

Initial results of IODP Expedition 355, Cenozoic Arabian Sea Monsoon

*Masao Iwai¹, Kenta Suzuki², Dhananjai Pandey³, Peter D Clift⁴, Denise Kulhanek⁵, (Group)
Expedition 355 Scientists

1.Center for Advanced Marine Core Research, Kochi University, Japan, 2.Graduate School of Environmental Science, Hokkaido University, Japan, 3.National Centre for Antarctic and Ocean Research, Vasco da Gama, Goa, India, 4.Department of Geology and Geophysics, Louisiana State University, USA, 5.International Ocean Discovery Program, Texas A&M University, USA

During International Ocean Discovery Program (IODP) Expedition 355, two sites (U1456 and U1457) were drilled in Laxmi Basin in the eastern Arabian Sea. Scientific objectives are (1) to document the coevolution of mountain building, weathering, erosion, and climate over a range of timescales, and (2) to recover basement from the eastern Arabian Sea for constraining on the early rifting history of the western continental margin of India.

Penetration depth at Sites U1456 and U 1457 were 1109.4 and 1108.6 m below seafloor (mbsf), respectively. Drilling reached sediments at Site U1456 were dated to 13.5-17.7 Ma, although with a large hiatus between the lowermost sediment and overlying deposits dated to <10.9 Ma as a result of a large mass wasting deposit, the Nataraja Slide emplaced before 10.9 Ma. At Site U1457, igneous basement, comprising massive basalt was cored. The calcareous sediment on top of the volcanics were biostratigraphically dated to ~62 Ma[DP1] .

In spite of hiatuses spanning ~8.2-8.7 and ~4.1-5.6 Ma, continuous sedimentary sections spanning the 8 Ma climatic transition were recovered. Sediments from a large mass transport deposit were also recovered, with measuring ~330 and ~190 m thick at Sites U1456 and U1457, respectively. Siliceous microfossils are found only in the mudline and the uppermost cores from both sites, whereas calcareous microfossils occur in varying numbers throughout the succession. Diatoms in the mudline samples are well preserved and consist mainly of coastal species, whereas these taxa are absent in the cored sediments. Diatoms are restricted in the uppermost 10 and ~0.5 mbsf at Sites U1456 and U1457, respectively. The assemblage includes benthic and freshwater taxa that indicate the lateral transport to those sites.

[DP1]We have not yet dated. Therefore I feel we should put late Cretaceous, instead of 62 Ma.

Keywords: Arabian Sea, monsoon, IODP