Outcomes of Early Career Investigator Symposium

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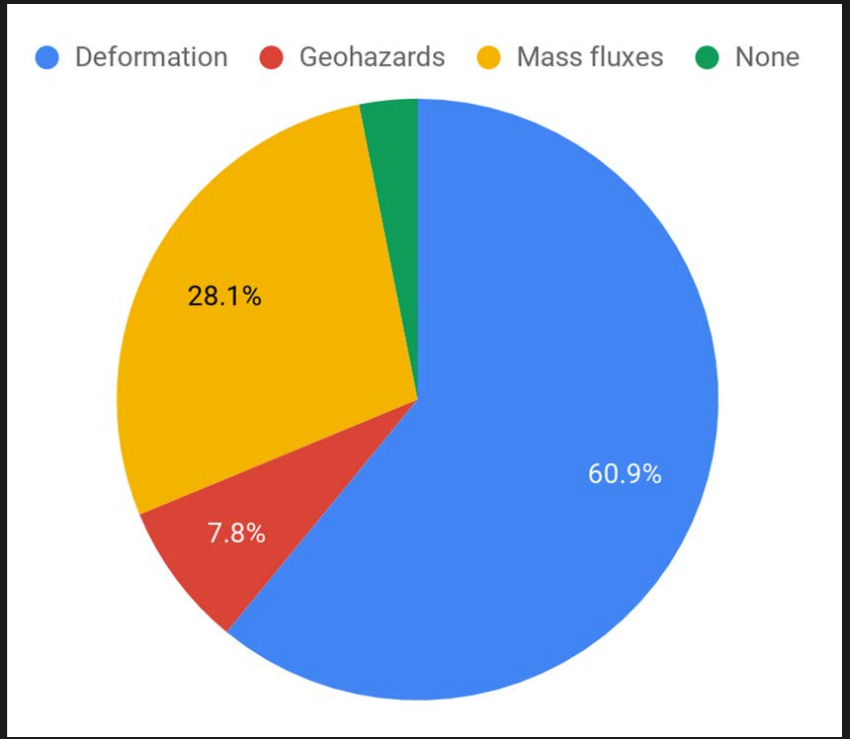
Symposium Overview

- Symposium Tuesday from 12:30 - 6:00
- 64 participants (undergrads to assistant professor)
- Self identified into TEI themes



Symposium Overview

- Research expertise covering a range of specialties:
  - Rock mechanics
  - Geodynamic modeling
  - Active & passive seismology
  - Geochemistry & petrology
  - Structural geology
  - Geodesy
  - Magnetotellurics
  - and more...

Geo PRISMS — Geodynamic Processes at Rifting and Subducting Margins

Overview of ECI Symposium Goals & Structure

(1) to provide an opportunity for early career researchers to network across GeoPRISMS disciplines

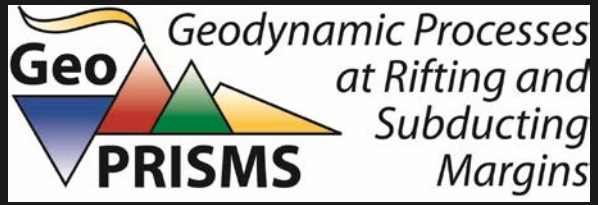
(2) to provide these researchers with advance exposure to TEI themes and questions to:

- deepen their overall workshop experience
- facilitate their participation in larger group discussions

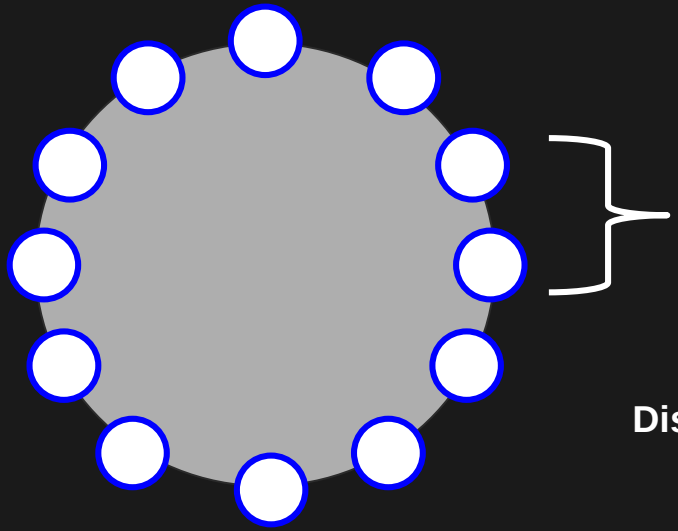
Geo PRISMS — Geodynamic Processes at Rifting and Subducting Margins

