

## **U-Pb ages and Nd isotope characteristics of Cenozoic magmatism in Sumatra, Sunda Arc**

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Cenozoic magmatism in Sumatra Island were formed by the Indo-Australian Plate subducted beneath the Eurasian Plate. We report a geochronological study with 64 zircon U-Pb ages from igneous rocks and 37 whole rock neodymium isotope compositions along the western coast of Sumatra. Our new data show the Cenozoic magmatism was most active and widespread during five stages: Paleocene to Early Eocene (63.9 to 48.8 Ma), Early Miocene (23.0 to 16.5 Ma), Middle to Late Miocene (15.7 to 10.5 Ma), Pliocene (5.2 to 2.8 Ma), and Quaternary (1.01 to recent). The magmatic gap from approximately 50 to 20 Ma might reflect the time interval between the India-Asia collision and the Indo-Australian subduction. These results, together with literatures, suggest three different magmatic series and tectonic settings in Sumatra. First, the central and southeastern magmatism show stable  $\epsilon\text{Nd}$  value (+4.6 to +2.4) represent the normal Sunda Arc melts and erupted in a narrow volcanic front bilateral the Sumatra Fault. Second, Toba and related magmatism were mostly erupted younger than 1 Ma with obviously crust signals ( $\epsilon\text{Nd}$  value -6.6 to -10.6). Third, the northwestern magmatism show temporal and spatial variability with geochemical heterogeneities which were attributed to magmas formed from the increasing depths of the underlying Benioff zone.