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From Digital Elevation Model To Complete 3D Block

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The quality of the digital elevation model and the development of the GIS allow now the geologist to incorporate these data in the 3D geological block construction. Geological map and field data, such as dip values for faults and horizons may be now accurately incorporate on a 3D model. We have developed original tools to take into account such a data as well as to correct the values of incoherencies induced by the discrete representation of the DEM. Based on field examples in the Middle east and Sub Andean zone will described how to use such a surface information may be used to build accurate 3D block in remote area where the seismic data are still scarce. DEM are now usually rather precise, it means that the number of points overpath easily 10 x 106 points. Our developments have included specific graphic tools to speed the display and the access to the values when using such a data in the frame of a 3D geomodeler. These tools are based on real time adaptive remeshing. Adequate filters allow us to define automatically the geometry of the outcropping faults and piece of horizons by incorporating ?a priori? geological knowledge in the algorithms. These ?a priori? are based on dips, dip versus depth and relationship between the top and the bottom of competent geological layers