

THREE DIFFERENT CENOZOIC FAULTING STYLES IN MEXICO

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Four types of fault patterns are formed in crustal conditions, each type can be identified using geometrical characteristics as follows: 1. Coulomb patterns produce two-dimensional non-rotational strain and consist of two sets of faults in conjugate arrangement. 2. Isolated-fault patterns formed by sliding along preexisting planes. These patterns can produce two- or three-dimensional rotational strain. They can be recognized because there are no slickenlines parallel to fault intersections. 3. Orthorhombic four-fault patterns produce three-dimensional non-rotational strain. They consist of four sets of faults with orthorhombic symmetry and form rhombic arrangements in map view. 4. Complex fault patterns produce two-dimensional or three-dimensional, rotational or non-rotational strain and have no restrictions in either, the number of fault sets or symmetry. These patterns can be recognized because there are slickenlines parallel to the fault intersections. We documented the type 1 pattern in the Sierra Madre Occidental where a horst and graben system was formed. The type 3 was documented in the Mesa Central, in this case deformation produced a polygonal basins system. The type 4 was observed in many areas as meso-scale faults, we present two cases of southern Mexico. In all the cases the age of faulting is Cenozoic and the geometrical relationships predicted by theoretical models show good agreement with field observations.