

# Elevation Change around HSU

By: Dylan Hills, Jacob Taulbee, and Aubrey Dominguez

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## Introduction

Humboldt State University is located within Humboldt County in Northern California. Below is a map showing the location of Humboldt County within California.



*Figure 1. Location of Humboldt County (red) within California.*

The University is notorious for the many hills and stairs sets it has around its campus. However, the severity of the hills and stairs varies greatly, depending on where you are at on campus. Our group, which we call 'Hills, Stairs, and Umbrellas' set out to make a map that would depict the different degrees of elevation change around campus.



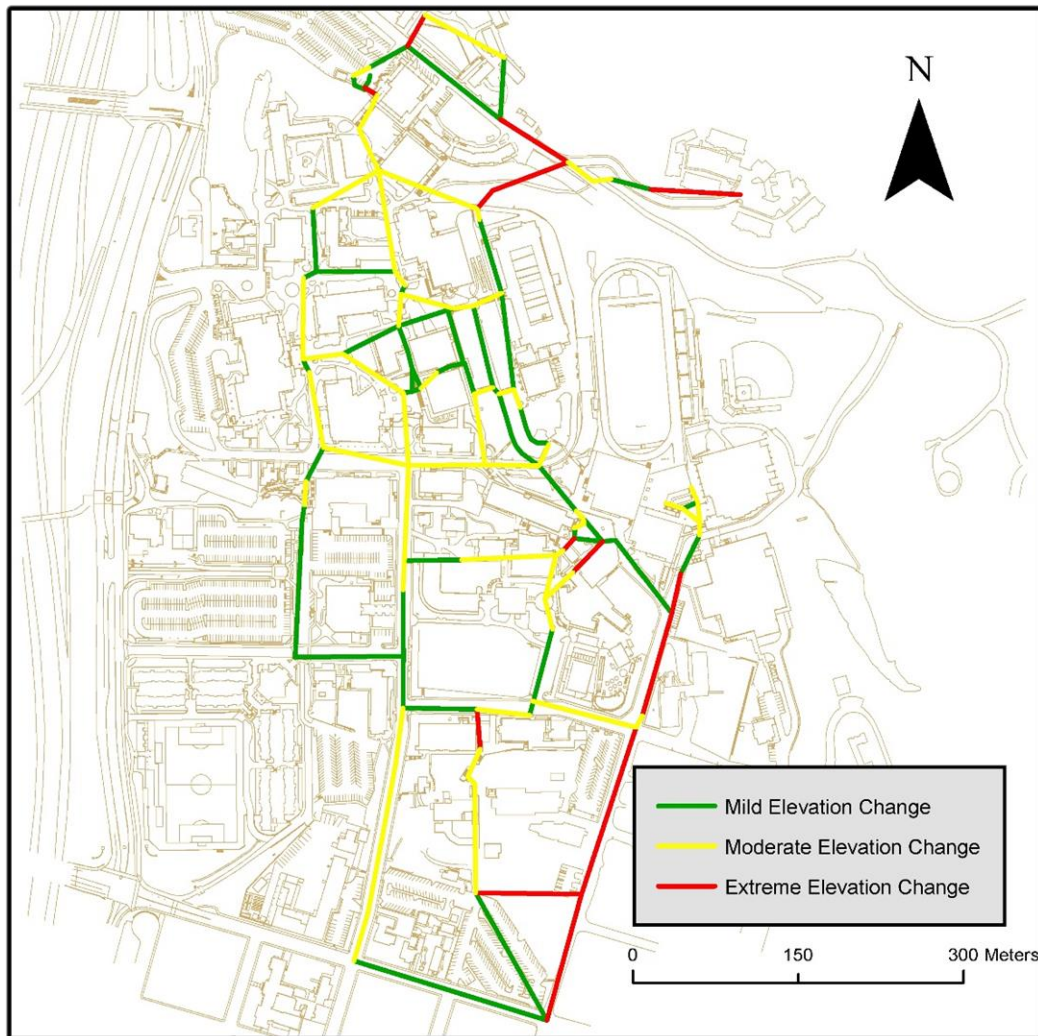
*Figure 2. Aerial Photo of Humboldt State University showing a 3D visualization of elevation around campus.*

## Methods

The first step in our process was to acquire way points using a handheld Global Positioning System (GPS) unit. Our group members fanned out across campus with GPS units and marked way points on the bottom and top of each hill or stair set. Once our data was acquired, we took it back to the lab and loaded it into ArcGIS. The data points were converted over to the proper coordinate system, North American Datum 1983, Universal Transverse Mercator (UTM) Zone 10 North to match our spatially referenced campus map. We then geo-referenced our waypoints to known ground points in order to increase the accuracy of our analysis. After we made sure our points were where they were supposed to be, we used our Digital Elevation Model to determine the elevation at each one of our way points. Using this information, we were able to see the changes in elevation from each point to the next. Our group proceeded to then digitize polylines, and assigned different symbology to the varying degrees of elevation change. The breakdown of our three classes is as follows; less than 30 meters of elevation change was classified as mild, between 30 and 60 meters of elevation change was classified as moderate and over 60 meters of elevation change was classified as extreme.

## Results

Below is a map showing the results of our analysis. As we predicted, the degree of elevation change around campus varies greatly. To best depict our data, our group decided to assign three classes to our classification; mild, moderate and extreme elevation change, which are defined above.



*Figure 3. Map with different degrees of elevation change around Humboldt State University*

## Conclusion

As we expected, our biggest change in elevation was along Union Street on the east side of campus; and the areas of least elevation changes were on the lower west end of campus near the Marketplace. This map could be very useful for incoming freshmen who want to find the least strenuous route to their classes or people with disabilities.

## Acknowledgements

Work was done by all members of our group 'Hills, Stairs and Umbrellas'

## Sources

- All data points were acquired by the group members using handheld GPS units.
- Aerial photographs were acquired from (Unknown Source)
- County Boundary was acquired from the Humboldt County GIS data download.
- Digital Elevation Model was acquired from USGS National Elevation Data Set.
- Campus map was acquired from the Humboldt Data hub.