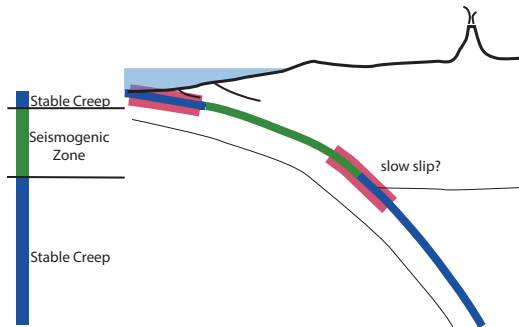


# Rheology and Dynamics of the Plate Boundary

Melodie French

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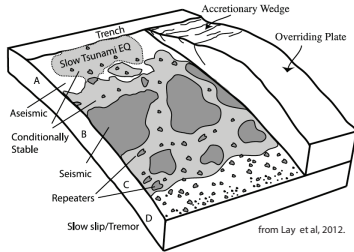
September 28, 2016



modified from Scholz (1998)

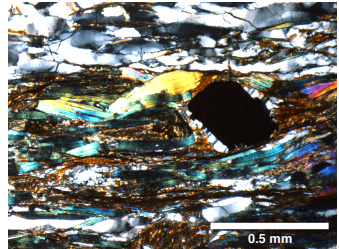
# WHAT DO WE NEED TO KNOW?

## Heterogeneous Rocks



## Deformation Mechanisms and Rheology

- Low breakdown temperatures  
Constant stress:  $\log(\dot{\epsilon}) \propto 1/T$
- Polyphase rocks
- Extreme pore fluid pressures

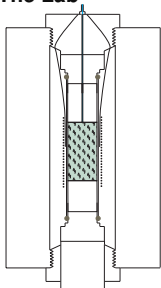


- Processes of formation
- Statistical descriptions
- Composite properties



# AN INTEGRATED APPROACH FROM A SUBDUCTION ZONE OBSERVATORY: FACILITATING COMMUNICATION

## The Lab



- Constitutive behavior
- Linking microstructures, mechanisms, rheology, and stress
- Interpretation of geophysical signals

Modifying or updating existing facilities for collaborative research to answer targeted questions.

## The Field



- Cross-disciplinary communication
- Linking scales of observation
- Identifying dominant mechanisms

Sites complimentary to instrumented modern subduction zones.