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SEDIMENTOLOGY OF HOLOCENE WARM TEMPERATE LIMESTONE AT MUROTO-MISAKI, SHIKOKU JAPAN

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Muroto-misaki (Cape Muroto) is a southern tip of the eastern half of Shikoku, southwestern Japan. The Nankai Trough, where the Philippine Sea Plate subducts beneath the Eurasian Plate, is located about 100 km to the southeast of this cape. Muroto-misaki and its environs have been seismically uplifted.

Sedimentological study was conducted on Holocene limestone that occurs along the coast from Muroto-misaki to Meoto-iwa located about 13 km to the north of the cape. Distribution of the limestone is limited to < 10 m in elevation. The limestone is up to 4.4 meter in mean diameter and less than 0.5 m in thickness, and consists mainly of fossilized sessile organisms such as annelids, bryozoans, corals, encrusting foraminifera, and coralline algae. Associated components include barnacles, ostracods, molluscs, echinoids, benthic foraminifera, peyssonneliacean algae, and non-calcareous clasts and grains. Cement is a minor component and found in a semi-closed space between coralline algal crusts and their substrates.

Modal composition of limestone was determined by a point counting technique. The results show that the limestone can be classified into 6 types on the basis of predominant fossilized sessile organisms. The dominant components are: corals and coralline algae in Type I; coralline algae in Type II; coralline algae, annelids and barnacles in Type III; coralline algae and annelids in Type IV; encrusting foraminifera and encrusting bryozoans in Type V; and molluscs in Type VI. Comparison of vertical distribution of the six types with those of modern sessile organisms indicates the highest elevation of Type I at a particular outcrop corresponds to mean low sea level (MLSL) when the limestone formed. Therefore the Holocene limestone is considered ideal for the analysis of relative sea-level changes. Based on the distribution of Type I limestone, we find that the elevation of paleo-MLSL decreases northwards at a rate of 10 cm/km.