

## Correlation between the interplate coupling and the spherical oceanic lithosphere buckling at subduction zones

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We present a hypothetical model of mechanical stress change on the plate interface due to the slab age increases or decrease after the major spherical buckling.

Here, we assume that the absolute plate motion velocity of the overriding lithosphere is approximately zero at a subduction zone concerned.

Spherical tectonics suggests that, in the case of both edges of the single trench segment having been fixed with the mantle frame, if the slab age is gradually increasing or decreasing, the normal stress on the plate interface, i.e., interplate coupling, will be strengthened or weakened to some extent, respectively.

In the case of the abrupt increase or decrease in the slab age, the spherical slab segment might follow the mechanical buckling theory.

The buckling sequence of the trench segment(s) during morphological transformation is not like as a step function but as a gentle curve of some short period.

This is mainly because of the rheology response for the materials concerned, not only the slab segment itself but also the passive viscous flow regime within the surrounding upper mantle layer as well as the overriding lithosphere.

Keywords: interplate coupling, spherical shell buckling