A High Resolution Bathymetry of the Andaman Sea Shelf in Thai EEZ

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The December 26, 2004 tsunami wave had demolished constructions in large areas along the Andaman Sea coast of south Thailand and killed many people. In order to assess the possible impact of future tsunami in near real time, the availability of a reliable bathymetric chart is required. In addition, such a chart allows assessing the potential of slope failures occouring in the area. The Bathymetry of the continental shelf and upper slope of the Andaman sea with in the Thai EEZ was investigated in November-December 2006 and October-November 2007 using an ELAC Bottomchart Mk.II 50 KHz multibeam echosounder and a parametric sediment echosounder. The surveys were conducted on board RV Charkratong Tongyai during cruise MASS-I and MASS-II as a part of the MASS-project "Morphodynamics and slope stability of the Andaman Sea Shelf break". The primary aim of the project was to map the morprhology of hitherto unexplored parts of the western slope of Mergui Ridge and the in situ characterization of the slope in terms of previous slope failures and its tendency to fail in the future. An area of about 3,000 km^2 in the southwestern corner of Mergui Ridge in the Andaman Sea was successfully mapped. The investigation stretched from 500 meters to 1,700 meters water depth covering the outer shelf and upper slope area. The entire echodata are cleaned and processed a 50 m grid resolution. Statistic values of such grid show a number of data points which is obtained 9.15 points on average. Histogram plot of whole grids show that 82% obtained data at least 4 points per grid. The median standard deviation of most grids is better than 0.2% of water depth. The values indicate that a 50-m grid of our dataset provides a reliable bathymetric chart. A number of previously unknown features including three plateaus, two pockmarks, and one mud volcano with more than 10 mounds are identified in a smooth area above 700 m water depth. Two posible slumps and more than 10 gullies are identified in a slope area below 700 m depth. Twenty four 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.

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