# Wildlife Conservation using Geospatial ML

Adam Cook, Cesar Diaz Andrade, Dheeraj Namargomala, Fernando Canseco, Jacob Brooks, Michael Cheng, Peter Zakariya, Vignesh Sundararajan

Introduction

• Pheasants and Quail Forever (PQF) is a non-profit organization that is dedicated to conserving wildlife
• John Deere partnered with PQF to identify farmland as a source of conservation.
• The objective is to develop a geospatial machine learning model to identify farmland that is suitable for conservation.
• The purpose is to aid conservation and help farmers to reuse unproductive or unprofitable farmland.
• The geospatial machine learning model uses data sources, such as satellite imagery, soil, and elevation data.
• The poster presents our findings and discusses the implications of our work for the future of wildlife conservation.
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Dataset

Locate field in EOBrowser → Gather soil and elevation data → Visualization → Merge datasets by hex

Check for cell towers

Normalize data

Quality Assurance

Final Dataset Columns:

Field Hex ID | Area Hex ID | Clay/Sand/Silt % | Height | Relative Height | Slope | Cell Tower
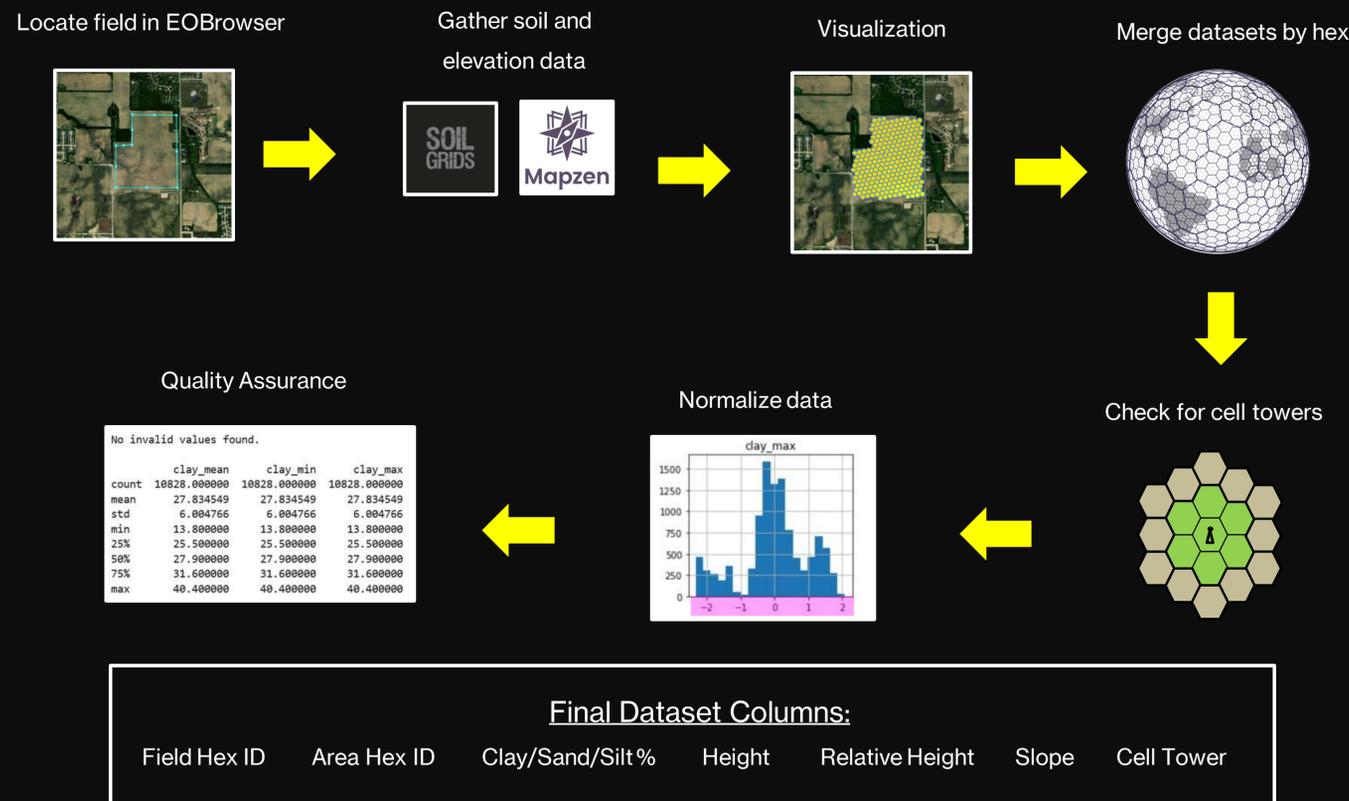
Detecting Potential Conservation Land with Heuristics

NDVI (Health of Vegetation) approach
• Find fields with NDVI lower than a certain threshold based on NDVI around it plus what is growing

Outlier approach
• Based on a large amount of data, find outliers
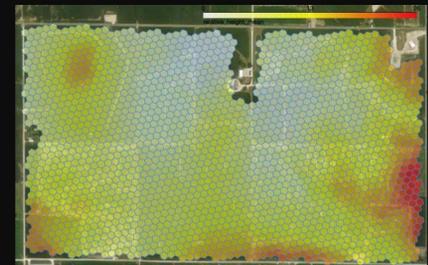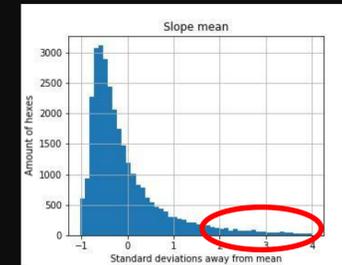
Detecting Potential Conservation Land with Unsupervised Learning

The arrows represent the level of importance of each feature in the dimension reduction. Each data point represents a hex id.
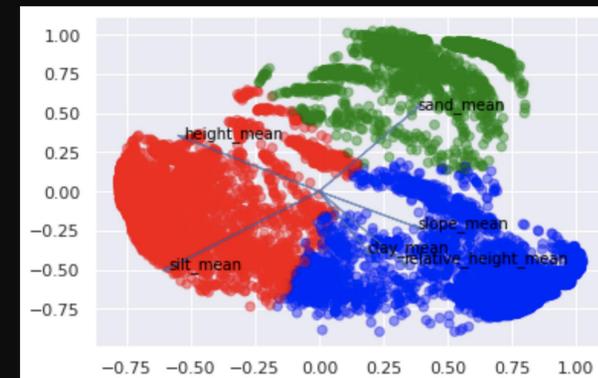
Variables
• Sand mean
• Silt mean
• Clay mean
• Height mean
• Relative Height mean
• Slope mean

Conclusions and Future Goals

Conclusions
• Based on our findings, out of 67 fields, XX% were identified as good candidates for conservation, on average a XX% area of those fields
• Multiple factors go into if an area is profitable or not

Future Goals
• Use NDVI in the final dataset
• Create a profitability map
• Compare our conservation predictions with known conversation areas

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