

Research on subduction cycles and deformation

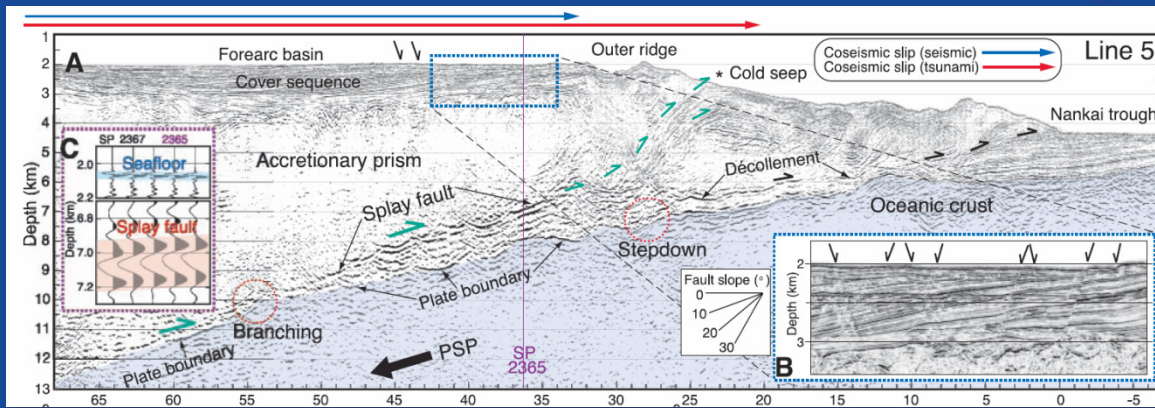
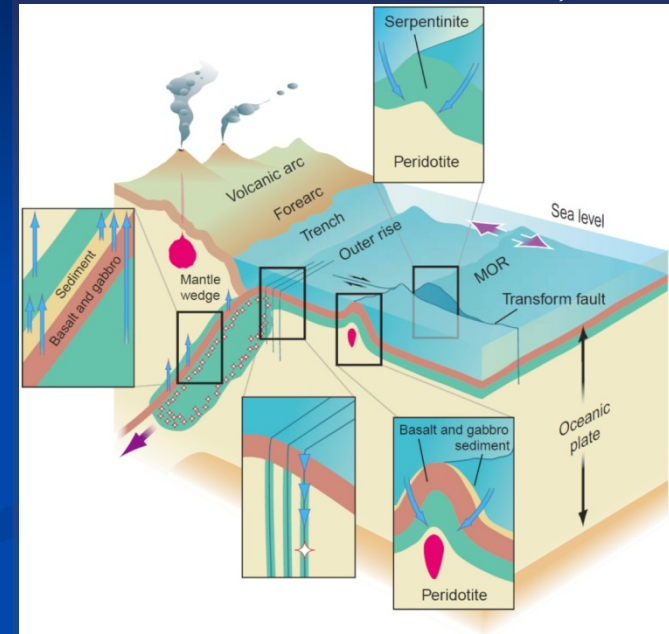
- IFREE's plan and strategy -

