

Hydraulic properties and pore structure of the sedimentary rocks at Site C0020, IODP Expedition 337 in Sanriku-oki basin

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Microbial biomass in the ocean sediments is controlled by physical, chemical and biological factor and conditions. The biomass in sediments reduces with increasing depth, and the limit of life and the reduction rate of biomass is partly controlled by physical conditions because lithification and diagenesis of oceanic sediments induce reduction of porosity, permeability and pore size. However the relationship between biomass and physical property for deep oceanic sediments is not well known. Therefore, in this study, a series of physical property measurements (Water potential, permeability and porosity) were conducted on the sediment cores at site C0020 from IODP expedition 337 and at site 902 from the Chikyu shakedown cruise (CY06-06) in Sanriku-oki basin. We measured water potential under atmospheric condition and permeability under confining pressure up to 40 MPa. Then we estimated the correlation between water potential and microbial biomass in the sediments.

Keywords: permeability, water potential, water activity, off-Sanriku basin, IODP expedition 337, biomass