

Paleoclimates and geohazards recorded in sediments in the frontal Manila accretionary wedge near Taiwan

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The incipient arc-continent collision zone offshore SW Taiwan is prone for earthquakes and submarine landslides. The seismic activity of this accretionary wedge is commonly recorded by mass transport deposits (MTDs) and seismo-turbidites. The river-connected Kaoping canyon in the accretionary wedge is the major sediment conduit that delivers Taiwan-derived sediments during floods into the Manila Trench through hyperpycnal turbidity currents. The Kaoping-canyon head lies directly off the Kaoping-river mouth during fluctuating eustatic cycles. Sediments along the Kaoping canyon are therefore likely to record how onshore sediments are delivered to the deep sea through hyperpycnal flows during a full eustatic sea-level change, therefore, revealing paleoclimates through the recurrence intervals and strength of hyperpycnal-flow events. An episode of exceptional hyperpycnal turbidity currents was vividly evidenced by a series of submarine cable breaks along the Kaoping Canyon and the Manila Trench during the 2009 Morakot Typhoon.

This study documents the preliminary findings for MTDs that may associate with the earthquake slip along the splay faults, the paleoclimates revealed from a sediment core of ~20,000 yrs old recovered from the bank of the Kaoping Canyon, and the origins and sediment characteristics for hyperpycnal flows occurred during the 2009 Morakot Typhoon.

Keywords: Paleoclimates, geohazards, seismo-turbidites, hyperpycnal flows, mass-transport deposits, accretionary wedge.