

Chikyu-SCORE Expedition 910: Scientific drilling west off Cape Erimo to understand deep biosphere-responses to earthquake-triggered mass transport deposits

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A new program, Chikyu Shallow Core Program (SCORE), has been launched by Japan Drilling Earth Science Consortium (J-DESC) to provide opportunities of drilling shallow holes in a short expedition of the D/V Chikyu. In September 19 –23, 2017, the first Chikyu-SCORE Expedition 910 was conducted at the drilling site west off Cape Erimo, Japan, based on the drilling proposal “Deep Learning of Deep Life: Exploring impact of submarine landslides on the deep biosphere-evolution off Cape Erimo”. Expedition 910 targeted organic-rich subseafloor microbiology, biogeochemistry, sedimentology and structural geology around the mass transport deposits (MTDs), which would have brought sudden changes of local environments of the habitat. During the past decade, our knowledge of submarine mass movements including submarine landslides has significantly expanded worldwide, with realization of their destructive impact and tsunami-generation potential. However, it still remains unknown how deep-biosphere microbial ecosystems have responded to the episodic environmental changes and, if any, how those responses played ecological roles in biogeochemical element cycles and even the climate. Core samples of 100 m beneath the seafloor were collected from two holes, and a short additional mud-line core was taken for high resolution microbiological and biogeochemical sampling just below the seafloor. The core samples were sampled during the expedition after a series of non-destructive and/or time-sensitive analyses such as X-ray CT (XCT) scan images. The remaining core samples were transported to Kochi Core Center for detailed geological observations and further sampling. As the result, four units of MTDs were identified in 100 m-length cores by XCT and the visual core description. In this presentation a summary of the shipboard analyses and post-cruise core description will be presented, together with preliminary results of the ongoing microbiological, geochemical, paleontological and sedimentological analyses.

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