

TRICUT: A PROGRAM TO CLIP HORIZONS AND FAULTS AGAINST TERRAIN MODELS - USING VTK, RAPID AND TRIANGLE LIBRARIES

1LINDENBECK, CH., 2EBERT, H. D., 1ULMER, H., 2PALLOZZI LAVORANTE, L. and 1PFLUG, R. 1Geological Institute, Albertstr. 23-B, D-79104 Freiburg, Germany; 2Instituto de Geociências, UNESP, Rio Claro-SP, Brazil

An efficient technique is implemented to cut polygonal meshes as a step of the geometric modeling of geological structures. In a boundary represented model of outcropping strata or faulted horizons the polygonal meshes intersect each other. TRICUT determines the line of intersection between the outcropping structure and the landsurface. The area of contact is retriangulated by inserting all points along the intersection line. Along this line the horizon or fault mesh is dissected in two or more parts, which can be interactively selected and removed. A new visualization technique is developed: The geological structures are clipped against a terrain vertically displaced before determination of the intersection lines. After the removal of overlapping parts the landsurface is shifted back to its original position. The perspective visualization of the clipped structures sticking through the surface enhance the interpretation of the geological setting. Examples from the Swiss Jura-mountains and from the Precambrian of SE-Brazil are shown. The program uses the RAPID Library for efficient collision detection and the TRIANGLE library to retriangulate all areas of contact between the surfaces. It uses the Visualization Toolkit (VTK) and runs on nearly every Unix-based platform and PCs providing (Mesa) OpenGL graphic capabilities.