

Subduction Zone Observatory

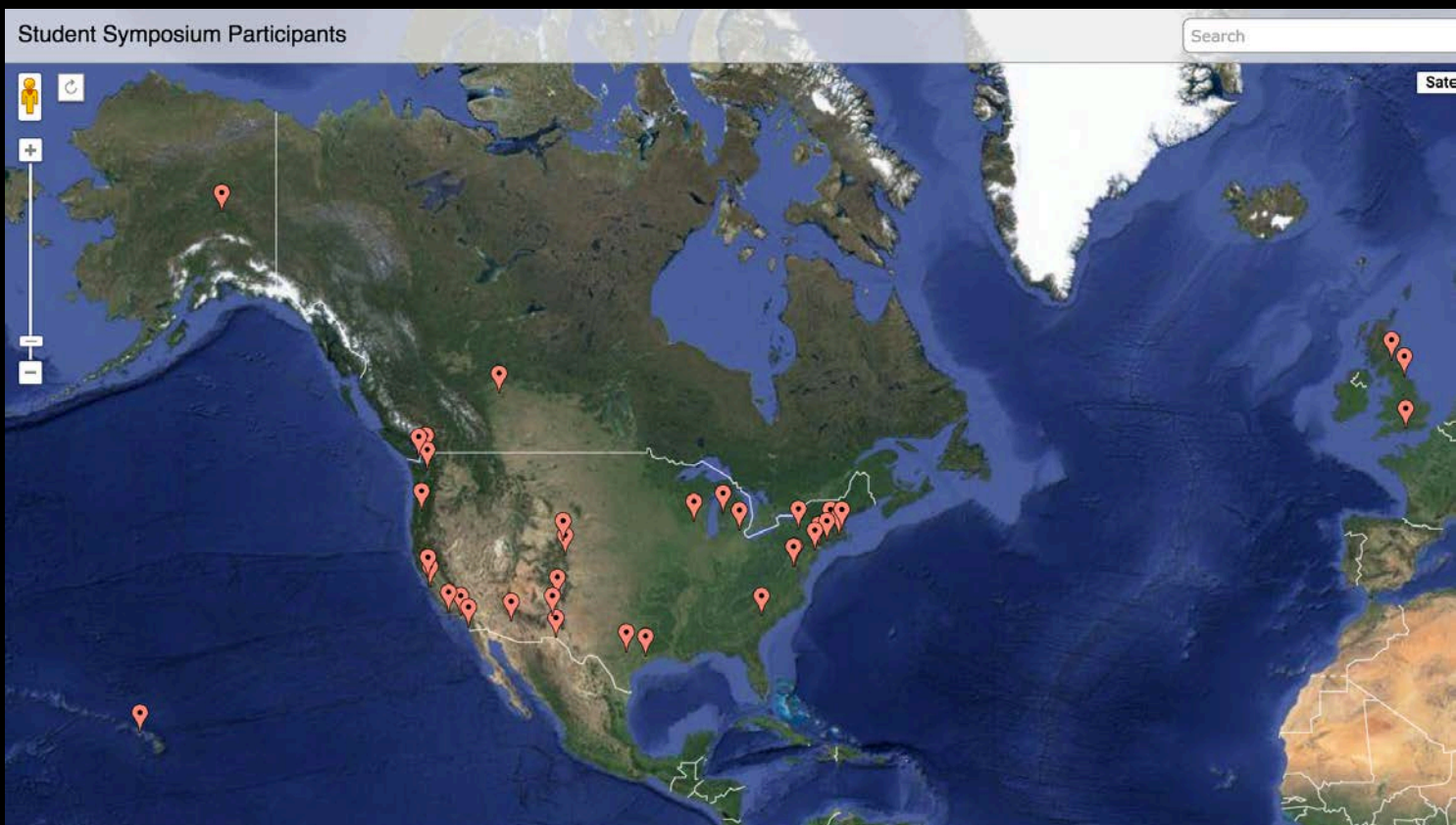
Perspectives from the Student & Postdoc Symposium



