Reexamination of geological setting of the Neogene rhyolites in Takeno Geosite, San'in Kaigan Global Geopark, Japan

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Various geological assets related to rifting and spreading of back arc basin (Sea of Japan) and formation of island arc (Japanese Islands) are distributed in San'in Kaigan Global Geopark. One of the geomorphic characteristics of the San'in Kaigan Global Geopark is variety of coastline, and central area of the coast line is characterized by ria coast. Geomorphology of the ria coasts of this area reflect the difference of hardness of rocks composing the area. Especially, rhyolitic rocks often compose the peninsulas, capes, large cliffs and solitary islands, because they are harder than surround sedimentary rocks. Some of them are designated as natural monuments and known as the representative geosite (ex. Mio-Oshima island, Yoroi-no-Sode sheet, Nekozaki-Peninsula and Ui Village) in the Geopark. They are noted by not only the beautiful scenery which created by columnar joint and flow structure but also field of outdoor activities. (ex. sea kayak, pleasure boat, fishing, diving, snorkeling, etc.)
It is the important to understand and report the value of geosite in the activity of the Geopark. But, the geological setting of the rhyolite bodies has not been clarified in detail. Wadatsumi et.al (1966), and Hyogo Prefecture (1996) proposed that these rhyolite bodies area correlated to late Pliocene Utaosa Thyolite in Teragi Group. But relationship of those rhyolite bodies are unidentified, because that they are isolated each other.
We have researched geologically the Ui-Nekozaki Rhyolite Body which is the largest rhyolite body in the San'in Kaigan Global Geopark and is drawn as a lava flow by previous geological map. As the result, get a different result from previous research.
Result of the survey shows that main part of the rhyolite body is divided following two bodies, one is pyroxene and amphibole bearing rhyolite around Mt. Kuruhi, another one is composed of typical rhyolite with flow structure sometimes bearing spheilite around Ui and Takui Villages. They are interrupted by basement rocks composed of Miocene Hokutan Group. On the other hand, a igneous rock body composing Nekozaki Peninsula located on the northwest of Ui Rhyolite Body is consist of amphibole dacite. As mentioned above, rhyolite body is divided into some separate rock bodies.
The flow structure of rhyolite distributed around Ui village to Takui village is steeply dipping generally 60-80 degrees and is disturbed with strongly appressed folding. Such occurrences of rhyolites indicate that they are not lava flow extruded on the surface of the earth but lava dome or intrusive body in the shallow underground.
Boundary between decite and basement sedimentary rocks (Hokutan Group) is observed at west cliff of Nekozaki Peninsula and is known as representative geosite showing unconformity between Miocene Hokutan Group and Pliocene Teragi Group. But the evidences of time gap between two bodies and flowage of lava on the ground surface (clinker, trace of erosion, basal conglomerate and so on) are not observed. Flow structure and bottom surface plane of the dacite mass is sub parallel to bedding plane of underlying sedimentary rocks of Hokutan Group. These facts may suggest that the dacite body has been formed the same time as sedimentation of Hokutan Group.
As mentioned above, Ui-Rhyolite body is divided into plural bodies and some of them may be formed at different ages. These results show that reconsideration of geological setting about other rhyolite bodies in San'in Kaigan Global Geopark (ex. Mio-Oshima island, Yoroi-no-Sode sheet) is necessary.

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