Introduction

Introductions

Eruption Dynamics of the Inyo Crater System

I. Background

The three South Inyo Craters are a part of the Mono-Inyo Chain of volcanic centers that extend from Mono Lake to Mammoth Mountain. In this chain, the craters in the northernmost crater will be called Summit Crater as it is at the top of Deer Mountain, the middle crater will be called North Inyo Crater, and the southernmost will be called South Inyo Crater. Using hand-held Garmin GPSMAP 60Cs units, we collected data on the topography of the craters. We hypothesize that the northernmost South Inyo Crater formed. We also hope to find evidence from ash layer composition and local subsidence to determine whether the ash layers were the same in each of the craters. We performed a wide sweep of the United States National Park System to find a location that would be suitable for this study. It was thus not the last crater to erupt. The inside of South Inyo Crater, about 1 meter thick, is not ash but coarse water-borne sediments. These eruptions were caused by magma from the Long Valley Caldera heating underground water and causing explosive eruption. In addition, due to the distribution and extent of the debris field, we are lead to conclude that basalt clasts of larger than 0.25 meters were confined to within 1 km of the craters. Together these two factors, the distribution of the debris and the presence of basalt clasts, help us to identify the ash layers studied in this paper as being basaltic in composition. A paper by Miller in 1985 described more details about the eruptions. These eruptions were caused by intrusion of magma coming up to the surface of the ground. They found this by analyzing the fault scarp banding (strike-dip of banding is shown in Figure 13). The strike-dip measurements were supposed to show the strike and dip of the ash layers corresponding to each individual eruption, data which could then be used to determine how the regions seismic properties have changed over time and how eruptions of this size and magnitude will be similar to these eruptions but will be small to moderate in size. Thus, while another phreatomagmatic eruption is brewing, such catastrophic implications are brewing. It will be interesting to see how the region's seismic activity responds to this ongoing activity. The southernmost of the three South Inyo Craters is Summit Crater. Like the outcrop tuff, this tuff also has remarkable similarity to Summit Crater's tuff: both contain biotite, hornblende, plagioclase, quartz and feldspar. While the crystal sizes are not the same, the composition is very similar.

II. Our Purpose

The purpose of this study is to examine the ash layers from each of the South Inyo Craters to determine whether the ash layers were the same in each of the craters. We performed a wide sweep of the United States National Park System to find a location that would be suitable for this study. It was thus not the last crater to erupt. The inside of South Inyo Crater, about 1 meter thick, is not ash but coarse water-borne sediments. These eruptions were caused by magma from the Long Valley Caldera heating underground water and causing explosive eruption. In addition, due to the distribution and extent of the debris field, we are lead to conclude that basalt clasts of larger than 0.25 meters were confined to within 1 km of the craters. Together these two factors, the distribution of the debris and the presence of basalt clasts, help us to identify the ash layers studied in this paper as being basaltic in composition. A paper by Miller in 1985 described more details about the eruptions. These eruptions were caused by intrusion of magma coming up to the surface of the ground. They found this by analyzing the fault scarp banding (strike-dip of banding is shown in Figure 13). The strike-dip measurements were supposed to show the strike and dip of the ash layers corresponding to each individual eruption, data which could then be used to determine how the regions seismic properties have changed over time and how eruptions of this size and magnitude will be similar to these eruptions but will be small to moderate in size. Thus, while another phreatomagmatic eruption is brewing, such catastrophic implications are brewing. It will be interesting to see how the region's seismic activity responds to this ongoing activity. The southernmost of the three South Inyo Craters is Summit Crater. Like the outcrop tuff, this tuff also has remarkable similarity to Summit Crater's tuff: both contain biotite, hornblende, plagioclase, quartz and feldspar. While the crystal sizes are not the same, the composition is very similar.