SCITS
Stanford Center for Induced and Triggered Seismicity

Introduction
Mark Zoback SCITS, Co-Director
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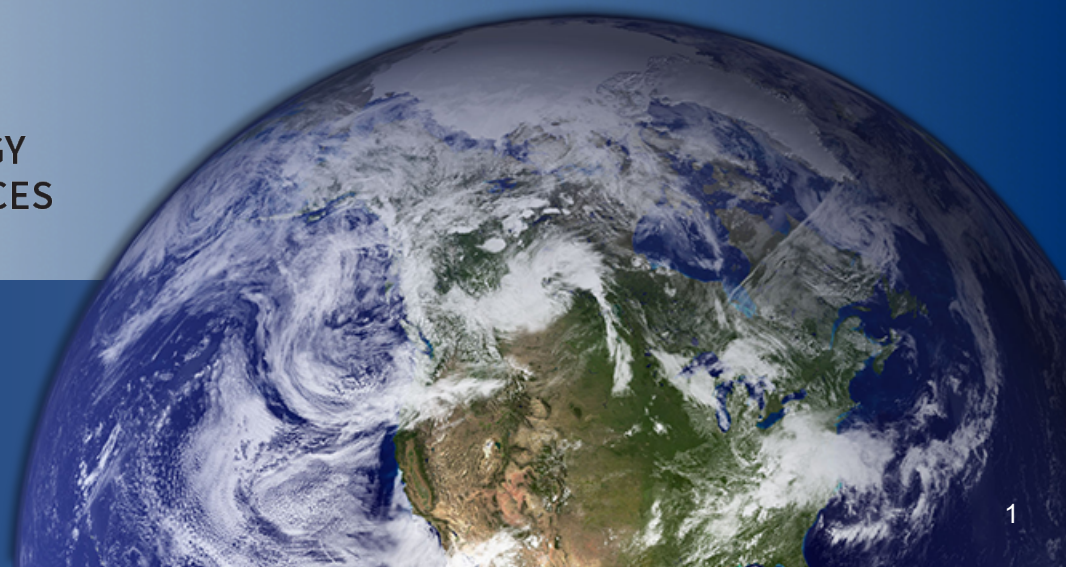
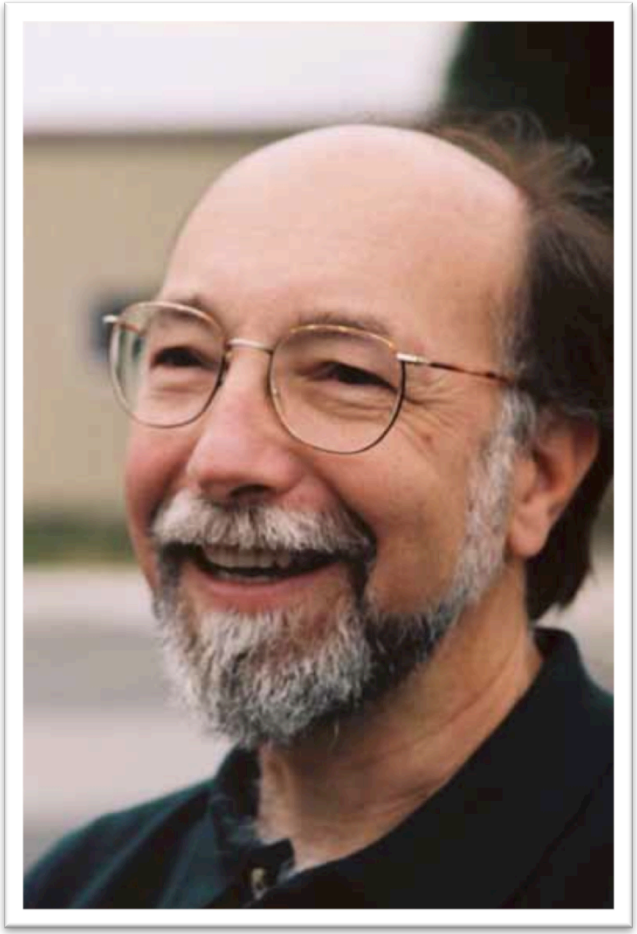


News: SCITS New Co-Director, Bill Ellsworth

- Seismologist interested in problems of seismicity, seismotectonics, probabilistic earthquake forecasting, and earthquake source processes;
- B.S. in Physics, M.S. in geophysics from Stanford University, PhD in geophysics from MIT;
- Worked at the earthquake research group at the U.S. Geological Survey in Menlo Park, California, for the past 40 years.
- Bill's research focuses on questions of fault structure and earthquake source processes over a wide range of spatial and temporal scales.
- He was a founder of the PASSCAL Program of IRIS, co-principal investigator of the San Andreas Fault Observatory at Depth (SAFOD) component of EarthScope, and currently serves on the steering committee of the Advanced National Seismic System (ANSS) and the National Earthquake Prediction Evaluation Council.
- Past President of the Seismological Society of America, a fellow of the American Geophysical Union, and recipient of the Distinguished Service Award of the Department of the Interior.



