

Temperature limit of the deep biosphere off Muroto (T-Limit)

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Expedition 370 of the International Ocean Discovery Program (IODP) aimed to explore the limits of life in the deep subseafloor biosphere at a location where elevated heat flow lets temperature increase with sediment depth beyond the known maximum of microbial life (~120°C) at only ~1.2 km below the seafloor [1]. Such conditions are met in the protothrust zone of the Nankai Trough off Cape Muroto, Japan, where Site C0023 was established in the vicinity of ODP Sites 808 and 1174 at a water depth of 4776 m using the drilling vessel *DV Chikyu*. Hole C0023A was cored down to a total depth of 1180 meters below seafloor. Offshore sampling and research was combined with simultaneous shore-based investigations at the Kochi Core Center (KCC) and long-term temperature observations were initiated [2].

The primary scientific objectives of Expedition 370 are (a) to detect and investigate the presence or absence of life and biological processes at the biotic-abiotic transition of the deep subseafloor with unprecedented analytical sensitivity and precision; (b) to comprehensively study the factors that control biomass, activity, and diversity of microbial communities; and (c) to elucidate if continuous or episodic flow of fluids containing thermogenically produced nutrients and energy substrates support subseafloor microbial communities in the Nankai Trough accretionary complex [1]. This contribution will highlight the scientific approach of our field-work and present preliminary shipboard and shorebased results of Expedition 370.

[1] Hinrichs *et al.* (2016) *IODP Expedition 370 Scientific Prospectus*. doi:10.14379/iodp.sp.370.2016.

[2] Heuer, Inagaki, Morono, Kubo, Maeda and the Expedition 370 Scientists (2017) *IODP Expedition 370 Preliminary Report*. doi:10.14379/iodp.pr.370.2017.

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