A numerical study of incipient plate subduction using DEM.

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http://ofgs.ori.u-tokyo.ac.jp/~ofgs/naito/naito-j.html

Because of its significant contribution for plate tectonics, the convergent margins need to be well-investigated. The mechanism of subduction, however, has not been clearly understood. One example is the transform plate boundary that characterized by a wide variety of age of the both plates. Such boundary may evolve into subduction, but there are few numerical models on such brittle features and we can not apply these to dynamic studies of subduction zones.

DEM (distinct element method) is a numerical simulation technique and has many advantages to deal discontinuity, such as large transformation and destruction models. This method uses a number of circular or spherical elements to represent the subject of investigation.

Positions of elements are computed solving equations of motions of each elements. We used DEM and some different physical parameters to represent numerical plate models. Then we combined some different plate models to build plate convergent margin models. The plates are compressed laterally and the process of collision and transformation of these models are investigated.