

## Lithostratigraphy of the Neogene Goto Group and finding of plant megafossils in the central part of Goto Islands, NW Kyushu.

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The Lower to early Middle Miocene Goto Group may provide a significant information concerning on the sedimentary and tectonic processes during the opening of the southern part of Japan sea. The Goto Group is well exposed in Nakadori-jima and Wakamatsu-jima, central part of the Goto islands.

There are two trend structures occur in the study area. 1) NE-SW trending normal fault dipping to NE or SW ( $F_1$ ) and asymmetric anticline with NE-SW trending axis. 2) N-S trending left lateral normal fault ( $F_2$ ).

The Goto Group exceeds to 3600m in thickness and is divided into three formations; Takasaki, Michidoi and Inoseto formations in ascending order.

The Takasaki Formation, 400~700m thick, consists of silty rhyssmite and dacitic pyroclastics sediment, showing green color altered volcanic sediments with well preserved lamination. These volcanics contain many detrial quartz and some basalt within felsic tuff matrix.

The Michidoi Formation, more than 1400m thick, consists mainly of alternation of sandstone and mudstone. The lower member shows fining-upward sequence from sandstone to mudstone. Three thick white acid tuff beds including accretional lapili interbedded. The upper member shows rhythmical alternation of sandstone and mudstone. Sandstone is thickly interbedded upward of this formation. Cross-lamina and wave ripple marks are well developed in gray to dark brown sandstone. Some channel filling sandstone and lens type sandstone are observed.

The Inoseto Formation, 1500m thick or more, mostly consists of sandstone. This formation is characterized by several coarsening-upward sequences and sigle thickening-upward sequence. The sandstone is yellowish orange to light gray color with quartz grains. Trough cross-beddings and convolute laminations are well developed in sandstone. Thick sandstone is often bearing coal and rip-up clasts of mudstone. Paleocurrents are unidirectional character which show NE direction.

Many plant megafossils are recovered from the upper portion of the Michidoi Formation in Atotsugi, Nakadori-jima. This plant assemblage is particularly abundant of *Salix*, and accompanying with *Taxodium*. As these plants are elements of swamp-border or riparian vegetations, the assemblage probably reflects such vegetations near the site of sedimentation.

The assemblage of these megafossils differs from that from the upper part of Goto Group of Fukue-jima in the southern part of the Goto Islands and that from upper portion of Inoseto Formation of Ryozegeaura (newly discovered in this study). The assemblage from Fukue-jima was referred to the Daijima-type floras of late Early to earliest Middle Miocene, containing such warm-temperate to subtropical elements as *Cinnamophyllum*, *Liquidambar?*, and others. Abundant occurrence of *Salix* in the assemblage in Atotsugi is exceptional among the Daijima-type floras, and indicate more temperate climatic condition at the time of that of the Michidoi Formation.

The Goto Group in the study area represents a stratigraphic evolution beginning with thick pyroclastics within lacustrine environment at volcanoes area (Takasaki Formation), passing fluvial-lacustrine environments adjacent to volcanoes (Michidoi Formation) and ending with deltaic environment (Inoseto Formation). The Takasaki and Michidoi formations are identified continent marginal lake environment of early stage of rifting of the Japan sea. The Inoseto Formation is characterized by a dominance of northeast paleocurrent pattern and quartz-rich sandstone. It is, therefore, comparable to a conduit zone between the continental river on the eastern part of Asian continent and newly rifted at southern portion of Japan sea.