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# Submersible dive cruise at lower transition of the Arabian Sea OMZ of the western Indian continental slope: Logistics, rationale and brief results

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During September 27 through November 10, 2008, we had a submersible dive cruise at Indian EEZ of the Arabian Sea. Purpose of the cruise is to investigate depositional process, biogeochemical cycle (benthic fluxes) and adaptive ecology of benthic organisms under oxygen depleted environments. This is a joint cruise between JAMSTEC and NIO.
In total, 26 dives were carried out along lower transition of OMZ. Three different approaches were used; 1) observation of sea floor and animals, 2) chemical and biological measurements both water column and sediments, and 3) in situ feeding experiments by adding food materials labeled with both C-13 and N-15.
Clear depth zonation of benthic organisms were recognized for 2000, 1150∼1050, 1000∼880, 870∼830, 825 $\sim$ 750, 730 $\sim$ 700, 649, 600 $\sim$ 500m respectively. Faunal composition changes from megabenthos (1150m), macrobenthos (700m) and further to protozoa (500m) according to the depth. Oxygen minimum zone is a hypoxic world. However, many benthic or nekto-benthic organisms are living and moving under very low oxygen concentrations (less than 0.4 $\mu$M = 0.002 ml / L). Even though oxygen concentration is so low, laminated sediments were not formed under OMZ. This is mainly because distinct tidal flows disturb sediment surface.
Samples from both in situ and onboard experiments are now processing and analyzing at own laboratories. A lot of in situ measurements were also performed during the dives.