Erin Wirth, University of Washington

TEI Student + Postdoc Symposium

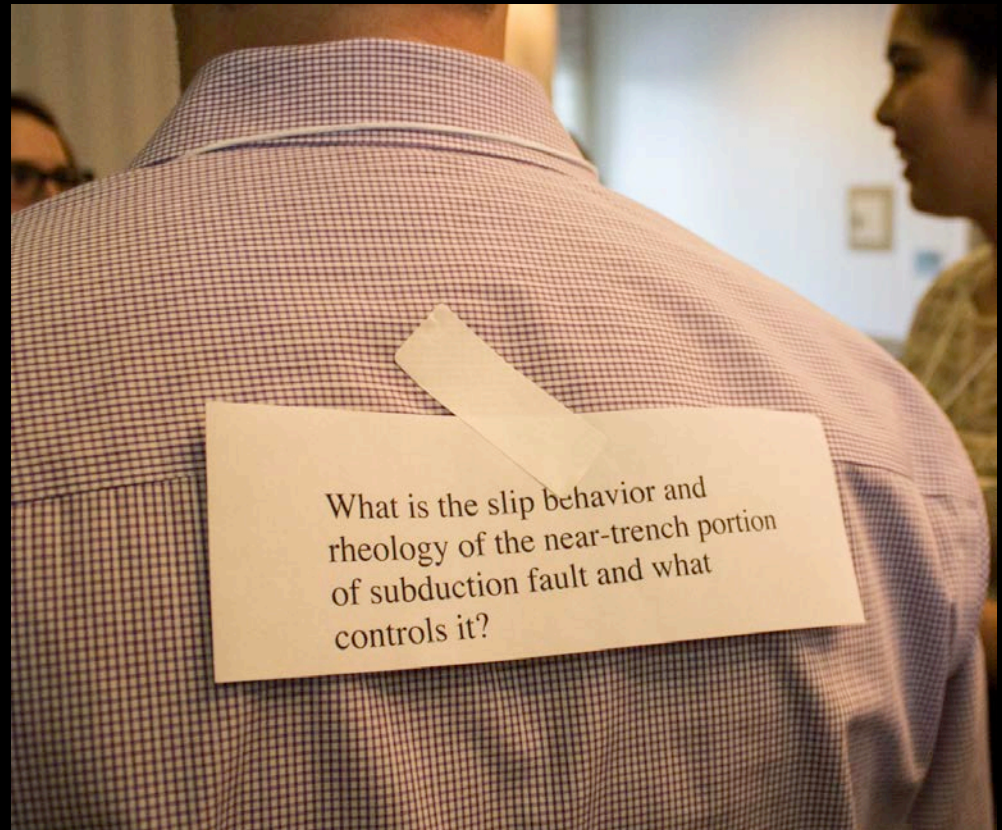
- Students (30) + Postdocs (18)



Courtesy of Kimmy McCormack

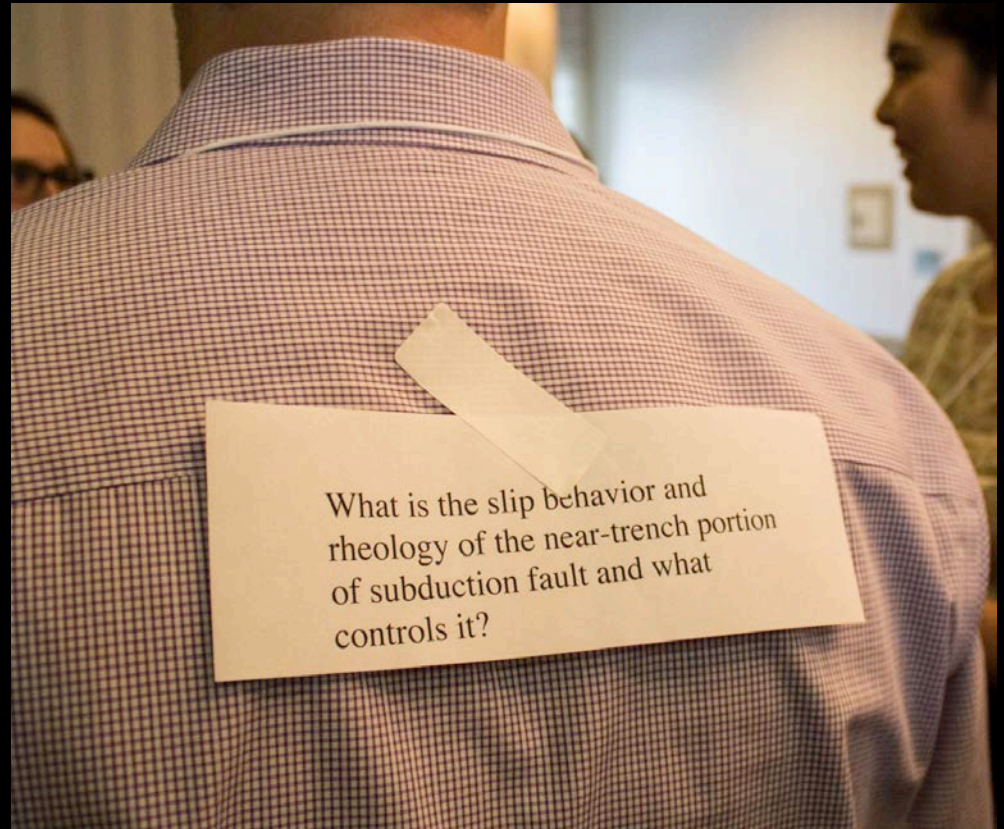
TEI Student + Postdoc Symposium

- Discussion on an SZO led by Joan Gomberg (USGS)



