

Geology of Fukue Island, Goto islands, Nagasaki Prefecture

Takanori Hasegawa[1]; Shoichi Kiyokawa[2]; Noriko Hasebe[3]

[1] Earth and Planetary Sci., Kyusyu Univ; [2] Earth & Planetary Sci., Kyushu Univ.; [3] K-INET, Kanazawa Univ.

The Goto islands situated in the western part of Japanese islands expose after Lower to Middle Miocene sedimentary (Goto Group) and igneous rocks. The geologic evidences in this area are very important to identify the relation between north west of Kyusyu and Asian continent. Detail stratigraphy and geological structure have not been identified. We focused on the northeast (Okuura region) and southwest(Tamanoura region) of Fukue Island, and examined stratigraphy and geological structure.

Geology of northeast area: In this area, two lithofacies, Goto Group and Goto granite intrusion, are observed. Goto Group is exposed in large area and the thickness reaches about 1600m. Goto Group is divided into three formations, Gongenndake, Okuura and Toraku formations. The Gongenndake Formation has about 300m thick, and the rock facies are massive structure, and have green color. As this samples are observed by microscope, there are what is rich in feldsper, very rounded quartz, sedimentary rock fragments or volcanic rock fragments. The Okuura Formation has 1000m thick, and consists of alternation fine-medium sandstone and mud-siltstone. This formation is divided into three members by rock facies. The Toraku Formation, more than 300m, exposes Kasinoura, Nanngoura and Toraku district, consists of medium-coarse sandstone that has cross bedding and tuff. These layers were intruded by granite dyke.

Geology of southwest area: In this area, three lithofacies, Goto Group, Goto granite intrusion and white rhyolite (Daiho Formation) are observed. The Tachiya Formation has about 750m in thickness, and are consists of green polymictic volcanoclastics and accretionary lapilli. The Tamanoura Formation has 900m in total thickness in this region, is consists of sandstone and shale which are meandering river sediment and rhythmite. Fission Track dating from volcanic sand shows depositional age of the Tachiya Formation is 17.3±0.9Ma, 16.2±0.9Ma, and the Daiho Formation is 13.1±1.1Ma in this study.

Structure: Three stage deformations are identified as three types faults. D1) NE-SW trending, NW dipping normal fault(F1). F1 is identified alongside high angle dipping beds. D2) NE-SW trending right lateral strike-slip fault(F2). D3) NW-SE trending left lateral strike-slip fault(F3). This D1 high angle dipping beds are able to be observed in both area, northeast and southwest. So, in this study, we regard this high angle beds as key bed of geological structure, and compare the two areas.

Conclusion: paleocurrents date from cross bedding indicates flow from south and there is fining-upward sequence cycle. From this evidence, Goto Group in this area is considered fluvial and lake sediment. There was volcanic activity when Goto Group was collecting because thick-bedded tuff layer intercalated in the Toraku Formation. First, Goto Group was collected. After that, white rhyolite(Daiho Formation) and Goto granite dyke were formed. The last, D1 high angle dipping beds were constructed.