

Marine sediment characteristics at Karimun Java Sea based on stratigraphic profile analysis, total suspended solid (TSS) and grain-size analysis (granulometry)

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Abstrak

A sedimentology survey was conducted during Pelayaran Kebangsaan research activities with a marine vessel of "Baruna Jaya VIII" in Karimun Java Sea. The objectives of the research were to determine the characteristics of marine water and its sediment, which are important control for coral reef growth in the study area. The survey acquired samples of Total Suspended Sediment (TSS) and gravity coring. Several analyses were then carried out on those samples; TSS analysis to determine the amount of suspended sediments in sea water that reflect the water quality for marine ecology, stratigraphic profile and sediment thickness pattern analyses to determine the sources of sediment, and grain-size analysis based on granulometry to determine deposition energy and grain-size distribution in the area. Those analyses were both conducted on-board Baruna Jaya VIII research vessel and P2O LIPI laboratory in Jakarta. The results showed that in Java Sea nearby Karimun Java Islands, the sediment supply came from the surrounding islands. Two sedimentary units were found in this area. The first unit has thickness of tens centimeter from sea bed surface. It is characterized by grayish green color, grain size variation from clay to coarse sand, soft or low density and abundance with shells. The second unit is located beneath the first one, indicated by sharp contact. It is characterized by brownish color, higher density resembling the density of rock, less compacted and can be broken easily by hand, with occasionally thin carbon lenses or remnant of decomposed vegetation, and less shell or fossil. At sea surface, TSS distribution shows value between 0.018 and 0.034 gr/l, with average of 0.025 gr/l, whereas at near bottom sea, it ranges between 0.024 and 0.030 gr/l, with average value of 0.027 gr/l. The granulometry shows that more than 50% of sediment is characterized by the abundance of grain size greater than 3 phi. It suggests that sea water around Karimun Java Islands was clear and the current was relatively calm. These conditions were relatively stable for a long time span. Those sea characteristics were important for successful growth of coral reefs and its complementary marine biotas. However, further studies and researches based on chemical and physical characteristics of sea water, and plankton and microbiology variation and abundances are necessary to confirm those presuppositions.