Coulomb stress transfer preliminary results

Rieti BASIN

Livio et al. (Submitted to NHESS)

«Paleoseismic history of the intermountain Rieti Basin (Central Apennines, Italy)»

Model Building

- Simplified fault traces
- Extended down to 10 km with a planar geometry
- Faults' attitude measured at surface.
- Max displacement constrained through paleoseismology and W&C94 empirical regression (i.e., 1 m for a Mw 6.6 eq).
- CSS is calculated by assuming a pure dip slip normal faulting on the northern and southern border fault.

Slip on seismogenic fault:
Max 1 m; tapering laterally.

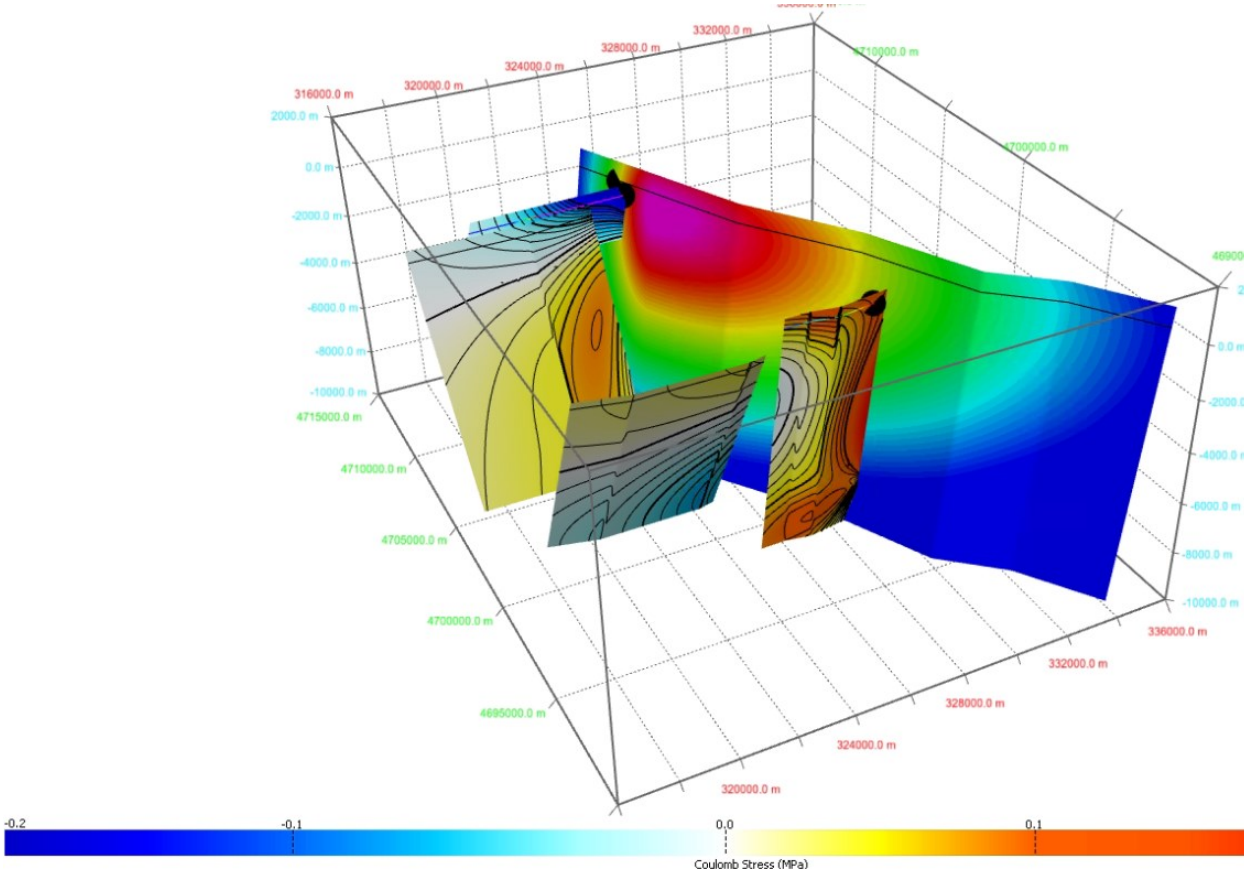
For the MODEL 1 measured through paleoseismology (event D).

