

Ella Hughes (Natural Sciences) – California Institute of Technology, Summer Vacation 2018

For 11 weeks of the summer vacation I worked as a student researcher at the California Institute of Technology. I worked under the mentorship of Professor Alex Sessions within the organic geochemistry laboratory in the Geological and Planetary Sciences faculty. Here, I undertook an independent project to construct the first record of the sulfur isotope composition of organic matter across the past 60 million years.

The aim of this research was to determine whether organic sulfur isotopes could be used as a proxy for past environmental conditions. Following on from this, we hoped to use sulfur isotopes to provide an insight into past climate states of the planet over time intervals at which the atmosphere may have reflected a state similar to that anticipated from continued anthropogenic emissions.

The results of this research were promising, with the sulfur isotope record reflecting our expectations based on other previously developed environmental proxies. However, the interpretation of our research remains ambiguous, and requires a substantial amount of future research work before it can be fully understood.

I will now be undertaking some of this work by continuation of the research completed at Caltech as my Part III Earth Sciences Master's thesis. This will allow me to develop a much more comprehensive understanding of the data I collected, and will hopefully lead to publication of the results in a paper. In addition, I have been selected to present my work this December at the American Geophysical Union Centennial Conference in Washington DC.

As well as undertaking research at Caltech, I was able to use my time off to explore California. I visited a number of amazing national parks and beaches, and was able to explore the diverse culture of LA and the surrounding area. I was also privileged to meet a number of other young researchers from a wide range of backgrounds, and have made friends for life.

I would like to thank the college and the Mill Lane Committee for the generous support they have given me in making this award. My experience this summer has given me unique opportunities in research, including allowing me to direct my own project as a Master's thesis, and has genuinely inspired me to pursue academia as a career.