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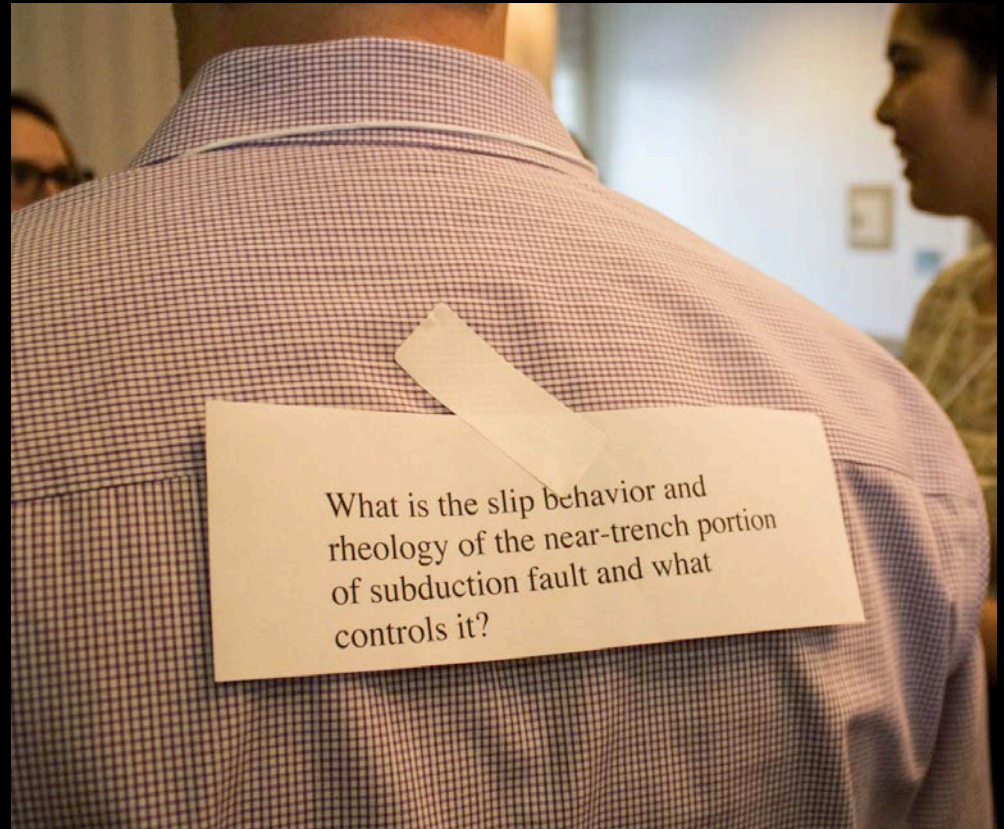
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- Perhaps less biased towards preconceived notions of what an SZO should be.



What is the slip behavior and rheology of the near-trench portion of subduction fault and what controls it?

TEI Student + Postdoc Symposium

- Discussion on an SZO led by Joan Gomberg (USGS)
- Perhaps less biased towards preconceived notions of what an SZO should be.
- (And perhaps less practical.)



Questions for Today!

- What are major scientific questions?
- What observations, tools, and structures are needed to solve the big science problems?
- What are the major geographic targets?
- How to organize a SZO (centralized or distributed, community or individual experiments)?
- Who are partners, nationally and internationally?

What are the major scientific questions?

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Subduction
Initiation

Controls on
Slab Morphology – Effects
on Dynamics

Erosion and
Morphology near
the Trench

Water Budget

Spectrum of Slip
Behavior

Feedback Cycles

Why do we have
deep earthquakes?

Constraints on the
Spatial Distribution
of Slip

Stability of the Wedge
at Trench

Fluid migration in
the slab and
wedge

Can Slabs Tear?

What physical
characteristic
modulate the
transition zone?

