

## The effect of the hydro-isostasy for the biological diffusion

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It has been shown that land area is an important factor in patterns of the species richness, although the species richness is dependent on the multiple factors such as physical environments, intraspecific competition, and local island history (e.g., movements of land masses and geological climate changes). Various functions such as the extreme-value function (Williams, 1995) have been proposed to describe this species-area relation. For instance, continental breakup and collision are accompanied by a large change in area, so previous studies have been considered to describe the effect of tectonics on biocenosis. However, the combination of geological and biographical perspectives has previously been attempted only at very large scales of time and space. In this study, we consider the species-area effects from the viewpoint of a shorter time scale and a small region - not in a continent but in islands over a period of tens of thousands years.

Historical changes in the coastline of Ogasawara Islands in the south part of Japan were estimated by using a numerical simulation based on a glacio-hydro-isostasy model. Temporal changes in the area of the island during the last 40 kyr were compared with temporal changes in species diversity in fossil land snails of the island. We discuss the relation between the biological diffusion and the area, such as island elevation, distance to the nearest large island, climate change, human activity.