

房総半島新第三系前弧海盆における被熱構造と圧密特性

Major variations in vitrinite reflectance and consolidation characteristics within a post-middle Miocene forearc basin, central Japan

*神谷 奈々^{1,2}、山本 由弦²、王 乾³、栗本 悠平³、張 鋒³、竹村 貴人¹

*Nana Kamiya^{1,2}, Yuzuru Yamamoto², Qian Wang³, Yuhei Kurimoto³, Feng Zhang³, Takato Takemura¹

1.日本大学、2.海洋研究開発機構、3.名古屋工業大学

1.Nihon University, 2.JAMSTEC, 3.Nagoya Institute of Technology

Forearc basin sediments near the oceanward margin preserve tectonic information related to plate subduction. The post-middle Miocene Boso forearc basin, central Japan, records major differences in structure, paleo-maximum temperature, and consolidation state between below (Miura Group) and above (Kazusa Group) the Kurotaki Unconformity, which formed at ca. 3 Ma. Many fault systems below the unconformity are characterized by a disaggregation-band-like inner fabric that apparently formed soon after sedimentation, whereas there are few of this type of fault system above the unconformity. Vitrinite reflectance values (R_o) are 0.38%–0.44% and 0.16%–0.22% below and above the unconformity, respectively. The consolidation yield stress (p_c) in the Miura Group (23.7 MPa in the Anno Formation; 31.0 MPa in the Amatsu Formation) is much greater than that in the Kazusa Group (7.5 MPa in the Umegase Formation; 7.6 MPa in the Ohtadai Formation). These clear differences in vitrinite reflectance and consolidation characteristics above and below the unconformity are attributed to a change in the convergence direction of the Philippine Sea Plate, which resulted in the Miura Group being uplifted and eroded by ~2000 m before sedimentation of the Kazusa Group. The forearc basin, especially near the trench-slope break, records structural and physical properties reflecting the plate-tectonic environment and the development of the trench-slope.

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