【首22-1-10】

2-3 首都圏下のプレート相互作用を考慮した地殻･上部マントル構造解析研究

東京大学地震研究所
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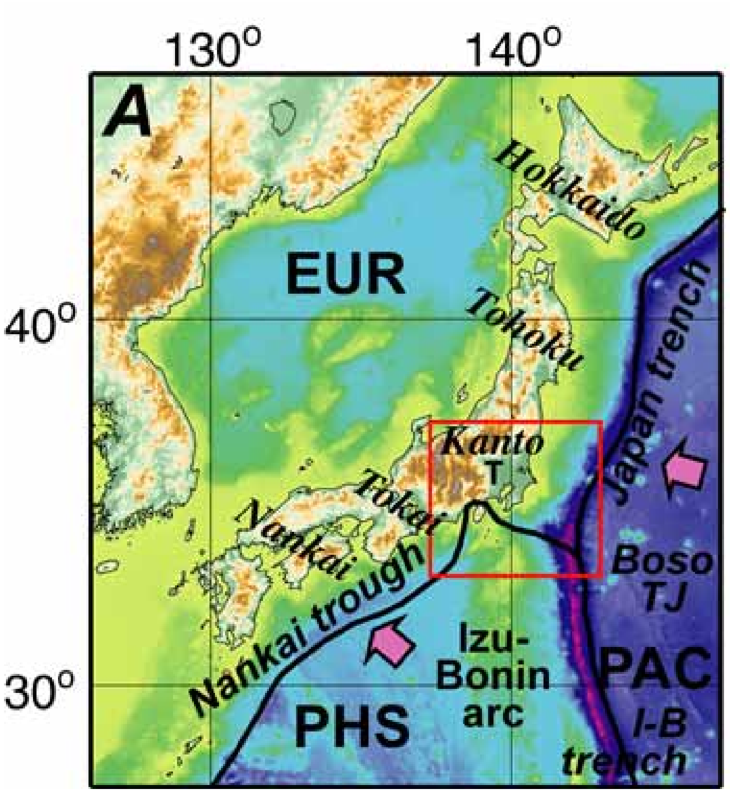
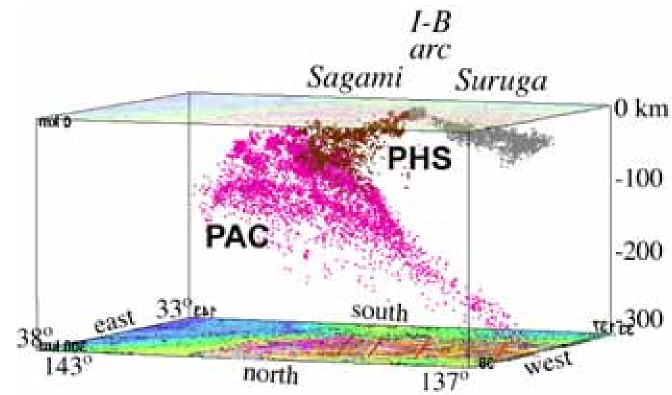
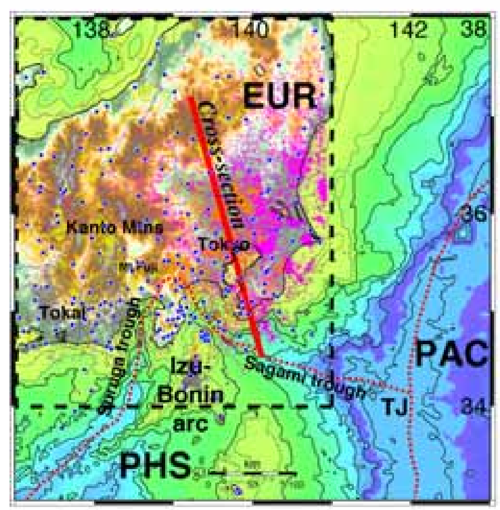
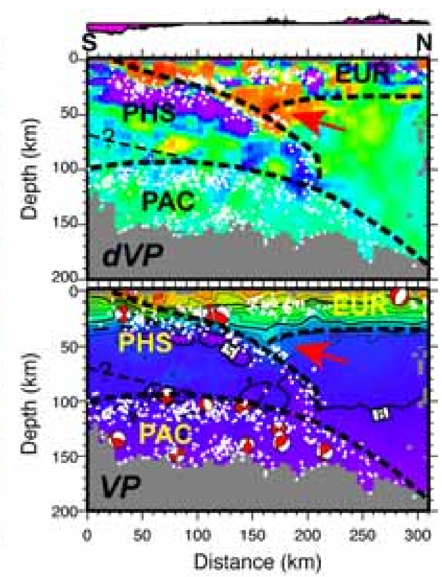
Geodynamical Modeling of PAC-PHS Slabs: Conditions for Increased Seismicity When Two Slabs Interact and Deform