Shuichi Kodaira
IFREE, JAMSTEC

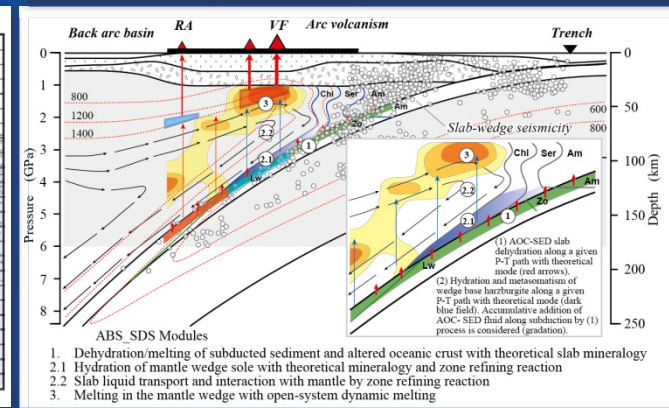
Scientific themes

- Seismogenic zone
- Subduction factory
- Incoming plate to subduction zone

Kerrick, 2002



Park et al., 2002



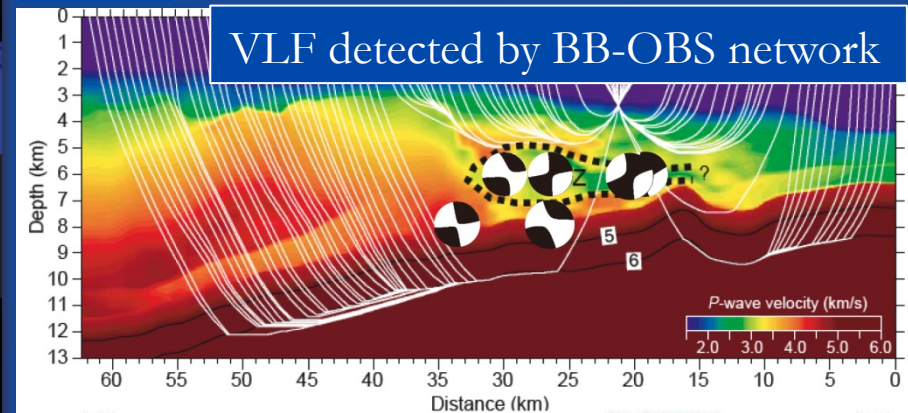
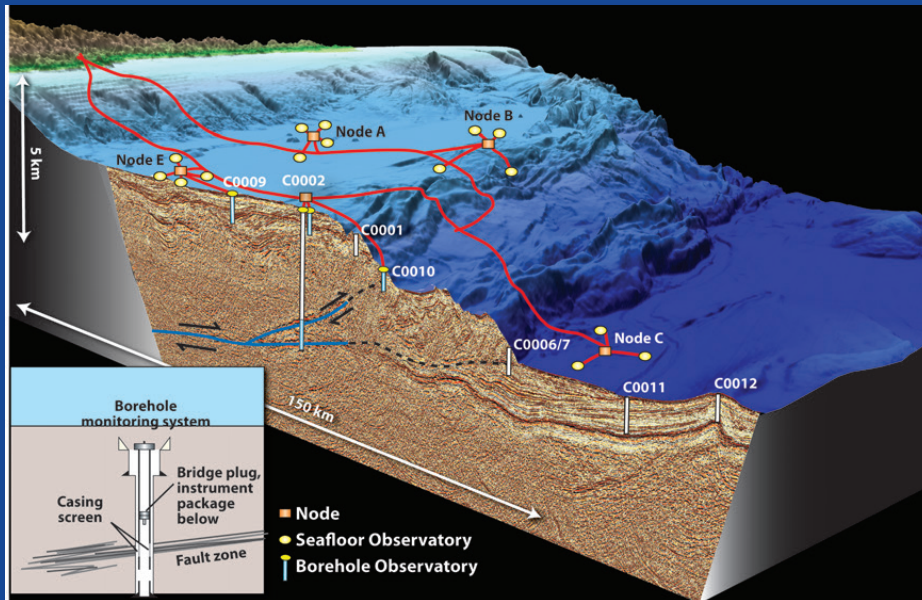
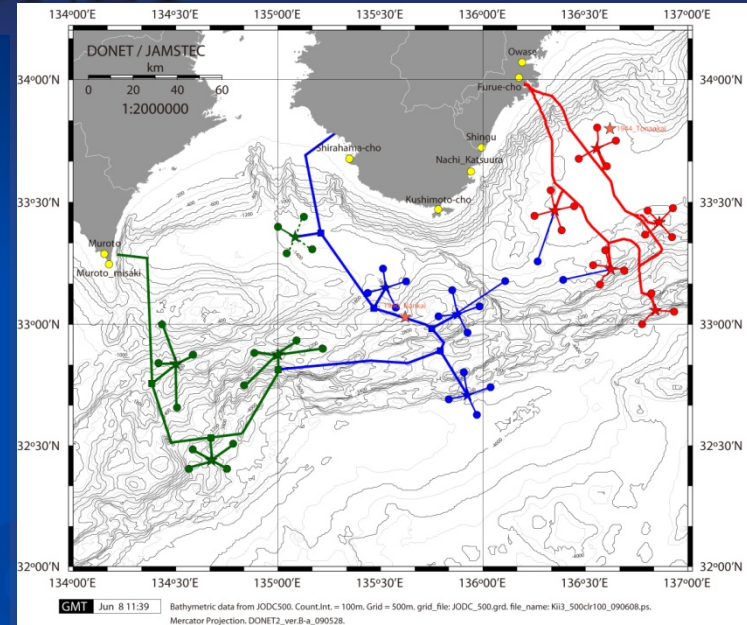
Kimura et al., 2009

