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NATURE AND METAMORPHIC EVOLUTION OF OCEANIC PLATEAU IN ECUADOR: CONSEQUENCES TO THE ORIGIN OF ADAKITIC MAGMAS

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Ecuador is located along the north-western margin of South American. From east to west, comprise three principal geological domains: 1. The Orient basin: represent the foreland basin of the Andean orogeny. 2. The Andean Cordillera: consist of two cordillera separated by inter Andean valley; the orient and western cordillera. 3. The coastal zone: is made of accreted oceanic terranes.

The geology of Ecuador is different from that of the Cordillera Andes, by the presence of accreted oceanic terranes. Several crustal fragments of oceanic plateaus overlain by island arcs accreted to the passive margin of Ecuador between 80 and 40 Ma and presently crop out in the Western Cordillera. From the Late Eocene - Early Oligocene, a continent-based arc developed first in the Western Cordillera and then, farther east. Since the Oligocene, dextral transpressive kilometer-scale faults affected the accreted oceanic terranes and provoked the exhumation of magmatic and metamorphic rocks. During the Late Cretaceous and Paleocene, slices of amphibolites, granulites, garnet meta-sediments, Iherzolites, pyroxenites, harzburgites, gabbros and basalts are exposed along Miocene to Recent transcurrent faults. The tonalite rocks are present too.

According to the equilibrated mineralogical phases and also to the thermobarometric results rocks, are deformed in between 630° to 850° at relatively low pressure (6-9 kbars). Thus, these rocks likely represent the metamorphosed remnants of the accreted oceanic crustal fragments and associated depleted mantle that form presently the roots of the Ecuadorian Andean Ranges. Also, the presence of Miocene tonalite with adakite features supports the hypothesis that the partial melting of oceanic fragments accreted and under-plated plays an important role in the genesis of adakites. This constitutes an alternative to the model that attributes the origin of recent adakites of Ecuador to a flat subduction or to the ridge of Carnegie fusion.

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Session No. 65--Booth# 19

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