

Dynamics and evolution of Nansei Islands of Japan

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The Nansei Islands of Japan is located in the boundary between Ryukyu trench and Okinawa trough (back arc basin). The Philippine plate subducts through the Ryukyu trench beneath the Eurasian plate. The GPS measurement suggests that the Nansei Islands advances toward the Philippine Sea side, and that the Okinawa trough and branched Kagoshima graven are expanding since over than 2Ma,

The existence of earlier species, Amami rabbit (*Pentalagus furnessi*) on the Amamioshima and Tiokunosima islands and the distribution of Habu (*Protobothrops flavoviridis*) in the southern Tokara volcanic island than Kodakara island can be interpreted that these islands have been connected together and with Eurasian continent at Miocene epoch. Different poisonous snake, pit viper (*Gloydius blomhoffii*) universally in major Japanese islands lives in only northern Nansei islands; Tanegasima and Yakushima, suggesting that these islands were connected with Kyushu. Yakushima is also characterized by granitic batholiths of Miocene.

Recent coastal terraces are well recognized in whole area of the Nansei islands, and the ascending rate is independence from each others.

Furthermore, the DNA sequencing of the microbes from the soil in Nansei Islands suggests that the ascending and descending records are individual.

These evidences suggest that just after the opening of Japan Sea, the Nansei island area changed to compressional field to form rather large elongated island from Taiwan to Kodakara-jima, and the northern islands; Yakushima and Tanegasima, were connected to Kyushu. However after Pliocene period, the Okinawa trough began to open, and the area changed to a extensional field as a whole, and ascending and descending areas were blocked by transverse fault.

The surface structure and subduction pattern of Philippine plate might control the dynamics and evolution of the Nansei Islands area.

Keywords: Nansei Islands, Philippine plate, Eurasian plate, extensional field, compressional field