Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

SMP046-11 Room:201B Time:May 27 11:15-11:30

Metamorphism and thermal structure of subduction zone: a case study on the Sanbagawa pelitic rock

Soichi Omori[1*], Kazumasa Aoki[2]

[1]Earth & Planetary Sciences, Tokyo Tech., [2]The University of Tokyo

The thermal structure of the present subduction zones has been a focus of geophysical studies regarding the origin of arc magma, transportation of volatile component such as H_2O and CO_2 into the deep mantle, and origin of the subduction zone earthquakes. Many studies employing numerical modeling have been done for the aim estimating the thermal structure of the subduction zone. The results contributed semi-quantitative understanding of the thermal structure of the subduction zone, however, diversity of the results among the models is not negligible to be applied to the natutal system.

It has also been one of the motivations of metamorphic geology that analysis of prograde metamorphism of a suite of metamorphic rocks in a metamorphic belt yields information of the the subduction geotherm. Recent advance in decoding metamorphic P-T condition enabled revealing true peak P-T condition and prograde P-T path excluding extensive retrograde hydration. Therefore, now, we can discuss the subduction geotherm of past subduction zone in a context of metamorphic geology.

In this presentation, we review nature of the thermal structure in the subduction zone, and prograde- and progressive-metamorphism, at first. Then a case study on the Sanbagawa pelitic rock is demonstrated with implications to the mantle-wedge dynamics and the material transportation.

Keywords: subduction zone, thermal structure, metamorphic rock, exhumation