**Statement of Research Interests**

**David Vasquez**

I recently attended a lecture by Dr. Gavin Schmidt the Director of the NASA Goddard Institute for Space Studies where he spoke about the importance of climate models. One thing that particularly stood out is that he spoke about the importance of modeling complex systems as we move into the future. He also spoke about how these models are often wrong and the important research that still needs to be undertaken in the field. This leads to one of my main goals of pursuing graduate studies in the College of Earth, Ocean, and Atmospheric Sciences at Oregon State University. I hope to become a leading researcher bringing principles of Computer Science to the field of Ocean Ecology and Biogeochemistry.

My background is a little unique but I have always been driven by a love of research, learning and teaching. I gained my master’s degree in the College of Engineering and my research involved developing algorithms to model the behavior of radiogenic isotopes. I was funded through the Nuclear Regulatory Commission and also co-authored and was awarded an additional research grant with my graduate advisor. As a graduate student I was nominated for and awarded an ARCS Fellowship by faculty in the Department of Nuclear Science and Technology. Upon completion, I gained my MBA and have been working as a Software Engineer at Oregon State University and then Cambia Health Solutions. I have also been fortunate to design and teach a number of courses ranging from Radiation Biology to Business.

    I realized during my master’s degree how much I loved research, teaching and academia and knew that I wanted to pursue becoming a Professor. I began speaking with faculty, attending seminars, taking courses and reading research and was drawn to the College of Earth, Ocean, and Atmospheric Sciences. I found faculty engaging in exciting and meaningful research taking place all over the world. What also drew me is the number of faculty who are undertaking research that aligns with where I hope to head in my personal academic career.  I feel this environment would allow me to integrate my own interests with the experience of successful scholars who would enable me to turn ideas into successful research.

While attending a seminar in the College I was able to hear Professor Watson speak about his research. One of the focal points of his presentation was a NASA funded study working to predict illegal activities occurring at sea. I was immediately drawn by the importance of the research, modeling of complex systems and the types of future research this work could open up. Another area of his research that really stood out to me was his research funded by DARPA working to develop analytical methods to predict dynamics in complex systems.

An example of something I would be interested in building upon is a current major research initiative being pursued by the National Science Foundation. They are working on developing a national approach to data science and engineering that is cohesive and conducive to modern science. One area of this initiative is they are working to establish a network of mobile and fixed tools to understand and document changes occuring in the arctic and how they will alter climate and ecosystems globally. Professor Bernard is engaging in work like this in her lab. They are working with krill to understand the effects of climate change on the Antarctic pelagic ecosystem. The data from this will be used to develop theoretical models related to energy and growth rates to better understand the effects of climate change.

I am always driven by the goal of making everything I am a part of as simple and clear to understand as possible. I hope that over time my research will help expand our understanding of science but also have a broader impact on society. While my focus will be on being a successful graduate student I also will continue to explore ways to approach and think about my research and its impacts in unique and novel ways. An example of this would be I was recently asked to work with faculty from the Department of Nuclear Science and Technology to help launch a startup related to nuclear security.

I know that time moves quickly and while graduate school may seem like a long time it is actually a very short period to begin to establish yourself as a researcher. During my master’s degree I went from limited knowledge of the field of radiation physics to developing software, completing a thesis, working as a teaching assistant and instructor and co-authoring a grant. I also learned a lot about academia and I hope to bring these skills and enthusiasm to pursuing my doctorate. I have begun working to apply for funding from outside sources like NOAA the DOE and the NASA NSPIRES program.

    If selected to start at OSU I would be interested in beginning to engage in any research opportunities that may be available over the summer. I have already been fortunate to meet a lot of faculty and students in the College and have been impressed with the kindness, warmth and helpfulness of everyone. While I plan to be focused on my research I also want to take the time to be an active and engaged member of the College.