

Paleomagnetism of a Dyke in Kelso, CA

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Abstract

An igneous intrusion was discovered while completing a geologic mapping project on the Kelso 7.5-minute quadrangle in in San Bernadino California. This dyke is located at 35 degrees 3'47" N and 115 degrees 40'47" and has an unknown age. The objective of our research entails examining samples extracted from the dyke, using a paleomagnetic demagnetization experiment to determine the age of when the dyke was emplaced. Samples were collected during a research expedition to Southern California. On site they were orientated and collected. They were then brought back to the lab where they had cores drilled on them. Of the cores drilled five were usable. They were then spun on the spinner and subjected to incremental heating until the temperature of 700 degrees Celsius was met. Results wield an average declination of 162.6 and an average inclination of 22.4. These results are promising but the potential rotation of the sample suggests more samples are needed to conclusively determine the age of this dyke.

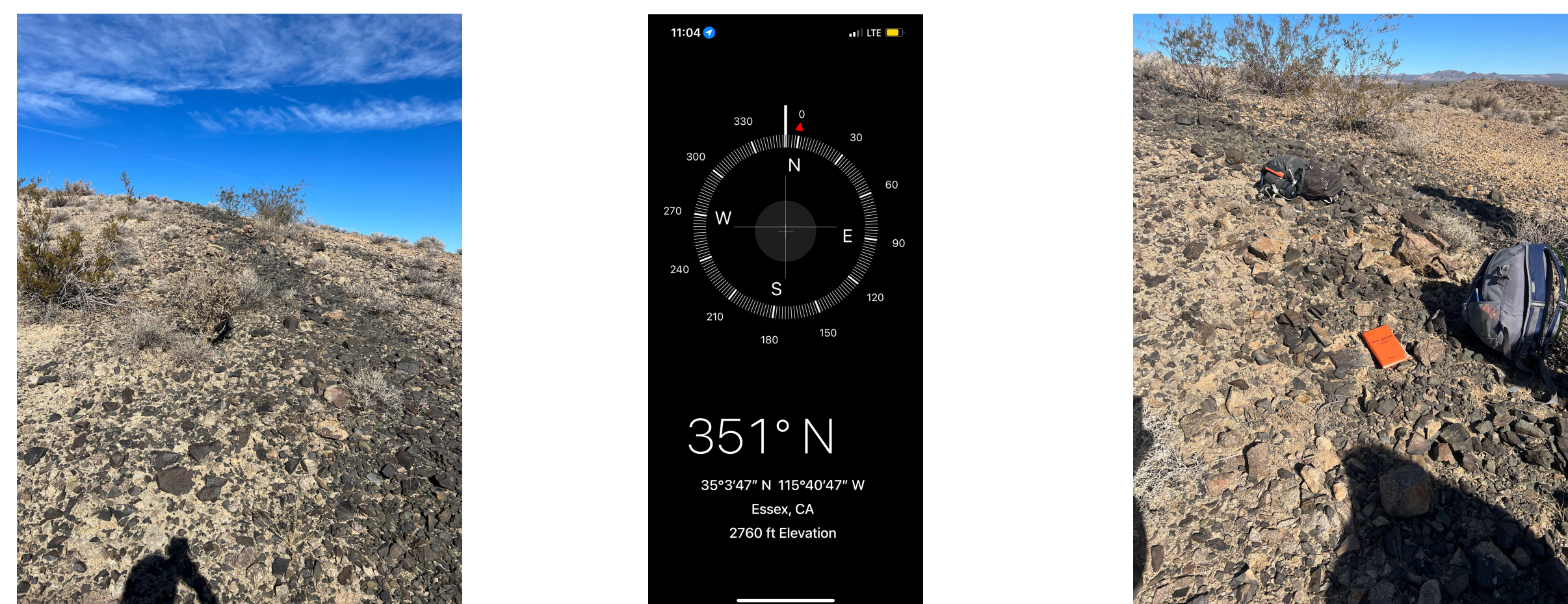


Figure 1

Figure 1 shows in person pictures of the sample site in Kelso CA. The far middle picture shows coordinates of where the dike is located.

