The temporal and spatial distribution of mass transport deposits offshore southwestern Taiwan

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Abstract

Offshore southwestern Taiwan structures show the lateral transformation from the passive Chinese continental margin to the Taiwan collision orogeny and the temporal evolution from Paleogene to present. The temporal and spatial distribution of mass transport deposits and sediment waves were analyzed by interpreting high resolution multibeam bathymetric and seismic data. There are several seismic facies which are recognized from seismic profiles, such as continuous- and parallel-layer seismic facies, wavy seismic facies, chaotic seismic facies. The Paleogene fault-bounded are topped by a breakup unconformity. Above the base of Pliocene Series, MTDs occur with different frequency and volume. On active margins the maximum run-out distances of MTD sheets across abyssal-basin floors are an order of magnitude less than on passive margin settings (less than 3 km and over 35 km, respectively) and the volumes of MTDs are limited on the abyssal sea floor along active margins. Major MTD episodes of deposition are correlated with the most rapid falls of sea level (low-stand sea level). Sediment waves overlie the underlying mass-transport complexes.