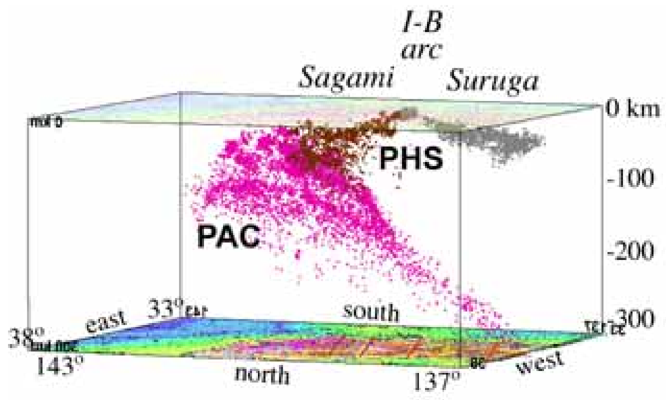


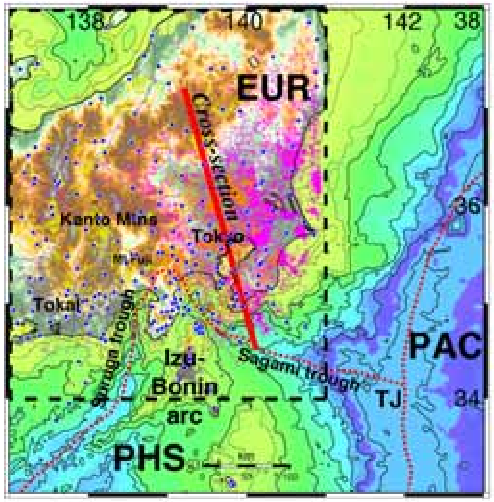


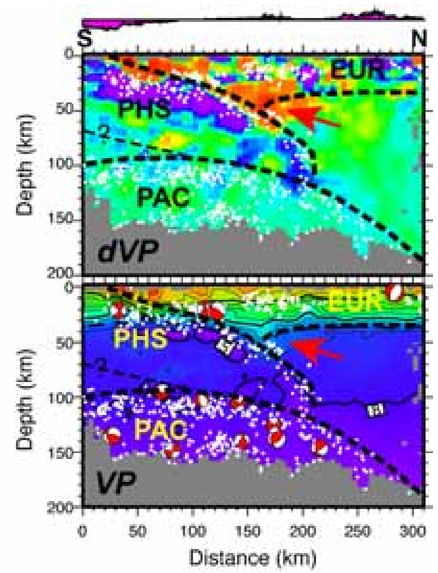


Geodynamical Modeling of PAC-PHS Slabs: Conditions for Increased Seismicity When Two Slabs Interact and Deform