Introduction

Kelso CA is located in the southeastern area of California. This area is full of geologic and tectonic activity. The goal of this project is to look at a dyke that was found near the Kelso dunes and use a paleo Demag experiment to determine the age of emplacement.

Figure 2
This is a map of California. The red star that is on the map is the area in Kelso where the sample for this research was found

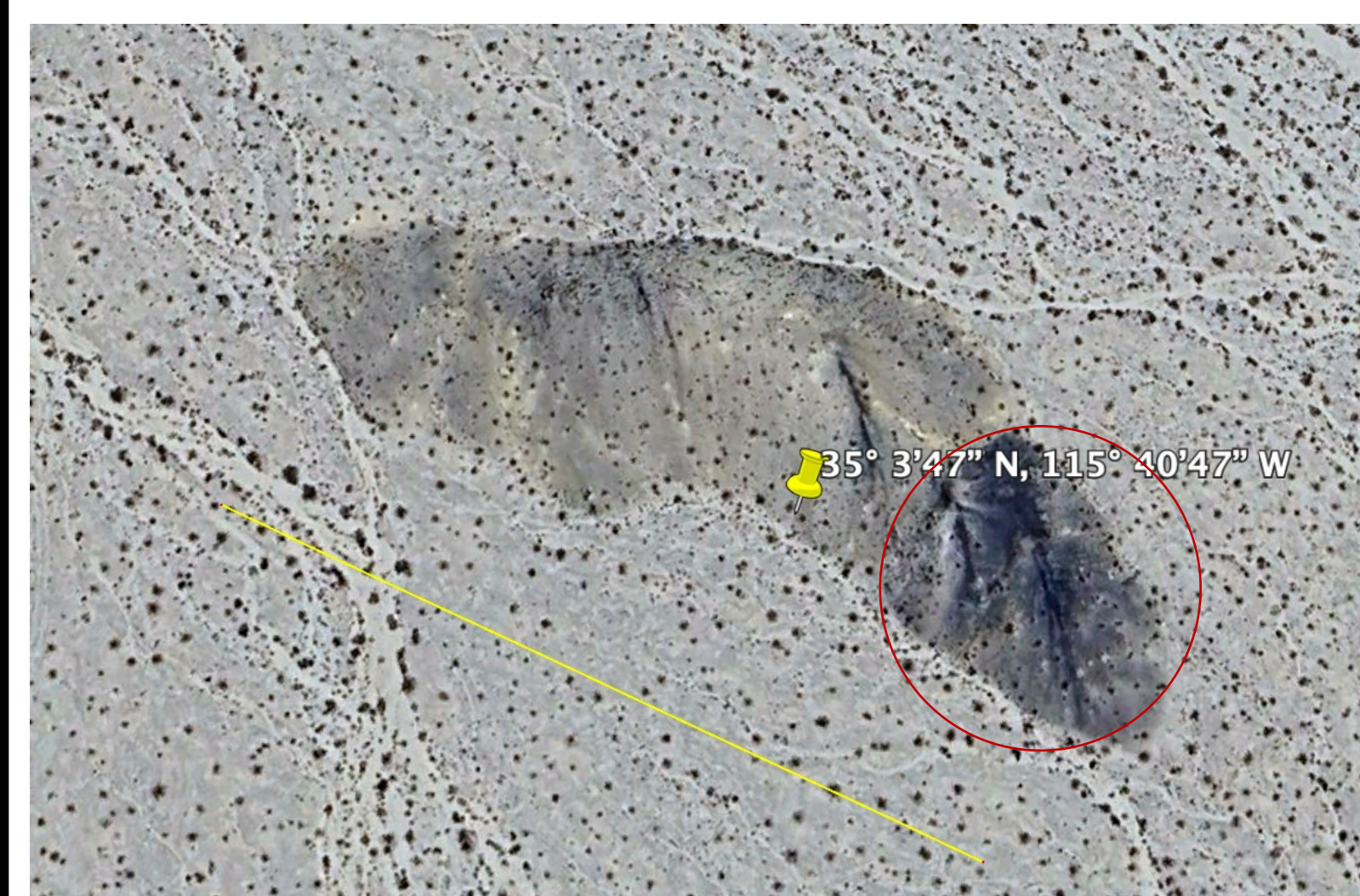


Figure 3
This is an aerial photo of the area of research. The yellow line is 500 feet long. The red circle is where the dike is.

