

Effects of hydrogen peroxide treatment on the particle size distribution of hydrothermal vent sediments: A case study in Guishan Island, Taiwan

ABSTRACT

Particle size analysis is able to reveal essential information about processes like production, transportation, sorting, and deposition of a study area. Pre-treatment of sediment by using hydrogen peroxide is recommended for more accuracy of particle size distribution as it removes organic matter which is adsorbed on the grain particle. A shallow water where hydrothermal vents site are located in Guishan Island is selected as the study site in this research. Sediment samples were collected at the depth of 3 – 5 cm from the seabed surface by SCUBA diving. Particle size analysis was conducted by dry sieving before and after hydrogen peroxide treatment. Results showed significant differences in very coarse sand ($p < 0.05$) as it decreases significantly in weight after treatment (10.62% of change). The other particle size level of sediment increases slightly in weight and the changes ranged from 1.20% to 2.60%, showing no significant difference (500 μm =0.59; p value 250 μm =0.67; p value 125 μm =0.48; p value 63 μm =0.47; p value >63 μm =0.38). Therefore, in order to accurately determine the particle size distribution at hydrothermal vent site, pre-treatment using hydrogen peroxide is recommended to remove organic material because hydrothermal vent is proved to have high organic matter content.