Seismogenic zone

IODP NanTroSEIZE and DONET

- Downhole observatory will be connected to DONET
- DONET2 was funded

Future plan of DONET

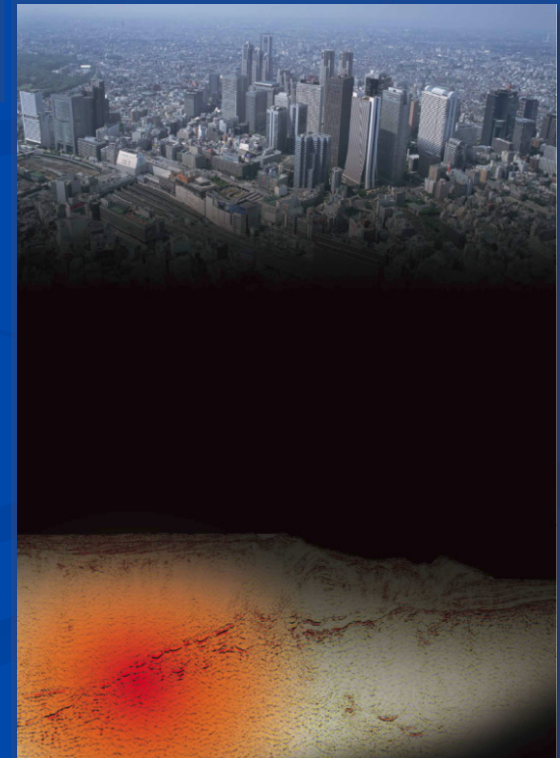
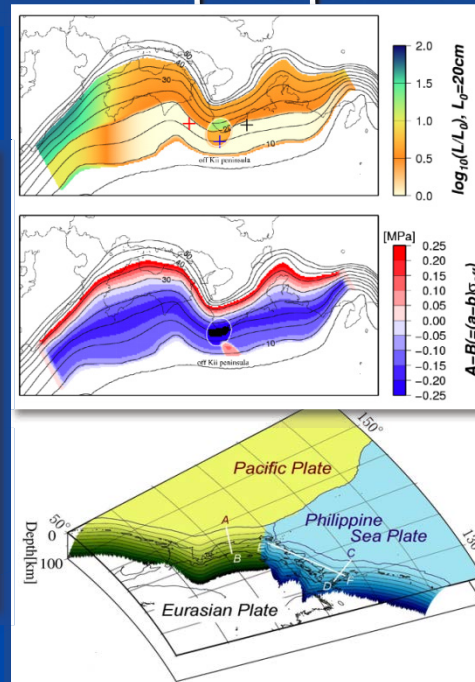
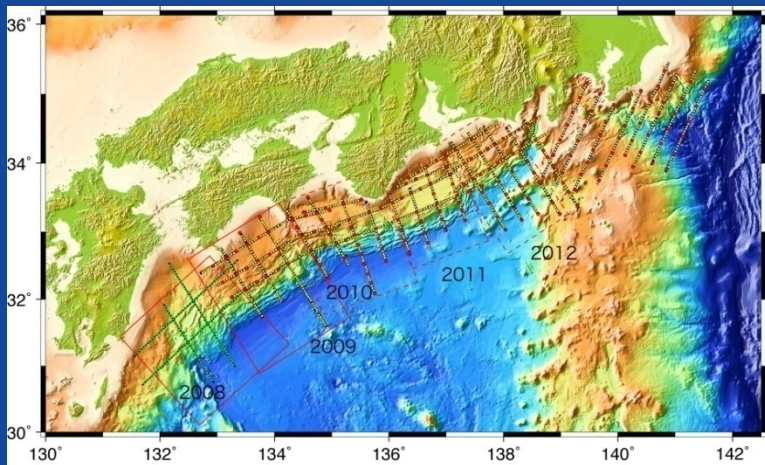


Seismogenic zone

■ Earthquake hazard mitigation program in Nankai Trough (~2012)

- Large-scale high-resolution seismic imaging
- Numerical simulation
- Link to earthquake engineering and social science

