

Stratigraphy and geological structure of Goto Group in the Narushima Island, Goto Islands, Nagasaki Prefecture, West Japan

*Daisaku Kaneko¹, Shoichi Kiyokawa¹

1. kyushu university

The Narushima Island, central part of Goto Islands, contains early Middle Miocene Goto Group with several intrusion and 2 type deformations. Goto Group is sediment of expansion time of Japan sea. In the Narushima Island, There may be the evidence of the times change of the lift zone. This study settles a geological feature of the Narushima Island as a stage before finding out the evidence. In this study area strikes NW in the south part and NE in the north part and dips 0-60°N. Northern area is well preserved drag fold which down to northwest (Type1). Northwest to southeast faults are well exposed 3 places with brecca zone (Type2). The Narushima Island is divided into 4 blocks by NNW-SSE trend extensional strike-slip fault with thick brecciated zone.

Stratigraphy of this sequence is divided 3 formations in ascending order, as follows: A formation (40m thick) is characterized by alternating beds of pyroclastic rock and tuffaceous sandstone. Pyroclastic rock in A formation contains 1-3 cm elongated lapilli oriented with their long axes parallel to bedding. B formation (350m thick) is composed of mudstone-dominant alternating beds of sandstone and mudstone, and subdivided 3 members. Lower Member (90m thick) is characterized by mudstone-dominant alternating beds of sandstone and mudstone, Middle Member (140m thick) by sandstone-dominant alternating beds sandstone and mudstone, and Upper Member (110m thick) by mudstone-dominant alternating beds of sandstone and mudstone. Sandstones of B formation exhibit a variety of depositional structures. Sandstones of Lower Member are normally graded and of Middle Member sometimes show internally climbing ripple lamination and trough and planar cross bedding. Fossils of mud snails occur in Middle Member. C formation (500m + thick) consists of thick sandstone and thin mudstone. Sandstone of C formation exhibits internally thick cross bedding.

It is thought that pyroclastic rocks of A formation are deposited as volcanogenic mud flow sediments, normal graded sandstones of the B formation are turbidity current deposits, and thick sandstones which exhibit cross bedding in the C formation are sediments near estuary. And In B formation, limnetic fossils occur. Therefore this stratigraphic change indicates rifted volcanic event, lake sediment and river-delta sequence at the rift zone of Japan sea. Type 1 deformation may be related by opening face of Japan sea. Northwest to southeast trend Type 2 deformation might be related rifting of north Okinawa Trough.