Enhancement Technology of Terrain Visualization Based on DEM

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Abstract: The earliest methods to express the topography could be reviewed to draw glyph or landscape. The contour map was appeared in 17th century and then the aerial image was made in 1940s. In this stage, analogous method was the main method to reveal the terrain change. With the development of Computer Science, Geographic Information Science (GIS) and Digital Elevation Model (DEM), digital terrain visualization technology was arisen at the historic moment.

The terrain visualization is an important component for terrain visualization expression，virtual geographic environments, virtual reality and so on. This poster focused on how to take the advantages of DEM and Digital Terrain Analysis (DTA) to enhance terrain visualization in hill and plain area. In fact, DEM data contained rich information about terrain characteristic and terrain structure. It could reflect the basic terrain feature from different sides. Terrain visualization map was shown through different enhancement technology, which including the directly enhanced elevation, the three-dimensional shading, the details of carving techniques. Various combinations with different terrain parameters, such as slope, aspect and curvature, were also used to enhance the expression effect based on DEM in this poster. With the enhanced terrain visualization expression effects, it can provide users with more intuitive and accurate cognitive terrain.

Keywords: DEM; visualization; enhancement