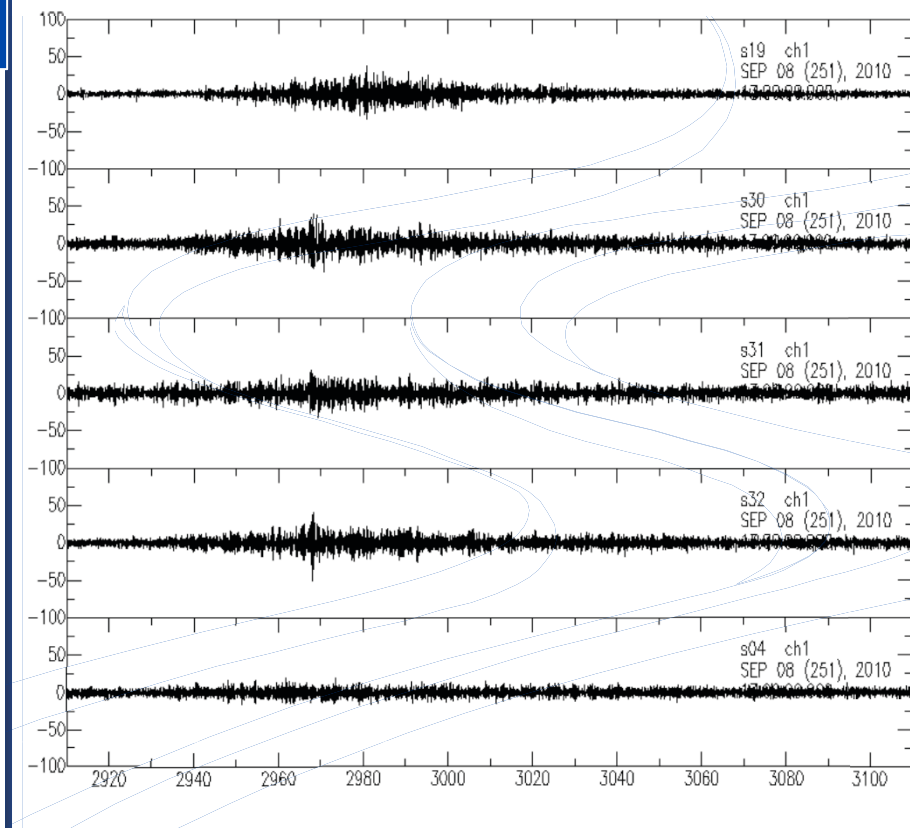
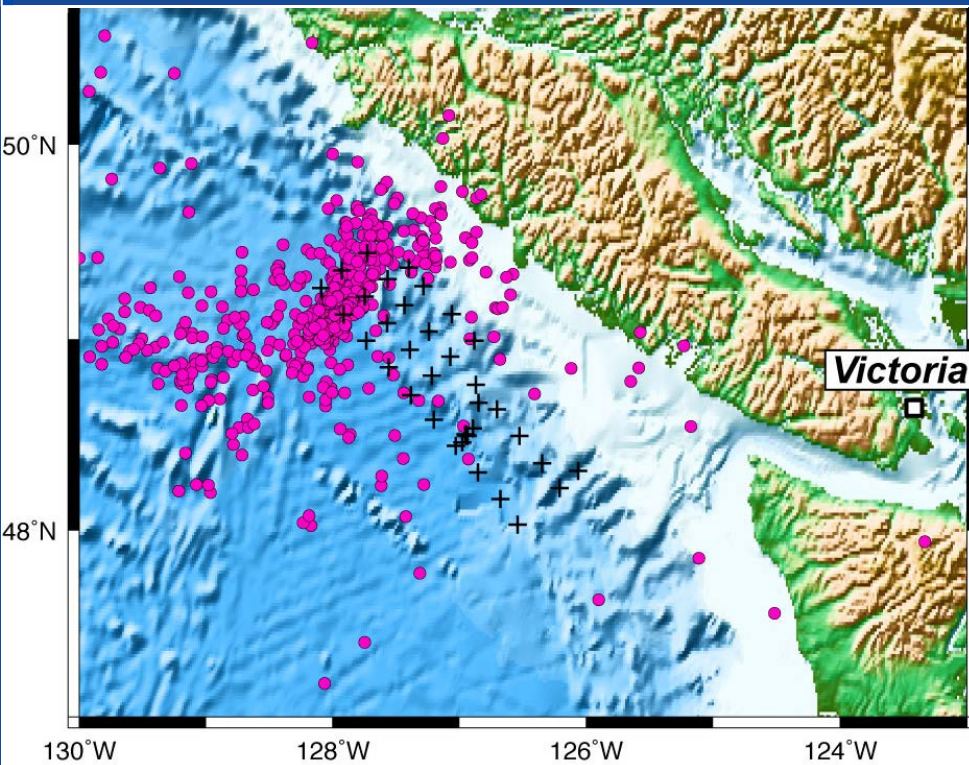
■ The second phase will be proposed