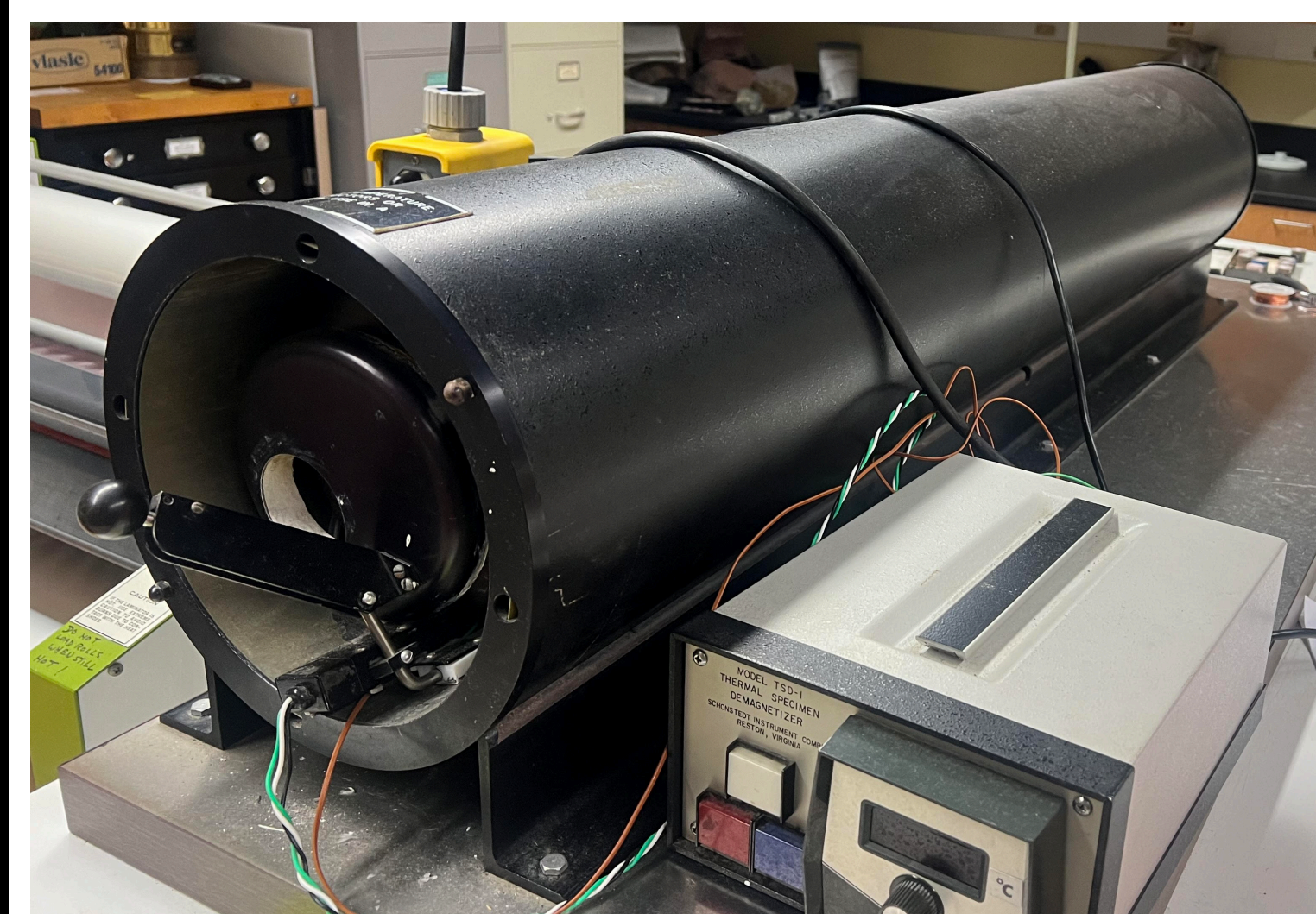


Figure 4

Figure 4 shows on the right a picture of the spinner that was used for the experiment and on the left a picture of the oven that was used to cook the sample.

Discussion

During data collection for this project there were no apparent issues. Samples were orientated and collected from the site. The issues that occurred happened during the heating of the samples in the lab. We believe that crystals were growing