We study the state and evolution of pressure, stress, deformation, and fluid migration through experiments, models, and field study. We are dedicated to producing innovative concepts that couple geology and fluid flow.

1. Experimental: Analyze fabric, acoustic, electrical, and material properties of mudrocks: 0.1-100 MPa.
2. Modeling: Develop and apply coupled models to link realistic rheologies, deformation, stress (shear & normal), and pore pressure.
3. Field Study: Analyze pore pressure, stress, deformation in thrust belts and in the sub-salt.

Website: http://www.udc.ig.utexas.edu/geofluids/
Contacts: pflemings@jsg.utexas.edu, john.germaine@tufts.edu, mariakat@mail.utexas.edu

Annual Consortium Meeting

**Deliverables:**
- Online presentations
- Online database of experimental program
- Publications
- Online software
- Spreadsheets, handbooks

![2019 Consortium Meeting](image)
65 attendees representing 10 different companies

![Transferring technology](image)
Transferring technology at the annual meeting and workshop

Geomechanical Modeling

Stress and pressure near faults

![Propagation time is 4s.](image)
Seismic imaging of stress and pressure

Field Studies

Pressure prediction in unconventional basins

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Clay</th>
<th>LIME</th>
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<tbody>
<tr>
<td>0-1,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,000-2,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,000-3,000</td>
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</tbody>
</table>

![Drilling window](image)
Pressure and stress prediction at Mad Dog using FES method and stress-dependency

![Experimental](image)
Intact vs. reseatediment behavior

**UT GeoFluids: A team effort of UT Geoscientists and Tufts Geotechnical Engineers**

**GeoFluids Co-Directors**

Peter Flemings
Professor
Jackson School of Geosciences
The University of Texas at Austin

Jack Germaine
Research Professor
Department of Civil and Environmental Engineering
Tufts University

3 Research Scientists
9 Graduate Students
2 Collaborating Faculty
2 Staff/Technical Support

Pressure and stress prediction at Mad Dog using FES method and stress-dependency

Drilling window

-\( s_{v'\text{cl}} \) (ppg)

| 2 | 2.75 | 3.5 |

-\( b_1 = 0.90 \)
-\( b_1 = 0.65 \)
-\( b_1 = 0.43 \)

<table>
<thead>
<tr>
<th>Overburden</th>
<th>Interpreted pressure</th>
<th>B=0.90</th>
<th>B=0.65</th>
<th>B=0.43</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrostatic</td>
<td></td>
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</tbody>
</table>

Lithology- and stress-dependent fracture gradient

Equivalent Mud Weight Below Mudline (ppg)