Seismogenic zone

- Comparative study
 - Cascadia earthquake study, SeaJade, w/PGC, UVic, WHOI
 - SeaJade2 proposal was submitted

More than 1500 events in 3-month observation



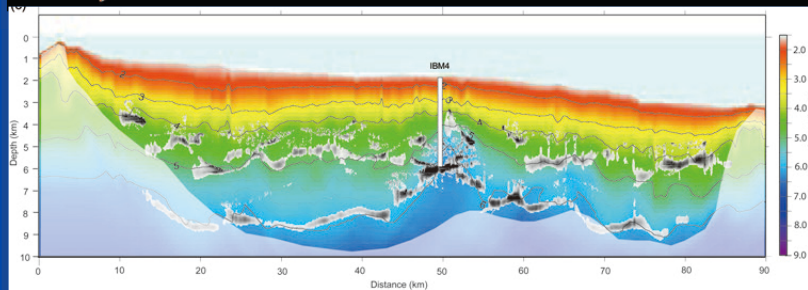
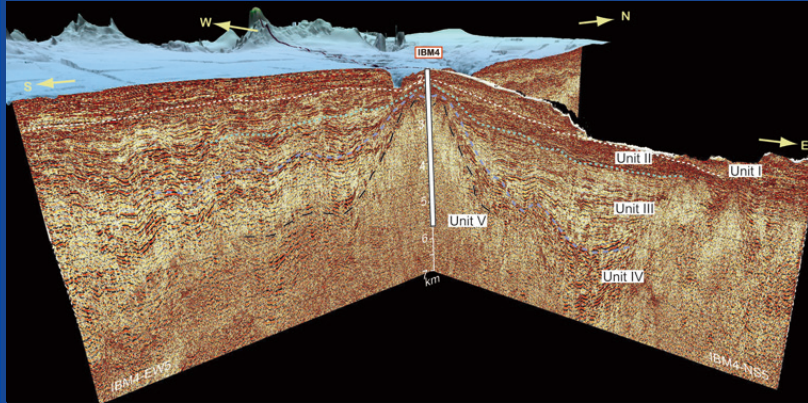
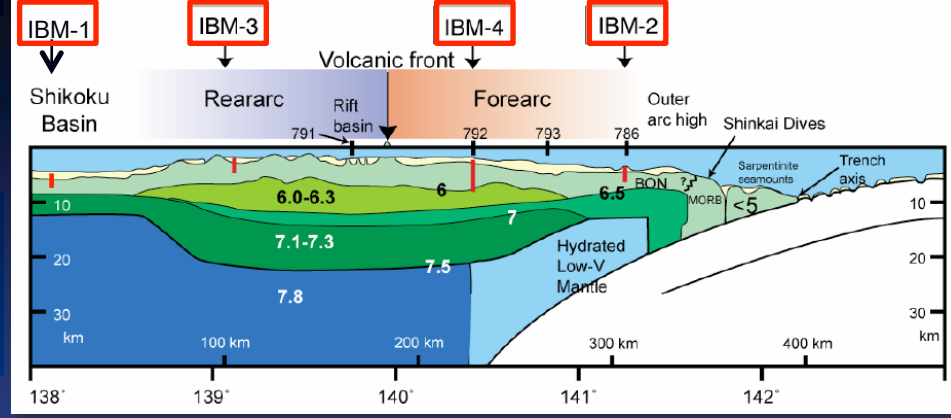
Subduction factory