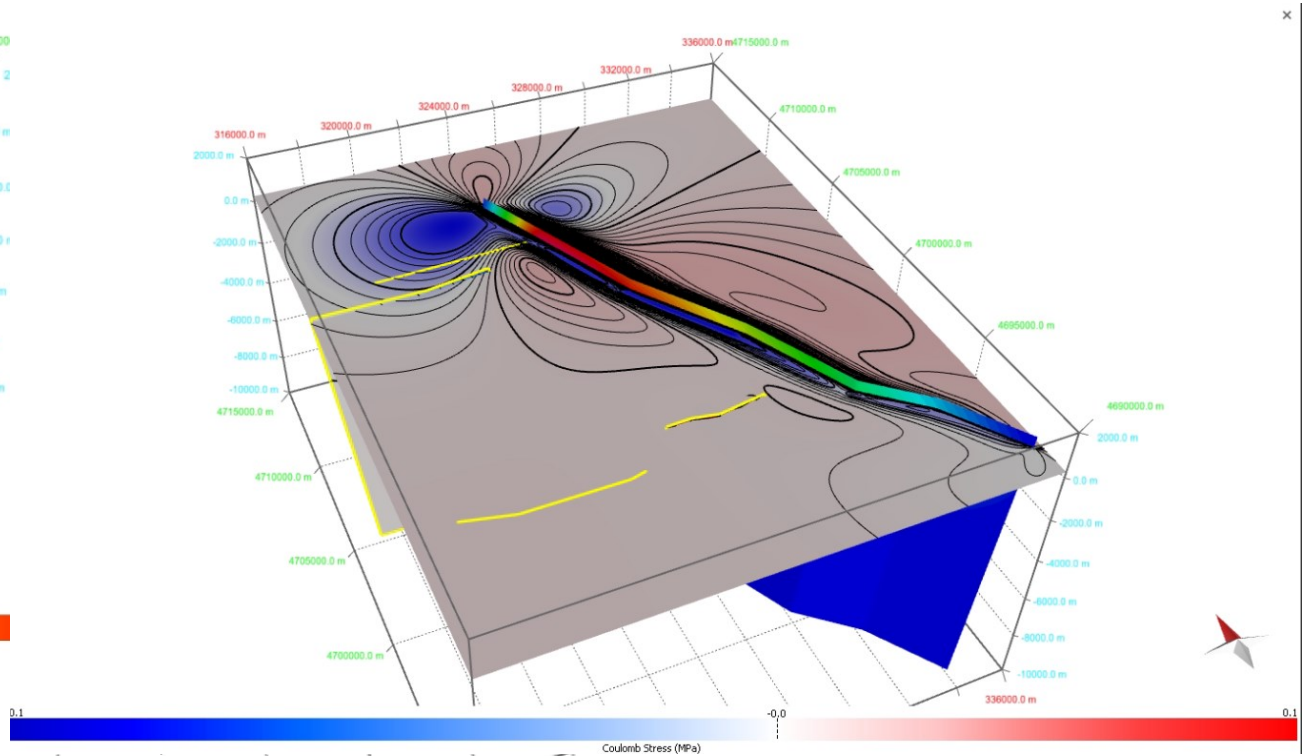
Mechanical parameters:
Poisson's Ratio: : 0.25
Young's Modulus: : 27000
Apparent Friction: : 0.4

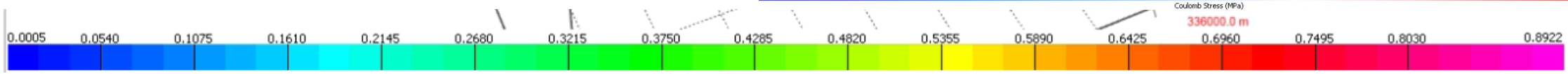
Free surface at zero elevation reference surface (no topography considered)

MODEL 1: Max displacement to the north

Southern border faults are mostly loaded (in EVENT D, those moved together with the main fault).

