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The Relationship between **NDVI** and **LST** based on **Land Cover Type** in Phoenix, AZ

Introduction

Previous research suggests that urban land cover elevates land surface temperatures (LST), which has a subsequent influence on the regional climate, human health and comfort, and energy consumption and water use. It is less clear whether these effects are related directly to vegetation, land cover, evapo-transpiration, or a combination.

The focus of the current research is to determine the extent to which vegetation influences temperature, ie the correlation between the Normalized Difference of Vegetation Index (NDVI) and Land Surface Temperature (LST).

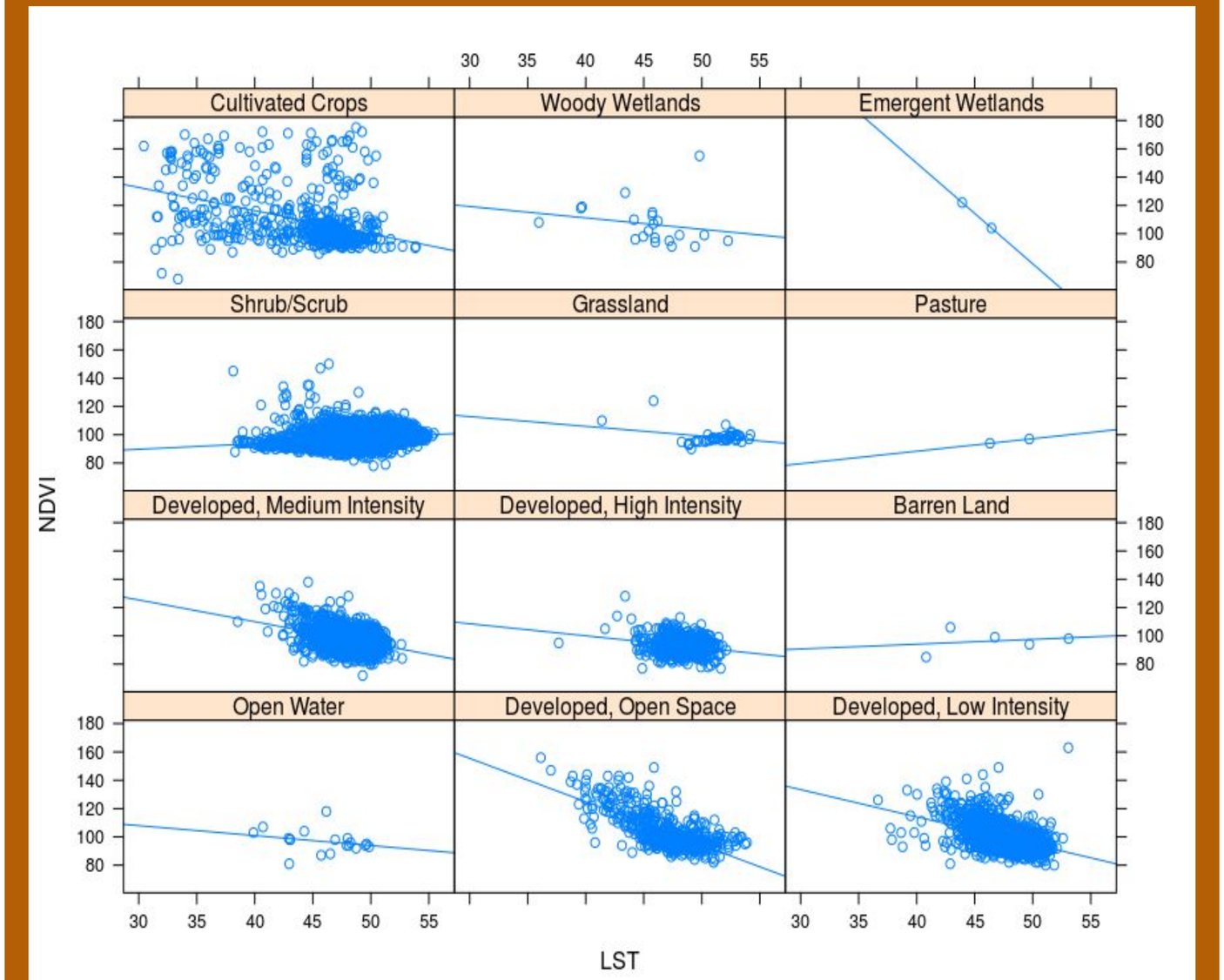
Results

The correlation between the LST and NDVI values that we predicted is evident from the similarity between the indicator maps where the same major features can be found.

Graphing the NDVI-LST relationship separately for each NLCD type shows that the NLCD type plays an important role in the NDVI-LST relationship. If we wanted to predict LST values from NDVI values, knowing the NLCD type would significantly improve the accuracy of our predictions.

Discussion

This study supports the well established negative empirical relationship between LST and increased vegetation cover (higher NDVI). In other words, more vegetation and shaded surfaces are cooler than the peak temperatures of unshaded materials and impervious surfaces increase temperatures. As cities rapidly grow, urban greenery plays an important role as a mitigation strategy for increasing LST. Future research looks at the best locations for green infrastructure.



Maps of Variables