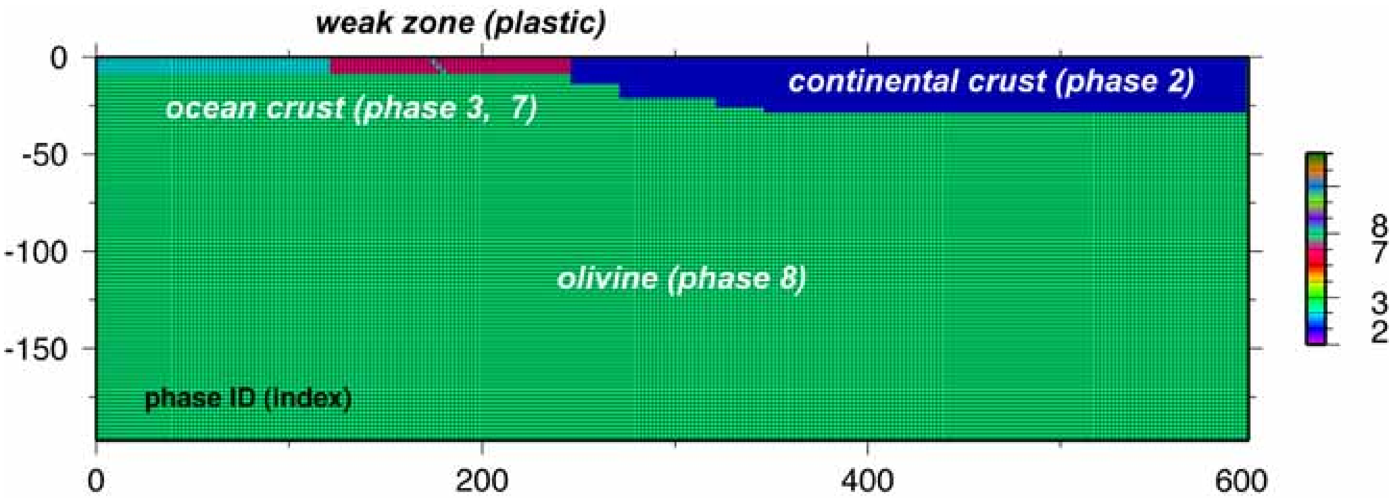
- What are stress and deformation patterns under Kanto where PHS and PAC hit?
- Can we identify zones where stresses are elevated and correlate to or predict higher seismicity?
- For geodynamical modeling, can we first create northern Honshu subduction for control?
- Can we model the Ontong-Java case where one old thick slab collides with a thin young slab?







Oceanic Plate Subduction under Continental Plate



Visco-elastoplastic Rheology (new FE code by Luc Lavier, UTIG)

phase 3	ocean crust (basalt)	30 my, 9 km crust
phase 7	ocean crust (basalt)	40 my, 9 km crust
phase 2	continental crust	100 my, 30 km crust
phase 8	mantle (olivine)	

plastic weak zone at *X=180* km to start subduction.

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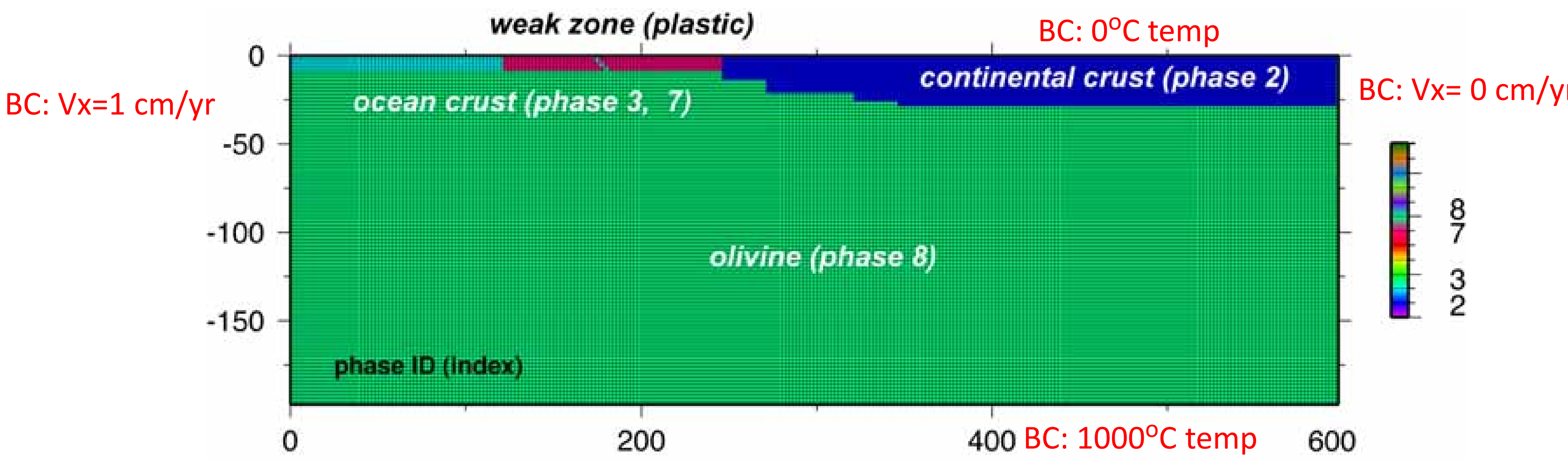

