



Stratigraphic Framework and Sediment Wave Fields in the Huatung Basin Offshore of Taiwan Mountain Belt

Ho-Han Hsu (1,2), Char-Shine Liu (1,2), Jih-Hsin Chang (1,3), Hau-Ting Hung (1,4), Tzu-Ting Chen (1), Philippe Schnurle (5), and Shye-Donq Chiu (1)

(1) Institute of Oceanography, National Taiwan University, Taipei, Taiwan, (2) Ocean Center, National Taiwan University, Taipei, Taiwan, (3) Atmosphere and Ocean Research Institute, The University of Tokyo, Chiba, Japan, (4) CPC Corporation, Kaohsiung, Taiwan, (5) Department of Marine Geosciences, IFREMER, Brest, France

Multichannel seismic, sub-bottom and bathymetry data are used to demonstrate stratigraphic framework and submarine canyon networks in the Huatung Basin (HB) offshore of east Taiwan. We suggest the seismic facies changes within 3 major sequences in the HB strata and could result from arc-continent collision in different stages. The ages of HB strata could be also estimated based on the sediment thickness and sedimentation rates in the HB. Since 50 Ma at least, pelagic sediments began to deposit in the deep sea basin and the different sediment thickness could reflect the HB basement variations. Then, the initiation of Taiwan mountain building and volcanic activities of North Luzon Arc changed the sediment deposition pattern in the HB after 5 Ma. Mass transport deposits, fold and fault structures occurred in this second stage. Since about 1.5 Ma, developed canyon-levee systems resulted in increased sedimentation in the north HB due to rapid uplift of the Taiwan orogen; in contrast, none of submarine canyon developed and sediment thicknesses were relatively low in the south HB, because sediment transports could be blocked by basement highs. Nowadays, sediment waves and canyon-levee complex are the most distinct morphological features in the basin. Overbank sediments due to gravity flows are suggested to drive the initiation of sediment wave fields developed in the submarine canyon drainages. In this study, we proposed a three-stage-process to interpret the evolution of sediment wave field accompanied with canyon-levee developments in the HB. Our works provide a stratigraphic point of view based on multi-scale geophysical data to discuss the depositional and structural evolutions offshore of east Taiwan in a convergent setting between the Eurasia and Philippine Sea Plates. We believe the results could be helpful for future studies of structural and stratigraphic evolutions within the mountain building processes of Taiwan.