

# 地質学セミナー

## Heavy Mineral Analysis of Miocene Turbidite Sequence in Chichibu Basin, Central Japan

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The main purpose of current master's research is to interpret transport and settlement mechanism of sediments by turbidity currents in the Miocene Chichibu Basin; to find out heavy mineral dense-levels in a single turbidite, and to discriminate the most appropriate sampling procedure for heavy mineral provenance studies as heavy mineral analysis plays important role as marker on the analyzing the reservoir rocks in petroleum technology. For example, Tokuhashi (1997) discussed the role of the heavy mineral analysis on turbidite sandstones in the Neogene Niigata oil basin, Central Japan, proposing that the heavy mineral analysis is very valuable as conventional tool on estimating the provenance and infer the original relationship of several sandstone bodies.

The geological settings and related studies of Miocene Chichibu Basin, Central Japan were very well reported on the works of Kanno (1957), Latt and Sato (1987), and Takahashi (1992). Latt (1989) interpreted the sediments of Neogene Chichibu Basin as turbiditic and related clastic submarine fan sediments of the Early to Middle Miocene, and divided into two major systems, the main submarine fan system and the marginal system, and proposed two episodes of sedimentation in the main submarine fan: the first took place in during the later Early Miocene and the second one at the early Middle Miocene, mixing and interfingering with the sediments of the marginal system.

In the present study four locations were chosen along the Akahiragawa River, where the turbidite sediments were well exposed. The Chichibumachi Formation is represented by sandstone, sandy siltstone and alternated sandstones.

The first observations show that the samples S1 and S2 from A site represents the repeatedly grading possibly Bouma TA or Lowe Sequence S3 at bottom of bed about 9cm thick, interpreted with non-Newtonian flow mechanism, followed by Bouma TA sequence with fining upward of fine to very fine sandstone grains about 1cm thick deposited by high-density turbidity current with rapid deposition from the head of turbidity flow, TB lower division of parallel lamination very fine sandstone about 3cm thick interpreted by upper flow regime where deposited by suspended load at the body of the turbidity flow, TC current ripple lamination with very fine sandstone about 2cm thick interpreted by lower part of lower flow regime which deposited from bed load and TD upper division of parallel lamination of very fine sandstone about 1cm thick with lower flow regime. Sample S5 from this location shows massive graded Bouma TA fining upward from fine to very fine sandstone and Bouma TB parallel lamination of very fine sediments were observed. It seems that the turbidites of site A considering the tabular bedding and fine grained sediment load with very conspicuous grading, might be end member of the turbidity flow (Mutti. 1992). From the samples S6 and S7 at site B Bouma TA and TB sequences were observed possibly the same A sites TA and TB sequence mechanism repeated here. The C site samples or beds do not show any grading or characteristics of turbidite bed. The site D sample was represented by TA and TB sequences. The turbidites of the Chichibumachi Formation are characterized by Bouma classic sequences.