Research Topics

Prof. Jack Baker

- Development of a PSHA framework for induced and triggered seismicity (w/ PhD student Abhineet Gupta)
- Evaluation of ground motion prediction models for shallow triggered seismicity (w/PhD student Abhineet Gupta)
- Use of "Did You Feel It?" data to evaluate near-source ground motion intensity from potentially triggered earthquakes (w/ MS student Gemma Cremen)

Prof. Greg Beroza

- Earthquake detection through efficient similarity search for continuous data (w/ PhD students Clara Yoon, Karianne Bergen, and Ossian O'Reilly)
- Template based earthquake detection applied to the evolution of the Guy-Greenbrier Swarm (w/postdoc Yihe Huang)
- Search for temporal variations in crustal velocity structure related to fluid injection (w/postdoc Pierre Boue')
- Optimization of seismic network design for earthquake detection (w/ undergrad Brandon Schow)

Research Topics

Prof. Eric Dunham

- Using seismic waves to infer hydraulic fracture geometry: Finite difference simulations of wave excitation by resonant oscillations of fluid-filled cracks (w/ PhD student Ossian O'Reilly)
- Ground motion simulation of shallow earthquakes (w/ PhD student Sam Bydlon)
- Modeling of earthquake sequences in poroelastic media on faults with rate-and-state friction (starting January 2016 with visiting MS students Vidar Stiernström and Kim Torberntsson).

Prof. Steve Gorelick

- Utilization of InSAR to constrain hydrologic models at injection sites
- Environmental consequences of triggered seismicity

Prof. Roland Horne

- Thermal cooling stresses and induced seismicity (w/PhD student Jack Norbeck)

Prof. Paul Segall

- Poroelastic coupling and rate dependent earthquake nucleation due to fluid injection (w/ PhD student Shaoyu Lu)
- Joint inversion of deformation and seismicity to image mode I crack propagation.
- Response of Basement Faults to Fluid Injection in overlying strata (w/ Postdoc K-Won Chang).

Research Topics

Prof. Jenny Suckale

- Under the Macroscope: Constraining the spatiotemporal characteristics of injection-triggered seismicity at the reservoir scale with data-driven models. (w/Postdoc Davis Dempsey)
- Simulations of multiphase flow interactions in the subsurface

Prof. Howard Zebker

- Utilization of InSAR to constrain hydrologic models at injection sites (w/ PhD student Clara Yoon)

Prof. Mark Zoback

- Comparison of OK seismicity with injection data (w/PhD student Rall Walsh)
- Oklahoma Stress and Earthquake Focal Mechanisms - w/ PhD student Richard Alt
- Identification of Potentially Active Faults in Oklahoma = w/ PhD student Rall Walsh
- Application of Seismicity Index to Oklahoma Seismicity - w/ PhD student Cornelius Langenbruch
- Texas Stress Map Project = w/ PhD student Jens Lund-Snee

Agenda: Wednesday AM

- 8:30 – 8:45 Mark Zoback – Welcome, Introductions and Review of the Agenda
- 8:45 – 9:00 Claudia Baroni – Update staffing and membership, website
- 9:00 - 9:30 Bill Ellsworth - USGS One year Earthquake Hazard Model
- 9:30 – 10:00 Jack Baker and Abhineet Gupta - Bayesian Treatment of Induced Seismicity in Probabilistic Seismic Hazard Analysis
- 10:00 – 10:30 Mark Zoback – Update of Oklahoma Injection/Seismicity Data and Interactions with Government and Industry
- 10:30 – 11:00 Break
- 11:00 – 11:30 Rall Walsh and Mark Zoback – Prediction of Potentially Active Faults in Oklahoma
- 11:30 – 11:45 Jens Eric Lund Snee and Mark Zoback – Texas Stress Map Project
- 11:45 – 12:15 Abhineet Gupta and Rall Walsh – Correlations Between Seismicity Rates and Injection Rates in OK

Agenda: Wednesday PM

- 1:15 – 1:45 Justin Rubinstein, USGS – Update on Kansas Seismicity
- 1:45 – 2:15 Sam Bydlon and Eric Dunham – Ground Motion Prediction
- 2:15 – 2:45 K-Won Chang and Paul Segall – Injection Induced Seismicity on Basement Faults Including Poroelastic Stressing
- 2:45 – 3:15 Jack Norbeck and Roland Horne - A Practical Criterion to Assess the Behavior of Pressurized Basement Faults
- 3:15 – 3:45 Break
- 3:45 – 4:15 Greg Beroza and Marine Denolle - Ground Motion Prediction Using the Ambient Seismic Field
- 4:15 – 4:45 Kris Nygaard – ExxonMobil – States First Induced Seismicity Primer
- 4:45 – 5:30 Open Discussion
- 5:45 - Reception at the Faculty Club

Agenda: Thursday AM

- 8:00 – Continental Breakfast
- 8:30 – 9:00 – Yihe Huang and Greg Beroza - Time-Variable Magnitude-Frequency Distribution for the Guy-Greenbrier Sequence
- 9:00 – 9:30 David Dempsey and Jenny Suckale –Spatiotemporal and Magnitude Frequency Distributions of Injection-Induced Earthquake Sequences
- 9:30 – 10:00 Cornelius Langenbruch and Mark Zoback – Application of Seismic Index to Oklahoma Seismicity
- 10:00 – 10:30 Clara Yoon, Greg Beroza, Karianne Bergen and Ossian O'Reilly - Earthquake Detection Using Efficient Similarity Search
- 10:30 – 11:15 Brief discussions of Future Work by Stanford Faculty
- 11:15 – 12:00 Open Discussion
- 12:00 Adjourn

Let's Get Started ….

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