around the 600 degree point. For this reason we have altered our data and deleted the points past 550 degrees Celsius.

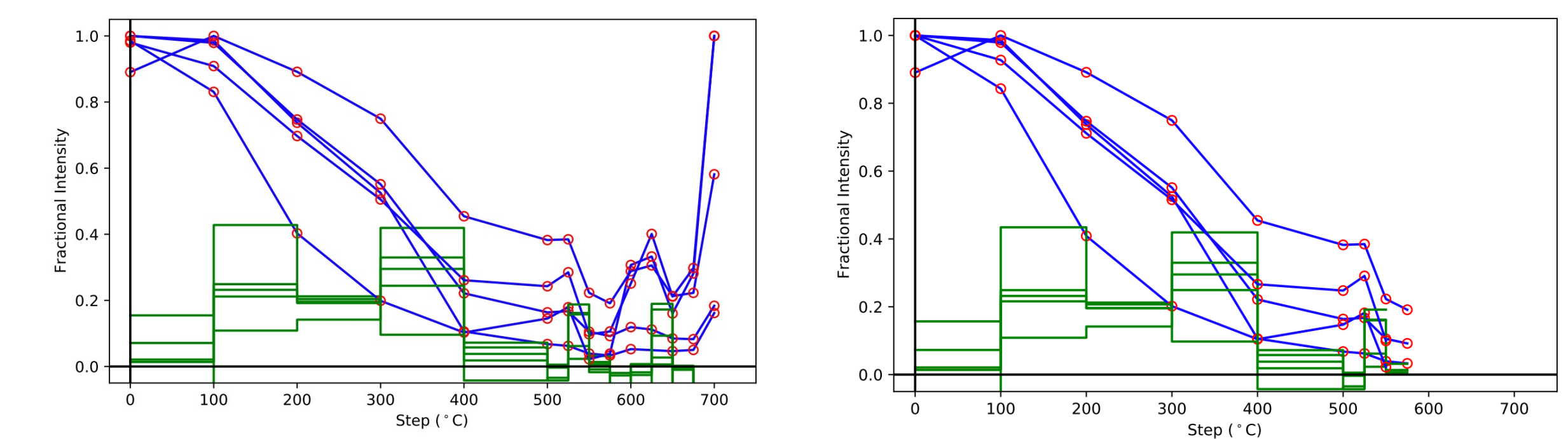


Figure 5

These two graphs show the fractional intensity on the Y axis and the step in temperature on the X axis. As you can see on the graph to the left at the 600 degree mark things start to go haywire. This is for the crystallization explained above so that data has been negated from the data set.

