Geochemical compositions and provenance of core sediments from the Gulf of Thailand and east coast of Malay Peninsula

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The geochemical compositions of core sediments from the Gulf of Thailand (GOT) and the east coast of Malay Peninsula (ECMP) have been examined to elucidate their chemical variations and geological provenance signatures. The GOT and ECMP sediments are characterized by low to moderate SiO_2 contents (51.94-56.31 and 51.28-57.74 wt.%, respectively), and variable Al_2O_3 abundances (10.64-13.14 and 5.58-6.34 wt.%, respectively). At both site the sediments are systematically enriched in CaO, Th, Sr, Sc, Y, Zr and Ce relative to upper continental crust (UCC), and depleted in Pb, K_2O, Na_2O and Ba. The ferromagnesian elements Fe_2O_3T, Cr, V and Ni in the ECMP are a little lower than in UCC, whereas abundances in the GOT sediments are similar to UCC. These features suggest progressive loss or gain of elements due to fluvial transport, diverse climatic and weathering regimes, and concentration of heavy minerals. Index of compositional variability (ICV) values for the GOT and ECMP sediments range from 1.47-1.95 and 3.66-4.48, respectively, indicating relatively low compositional maturity in the latter. Chondrite-normalized rare earth element (REE) patterns for both suites are similar to UCC, with significant LREE enrichment (La_N/Yb_N 7.86-8.65 and 7.48-8.25, respectively), nearly flat HREE segments, and marked negative Eu anomalies (Eu/Eu* 0.61-0.69 and 0.63-0.67, respectively) reflecting a felsic source rock provenance overall. Discriminant diagrams, immobile trace element ratios (Th/Sc, Zr/Sc, Ce/Sc, Ti/Zr, Cr/V and Y/Ni) and REE ratios ($\sum$LREE/HREE and Gd_N/Yb_N) indicate derivation of the GOT and ECMP sediments from typical felsic rock sources, with compositions are very similar to average dacites, rhyolites, and I- and S-type granites.