**Personal Statement** Bobby Sue Student

I did not always plan to be a geologist. In fact, if not for discovering a love of math in high school I probably would have become a professional artist and still consider art to be part of my identity. I also considered astrophysics and philosophy, to the extent that in college I completed enough credits to technically qualify for degrees in both in addition to taking more than the required credits for Earth and planetary science. It was not until the second half of my junior year in college that I could see with certainty a future as a geologist. Standing in front of a turbidite sequence in northern Spain, I realized that I had botched the question on turbidites on the midterm a week previously but I also realized that that would never happen again, because now, actually looking at a real sequence, I understood the changing environmental conditions it recorded. Rocks were something I could understand and that understanding was awe-inspiring. I came back from that field trip dreaming about rocks and excited to pursue a career in geology.

For my undergraduate thesis I worked on quaternary sea level modeling with Professor _____, and we are currently in the final stages of journal manuscript preparation. Working on this project has significantly improved my coding skills (for part of the project I wrote a Matlab code to model sea level following established mathematical methods). Before working on this project, I had only had a vague sense of what "mathematical modeling" was, but I now have a full appreciation of what it entails and what it offers as a scientific tool. My work looks at how different models incorporating varying degrees of detail in mantle and lithospheric variations result in different sea level reconstructions for the Red Sea during the last deglacial period. This project has also been an incredible collaborative experience. In addition to working directly with Professor _____, I received mentoring from graduate students in his research group who work on similar modeling projects. Their unwavering commitment to helping me understand what I was doing and willingness to be a sounding board for my ideas are in part what inspired me to apply to graduate school: I would like to be the same kind of mentor to undergraduate students at Boulder.

My other major research experience is very different. With Professor _____ at _____ University and Dr. _____ at _____, I am trying to update the time constraints on Rodinian rifting and subsequent passive margin formation as recorded in Western North America. To do this, we are modeling the tectonic subsidence history of the rift basin using field measurements of stratigraphic thickness and structural observations from the Death Valley area. I have been working on this project since June 2018, with fieldwork occurring in September. We are currently in the process of finalizing our models and preparing a manuscript. I have really loved the combination of fieldwork and modeling in this project. The multi-sensory nature of fieldwork is in part what drew me to the Earth sciences in the first place and I would like my graduate work to include fieldwork as well. I am also looking for opportunities to use and expand my repertoire of analytical skills. The geological lab work I have done previously was for a class project in which I prepared samples for solid mass spectrometer carbon and oxygen isotope analysis. I derived the same satisfaction from this hands-on work as I do from art projects and the patience and meticulousness demanded by lab work play to my strengths. Although not scientific, many of my previous jobs (such as legal archiving and food packaging) have required adherence to procedures that demanded levels of precision and attention to detail similar to those required in lab work.

My undergraduate institution stressed the multi-disciplinary nature and breadth of topics in the Earth sciences, which has given me a greater understanding of how different Earth systems influence each other than if I had focused solely on one sub-discipline. I am fascinated by erosion, both its modern effects on landscapes and how it limits what the rock record preserves. I would like to pursue graduate research in geomorphology combined with tectonic factors to look at erosion through deep time. UC Boulder's expertise in these areas make it the ideal place to earn my PhD. I am particularly interested in _____'s work applying thermochronometry to questions about large-scale erosional and tectonic events.

Academia has not always felt like a perfect fit for me and I still sometimes question my place in it and the system in general. However, rather than this questioning being an obstacle, I see it as a valuable check on taking for granted the usefulness and privilege of devoting my time to pure research on academic questions. This is something I struggled with in college while reconciling my academic aspirations with my family's low socioeconomic working-class background. Part of what makes the Earth sciences appealing to me is that they have practical applications, such as informing understanding of potential hazards to humans, in addition to fulfilling academic curiosity. Although I am currently more excited by questions about the past than questions about the present, I like that the same skills can be applied to provide material benefit to human life. I want to contribute to expanding our knowledge of the Earth's history but I would also like to contribute, if possible, to helping us find better ways to live in Earth's present. Reconciling my academic aspirations with my socioeconomic background has also, I think, made me a more responsible scientist. I feel a responsibility to be able to explain my work well to anyone who asks and to be able to offer a coherent reason why the work is valuable, even if that reason is not accepted by everyone. I feel a responsibility to try to help other students who struggle like I did to figure out the academic system. I hope that my advice has been helpful to students to whom I've offered it in the past and I look forward to teaching and helping students in a more formal capacity as a teaching assistant. I benefitted greatly from TAs invested in their roles as teachers and I view teaching as a component of graduate school equal in importance to research. The teaching opportunities at Boulder and the commitment of other graduate students to teaching, as evidenced by presentations at the AGU 2018 Fall Meeting, are further reasons Boulder would be an ideal institution for me, in addition to the research opportunities available.