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SCG063-P02

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Numerical simulation of incipient plate subduction on intra-oceanic plate boundaries with Distinct Element Method

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Plate convergent margins bring the main driving forces to activate the plate tectonics on the earth. However, the initial formation process of new plate convergent margins has not yet to be adequately described. We constructed numerical models imitating intra-oceanic plate convergent margin, and examined numerical experiments. These convergent margins were constructed by the Distinct Element Method (DEM) that was extended to incorporate ductile deformation by a newly developed 'balloon method'. One plate convergent margin was constructed as one pair of adjacent two plates, and four different pairs of plate thicknesses were set as initial conditions. The two of four experiments showed initial plate subduction, and the results shows that plate subduction starts with a well grown slab head and the flow of asthenospheric mantle beneath lithospheric plate strongly affects to formation of plate convergent margins.

Keywords: plate tectonics, convergent margin, plate subduction, numerical computing