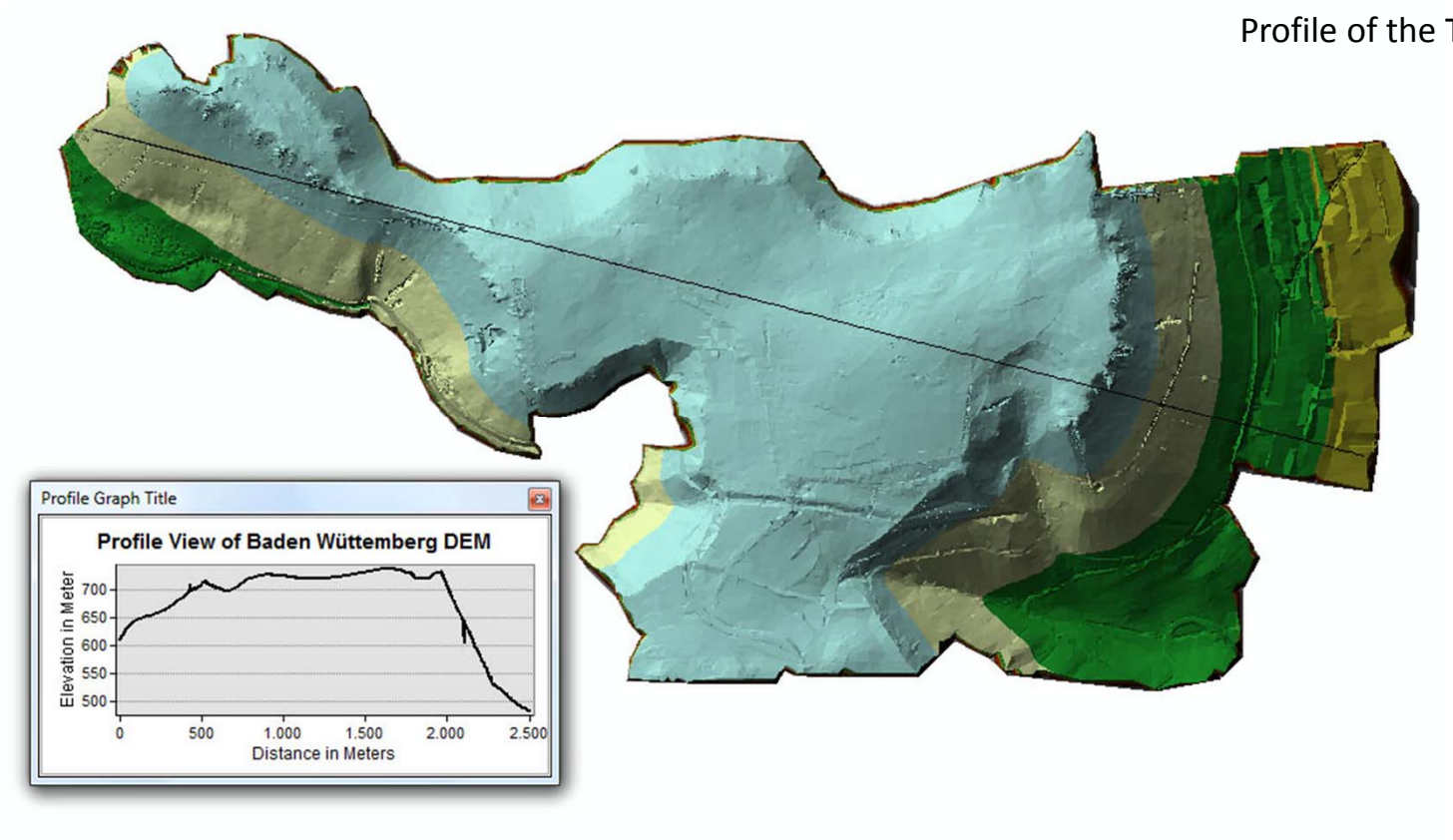

Fig: 7 Devleopment of 3d Triangular Irregular Network (TIN) from Erkenbrechtsweiler (Geodatabase) using „Mass Point“.

1. After the development of the TIN as in Fig 7, the Elevation model was copied in the ArcMap. With the use of 3d analyst tool, „Interpolate Line“ was selecte to draw a staright line covering a wide range of elevations according to the colour ramp.
2. Used „Create Profile Graph“ tool from the 3d Analyst tollbar to create a profile graph of the area covered by the interpolation line. The graph was added in the map layout.
3. With the help of the Profile Graph user can undersatnd the distance and elevation of the terrain.

