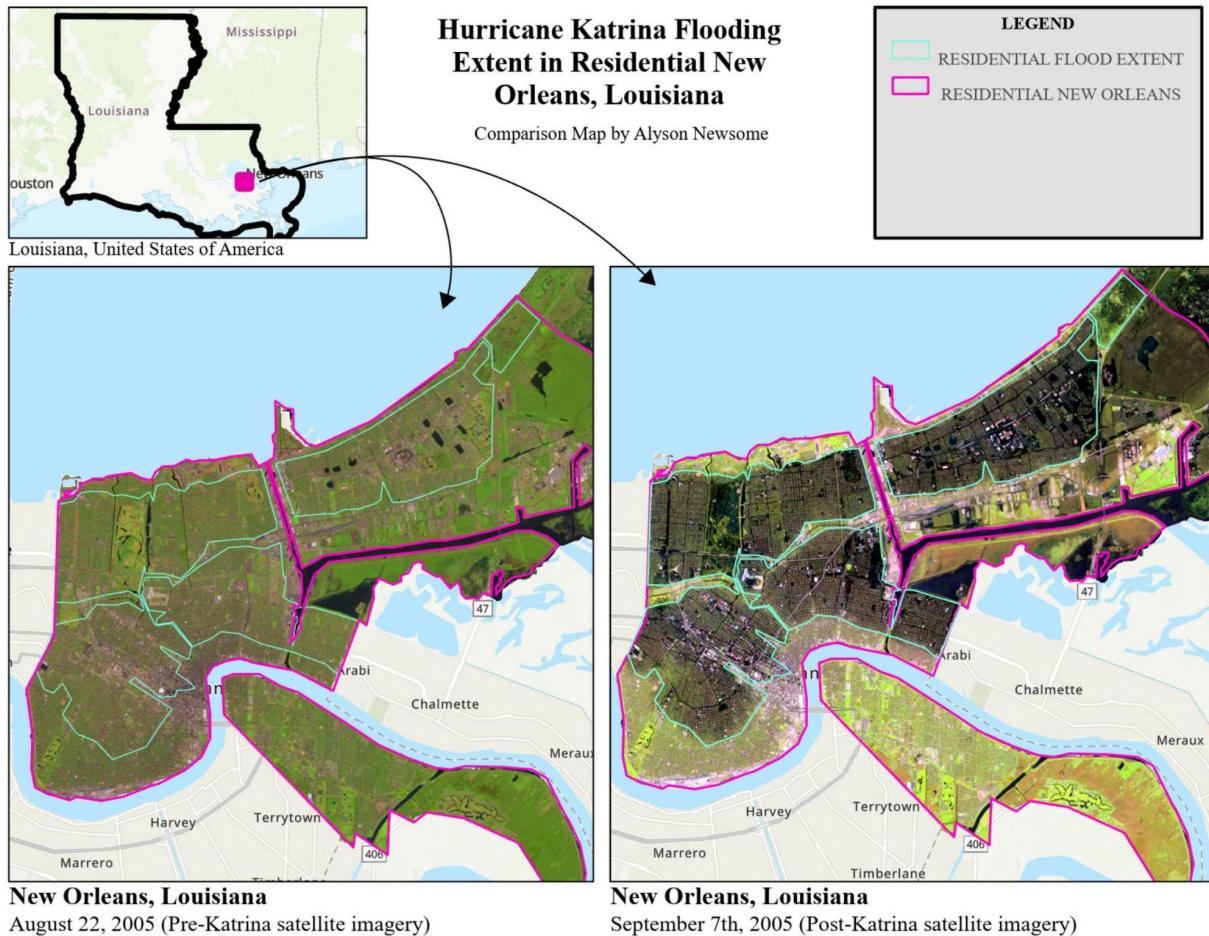


1. A map based on Landsat imagery that shows the full extent of flooding caused by Hurricane Katrina in New Orleans. You have complete freedom to decide what you'd like to include in your map, but I highly encourage you to clip imagery to the formally defined urban area of New Orleans. You should choose the best band combination for visualizing flood water.



2. A report no more than 400 words long that explains your methods, including a justification of band combinations and the elements you decided to include in your map. Make sure to explain what you were hoping to achieve with your map design. Further, calculate what percentage of the city was impacted by flooding, explaining how you used ArcGIS to make this calculation. Also, construct a testable hypothesis explaining what controlled the spatial extent of flooding throughout the city. For instance, why was the French Quarter spared?

(326 words) To display the impact of Hurricane Katrina on residential areas in New Orleans, I made a map that compares pre- and post-Katrina satellite imagery of New Orleans. The pre-Katrina image, taken on August 22, 2005 (Landsat 5, Level 2), was compared to the post-Katrina image from September 7, 2005 (Landsat 7, Level 2). I used the 5-4-3 band combination to show more natural colors, making the vegetation appear green and water dark blue to ensure that it was easy to understand and flooding was still clear.

I specifically focused on the urban/residential areas because flooding in these zones had the most significant human impact. The rest of the state seemed largely rural in the Landsat images, with lots of greenery and little indication of urbanization. I outlined residential areas in pink to separate them from surrounding regions and to emphasize the impact on communities rather than uninhabited land. I also outlined flooded zones on the “after” map with bright blue to make sure flooding was clear.

I created two polygon layers showing the residential areas and outlined the spots on the map in that boundary to calculate the proportion of flooding in the area. To quantify the flooding impact, I used the Tabulate Intersection tool, which calculated the proportion of the total area of flooded polygons within the residential zones polygon. This displayed that approximately 48% of residential New Orleans was flooded.

The map shows that while much of residential New Orleans experienced significant flooding, other areas seemed unaffected by the flooding. The French Quarter is near the Mississippi River and is built along levees, which seems to be an area of lower flooding impact on the satellite images. In contrast, the residential neighborhoods farther from the river experienced much more flooding. Also, the French Quarter is a high point in New Orleans, which may have helped it avoid flooding compared to the lower lying areas.

References

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