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Morphodynamics of the Andaman Sea Shelf Break, Thai EEZ

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The primary aim of the project “Morphodynamics and Slope Stability of the Andaman Sea Shelf Break” is the in situ characterization of the slope of the Andaman Shelf in Thai EEZ with special emphasis on previous slope failures and a possible tendency to fail in the future. The first cruise of the project was conducted in November-December 2006, the second cruise in October-November 2007 using the RV Chakratong Tongyai. Both cruises were devoted to hydroacoustic mapping of the shelf break and the slope. A multibeam bathymetric echosounder (MB)and a parametric sediment echosounder (sub-bottom profiler; SBP) were used to map the bathymetry and the thickness and structure of the uppermost sedimentary layer of hitherto unexplored parts of the shelf break in the Andaman Sea.

An area of more than 3,000 km2 in the southwestern corner of the Thai EEZ in the Andaman Sea was successfully mapped. The data cover the upper shelf break from about 500 m down to about 1,400 m water depth. Three especially interesting slope areas and three plateaus are seen in the bathymetric map. In addition, one mud volcano and more than 10 mounds in the mud volcano area have been indentified. The processing of the SBP data is still ongoing, so far 34 locations that had distinct morphologic and/or unusual sediment seismic features in this survey area were studied. Most of these (30) anomalous features were attributed to areas with possible occurrence of low-density fluids or gases in the shallow sediment layers. Almost all of these fluid or gas deposits were in lower slope areas with water depth greater than 900 m. In addition, several manifestations of fluid venting were also mapped on the upper shelf edge at water depths of about 600 m. Some of these shallower vents could form mounds with diameters of up to 500 m and heights of up to 50 m. Diffuse reflections in the vicinity of the mounds and strong signals not related to seafloor reflections indicate the presence of uprising bubbles or gas flares.