Initiatives to promote interdisciplinary networking

- Selected 3-4 volunteers from different disciplines to create thematic overview presentations
- Assigned interdisciplinary breakout groups that were maintained throughout the symposium
- Presented lightning introductions during first breakout
- Encouraged participation among members through breakout structure



Breakout Group Sessions



Discuss in Groups of 8 (10 min)

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Discuss i ps of 4 (5 min)

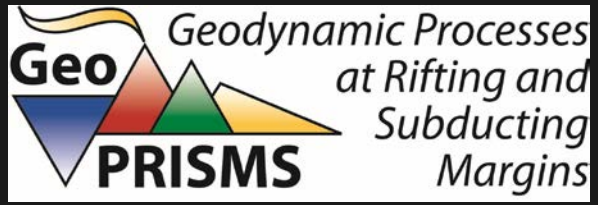
Group
Discussion and
Synthesis (20 min)

Discuss in Pairs (5 mi

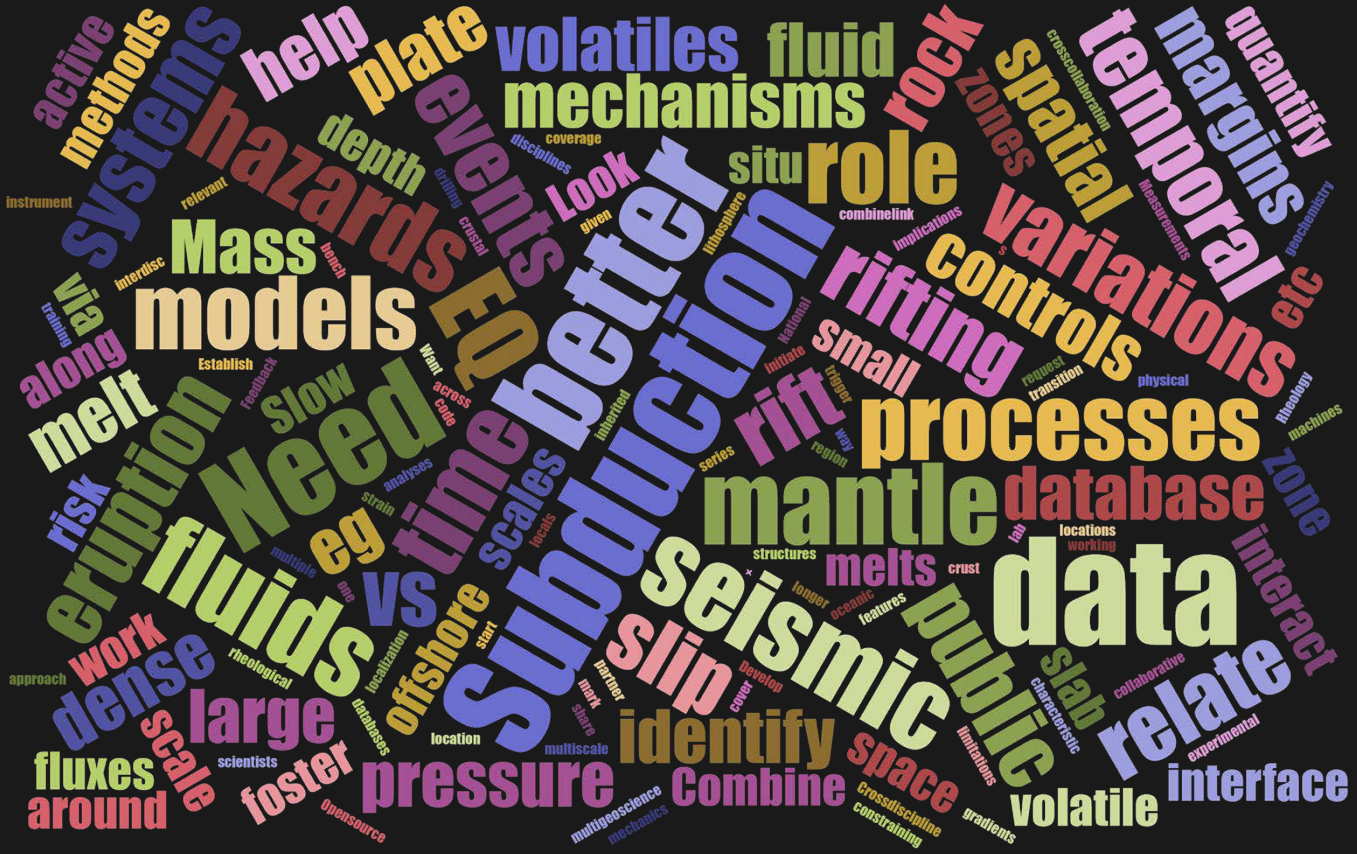
GeoPRISMS Geodynamic Processes at Rifting and Subducting Margins

