

Volcanic activity history of Io To Island in Ogasawara Archipelago estimated by terrace chronology and crustal deformation

NAKANO, Takayuki^{1*}, IMAKIIRE, Tetsuro¹, KOARAI, Mamoru¹, Kosei Otoi¹, Shinzo Ooi¹, SASAKI, Keiichi²

¹GSI of Japan, ²Kanazawa Gakuin University

No detailed studies about geoscience phenomena in Io To Island in Ogasawara Archipelago were kept since it was summarized on "Journal of Geography" in 1985. We have conducted survey of topography and geology and observation of crustal deformation using GPS in order to interpretate a detailed uplift activity history, volcanic chronology and recent crustal deformation. This work was supported by MEXT KAKENHI (21510193). Primary results of this study were reported on Ooi and Yurai (2007) and Imakiire et al. (2010). In this presentation, we report the result of radioactive dating and component analysis about the samples extracted in Io To Island, and volcanic evolution history in Io To Island reached by making use of those results is suggested.

The volcanic activity history for 3,000 years past in Io To Island estimated by these results and existing results is as follows: (1) a great volume of lava and pyroclastic material (Motoyama tuff) spewed out about 2,700 years ago, and old Io To island covered thickly with it, (2) a submarine volcano erupted around Kangoku Iwa about 1,600 years ago, and the peperite was generated, (3) a large scale eruption of the volcano occurred around Suribachi Yama volcano about 1,400 years ago, and pumice drifted in Okinawa, (4) Suribachi Yama volcano erupted with a uplifting rapidly Motoyama volcano about 500-600 years ago, and Suribachi Yama volcano was connected with Motoyama volcano by a large amount of pumice, (5) a small scale eruption occurred in Suribachi Yama volcano about 400 years ago, the scoria hill was formed on southern edge of the crater of Suribachi Yama volcano, (6) an eruption with magma occurred at the sea bed off south coast of Motoyama volcano after the second World War.

It was confirmed that the uplift velocity past of Io To Island (Motoyama volcano) was intermittent and fastest in about 500-600 years ago by terrace chronology. On the other hand, the average uplift velocity during the past 100 years by a reference point and GPS observation is 15cm/yr (Hiraoka et al., 2009), and maximum uplift velocity was recorded in the 1950s-1960s and from late 2006 to 2010, about 56cm/yr (Tsuji et al., 1969) and about 40cm/yr (GSI, 2011) respectively. These recent uplift velocity is comparable to it in about 500-600 years ago, when Suribachi Yama volcano erupted with a uplifting rapidly Motoyama volcano.

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