Investigation of Quaternary activity in Miyakojima fault zone Okinawa Pref. southeast Japan

Tomoo Echigo[1]; Masashi Omata[2]; Yorihide Kohriya[3]; Kiyoshi Ichikawa[4]; takaaki iwasaki[5]; Ikuhisa Adachi[6]; Hideaki Maemoku[7]; Tatsuya Ishiyama[8]; Masanobu Shishikura[9]; Kaoru Taniguchi[10]; Toshio Kawana[11]; Takashi Murakami[12]; Naoko Kitada[1]; Naoto Inoue[1]

[1] GRI; [2] INA Co.; [3] INA; [4] Dep. Geog. lit, komazawa Univ; [5] ias
; [6] none; [7] Geography, Edu., Hiroshima Univ.; [8] Tohoku University; [9] Active Fault Research Center, AIST, GSJ; [10] ERC, ADEP; [11] Natural Environment, Coll. Edu., Univ. Ryukyus; [12] Geo-Research Institute

We report on the result of the active fault survey done with the Miyakojima fault zone of Okinawa Prefecture. This investigation was executed by the budget of the Ministry of Education, Culture, Sports, Science and Technology.

Miyakojima is located in the southwest about 290km of the main Okinawa island. The highest point in the island is above sea level 115m. The shape of the island is triangular from east to west of about 25km at about 30km in the direction of northeast. The distribution of the Miyakojima fault zone is being pointed out to Miyakojima by The Research Group for Active Faults of Japan (1991) and Nakata and Imaizumi (2002). The Research Group for Active Faults of Japan (1991) is named the Aragusuku fault system, the Fukusato fault system, the Naganuma fault system, the Yonabaru fault system, Nohara fault system, Koshihara fault system, Kate fault system, and Kuruma fault system. As for the northern part and the southern part of the Naganuma fault system, length becomes 27km. Therefore, Headquarters of Earthquake Research Promotion specified the Miyakojima fault zone for the additional investigation fault on August 30, 2005.

A basic rock of Miyakojima is Shimajiri formation, and Ryukyu limestone. O-nogoshi clay layer and the latelite soil of the Res origin cover the surface. The thickness of the layer doesn't thinly contain the carbide in the laterite soil layer. A detailed observation of the fault scarp was difficult because it changed in quality the surface of Ryukyu limestone. Therefore, we judged that the briskness evaluation of the active fault by the trench excavation survey was difficult. Instead, it paid attention to the old shore line evidence like the beach locks, bench and notch etc. distributed in the coast. We examined the fault activity investigating these distribution, height, and age. Besides this, the high-resolution evaluation and multichannel seismic reflection method was executed in the shallow sea area. And we executed the drilling survey that crossed the limestone wall in Sugama area of Miyakojima.

As a result of the geographical and geological features survey, the following findings were obtained.

The Aragusuku fault system, the Fukusato fault system, and the Naganuma fault system are giving the transformation to the Bora limestone at the early Quaternary. However, the possibility that there is no transformation in the Tomori limestone is high.

After at least 2000 years-ago, the fault activity is thought to be not active based on the distribution of the beach lock.

Two or more faults that give displacement from the result of the shallow seismic reflection method inquiry of the sea area to the Shimajiri layer group are admitted. It adjusts to the position of the cliff of displacement in surface.

In the future the Aragusuku, the Fukusato and the Naganuma fault system are thought that the possibility of acting is extremely low from these results. On the other hand, briskness is not predicable in a confirmation of limestone only in the fault system in the Yonabaru and the Nohara. As for the Kate fault system, the possibility that displacement is generated by the earthquake in 1771 is thought (Adaniya private letter). This boring result is reported later. This report is an intermediate result. Therefore, there is a possibility that the interpretation will change in the future.