

Wow... That's A Nice Escarpment!

3-D Visualization of the Blue Ridge Escarpment

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What Is The Blue Ridge Escarpment?

The Blue Ridge Escarpment is a rugged landform in the Appalachian Mountain formation that separates the Piedmont Region from the Blue Ridge Mountains. From the base of the Escarpment to the top of the first mountain peaks is an elevation change of about 1000 ft. The area of highest relief occurs in Greenville County. The origin and evolution of this escarpment is still being investigated, but is thought to be the result of rifting and erosion parallel to the escarpment. The drastic change in elevation gives the Blue Ridge Escarpment a rugged and wild beauty, and provides great places for camping, hiking, and seeing incredible views.

Why 3-D?

Since the Blue Ridge Escarpment's formation and evolution is still being debated, viewing it in 3-D can provide a way to study the structure and trends of the Escarpment without having to spend a lot of money on renting airplanes to fly through it. Using 3-D animation can even simulate an airplane fly-through, and if you have aerial photographs to drape over the 3-D image, you have the next best thing to a real airplane flight, without the risk of crashing in the escarpment. 3-D analysis is a very useful tool. You can view the animation at

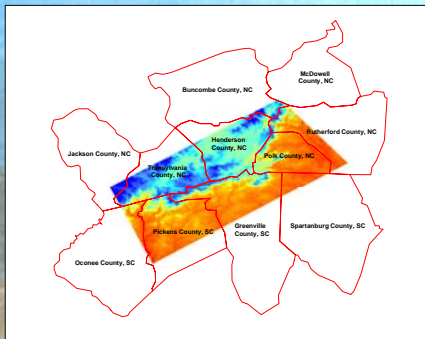
<http://fcweb.furman.edu/~alicia.rowe/GISproject.htm>

Data and Methods

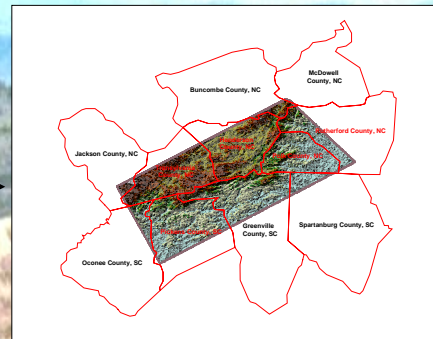
To create a three dimensional model and a three dimensional animation, ArcScene was used, and to retrieve original data and create two dimensional views to show where the Escarpment is in the US, ArcMap was used.

Data Sources:

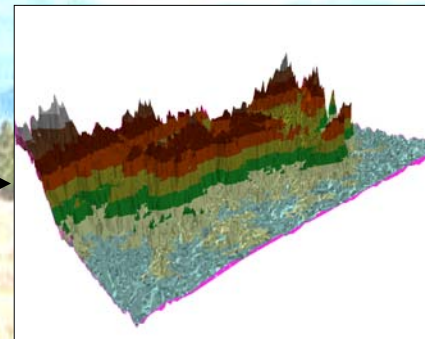
- The DEM was obtained from USGS' NED (National Elevation Dataset) in a grid format.
- The county boundaries were obtained from US Census Data.



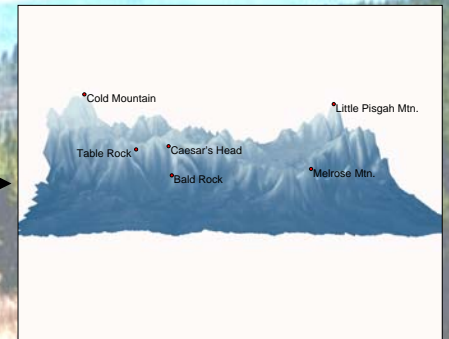
A 30 m resolution DEM (Digital Elevation Model) of approximately 50km x 100km area of the Blue Ridge Escarpment was used to make the 3-D model. For reference purposes, counties of North Carolina and South Carolina that overlapped with this area were used.



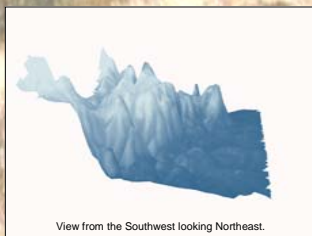
The DEM was then converted into a TIN, (a Triangular Irregular Network). This provided the base elevations that are required for creating a 3-D model.



The TIN and DEM data were brought to ArcScene, where the TIN was converted into a 3-D model and vertical exaggeration was used to emphasize the drastic change in elevation.



The DEM was draped over the TIN by setting the base heights of the DEM to match that of the TIN. This smoothed the sharp peaks of the TIN, causing it to look more like the escarpment as we see it. Some areas of interest are highlighted in the 3-D model above.



View from the Southwest looking Northeast.



View from the Southwestern corner to the Northeastern corner.



View from the Northeast looking Southwest.



View from the Northeast corner to the Southwest corner.

These are different angles of the Blue Ridge Escarpment to give you an idea of what it looks like as a 3-D model.