

The characteristics of seismic stratigraphic facies of Kikai submarine caldera and off the southern Kyusyu

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Kikai submarine caldera which is located in the southern extension of the Kagoshima volcanic-tectonic graben caused super eruptions at least three times at 140, 95, 7.3Ka. We conducted the campaign of integrated research cruises utilizing T/V Fukae-maru around Kikai submarine caldera. Seismic reflection surveys are a part of the campaign to reveal these volcanic activities and the caldera formation, which has been discussed so far based solely on subaerial deposits of Takeshima and Satsuma Iwo-jima exposed as the subaerial parts of the northern rim of the caldera, surrounding islands, and the southern Kyusyu. The seismic reflection surveys target submarine area where most of the body of the caldera exists and its large part of the pyroclastic materials deposited. In order to obtain fine features of seismic morphology and facies of these, the seismic survey was configured for high resolution imaging with a mini GI gun and 6ch short streamer. The data was processed with stacking and migration preserving high frequency contents.

The results of the high resolution seismic reflection profiles around Kikai caldera and off the southern Kyusyu reveal seismic stratigraphic facies and the geologic structures. Several seismic units characterized by distinctive seismic facies were recognized around Kikai caldera, and these were deformed by faults accompanied with caldera collapse and also slump structures which are widely shown in the vicinity of the caldera. These facies of the units are considered to represent the variations of pyroclastic materials in association with stages of the volcanic activities, and also the deformation of these units can allow us to discuss the caldera formation process. Several uniform units are recognized in the profiles of the northern side of Kikai caldera where is off the southern Kyusyu, and are believed to be primary and secondary deposits supplied by the southern Kyusyu volcanoes including Aira caldera and Ata caldera located in the Kagoshima-bay. In these units has some sequence stratigraphic surfaces and system tracts accompanied with the Quaternary eustatic sea level change and possible subsidence. We will discuss the activities of these caldera volcanoes of the south of the Kyusyu from these stratigraphic structures and sequence pattern of deposits supplied by both of the Kikai caldera and the southern Kyusyu volcanoes.

Keywords: Caldera, Seismic Reflection Survey, Seismic Sequence Stratigraphy