Geology and radiolarian fossils of the Ganbisan area, Akiyoshi terrane, Southwest Japan

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Geological and micropaleontological studies for the Permian accretionary complex of the Akiyoshi terrane in the Ganbisan area, Yamaguchi Prefecture, Japan, have been carried out. The Akiyoshi terrane around the study area is composed of the Akiyoshi Limestone (Carboniferous - Middle Permian oceanic island), the Ota and Beppu Groups (Carboniferous - Late Permian ocean floor deposits) and the Tsunemori Group (Middle - Late Permian trench-fill deposits). The Ota and Beppu Groups consist mainly of chert and clastic rocks. Radiolarian biostratigraphy and depositional environments of the Ota Group was investigated by Uchiyama et al. (1986). While there are no recent study for the Beppu Group since Takahashi et al. (1967).

The study area is situated in the western part of the Beppu Group. Chert of the study area is commonly massive and non-stratified. Chert frequently interbedded with chert breccia, chert-limestone breccia and limestone conglomerate. Chert gradually changes into felsic tuff. Clastic rocks are mainly composed of mudstone with occasional intercalations of sandstone and felsic tuff.

Radiolarian fossils were found from chert, felsic tuff and mudstone around the Mt. Ganbisan. The radiolarian fauna including Pseudoalbaillella sp. aff. P. longicornis, Pseudoalbaillella yanaharensis, Follicucullus monacanthus, Follicucullus scholasticus, Pseudotormentus kamigoriensis and others, indicates Middle - earliest Late Permian in age.

Sponge spicules are commonly included in chert, felsic tuff and mudstone. The fauna of sponge spicule is composed of abundant monaxons, with tetraxons, rhax and triaxons. Sponge spicules were mainly derived from Demosponges, with secondary Hexactinellids.

Chert and clastic rocks of the Ganbisan area make a pile with low-middle angle. Takahashi et al. (1967) suggested that all of them are normal bedding. However, compared with the reconstructed stratigraphy of the Akiyoshi terrane (Kanmera et al., 1990), the lithological change from mudstone to chert through felsic tuff at south of Mt. Ganbisan suggests that they are overturned bedding with low angle. Actually alternations of sandstone and mudstone at south of Mt. Ganbisan show overturned graded bedding with low angle. On the other hand, sandy mudstone of south of Okada indicates normal graded bedding with middle angle. Thus, geological structure of the Ganbisan area is considerably complex, and it is necessary to investigate more carefully.