3d Visualization

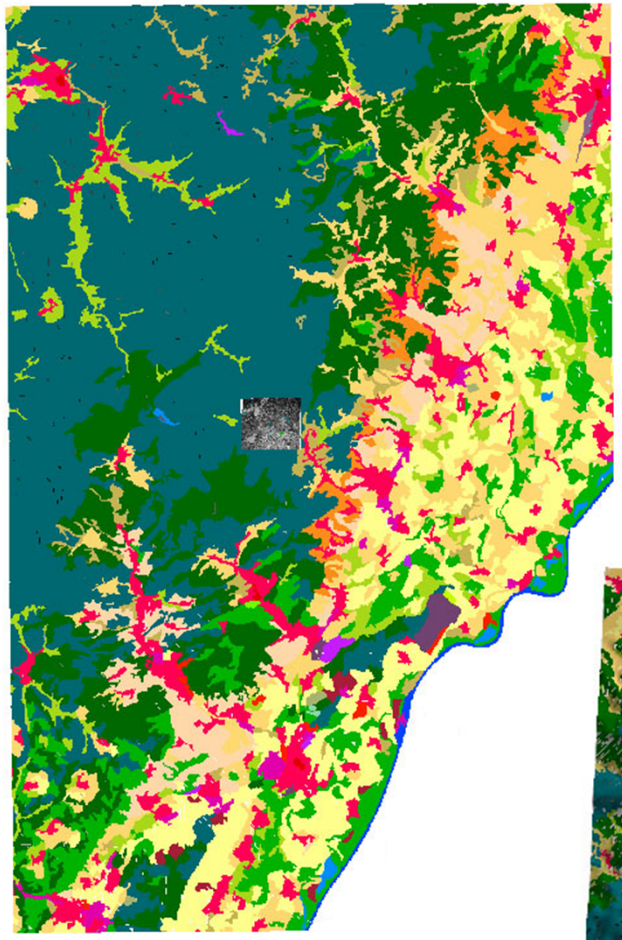

Fig 08. 3d top view of landuse data and rectified aerial photography with buehl DEM

1. Landuse data and rectified aerial photography were overlayed together with the DEM buehl.
2. 3d visulatizations were performed with the layer properties by selecting the base heights
3. With the scene properties the vertical exaggreation was selected at 2 for all the layers.
4. For the rectified aerial photography an offset was made though the base heights tools to visualize it with the 3d view.
5. 3d top view is shown in fig 8 and 3d perspective view is shown in the fig 09.

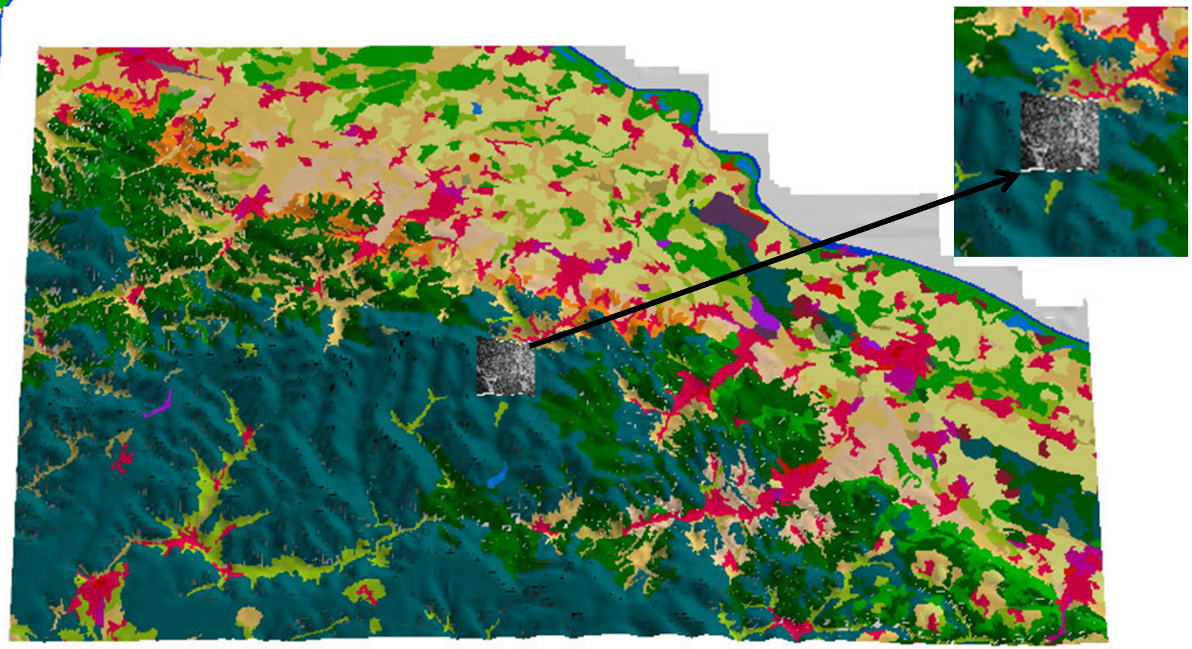

Fig 09. 3d perspective view of landuse data and rectified aerial photography with buehl DEM

Dilip Kumar Biswas