



Dr. Hillary S. Jenkins
Associate Professor of Environmental Studies
Lewis Hall
1200 E. Colton Avenue
Redlands, CA 92374
hillary_jenkins@redlands.edu
909-748-8525

Recommendation Letter for Amy Whether
Armacost Library Undergraduate Research Award (ALURA) STEM

March 21, 2017

To the ALURA-STEM Program Committee,

It is with great pleasure that I write this recommendation letter for Amy Whether, who has applied for the Armacost Library Undergraduate Research Award for her outstanding senior thesis research on Noise Pollution in Prek Toal, Cambodia. Her thesis, titled *Sound Over Troubled Waters: Noise Pollution in Prek Toal, Cambodia*, combines observational data collected in Cambodia (including a boat engine survey and engine sound tests) with an empirically derived model for sound attenuation produced in ArcPro. Her research is a wonderful example of the evolution of the research process and how literature review informs and shapes that process.

In the summer of 2016, Amy first approached me about the possibility of building upon the work she began while studying abroad in Cambodia. Amy had conducted a statistical analysis of the engine types used by fisherman in the river town of Prek Toal, Cambodia, and wanted to find a way to connect her passion for ArcGIS with her interest in Noise Pollution. The natural place to begin was within the literature – so I tasked Amy with answering a series of questions: has noise pollution even been spatially modeled, if so, what methodologies were used, what were the results, can we find comparison sites, etc.

Amy began with a thorough investigation into the literature to come up with a suitable methodology for creating her own spatial model and appropriate ways of comparing her model with prior work. This led her to learn much about Sound Attenuation – how this is measured and what the theoretical equations for attenuation look like. Because her observational data is from a remote area in Cambodia – the data she collected is entirely new and she was challenged to find information in the literature that would allow her to compare what she derived with pre-existing theoretical calculations of sound attenuation.

Amy was also able to discover a series of equations that enabled her to redirect her research questions somewhat – which was a particularly fascinating part of her process. For example – Amy initially desired to model sound attenuation across a range of land surfaces – but quickly discovered that a theoretical model for this type of attenuation was difficult to find. This allowed her to redirect her focus toward sound attenuation over a single surface but compare this against duration of exposure – something heavily documented in the literature and therefore easily comparable. She was able to create a wonderful model of sound decay with distance and come up with threshold levels (based on duration) that result in Noise Induced Hearing Loss.

Another important research method Amy employed was making use of mentors within specific fields. As a Physics and Environmental Science double major, Amy reached out to faculty in both departments for their expertise and direction within the literature. Because Amy used ArcGIS to create her spatial model, she also needed to review technical manuals on ArcGIS coding in Python. For direction in this regard, she reached out to Nate Strout of the Center for Spatial Studies.

Overall, Amy’s work is a lovely example of a research project that was directed in many ways by her literature review and the pre-existing theoretical derivations of Sound Attenuation. This thoughtful review combined with new information about Sound Decay and the Noise Pollution of a remote town in Cambodia resulted in Amy receiving honors for this project in the Environmental Studies department! Her research thesis demonstrates a talent for problem-solving, technical skill, creative thinking, and the ability to work collaboratively across a variety of disciplines.

For these reasons, I heartily recommend Amy for the Armacost Library Undergraduate Research Award. Please do not hesitate to contact me with any further questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Hillary Jenkins', with a long horizontal flourish extending to the right.

Hillary Jenkins