

P-T and deformation fields of magmatism and metamorphism in subduction zones

Hikaru Iwamori[1]

[1] Geological Inst., Univ. Tokyo

Magmatism and metamorphism in subduction zones are modelled numerically, considering mantle convection, generation and migration of aqueous fluid and melt, and relevant phase equilibria. The model results and observations suggest that (i) the amount and depth of fluid generation and release from the subducting plate are controlled by the thermal structure of the subducting plate (age and subduction velocity), (ii) the high-pressure and high-temperature type metamorphic belts can be formed closely in time and space, associated with subduction of a young plate or spreading ridge, (iii) deformation and exhumation of the metamorphic belt can be driven by tangential stress of subduction, associated with supply of heat and water by ridge subduction, which reduces viscosity of the rocks.