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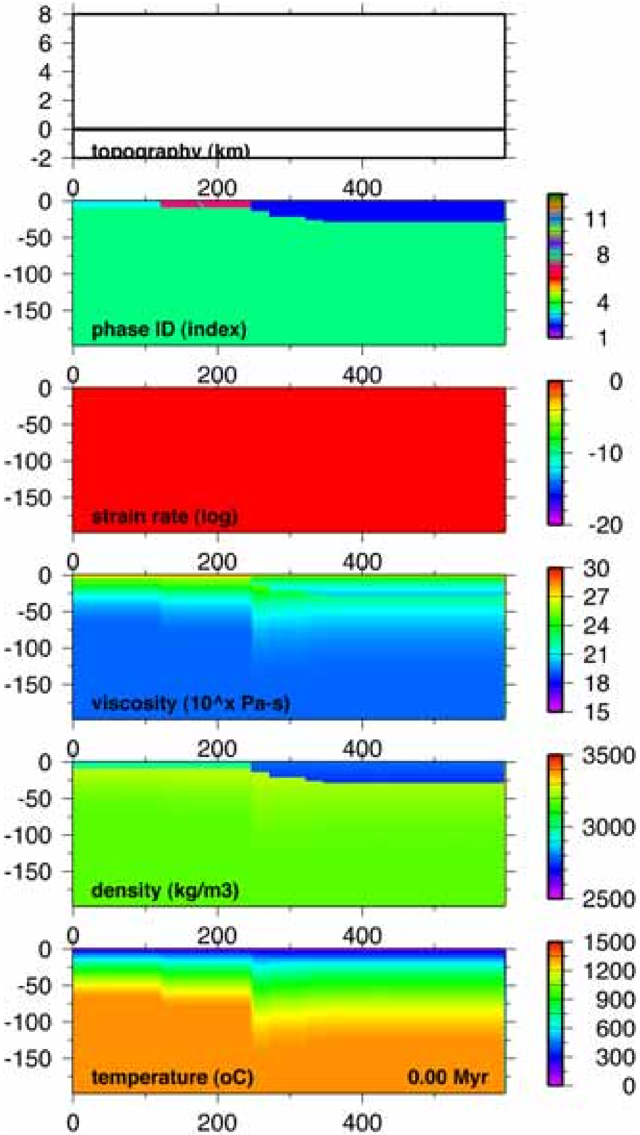
plastic weak zone at *X=180* km to start subduction.

erosion on, radiogenic heat in crust,
basalt -> serpentinite -> eclogite phase change.

