

ABSTRACT

THESIS: Exploring the relationship between land use/land cover type and wet-bulb globe temperature

STUDENT: Caleb Saylor

DEGREE: Master of Science

COLLEGE: Sciences and Humanities

DATE: December 2017

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With the climate seemingly undergoing significant change, it's believed that the frequency of extreme heat events will increase. These extreme heat events could be exacerbated by the type of land it is occurring over. Death by overexposure to extreme heat is the number one killer among meteorological phenomena, so knowing how land and atmosphere interacts is becoming more important than ever. Being informed about these interactions could be the difference between life and death in some communities. This study set out to determine if there is a relationship between land use/land cover type and the wet-bulb globe temperature. This was done by constructing a mesonet across the state of Indiana using meteorological, solar, and land cover data. Maps were created using GIS technology based on the data and the state was divided into uniform parcels with land cover and WBGT attributes. Using Kruskal-Wallis test and Dunn's post-hoc analysis, it was determined that there is a relationship between land cover type and wet-blub globe temperature. Being armed with this type of information could help people make smart decisions during an extreme heat event. This knowledge can be applied to fields such as construction, military, athletics, or any other field that spends a large amount of time outside during unsafe weather conditions to help aid in keeping people safe.