

Geologic History and Petrology of the Tobago Volcanic Group

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Abstract

The pre-Cenozoic rocks of Tobago, consists of three East-West trending lithologic belts that cut across the island: the North Coast Schist (NCS), the Plutonic Suite, and the Tobago Volcanic Group (TVG). The geology of the Tobago Volcanic Group has largely been categorized as undifferentiated. In an attempt to understand the geological processes and/or events that culminated in the formation of this volcanic group, the southern part of Tobago was mapped and samples were taken from specific sites which then underwent petrographic analysis. The petrology of the various volcanics show some interesting features, some of which allowed certain conclusions to be drawn about its geologic history, and in doing so, may provide some limitations to various tectonic models of the southern Caribbean.

The general petrology of the area gives rise to the conclusion that the area consists of basaltic flows with different eruption times and magmatic compositions. The volcanics were then subjected to very low grade metamorphism and some hydrothermal alteration. Hydrothermal circulation during burial of thick lava successions may have led to the deposition of calcite amygdals in the basalt vesicles. Some of the olivine and or augite and even “skeletons” of the aforementioned minerals were replaced or being replaced by chlorite and then calcite. The numerous mineral replacements indicate that the system is still trying to equilibrate. The quantity of these amygdals and level of hydrothermal alteration can be traced across the volcanic group. This represents a vital clue towards the geologic processes that shaped this part of the Tobago Volcanic Group. This paper will show the petrology of the TVG as a preliminary interpretation of the geology of the area.