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New constraints from detrital zircon U-Pb data from Middle Paleozoic strata in Western Peninsular Malaysia: A potential detrital zircon contributor to East Sumatra

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Peninsular Malaysia is an amalgamation of two tectonic blocks: West Malaya (part of Sibumasu terrane) and East Malaya (part of East Malaya-Indochina terrane). Sibumasu terrane was located in the peripheral areas of northern East Gondwana, which constitute Australia and India at the core, during the Early Paleozoic. Its configuration at the peripheral areas could cause different parts of the terrane to receive a different detrital zircon source. A recent study separates East Sumatra from Northern Sibumasu because it shares a similar Early Proterozoic detrital zircon age profile with Western Australia whereas Northern Sibumasu mainly received detritus sourced from Northern India [1]. However, due to inadequate detrital zircon data, West Malaya is overlooked. As West Malaya is adjacent to East Sumatra, they may share similar detrital zircon age profiles. To test this hypothesis, we analyzed the zircon from two Middle Paleozoic meta-sedimentary strata (Silurian and Carboniferous meta-sandstones) from West Malaya. The detrital zircon age profile of Silurian meta-sandstone shows one major age peak at ca. 1117 Ma, with three subordinate peaks at ca. 944 Ma, ca. 660 Ma and ca. 500 Ma. The Carboniferous meta-sandstone detrital zircon age spectra show two major age peaks, at ca. 1183 Ma and ca. 576 Ma. Our result is similar to East Sumatra detrital zircon age spectra, which is defined by two age populations of ca. 1300-1000 Ma (peaks at 1170 Ma and 1070 Ma) and 590-510 Ma [1]. Hence, we suggest East Sumatra-West Malaya was once a single tectonic unit, with detrital zircon age profiles disparate from Northern Sibumasu (characteristically defined by prominent 980-860 Ma population [1]). The establishment of Malacca Strait in the Oligocene separates the two landmasses [2], and before that, West Malaya's Middle Paleozoic strata may be a potential detrital zircon contributor to East Sumatra's Late Paleozoic strata, which hold much of the Precambrian-Paleozoic detrital zircon. The hypothetical suture which separates East Sumatra-West Malaya from Northern Sibumasu may lie unrecognized, possibly to the east of West Malaya.

[1] Zhang *et al.* (2018) *J. Geophys. Res. Solid Earth* **123**, 6098-6110.

[2] Packham *et al.* (1993) *J. Southeast Asian Earth Sci.* **8**, 497-511.