

09.15: UT GeoFluids 2020 Research Plan

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ABSTRACT

Over 10 years, the UT GeoFluids Industrial Associates Program will study the state and evolution of pressure, stress, deformation and fluid flow through experiments, theoretical analysis, and field study. The Institute for Geophysics (UTIG) at the Jackson School of Geosciences will partner with the Dept. of Civil and Environmental Engineering at Tufts University. The cost will be \$50,000 and will increment at 2%/yr.

We aim to develop a unified approach that incorporates stress dependency, creep, mineralogical transformation, and loading path to illuminate the state and evolution of pressure and stress in basins (Figure 1). We will:

- Develop pore pressure and fracture gradient workflows
- Implement stress-dependency and anisotropy in poromechanical models
- Develop synthetic seismic of poromechanical models.
- Study material behavior under geologic stress paths
- Examine creep in mudstones at geologic scales
- Compare resedimented with intact material behavior
- Apply and test our approaches to field problems
- Incorporate our findings in easy to use workflows and online software.

Overall, our approach will result in two- and three-dimensional whole earth models that improve well design, real-time drilling, borehole stability, and reservoir simulation.

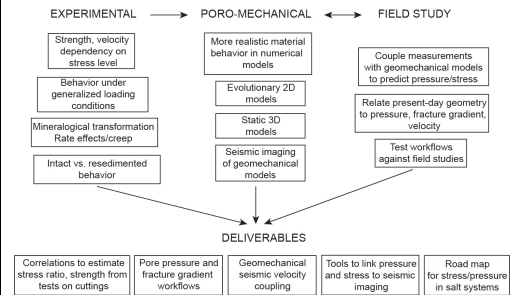


Figure 1: Interdependence of experimental, poromechanical, and field study variables.

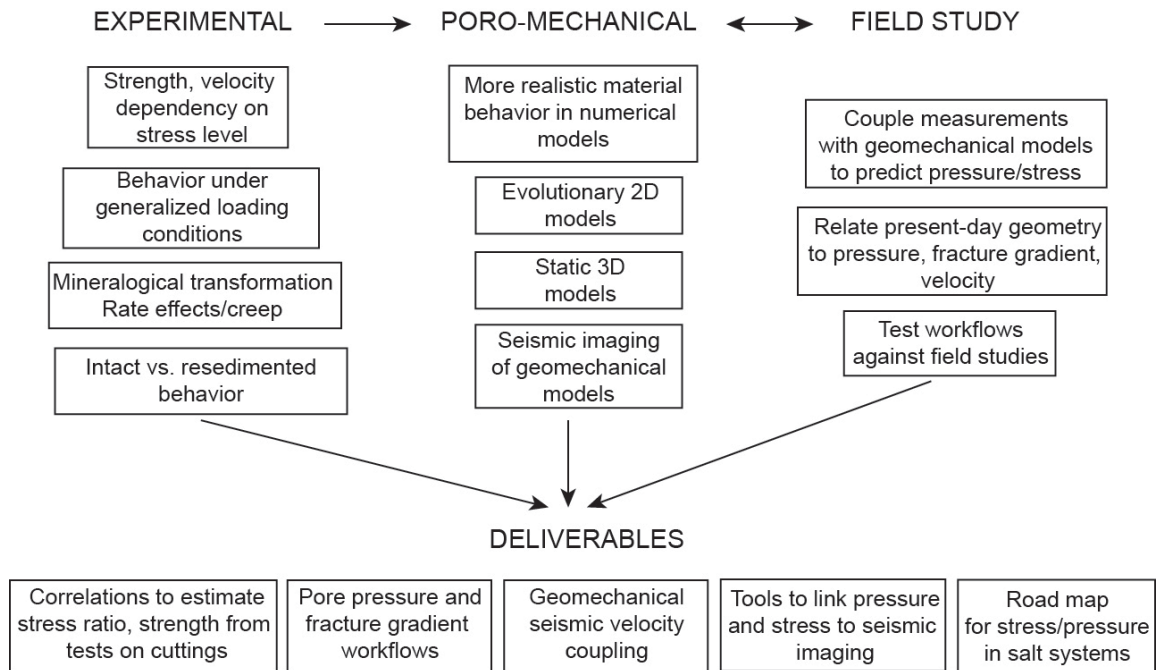


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