

Stratigraphy of the Sorachi and Yezo groups in the Furano-Ashibetsu area, Hokkaido, Japan: Another oceanic plate in the NW Pacific.

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The Sorachi - Yezo Belt in central Hokkaido consists of the Jurassic - Lower Cretaceous Sorachi Group and the Cretaceous Yezo Group. The lower part of the Sorachi Group consists of basalt lavas. The upper part consists mainly of siliceous and tuffaceous mudstones partly with intercalation of basalt and volcanoclastics. The Yezo Group conformably overlies the Sorachi Group and is composed of sandstone and mudstone.

Various models have been proposed for the origin of the Sorachi Group, based mainly on petrology of the lower part lavas, and agreement has not yet been obtained. It is difficult to specify the tectonic setting for the lower Sorachi Group only by igneous petrology.

Therefore, in this study, we focus on stratigraphy and clastic composition of sediments (the upper Sorachi Group to the lower Yezo Group) overlying the basalt.

We divided the Sorachi Group of the Furano-Ashibetsu area into five lithostratigraphic units (S1: basalt lava, S2a: volcanic conglomerate, S2b: volcanoclastic sandstone with mudstone, S2c: siliceous mudstone with tuff, and S2d: siliceous tuffaceous mudstone with basalts), The lower Yezo Group are divided into two units (Ly1: sandy and Ly2: muddy turbidites, respectively). [HU1] S1b is assigned to Tithonian - Berriasian by radiolarians. Zircon U-Pb ages suggest that a S2b sandstone is Valanginian or younger, a S2d tuff bed is Barremian, and a Ly 1 sandstones is latest Barremian -earliest Aptian or younger. These ages are consistent with radiolarian ages in literatures.

Detrital clinopyroxene compositions suggest that the volcanic rock clasts comprising S2a unit were reworked from the underlying MORB-like S1 basalts, whereas volcanic and plutonic detritus comprising S2b sandstone were supplied from an arc, both in pelagic environments. On the other hand, the tuff bed in S2d unit contains Proterozoic zircons, which indicate volcanic ash supply from the Eurasian continent into the basin in a hemipelagic realm. Ly1 sandstone consists of terrigenous clasts including Proterozoic zircons.

Since the change from pelagic via hemipelagic to peri-continental facies can be regarded as a kind of oceanic plate stratigraphy, it is suggested that the Sorachi Group was a part of an oceanic basin moving toward the Eurasian Continent. On the other hand, in the Jurassic to Early Cretaceous, the oceanic crust(s) which accreted sediments both to North Kitakami -Oshima belt and to Idonnappu and Kamuikotan zones was Triassic or older, distinct from Jurassic oceanic crust of the Sorachi Group. In addition, S2b volcanoclastic detritus in the Sorachi Group was supplied from an island arc in a pelagic realm, which must have comprised an intraoceanic plate boundary. Therefore, ocean basin of the Sorachi Group was likely to be separated also from the main oceanic plate of the Pacific. The Sorachi Group thus suggests existence of an oceanic plate independent both from the Eurasia and the major oceanic plate in the Pacific in the latest Jurassic to the Early Cretaceous time.

Keywords: Sorachi-Yezo Belt, oceanic plate stratigraphy , Zircon U-Pb ages