Estimating the soil erosion risk of the UMBC landscape.

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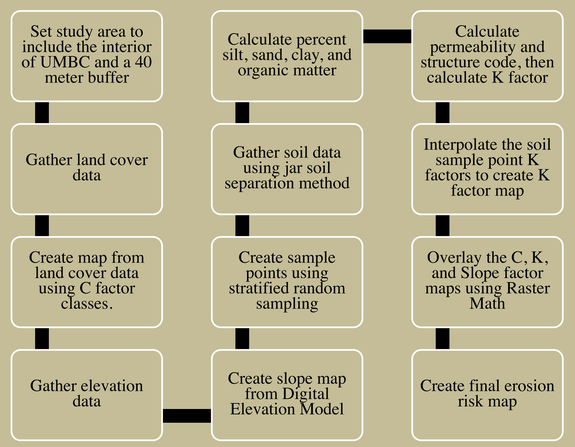
Introduction

This study analyzes the potential soil erosion risk across the campus of University of Maryland, Baltimore County at 1-meter resolution in 2016. Using a simplified Universal Soil Loss Equation, slope, soil erodibility, and land cover factors were used to calculate the erosion risk across campus. This study was done to make comparisons to current global soil erosion maps such as one from Global Forest Watch in order to see how the results would compare at a finer resolution. It was also conducted to potentially provide Facilities Management with a general idea of where landscape management practices need to be implemented. The study was done over a period of one semester at UMBC, and used methods from other similar studies to conduct the analysis.

Methods



Acknowledgements

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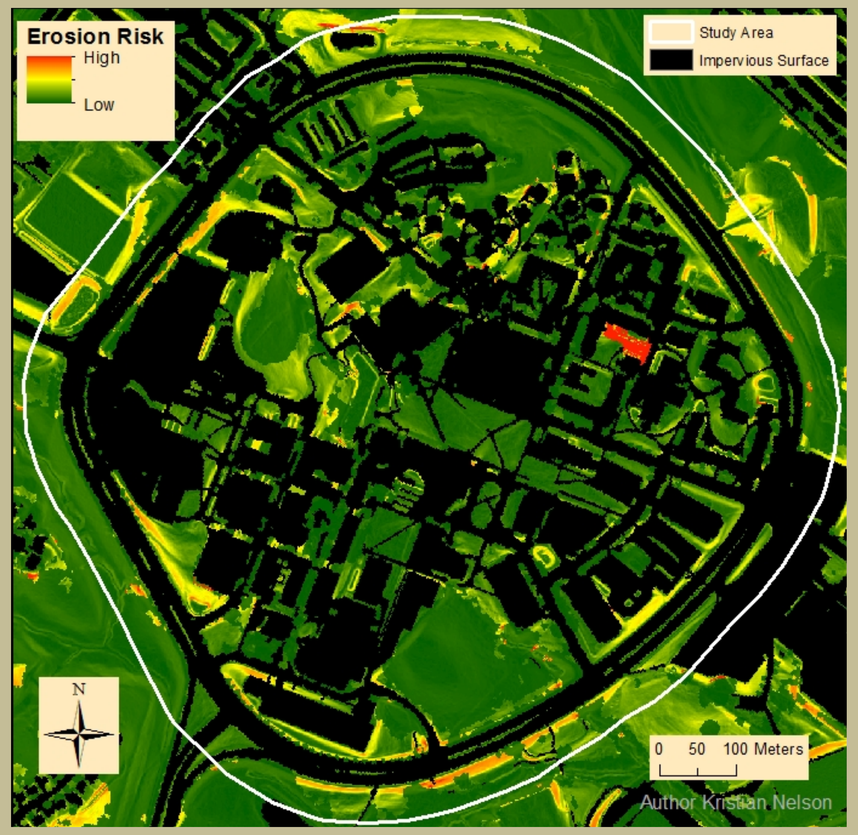
References

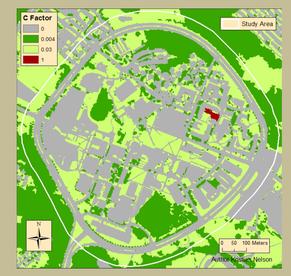
Chatterjee, S., Krishna A.P., and A.P. Sharma. 2014. Geospatial assessment of soil erosion vulnerability at watershed level in some sections of the Upper Subarnarekha river basin, Jharkhand, India. Environmental Earth Sciences 71: 357-374.

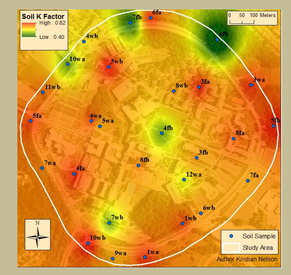
Global Forest Watch. Global Forest Watch Water. Retrieved April 29th, 2018. http://water.globalforestwatch.org/.

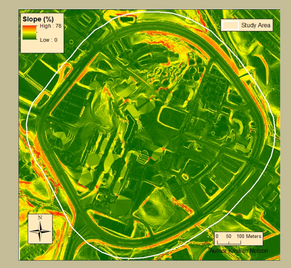
NAIP GEOTIFF imagery courtesy of USGS. Land cover map courtesy of Chesapeake Conservancy.

Results









Conclusions

The final erosion risk map shows where there is a high risk of soil degradation and erosion around campus. It was interesting to compare the factors that were used in the final calculation to see how slope, land cover, and soil characteristics affected the final outcome. It can be concluded that vegetation plays a large role in soil stabilization, as areas around campus with low amounts of vegetation and steep slopes have high risk of soil erosion. These areas shown on the map are places that management practices such as native vegetative planting, could be implemented to prevent the landscape from eroding. The methods used in this study were replicated from other similar studies such as one done in India by Chatterjee et al. (2014). The results from this study show a more detailed look at the landscape of UMBC than the global erosion map created by Global Forest Watch. It clearly displays specific areas around the campus that are in need of landscape work which could help preserve the health of the local ecology.