

## Tectono-depositional evolution of the Mio-Pleistocene forearc basin on the Boso Peninsula, central Japan

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The Boso Peninsula, central Japan is located near a plate boundary between North America Plate, Philippine Sea Plate and Pacific Plate. The peninsula consists of accretionary prisms and a forearc basin fills, which indicates it developed with subduction of Sagami Trough. The forearc basin in the Boso Peninsula has developed with plate subduction and has a large-scale geological structure, the Kurotaki Unconformity. Variations of geological structure and lithology involved in the Kurotaki Unconformity has been confirmed, however detail of evolution such as paleotemperature and maximum burial depth are unclear. In this study, geological and engineering analyses were performed to investigate an evolution history of the Mio-Pleistocene forearc basin correlated to the plate subduction in the Boso Peninsula, central Japan.

Integrating the results of the geological, paleo-thermal and consolidation analyses, an evolution history of the Boso forearc basin were suggested. In the western part, major differences above and below the Kurotaki Unconformity were identified in the distributions of geologic bodies and their structures, paleotemperatures, and consolidation characteristics. These variations probably relate to a change in the convergence direction of the Philippine Sea Plate at ~3 Ma. Uplift and erosion of the Miura Group during the formation of the unconformity, and compression parallel to the direction of plate-subduction apparently caused the variations in the attitudes of geologic bodies. In the eastern part, the distribution of the consolidation yield stress appears to indicate that the burial process of the forearc basin occurred regardless of the development of the Kurotaki Unconformity, as ascertained from the patterns of consolidation yield stress for the Kazusa and Miura groups above and below the unconformity, respectively. Vitrinite reflectance corresponding to paleotemperature also shows no break in trend or values across the Kurotaki Unconformity. Because this feature is similar to the characteristics of the consolidation yield stress trend, any difference in vitrinite reflectance across the unconformity is thought to have disappeared because of the burial process. The uninterrupted trends in vitrinite reflectance and consolidation trend in the eastern part between the Miura and the Kazusa groups can be explained by the greater subsidence of the eastern part of the Boso forearc basin compared with the western part since ~2.3 Ma. Considering a possibility that a subsidence and uplift rate around the Boso Peninsula had been dependent on the way of subduction, the investigated variation of evolution between the western and eastern part of the Boso forearc basin contribute to determining the way of subduction.

Keywords: Forearc basin, Boso Peninsula, Vitrinite reflectance, Consolidation test