

## Detrital Zircon U-Pb and Hf Isotopic Study in NW Sumatra, Indonesia

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In NW Sumatra, Tertiary sedimentary basins that occur in forearc and backarc settings with respect to the present-day subduction system [1] were deposited in three major terranes, namely, the Woyla Nappe, the East Sumatra block, and the West Sumatra block. NW Sumatra represents the product of complex accretion/collision/subduction histories among these three terranes, which have originated from the eastern margin of Gondwanaland [2, 3]. To better understand the complex histories, we present a detrital zircon study in NW Sumatra that, together with our unpublished work on major magmatic rocks in the area, allow us to reach the following conclusions: (1) Detrital zircons from 14 samples (river sand or sandstone) in the forearc basin reveal seven age peaks at ~1050 Ma (n=74), ~550 Ma (n=65), ~214 Ma (n=138), ~131 Ma (n=14), ~100 Ma (n=65), ~52 Ma (n=238) and 20-0 Ma (n=303), respectively; (2) Detrital zircons from nine samples in the backarc basin show similar age populations, except lacking the 52 Ma peak; (3) The Triassic zircons, with  $\epsilon\text{Hf}(t)$  values of -20 to 0, are sourced mainly from the Indonesian granitoids that are widespread in the East Sumatra block; (4) The less abundant Early Cretaceous zircons, with  $\epsilon\text{Hf}(t)$  values of -5 to 0, are most likely from the West Sumatra block; (5) The mid-Cretaceous zircons, with  $\epsilon\text{Hf}(t)$  values of +11 to +16, are from the Woyla Nappe due probably to the Woyla accretion; (6) The Eocene and younger zircons, with  $\epsilon\text{Hf}(t)$  values of +6 to +17, are from the initial stage and modern arc magmatic rocks related to the Indian Ocean plate subduction.

[1] Barber et al. (2005) SUMATRA: Geology, Resources and Tectonics. *Geol. Soc. Mem.* **31**; [2] Hall (2012) *Tectonophys.* **570-571**, 1-41; [3] Metcalfe (2013) *JAES* **66**, 1-33.