Geodynamics Seminar

第338回ジオダイナミクスセミナー

Mantle convection with continental drift and heat source around the mantle transition zone

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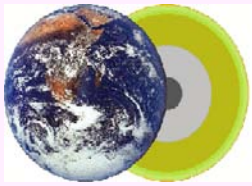
主催：愛媛大学地球深部ダイナミクス研究センター
日時：10/12（金）午後 4時30分～
場所：総合研究棟 4F 会議室



EHIME UNIVERSITY GRC GEODYNAMICS RESEARCH CENTER

Abstract

Geological studies have suggested that a significant amount of crustal material has been lost from the surface due to delamination, continental collision, and subduction at ocean-margins. If so, then the subducted crustal materials might be expected to be trapped in the mid-mantle due to the density difference from peridotitic materials induced by the phase transition from coesite to stishovite. In this study, we conducted two-dimensional numerical experiments of mantle convection with continental drift and a heat source placed around the mantle transition zone in order to study the effect of the subducted granitic materials drifting around the mantle transition zone. We found that the addition of the heat source considerably reduces the time scale of continental drift. In the absence of a heat source, the resulting time scale is too long compared with that of the so called supercontinent cycle, where the breakup is induced from a plume generated by an insulating effect of the continent. The heat source also causes massive mechanical mixing, especially in the upper mantle. The results suggest that the heat source drifting around the mantle transition zone can be a possible candidate for inducing the supercontinent cycle at an appropriate time scale.

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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