

Emily Poston
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GIS- Maidment

Final Project Proposal

The Memorial Day flood that occurred in May 2015 not only affected the San Marcos area as we studied in class, but it also caused a great deal of flooding in Austin as well. Modeling flooding in urban areas is a topic of great concern because sharp features such as roads and building that exist in urban centers are difficult to extract in classical methods of modeling flow. My graduate research will be focusing on developing tools to use high resolution topography data with new flow modeling techniques for urban areas, specifically on the Memorial Day flood in Austin. In order to integrate my graduate research with this GIS project, I would like to study downtown Austin's flooding as a result of the Memorial Day storm event.

As with the exercise we did for the San Marcos, I would like to study how the variation of land cover affects the amount of runoff. The metropolitan area of Austin will be mostly developed, impervious cover, which would incur a great deal of runoff as opposed to the San Marcos basin which we saw was mostly undeveloped. I will experiment with different percentages of land cover (data from GIS) to see how an area with the same total area as Austin but with mostly vegetation would respond to the same storm event. Further, I would like to study where the catchments and flow lines are located in the Austin area to see where infrastructure could be improved to prevent the kind of flooding that occurred in May. There is a lot more work to be done in order to accurately predict flooding in urban areas. With this project, I hope that the maps I produce in GIS and the data I collect from the storm event will help me with my research.

If I am successful, I would like to include some solutions to what problems exist for flooding in urban areas. Whether it is including pervious pavement around the city or creating new detention ponds to deal with the massive amounts of water from these storm events, I would like to investigate how these additions would help flooding in Austin and other urban areas.

