
[JJ] Evening Poster | H (Human Geosciences) | H-GM Geomorphology

[H-GM03]Geomorphology

convener: Tsuyoshi Hattajji (Faculty of Life and Environmental Sciences, University of Tsukuba),
Masayuki Seto (Fukushima Future Center for Regional Revitalization, Fukushima University), Hiroshi Shimazu (立正大学地球環境科学部地理学科)

Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

The main subject of this session is the whole range of themes relating to geomorphology, especially geomorphic processes, landform development and its relation to environmental changes, geomorphological hazards and their mitigation and reports of recent events of disaster occurred in Japan, various kind of hazard maps, relationships among geomorphic processes, other natural phenomena and human activities, and various techniques of geomorphological measurements and automatic landform classification. Japanese can be used in this session.

[HGM03-P09]The Relationship Between the Coastal terrains and Geological Layers, in the Western part of Iki Island, Nagasaki Prefecture

*Yasuhiro Horikawa¹, Kenta Okidate², Takuro Ogura³, Tatsuto Aoki⁴ (1. Course of Environmental Coexistence, School of Regional Development Studies, Kanazawa University, 2. Course of Human Sciences, School of Humanities, Kanazawa University, 3. Graduate School of Frontier Sciences, The University of Tokyo, 4. School of Regional Development Studies, Kanazawa University)

Keywords: Rock control, Holocene sea-level change, Sea cave, Breccia, Basalt, Natural bridge

In western part of Iki island, many sea caves distribute facing Genkai-Nada. Especially a collapsed sea cave called Onino-Ashiato is famous for its scale and unique shape. In the regions, like Japan, where are influenced by diastrophism, the forming process of coastal terrains, linking the relationship between geological rock property and sea level changes, is very complex and difficult. Due to this, the number of research examples is limited. But Iki island has few evidence of diastrophism (Watanabe 1990), which makes the consideration of coastal terrain's forming process easier by limiting the factors in geological features and sea level changes. This study focuses on the distribution of coastal terrain around Onino-Ashiato, the measurement of its shape, and the discussion of forming process of it. To grasp the shape of Onino-Ashiato in 3D data, SfM (Structure from Motion) was taken. To measure the distance, a laser rangefinder was used. By using detail pictures and these tools, the layers of rock consisting Onino-Ashiato and surface weathering were researched. Also, to understand the terrain around it in detail, geomorphological maps were made through observation. By using them, the consideration of the forming process of Onino-Ashiato is discussed.

Around the research area, the layers of basalt, which were formed around 2.1-2.5 Ma (Sano 1995) and layers of breccia form the base rock. The layers of breccia are weak of erosion and are collapsed rapidly from bigger rock brocks. Basalt is harder and that forms overhang sea cliff and upper natural bridge of Onino-Ashiato. From these results, it can be said that sea caves began to be formed at the layer of breccia. Onino-Ashiato is a horseshoe shaped sea cave, with 54 m in length, 33m in width, 26 m in depth, and the height of natural bridge is 9.4 m. The unique shape might be the result of the flow of wave in the sea cave as the result of observation. The relationship of sea caves in shape and distribution of them can be a link of the rock control theory. Also, the height of sea cave is around 10 m, and there is a sea cave, which exist 5.2 m higher than today's sea level. This shows the possibility of sea level changes.

The height of sea cave's existing point, 5.2 m is similar height of the tide in Holocene sea level change in Genkai-Nada (Shimomura 1994). From these evidences, 2 factors, Holocene sea level change and rock control, the possibility of relationship in forming coastal terrain is shown.

Reference

- Takashi Sano 1995. Geology of Iki Volcano Group: Lava Flow-stratigraphy Mainly Based on K-Ar Dating. Bulletin of the Volcanological Society of Japan 40-4: 329-347.
- Shoichi Shimomura 1994. Shorelines and Trend of Local Movements since the Peak of the Jomon Transgression in North Kyushu, West Japan. The Quaternary Research 33-5: 351-360.
- Mitsuhsa Watanabe 1990. Comments on the Tectonics of the Tsushima Strait Region, Northwestern Kyushu. The Quaternary Research 29-3: 227-279.