



On a coupled evolution of Earth's mantle and core: Implications for magnetic evolution over the geologic time-scale

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According to the recent progress of numerical modeling of mantle convection with various realistic physical processes, we can look into possible scenarios on core-mantle evolution suggested from theoretical and experimental studies with developing a coupled core-mantle evolution model in fully dynamical mantle convection simulations. The core evolution theory that allows to generate the inner core can be treated with the thermal boundary condition at the core-mantle boundary of mantle convection simulations. Here we introduce our recent accomplishments in a coupled core-mantle evolution: 1. Influence of early Earth differentiation and 2. Importance of hydrous minerals in the deep mantle. In the presentation, we will give implications for history of heat flow across the core-mantle boundary from early to present Earth and magnetic evolution over geologic time suggested from paleomagnetism measurements.