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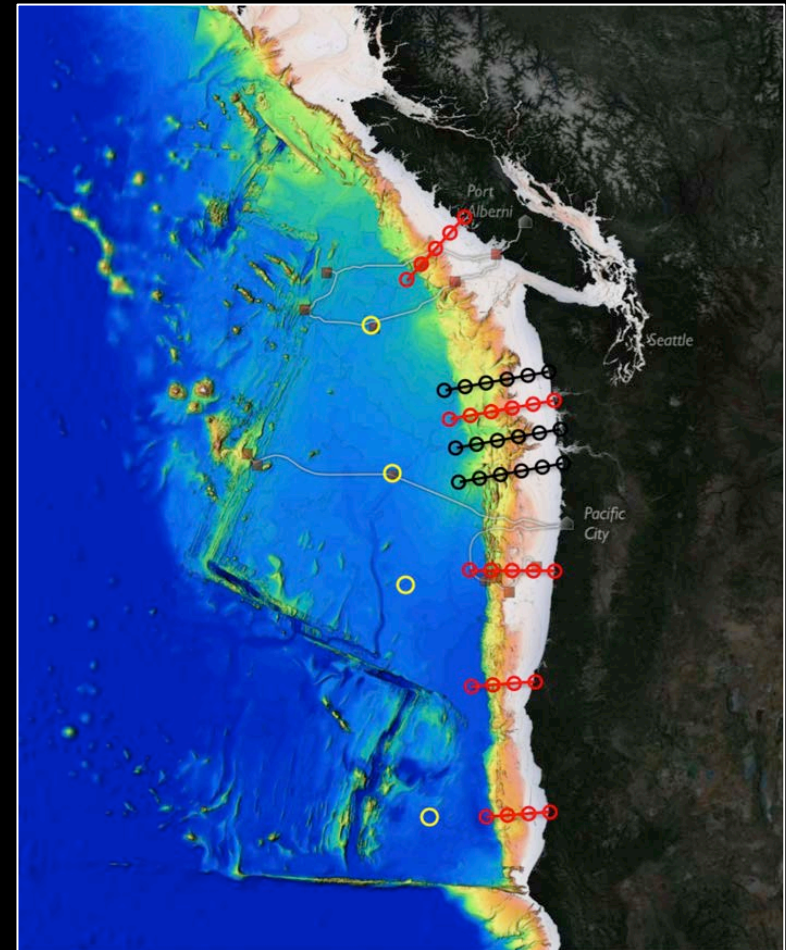
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What observations, tools, and structures are needed?

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- Strong Offshore Component
 - OBS
 - Marine EM
 - Ocean bottom GPS
 - Fluid flow sensors
 - Tidal gauges
 - Drill cores



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- Onshore
 - Boreholes everywhere! (3BB, strainmeters, GPS)
 - Remote observations (InSAR)

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- Deployment Style
 - Some long term (10-20 year) deployments
 - Package & move instruments? (like Earthscope)
 - RAMP Component

What are the major
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- “Weird” vs. “Normal” Subduction Zones
- Every Subduction Zone!
- Hazard Oriented – Go where there are people
- Well-studied
- Compare multiple (2+) systems

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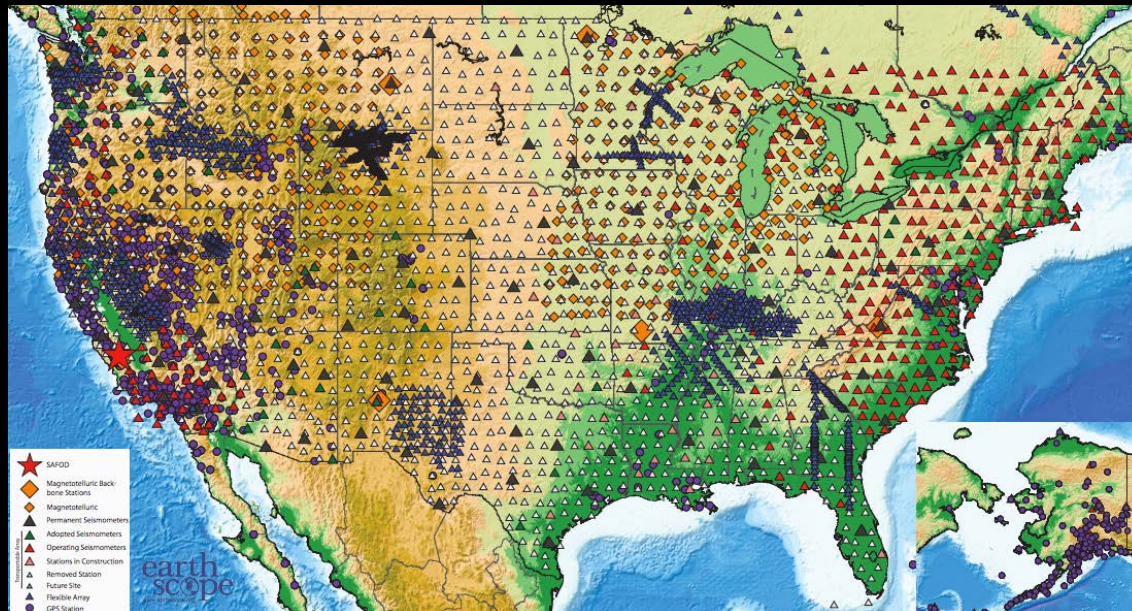
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Do a few things at many subduction systems, or many things at just one?

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- Community sharing for some aspects (i.e., OBS). Smaller projects or more novel techniques can be carried out by individuals.



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- Biologists? Climate Scientists?

Thank You!