Initiatives to facilitate TEI participation

- Crafted overview presentations covering major TEI themes
- Organized breakout discussions around two questions:
  - *What are the remaining or emerging science questions?*
  - *What infrastructure, data and/or synthesis do we need to address these science questions?*
- Identified 4 primary points for each breakout question
- Synthesized common responses among breakout groups

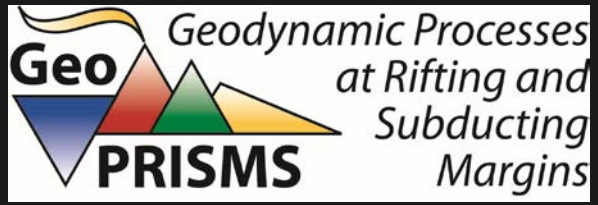


Breakout Discussions!!



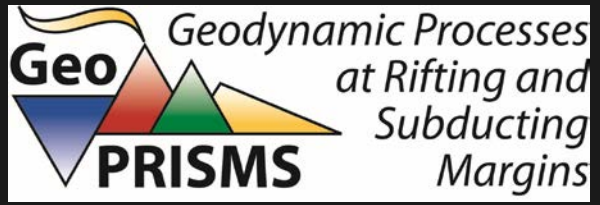
Deformation at all timescales

- *What are the remaining or emerging science questions?*
  - What are the processes that lead to rift and subduction initiation?
  - What is the role of inherited structures/crustal/mantle heterogeneities on these processes?
  - What is the role of fluids on strain localization, seismic slip and crustal/mantle/slab rheological properties?
  - How can we better constrain variations in space & time?



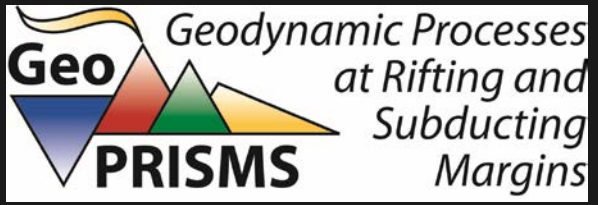
Deformation at all timescales

- *What infrastructure, data and/or synthesis do we need to address these science questions?*
  - Collect time series data to observe changes and sudden events that might not otherwise be captured
  - Foster interdisciplinary collaborations and open data availability
  - Refine knowledge on the physical properties of rocks, fluids, etc.
  - Conduct measurement campaigns that fill in gaps (e.g., offshore subduction zones) and cover multiple spatial scales



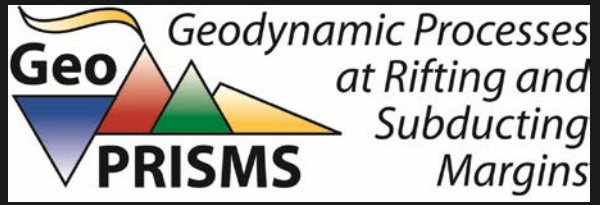
Mass fluxes

- *What are the remaining or emerging science questions?*
  - What are the sources, sinks and migration pathways of fluids and melts at active margins?
  - What are the chemical/isotopic compositions and distributions of volatiles/fluids among various reservoirs (e.g. slab, mantle-wedge, crust)?
  - What are the spatial and temporal scales of fluid/melt transport among reservoirs?
  - How can we better foster interdisciplinary research to address mass flux questions?