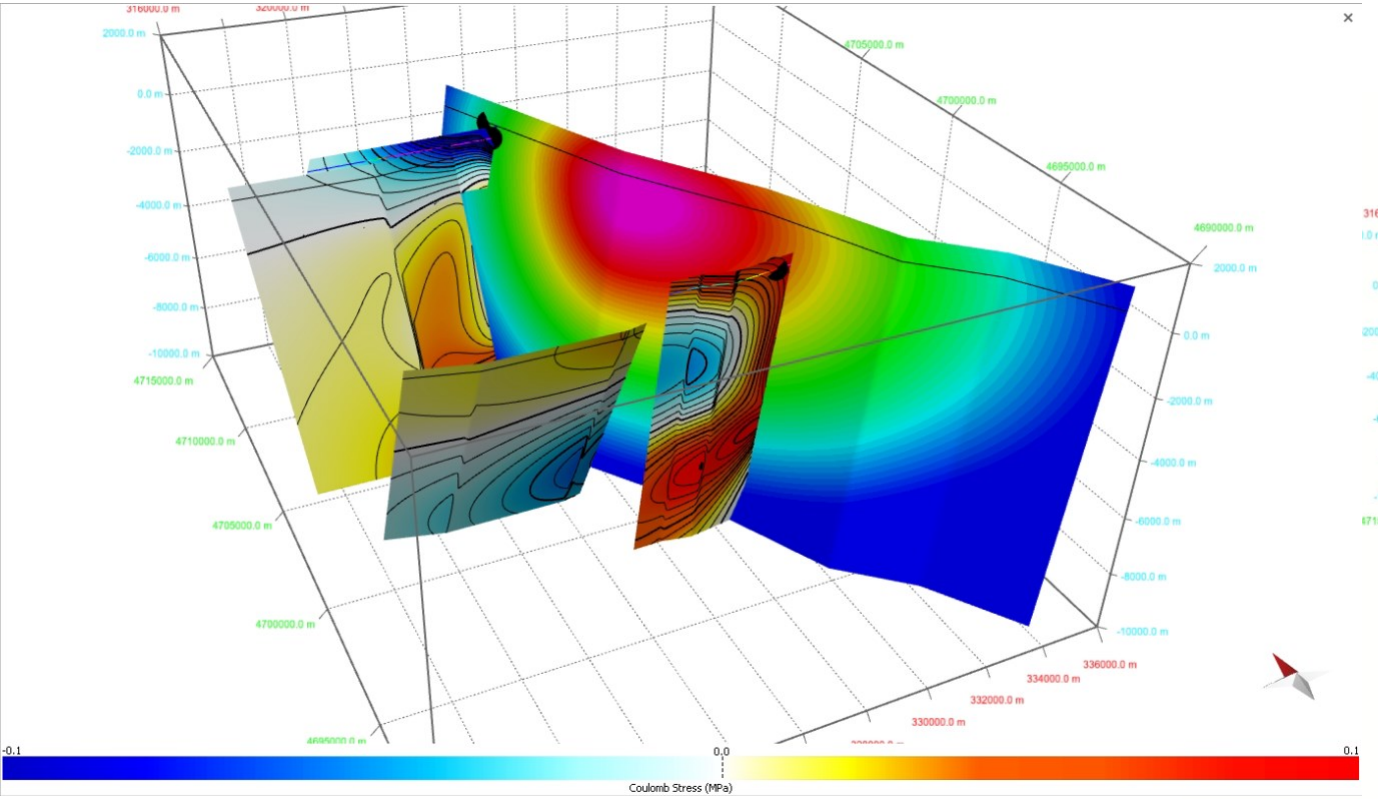


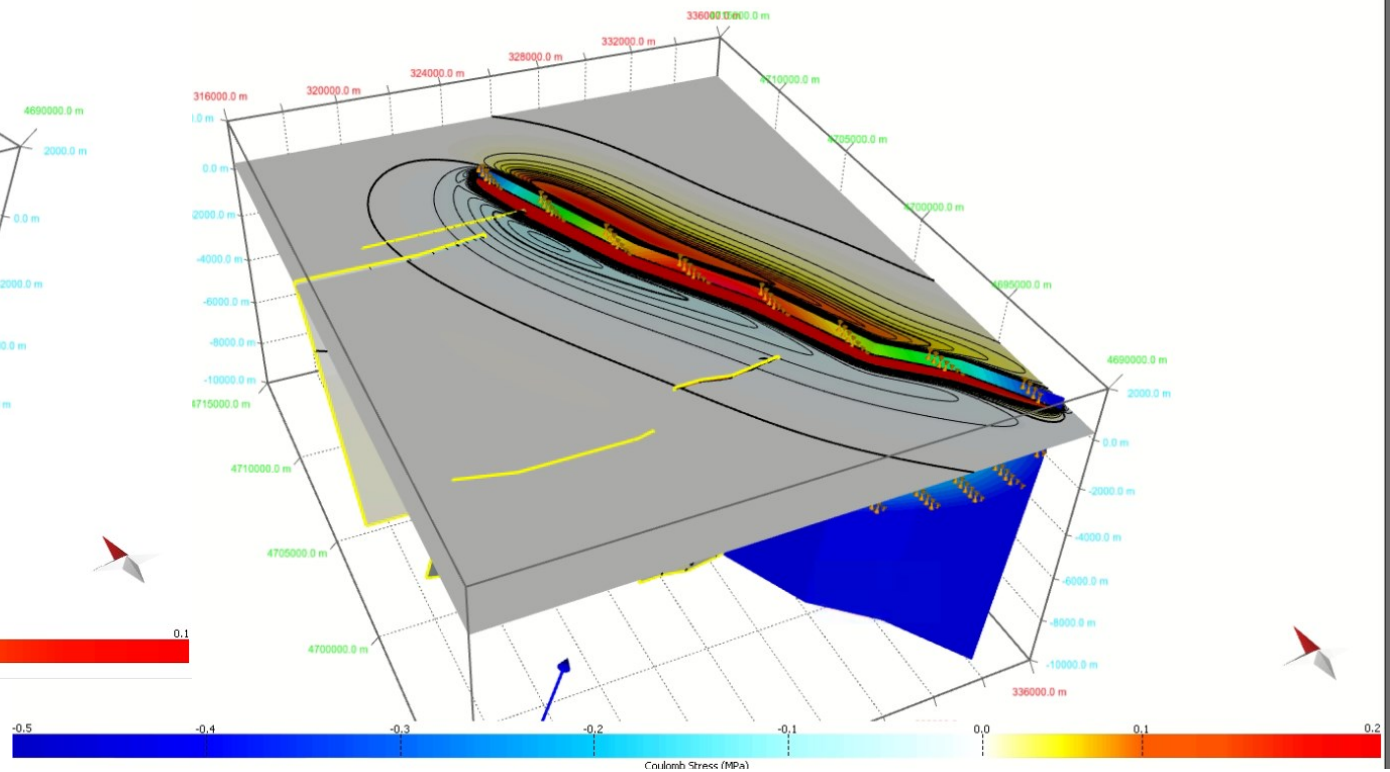




MODEL 2: Max displacement at fault center

The southern border faults are positively loaded at shallow depths.
Northern border faults are not loaded.





MODEL 3: Max displacement to the south

Northern border faults are slighlty loaded and the eastern segment of the southern faults at depths > 2 km