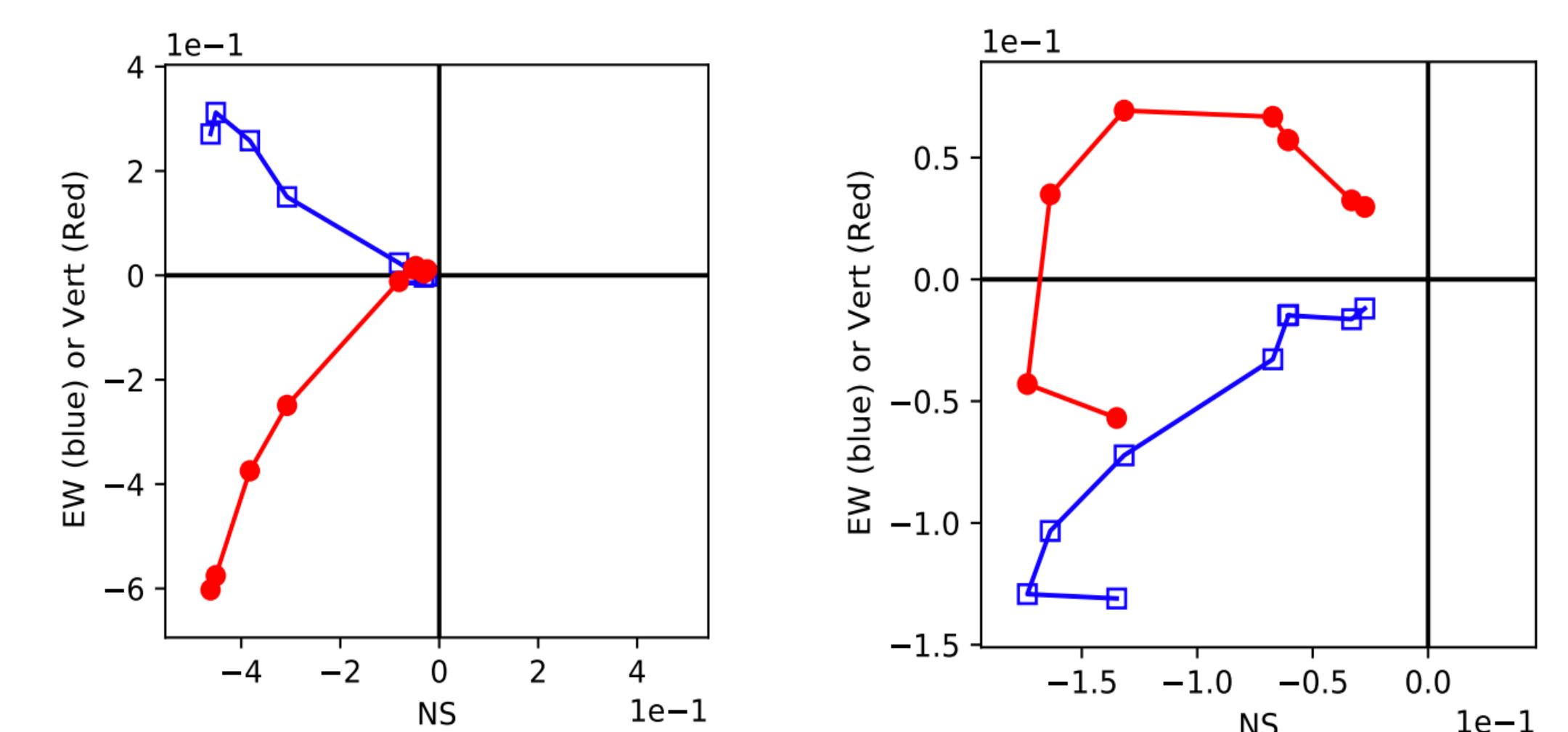


Figure 6

These two graphs show the orientation of emplacement of the certain sample used. The graph on the left shows an example of a good consistent data. The graph on the right shows an example of data that is not as consistent. With more samples more consistent data would be found.

Conclusions

This project idea and the data collected is a very good start to understanding the age of emplacement of this dyke. With more data sets we could determine a definite age of emplacement. This area of California is definitely worth looking at again and collecting more samples so a definitive age of emplacement can be found for this dyke.

Acknowledgment

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