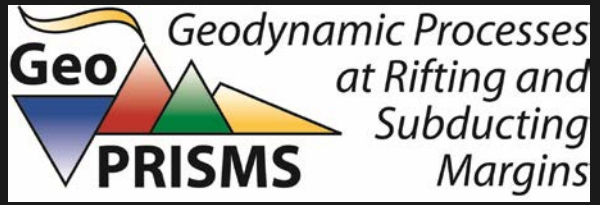
Mass fluxes

- *What infrastructure, data and/or synthesis do we need to address these science questions?*
  - Integrate geophysical and geochemical data to improve our understanding of mass fluxes
  - Constrain the temporal and spatial variations in rheology and permeability of the oceanic crust and lithosphere
  - Develop methods of proper or statistically valid upscaling of very localized processes to plate-scale
  - Establish dense sensor networks from the seafloor to the surface



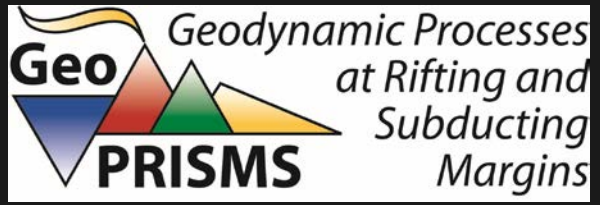
Geohazards & margin stability

- *What are the remaining or emerging science questions?*
  - What are the systematic controls of hazardous events (e.g. material properties/pore pressure → slow-slip events → large earthquakes)
  - How can we use existing data to better identify precursors to hazardous events?
  - How can we better forecast the timing of these events?
  - How can we best communicate the uncertainties in these forecasts and trade-offs between timeliness and accuracy?



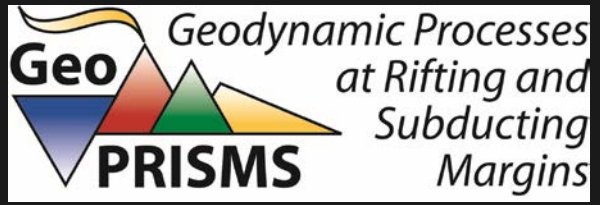
Geohazards & margin stability

- *What infrastructure, data and/or synthesis do we need to address these science questions?*
  - Facilitate effective communication pathways with the general public and policy makers (federal, state, and local levels) including communicating baseline hazard threats
  - Establish dense monitoring arrays in especially hazard prone areas
  - Create tools and a framework for interdisciplinary collaboration during hazard events (e.g., the Kilauea eruption)
  - Coupling of deterministic and probabilistic models including geophysical and geochemical data

