

## AGE AND TECTONO-MAGMATIC SETTING OF ABOR VOLCANICS, SIANG WINDOW, EASTERN HIMALAYAN SYNTAXIAL AREA, INDIA

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### Abstract

The Abor Volcanics are phyric, aphyric amygdaloidal basalts with plagioclase, clinopyroxene microlites and partially altered glass in groundmass. The Siang Window, located south of the Eastern Himalayan syntaxis, forms a transverse antiformal duplex. The Abor Volcanics, the overlying unit of volcani-sedimentary Yinkiong Formation and the underlying Miri Quartzite are exposed at the core beneath the arched splay of the Main Boundary roof-thrust underlying variably metamorphosed Proterozoic rocks. Sediments near the contact zone of the Miri Quartzite and the Abor Volcanics often yielded a rich assemblage of foraminifera indicating late Paleocene to early Eocene age, whereas, the Yinkiong Formation contains foraminifera assemblage indicating early to mid Eocene age. The volcanic rocks inter banded with lower Permian Gondwana equivalent sediments exposed along southern frontal belt of the Siang Window and its continuity further west are also called the Abor Volcanics.

Primary or secondary nature and age significance of recently reported paleomagnetic data from the type area of the Abor Volcanics are debated. K-Ar WR geochronological study recorded  $319 \pm 15$  Ma age on a basalt boulder, whereas, Zircon Fission Track (ZFT) study on the Yinkiong and the Miri formations indicated post-Paleocene and post-Jurassic deposition ages respectively. Thus, the Abor Volcanics possibly contain rocks mainly of two ages.

Based on major- and trace element data and inferred Permian age, the Abor was inferred to represent within-plate 'rift valley' stage of the Tethyan ocean. On the other hand, trace- and RE- element data according to others represent continental volcanic rocks. Their late Paleocene to early Eocene age coeval to early stages of India-Asia collision indicates them to be Himalayan foreland basin volcanic rocks.

Present analysis integrates geochemical data on 10 earlier and 5 recently collected samples from the Siang Window. Based on close match ratios of strongly incompatible elements, it is concluded that the Abor Volcanics are composed of chemically coherent group of tholeiites with minor component of alkaline basalts. These have been generated from enriched sub-continental lithospheric mantle source(s) undergoing different degrees of partial melting. The elemental variation has been further affected by low pressure fractional crystallization mainly involving olivine and plagioclase.

In-situ positions of Late Paleozoic basalts recorded from the Siang Window are not known. These are related to Permian Gondwana rift that are generally located along the MBT frontal zone. The Himalayan foreland basin related Abor basalt, on the other hand, were emplaced along deep seated faults, some of which might have followed the pre-existing Gondwana rift- or MBT- related weak zones.

**Keywords:** Abor Volcanics, continental basalt, age, Siang Window, Eastern Himalayan Syntaxis.