

# Linkages between volatile release and the rheology of the plate boundary interfaces (& the mantle wedge)

1. How does volatile release from subducting plate affect the slip behavior of the subduction megathrust?
2. What is the role of serpentinization in weakening the slab-mantle interface?
3. How does dehydration of the slab influence mantle wedge dynamics?
4. What physical processes are associated with intermediate and deep earthquakes?

# Implementation and Site Attributes

- Nested multi-scale 3-D seismic/MT observations
- Geological/field observations on exhumed interface material from a range of depths
- Low & high-temperature deformation experiments
- Geodynamic models that incorporates interface-mantle feedback
- Along-strike variation in fluid flux and subduction parameters
- Along-strike variation in slip behavior (Groups 1 & 2)
- Complementary petrological/geochemical signatures/models for volatile distribution (Group 4)

## Potential Primary Sites

- Cascadia – Infrastructure and data, 2-5 years?
- Alaska/Aleutians – 10 years?

## Potential Thematic Sites

- Lesser Antilles/Caribbean – Slow spreading & volatiles
- Chile and Sumatra – Recent great earthquakes, along strike variation in sub. parameters
- Central America – Along strike variation in input/output
- New Zealand/Hikurangi – Along-strike variation in the plate boundary geometry/slip/sediments, erosion etc.
- NE Japan/Kanto, Tonga, IBM – Cold-slab