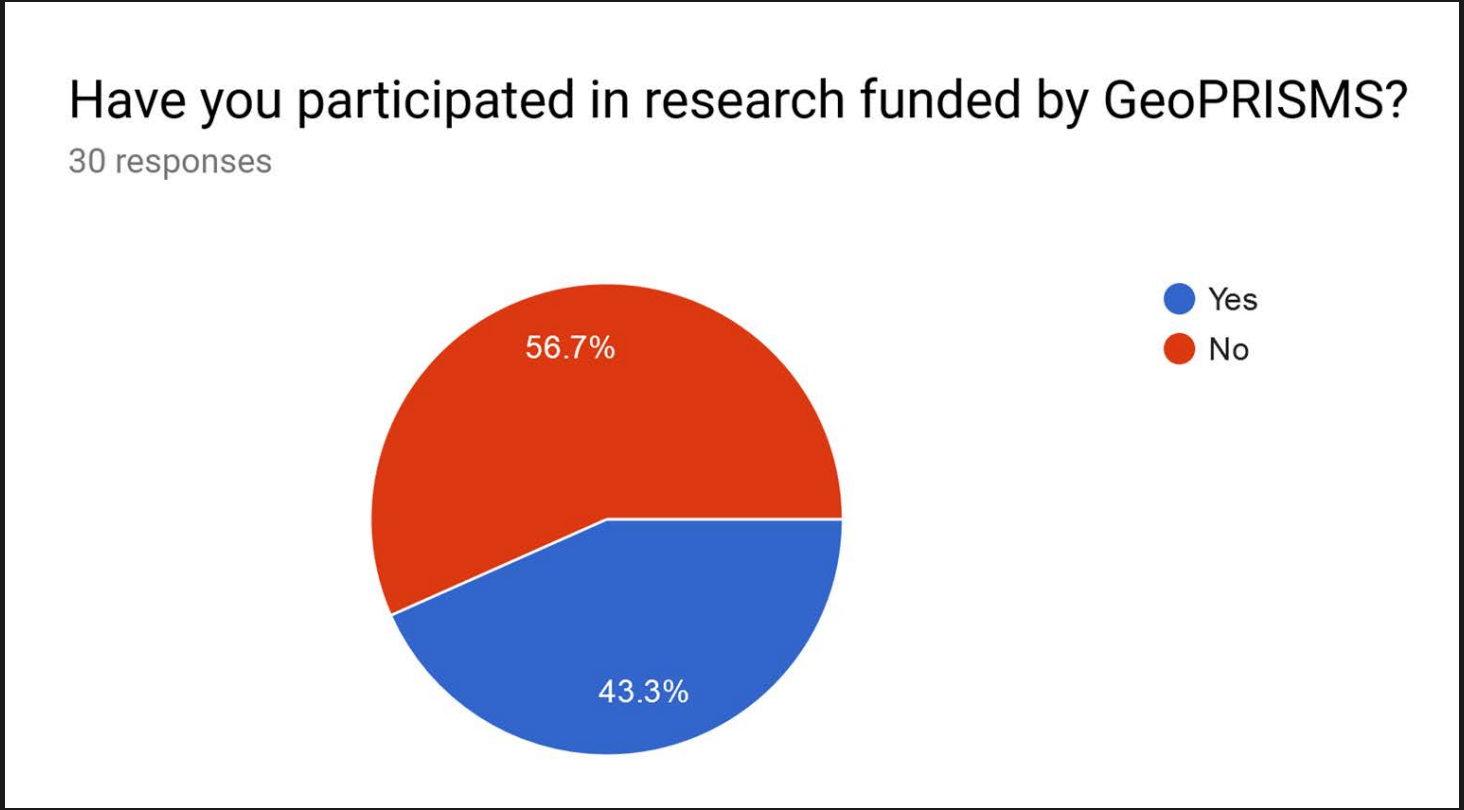


Cross-thematic questions and needs

- Progress made for discrete (space/time) observations → Need for additional observations, techniques or models to fill in knowledge gaps and extrapolate over space and time
- Abundant discipline-specific observations/interpretations → Need for more interdisciplinary data synthesis to answer outstanding questions
  - Easier ways to access multidisciplinary data
  - Easier ways to find collaborators to help interpret multidisciplinary data
  - More opportunities for cross-disciplinary workshops
  - Primary site specific workshops



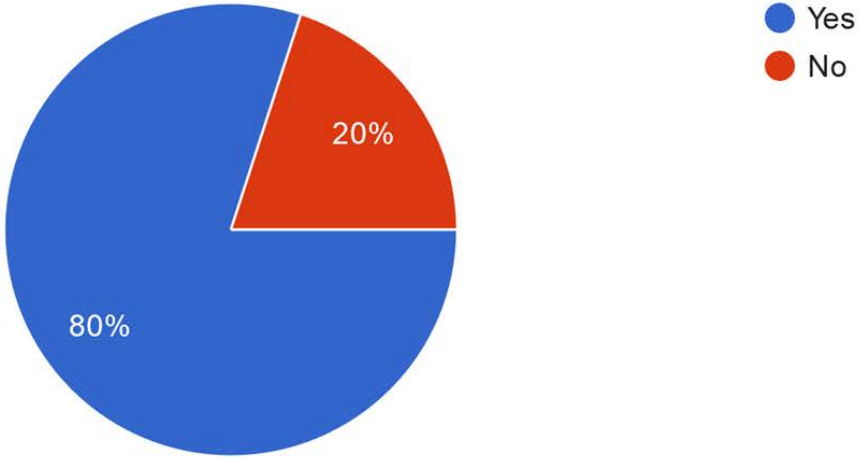
Impacts of GeoPRISMS programs on EC Scientists



Impacts of GeoPRISMS programs on EC Scientists

Have you participated in a meeting, workshop, and/or a field campaign associated with GeoPRISMS prior to this meeting?

30 responses



Benefits of GeoPRISMS on your Career

- Networking, collaboration and idea exchange opportunities
- Exposure to outstanding science questions
- Exposure to multidisciplinary science
- Field and/or laboratory opportunities

Desired features of a GeoPRISMS Successor

- Continued networking and multidisciplinary collaboration
- Training opportunities
- Cross-disciplinary workshops/meetings
- Science targets to address sampling bias and/or gaps
- Continuation of GeoPRISMS research themes

Questions?

Geo PRISMS Geodynamic Processes at Rifting and Subducting Margins