Initial Time = 0 Myr (before movement)

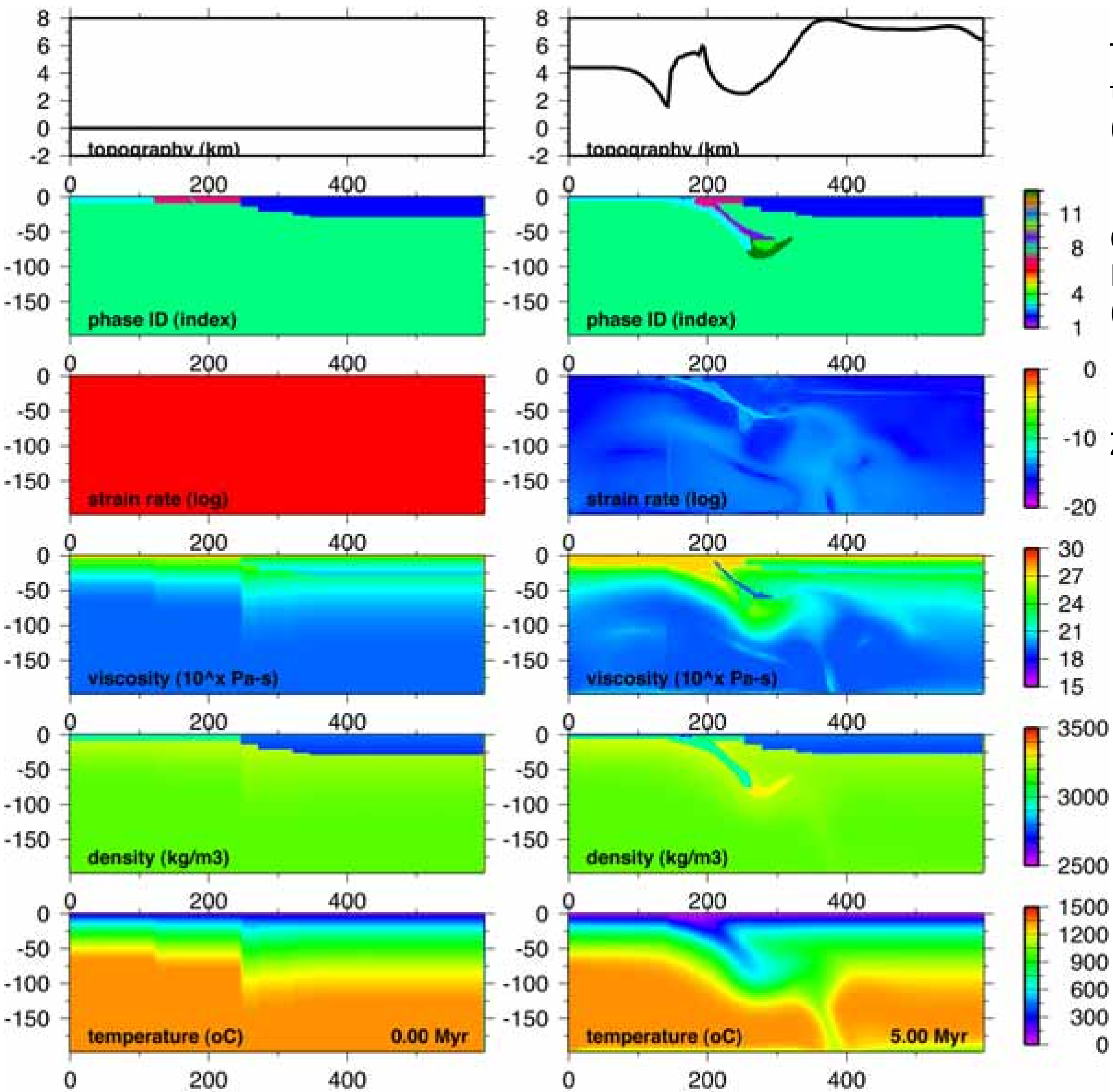


Two pieces of oceanic plate with weak zone, next to continental plate.

Density structure responds to viscosity structure to determine sinking behavior.

Thermal age of plates and BC's define temperature structure.

Initial Time = 0 Myr **Simulation Time = 5 Myr** **(4,270,000 calculation time steps)**



Topography (scaled wrong) shows trench and accretionary prism height (isostatic + dynamic topography).

Ocean plate subduction.
Basalt -> serpentinite change (purple color).

Zones of strain rate.

Viscosity, density, and temperature structure show geometry of subducting slab.

see .MPG movies