Geodynamics Seminar

第305回ジオダイナミクスセミナー

Effect of subducted continental crusts on mantle dynamics

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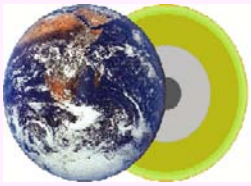
主催：愛媛大学地球深部ダイナミクス研究センター
日時：10/7（金）午後 4時30分～
場所：総合研究棟 4F 会議室



EHIME UNIVERSITY GRC GEODYNAMICS RESEARCH CENTER

Abstract

Increasing and decreasing of the continental crust has undoubtedly been controlling the Earth's surface environment including biosphere and atmosphere. The growth rate of the crust has been an extensive research subject and is considered to be highly dependent on the vigor of the mantle convection because it is closely linked to volcanic activities and accretion of sediments along subduction zones. The destination and the quantity of the subducted crusts are key points to elucidate the dynamical and chemical evolution of the Earth. As a way of the subduction of continental materials, three mechanisms have been proposed : tectonic erosion, sediment–trapped subduction, and direct subduction of immature oceanic arcs. In these processes, the granitic materials are conveyed through a subduction channel, which is a several hundred meters or kilometers thickness layer entangled from a subducting slab. In this study, we performed a numerical simulation of a subduction channel by a 1-D model that incorporates non-Newtonian rheology. The results indicate 2-3 km3/yr of the continental crust can be dragged into the mantle transition zone, that is comparable to the subducting continental crusts from the Earth's surface. We also conducted convection simulations with subducted continental materials.

詳細は当センターホームページ: http://www.ehime-u.ac.jp/~grc/をご覧ください
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