

Whitney Benson

Project Proposal Update

GIS in Water Resources

Fall 2018

Proposed Topic: 2013 Floods: Mapping Hydrology and Impacts in Larimer County, Colorado

From September 11 to September 17 of 2013, Colorado experienced a prolonged rain event that resulted in major flooding in multiple large areas along the Front Range. Due to the prolonged nature of the event, the size and scope of the flooding exceeded the bounds of flood plain models. A state of emergency was declared for 14 different counties, and the event caused billions of dollars in damage.

While Boulder County saw the highest rain totals, some of the most devastating effects were seen in Larimer County, which is home to cities of Fort Collins and Loveland, as well as the town of Estes Park. Road damage isolated communities from easily receiving aid, and by some reports, Larimer County saw more homes destroyed than anywhere else in the state.

The goal of this project is to combine a variety of data to better visualize not only the hydrologic timeline of the event, but it's impacts on the built environment, and the communities surrounding those environments. By combining this data, we can better see where the event truly caused the most damage, and possibly draw conclusions for future flood planning.

Rainfall data will be obtained from NOAA, and supplemented by the Community Collaborative Rain, Hail, and Snow network (CoCoRaHS). ArcMap and USGS have the rest of the data needed for a hydrologic study. FEMA data on flood plains and flood hazards will also be incorporated.

On the impact side of things, I plan to start with demographic data from the US Census Bureau and Larimer County. I am working on finding a more standardized set of data on damage in the area, to supplement some information from Larimer County's website, but plan to conglomerate twitter and news articles if needed. There are a variety of sources of interest for the area, but I intend to be selective in choosing which ones to use after seeing what relationships between data sets emerge.

Tentative Steps Include: Preparing impact and demographic data for import into ArcGIS, formatting possible non-hydrologic data in ArcGIS, completing the hydrologic mapping, comparing hydrologic maps with the other maps to analyze impacts, refining maps, and drawing conclusions.

Updates: I've spent most of my time gathering the "story" aspect of the floods, for my eventual story map, by gathering news articles, Instagram posts, and tweets. I've uploaded the county outline and the DEM data for the area, and trimmed the DEM raster to county, with a buffer zone. The next steps are hydrologic mapping of the event, and tying it in to impacts I've gathered from news sources.

