THE GEOLOGICAL SOCIETY OF TRINIDAD & TOBAGO

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A Tale of Two Tufas

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Tufas are calcium-carbonate deposits that form when conditions in calcium and carbon dioxide saturated waters change abruptly, such as when there is a decrease in water temperature. These changes allow carbon dioxide to escape from the water or calcium to change its reactivity, which can then trigger the precipitation of calcium carbonate. This project aims to analyze and compare two tufa deposits from Northern and Southern Trinidad. In South Trinidad the Salt Springs tufas form in a warm, saline, and crude oil-bearing spring. In contrast, the Turure tufas in Trinidad's Northern mountain range form in a pristine freshwater stream. The Northern Range, far removed from the oil and gas deposits of South Trinidad, is covered in relatively pristine rain forest held up by metamorphic rock. We will apply oxygen and carbon stable isotope geochemistry to understand the temperatures and hydrologic conditions of the carbonate formation, also potentially using thin tufa layers to evaluate cyclicity of precipitation of tufa. X-ray diffraction analysis will be applied to identify
the mineralogical composition of each of the two tufas. Different carbonates form under different geochemical conditions, so having a precise understanding of mineralogy is important. Differences between the two tufa locations are expected to be the result of differences in local geology, and the application of these techniques will help determine the specific origin and formation of these tufas.