- IODP Project IBM

- Four proposals

- Sample return from deep arc crust
- Drilling through fore arc oceanic crust

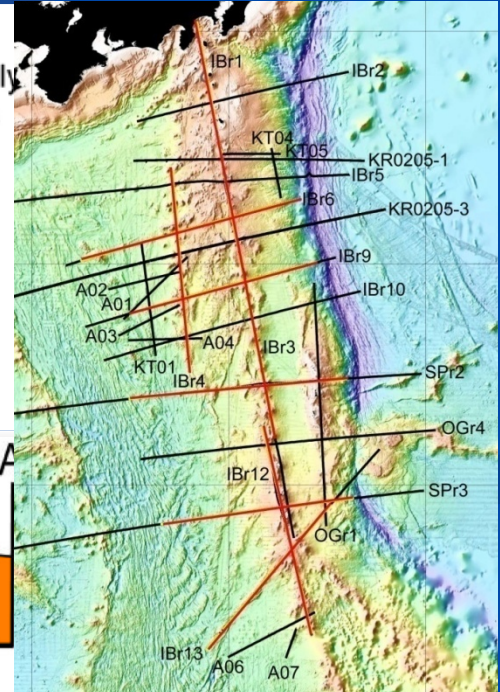
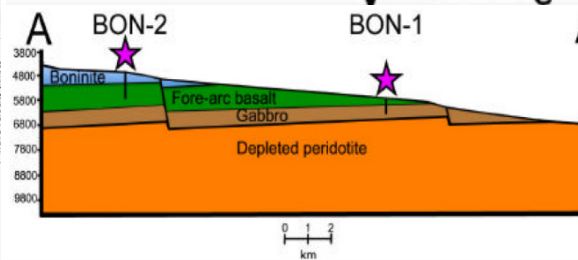
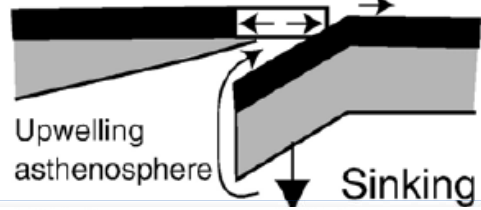
- Additional seismic surveys



Infant arc (48-45 Ma)

Is hizuka et al. (2006) Trench retreats rapidly as Pacific plate sinks

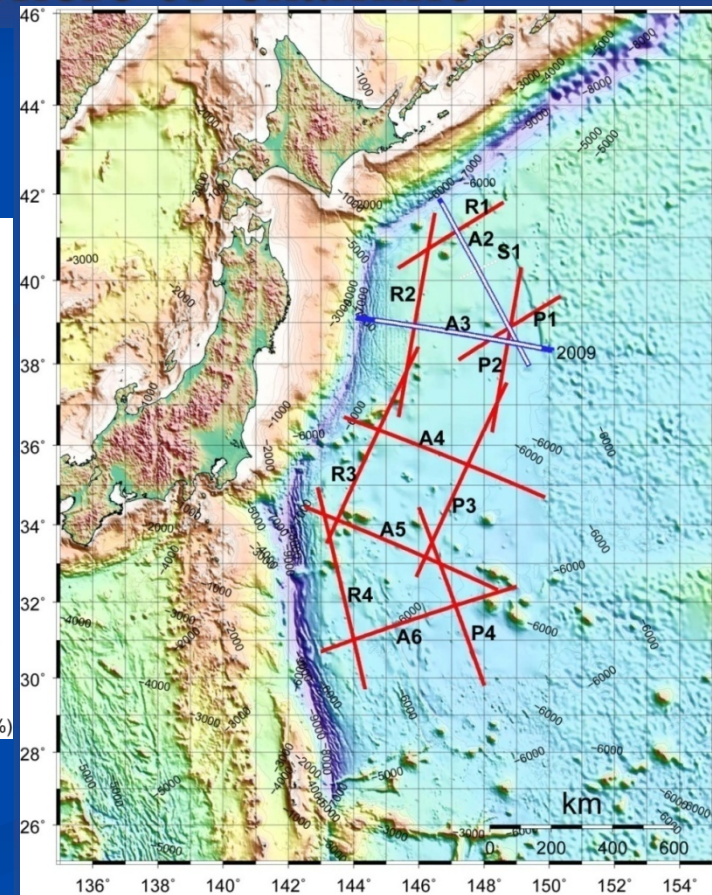
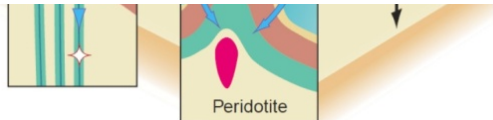
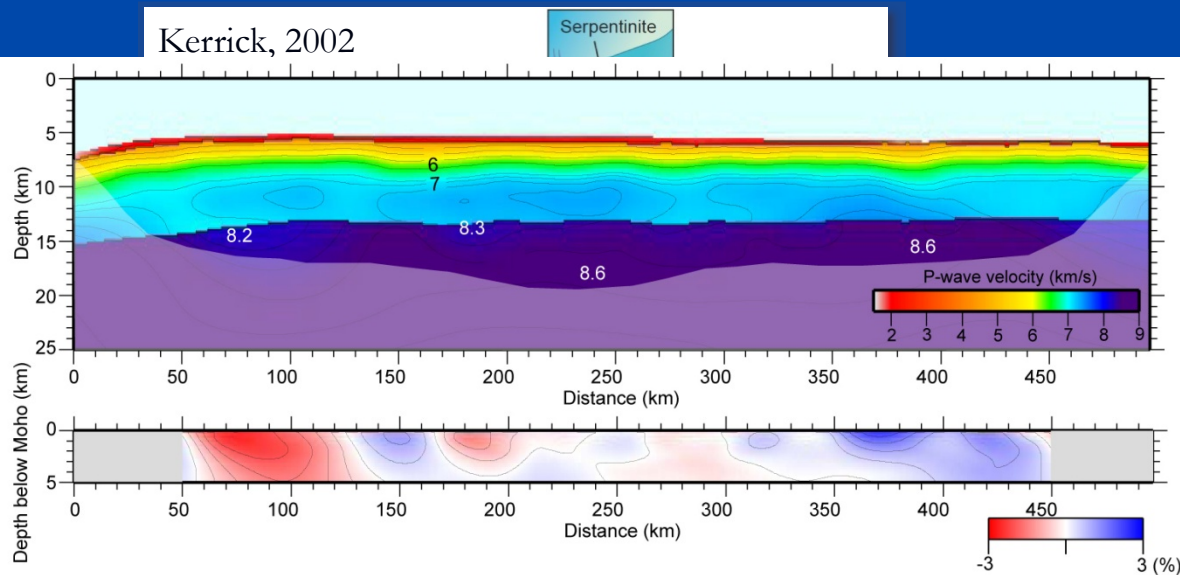
Boninite volcanism in spreading forearc



