



## ADVISOR/MENTOR: Dr. Luna SPONSOR/GRANT: employer sponsored PROGRAM START: Fall 2016

## BIOGRAPHY

Amy received her B.S. in geological engineering in 2006 and M.S. in civil engineering in 2008, both from the University of Missouri – Rolla. After which, she began her professional career with Shannon & Wilson, Inc., a very well respected geotechnical and environmental consulting firm. During her tenure, Amy successfully managed a wide variety of subsurface investigations, planning and design, construction, and environmental remediation projects across the country. In 2014, Amy accepted an engineering position with the Department of Defense, which has afforded her the opportunity to return to school to pursue her Ph.D. in civil engineering.

## RESEARCH

Flood hazard across the nation is being redefined, as both the frequency and severity of flood events are steadily increasing due to the combined effects of climate change, increased impervious surfaces associated with development, and a lack of effective floodplain management policies. Exposure is also increasing as communities continue to encroach closer to the known hazard. Now more than ever, earthen levees play a vital role in protecting populations from this increased flood risk. However, it is estimated that there are over 100,000 miles of levees across the U.S., making it nearly impossible for agencies to routinely inspect and maintain all of these systems. By combining remote sensing technologies with big data analytics, larger spans of levees can be efficiently evaluated to make best use of limited federal, state, and local resources. This research will develop a methodology using a two-phased approach, whereby the latest census data, among other open data sources, are utilized to assess the exposure and vulnerability of the communities they aim to protect. Then, the hazard and anticipated performance of the most critical levee segment can be analyzed by means of drone survey collection to progressively monitor levee deformation, coupled with field inspection results, to ultimately prioritize levee improvements at a finer resolution than ever before.



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