Deformed rocks, Metamorphic rocks and Tectonics

Convener: *Tetsuo Kawakami (Graduate School of Science, Kyoto University), Kazuhiko Ishii (Department of Physical Science, Graduate School of Sciences, Osaka Prefecture University), Chair: Takeshi Ikeda (Department of Earth and Planetary Sciences, Graduate School of Science, Kyushu University), Fumiko Higashino (Graduate School of Science, Kyoto University)

Mon. Apr 28, 2014 4:15 PM - 6:00 PM  414 (4F)

We invite all researchers who aim to understand the dynamics of the earth’s crust and mantle at the plate boundaries, to discuss the latest results from various viewpoints. The scope will include contributions through petrology and structural geology as well as various techniques including rheology and transformation of heat and mass.

5:15 PM - 5:30 PM

Thermal structure and water transportation in subduction zones: a comparison between NE and SW Japan

3-min talk in an oral session
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Keywords: subduction zones, NE Japan nad SW Japan

Northeastern and southwestern Japan are considered to be typical examples of cold and hot subduction zones, respectively. The old Pacific plate subducts beneath northeastern Japan at high rate and the young Philippine Sea plate subducts beneath southwestern Japan at low rate. These contrasts in the subduction conditions reveals in several aspects including higher activity of arc volcanism and deeper down dip limit of inter-plate earthquake in northeastern Japan, and deep low-frequency tremors at plate boundary of southwestern Japan. We have investigated thermal structure and geophysical and geochemical processes in these subduction zones using a numerical model. The model includes hydration and dehydration of the slab and mantle wedge, melting and solidification of mantle peridotites, permeable flow of melt and aqueous fluids, and temperature-dependent solid flow of mantle peridotites with water- and melt-induced weakening. We will discuss effects of the subduction conditions on the volcanic and seismic activities through the processes, especially water transportation.