Incoming plate to subduction zone

- Understanding input material to a subduction zone and its relation to subduction processes
 - Seismic imaging of oceanic lithosphere to examine structural variation toward trench

Kerrick, 2002

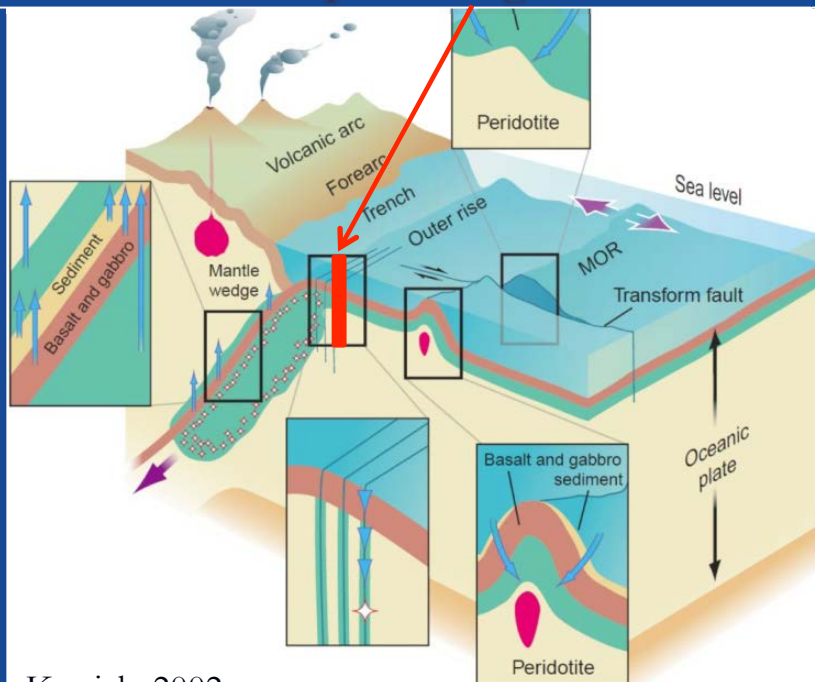


Incoming plate to subduction zone

- Provide fundamental information to IODP Mohole project
- Future challenge: outer rise deep drilling as Mohole2

Ildefonse et al. 2010

Outer rise deep drilling as Mohole2



Kerrick, 2002

