

Role of Homogeneous Part on Lamina-Formation at a top of Unlithified Sediments in an Early Stage of the Compaction Process

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We will discuss a significance of local homogeneous zone in unlithified sediments, which occasionally appears during burial process. In this study, we used nondestructive core samples collected from Lake Kaiike (11 m in maximum depth, area: 0.16 km²), Kamikoshiki Island, Kagoshima, western Japan. The lake is characterized by an existence of redox boundary in a water column (around 4.5 m depth) throughout the year. The collected samples are 6 to 8 cm of microbial mat and ca. 35 cm of unlithified sediments. We found minor downcore variations in biogenic and mineral compositions. We recognized three lithological units based on visible sedimentary structures and measured physical properties: Unit I, consists of a pile of varicolored microbial mat, overlying Unit II, a transition zone between Unit I and lower Unit III, which is a unit of unlithified sediments. A local homogeneous zone appears in top of Unit III (Subunit IIIA). This subunit is characterized by absence of lamination, relatively higher porosity, and weaker anisotropy of magnetic susceptibility (AMS), compared with lower subunit IIIB, which has clear lamination, lower porosity and relatively stronger AMS (F value: foliation). These suggest that preferable reorientation of fabric occurs in subunit IIIA, resulting in stabilization of fabric, i.e., clay minerals and diatom flusters, framework.