Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

SGL44-P07 Room:Convention Hall Time:May 23 17:30-18:30

Stratigraphy and tectonic setting of clastic rocks in Jurassic accretionary complex of Cape Shiriya, northern Japan.

KIMURA, Sho[1*]

[1]Graduate student of Education, Hirosaki University

[Introduction]
The Jurassic accretionary complex of Cape Shiriya in northern Japan contains conglomerates and lithic sandstones suggestive of mass wasting on inner trench slopes, as well as large limestone bodies of seamount origin. Dominance of mass-wasting setting on inner trench slopes favors a non-accretionary convergent setting similar to the present-day Japan trench. However, geological processes in such settings are not well studied. The author focuses on recycling processes of accreted materials observed in the Cape Shiriya rocks, and made field mapping, and examined clastic composition and their radiolarian ages. The clastic composition of conglomerates suggests two provenances : a limestone-capped seamount being subducted, and a trench landward slope consisting of previously accreted sandstone and siliceous sedimentary rocks. Because siliceous rock clasts could also be supplied from outer trench slope, radiolarian ages of the siliceous rock clasts are examined to confirm their sources.

[Geologic outline]
Chert, sandstone, and mudstone are dominant along the northwest coast of Cape Shiriya. Whereas on the east coast, conglomerates with clasts and blocks of limestone and chert characteristically occur. In the study area, chert was dated as Late Triassic to Late Jurassic, and mudstones as lastest Jurassic to earliest Cretaceous (Oho and Iwamatsu, 1986 ; Matsuoka, 1987 ; Saito, 2010MS).

[Stratigraphy of clastic rocks]
A gradual lithologic transition from chert via siliceous mudstone to pebbly mudstone and alternation of sandstone and mudstone correlative to ocean plate was observed at Iwaya on the northwest coast. This succession extends to the northeast with folds. Thick conglomerate beds graded into sandstone or mudstone comprise a clastic sedimentary succession at Ataka on the east coast. At Shitsukari on the east coast, one can recognize a fault imbricate stack of peculiar sedimentary successtions, in which chert is overlain by conglomerate with sedimentary contacts.

[Petrological characteristics of conglomerate and sandstone]
In the Cape Shiriya area, conglomerate is typically angular, massive, and unsorted. Some of the conglomerate beds are graded into lithic sandstone. The conglomerate contains variously sized rubbles and clasts of limestone, chert, sandstone, and mudstone with small amounts of quartz, plagioclase, and potassium feldspar particles. The areas adjacent to large limestone bodies on the east coast, the conglomerate beds are dominated by limestone clasts exceeding 50 modal %, and are characterized by sandy matrixes dominantly of chert clasts. In Ataka, far to the north from the limestone bodies, limestone clasts is restricted no greater than 19 modal %, and conglomerate is rich in clasts of chert, sandstone, and mudstone.
Sandstone is classified into two types : one is characterized by the dominance of quartz and feldspar particles compared with lithic fragments. The other type is rich in clasts of siliceous sedimentary rocks. Sandstone of former type characteristically occurs as isolated thick beds among mudstone. Sandstone of later type occurs as those graded from as thin-beded turbidite alternating with mudstone.

[Radiolarian fossils]
Two alternative explanations are possible for the source of siliceous sedimentary clasts : the inner vs. outer trench slopes. Because the fossil age of siliceous sedimentary rock clasts are expected to differ among two options, the author is examining radiolarian ages of siliceous mudstone and chert underlying conglomerate and siliceous rock clasts. To date, Triassic to Jurassic siliceous rock clasts has been detected. In the study area, siliceous mudstones are uppermost Jurassic to lowermost Cretaceous. However, siliceous rock clasts correlative to this range have not been found.

Keywords: Jurassic accretionary complex, seamount, radiolarian age, conglomerate, Cape Shiriya