

What controls the magnitude and recurrence interval of earthquakes?

What mechanical properties and/or fault zone conditions control the wide spectrum of slip rates observed on subduction megathrusts?

How to answer the questions: Implementation Activities

- Comparative Subductology
 - Generating a global slip deficit map (and everything)
- 4-D controlled source imaging and MT combined with passive seismic monitoring on a subduction zone with along-strike variability in slip behavior
- Seafloor geodesy encompassing regions of known large seismic slip
- Correlating exhumed fault zone structure with specific slip processes

- Measure the slip budget of secondary faults as a way to determine their role in complicating magnitude predictability
- Drilling into a seismogenic zone
- Paleoseismic history to determine persistence of segmentation
- Laboratory measurements of frictional properties

Requirement of a Study Site

- Along strike variability in slip behavior
- Spectrum of slip behavior (creep, ETS & earthquakes)
- Well-known earthquake history
- Geodetic accessibility
- Clear geological segmentation