ENERGY GEOTECHNOLOGY VERTICALLY-INTEGRATED LABORATORY

TEAM TITLE: Energy Geotechnology Vertically-Integrated Laboratory (VIL)

GOALS: To predict soil & rock THCM behavior during heat and fluid injection and extraction, design new geomaterials to optimize the fuel cycle, and recommend strategies for resource and waste management. To build demonstration experimental set ups, to develop graphical media and to archive simulations ready for use in soil mechanics undergraduate course and geomechanics graduate courses.

TECHNOLOGIES: Interpretation and design of rock mechanics tests, microscopic observations, image analysis, simulation of granular assemblies, Finite Element modeling, programming, web page development.

RESEARCH ISSUES:
What are the scales and processes governing soil and rock behavior? How much energy does it take to produce energy? Is hydraulic fracturing sustainable? How to ensure long-term reliability of geological storage facilities? What are our energy resources for 2050?

FACULTY ADVISOR: Chloé Arson (CEE).

PROJECT PARTNERS & SPONSORS: Offices of the Executive Vice President for Research and the Provost – Georgia Tech Fund for Innovation in Research and Education (GT-FIRE); Georgia Department of Transportation (G-DOT); ConocoPhillips company, Houston, Texas; Lawrence Livermore National Laboratory, Livermore, California; Nuclear Regulatory Commision (NRC, pending); National Science Foundation (NSF, pending).

DESIZED DISCIPLINES & PREPARATION:
EE, CmpE, CS - Background/interest in database development, web information dissemination and programming (MATLAB, Fortran, C++)
ME/CEE: background in solid mechanics required; geology, mechanics of materials and dynamics recommended

CONTACT: Dr. C. Arson, 404-385-0143, chloe.arson@ce.gatech.edu