# Mineralization Styles and Metallogenic Epochs of Sumatra

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The complex geologic history of Sumatra is a product of the tectonic evolution of Gondwana breakup, and a series of subduction-arc magmatism, collision, and accretion events from the Devonian to Mesozoic. The tectonic division of Sumatra consists of the East Sumatra block as part of Sibumasu; the West Sumatra block that links to Myanmar west; Bentong-Raub (Bentong Billiton Accretionary Complex), Woyla Nappe; and Medial Sumatra tectonic zone and Present Accretionary Complex of Sunda Trench.

The tectonic framework is well accepted for the development of different mineral deposit styles around the Pacific region. Mineral deposits in Sumatra tend to form during major tectonic re-organization and associated magmatism. The gold-copper and base metal resources in Sumatra Island are mostly located on the western coast and central part of the island and parallel along the Sumatra fault zone, while the tin deposit resources are mainly from Bangka-Belitung zone of eastern Sumatra. Although very limited age data are available for the gold mineralization event, many deposits appear to be associated with Jurassic and Neogene magmatic arcs.

A Permian to Late Cretaceous metallogenic event is recognized for tin and base metal mineralization. A Paleogene metallogenic event in Sumatra is rarely recorded and the only sulfide mineralization occurs in the Rawas cluster within iron-rich skarns in contact with Woyla Group metasediment and disseminated within the Bukit Raja granite.

The Neogene metallogenic event of Sumatra is associated with the Tertiary Sunda-Banda magmatic arc and Aceh magmatic arc. This magmatic arc contains a large number of gold-copper deposits—such as epithermal Au, porphyry Au-Cu-(Mo), and skarn—that are associated with the Sumatra fault system. Three metallogenic provinces of Mio-Pliocene ages are recognized: (1) Cu-Au porphyry, skarn, HS epithermal; (2) Pb-Zn Sedex; and (3) Au-Ag LS epithermal that trend along the Sumatra suture. Currently, exploration in Sumatra is focused on several mineralization styles, including low sulfidation epithermal systems (e.g., Sontang, Lebong Tandai, Way Linggo, Ojolali); high sulfidation (Miwah, Martabe, Gunung Bujang), porphyry (Tangse, Beutong, and Tengkereng); skarn (Muara Sipongi, Beutong) and sediment hosted (Sihayo, Abong). These deposit types are formed within the West Sumatra block.