

LAGRANGIAN APPROACH FOR THE NUMERICAL SIMULATION OF FAULTS AND EARTH FISSURES

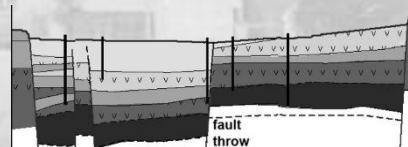
Andrea Franceschini

PROBLEMS:

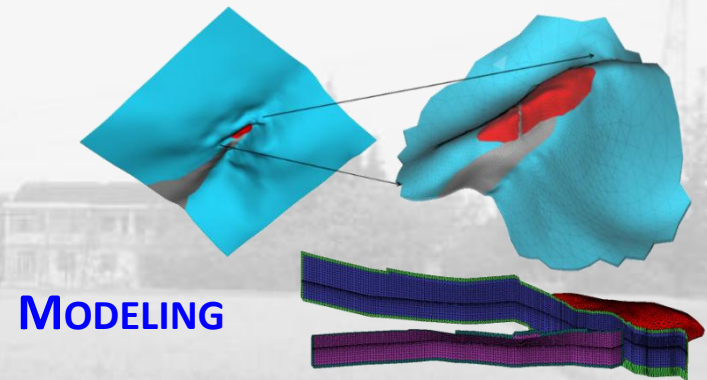
- induced seismicity
- fracking technology
- CO₂ storing
- earth fissures



Earth fissure generated by water extraction in Mexico City

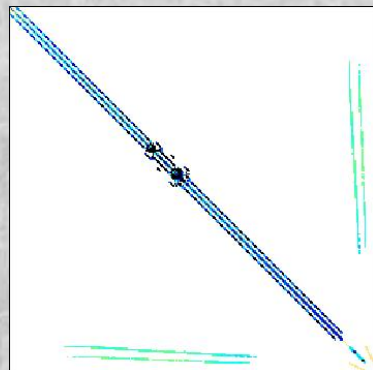


Reactivation of pre-existing deep faults



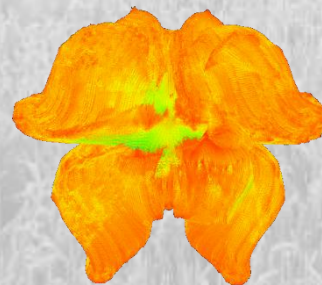
MODELING

3D mesh, with reservoir highlighted in red and fault discretization



Matrix generated in a geomechanical problem

LINEAR ALGEBRA FOR NUMERICAL SOLUTION

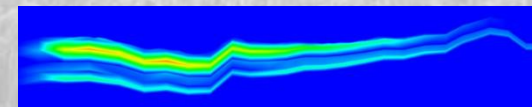


Graph representation of a flux problem

PHYSICAL RESULT



Earth fissure generation due to water extraction



Fault reactivation after reservoir exploitation