PROJECT SILVAFLUX

Big Data Computing and Interface for Tropical Forest Regeneration

By Team Clean Carbon

Team Introduction

Team Clean Carbon:

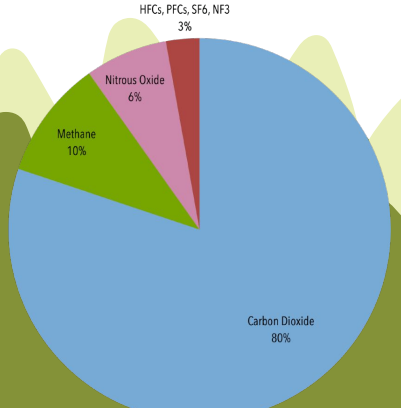
- Justin Stouffer
- Richard McCue
- Curtis McHone - Team Lead
- Jonathan Bloom
- Shayne Sellner

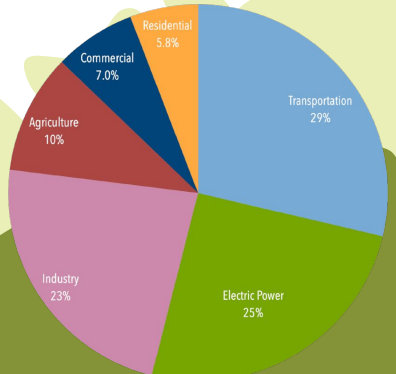
Team Sponsor:
Alexander (Allie) Shenkin

Team Mentor:
Vahid Nikoonejad Fard

Introduction

- Climate change has become a serious issue for our society
- Many large companies are starting to purchase carbon credits in order to offset their carbon footprint
- When companies purchase these carbon credits they are funding reforestation projects that reduce the amount of greenhouse gases in our atmosphere
- Our sponsor Allie (Alexander) Shenkin and his team have discovered a new technique that would allow for more carbon credits to be sold in a designated area
- With this new discovery selling carbon credits will become even more profitable and help reduce the effects of climate change





Our Client

Dr. Alexander (Allie) Shenkin:

- Assistant Research Professor at NAU's School of Informatics, Computing, and Cyber Systems
- Associated Scientist in Oxford's Ecosystem Lab

Designated research in two areas:

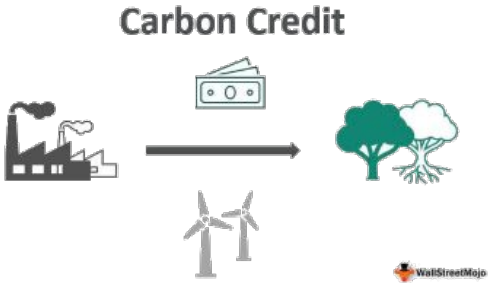
- Ecosystem responses to management, disturbance and climate change
- Roles of an ecosystem's structure in its function, assembly, and response to disturbance and stress

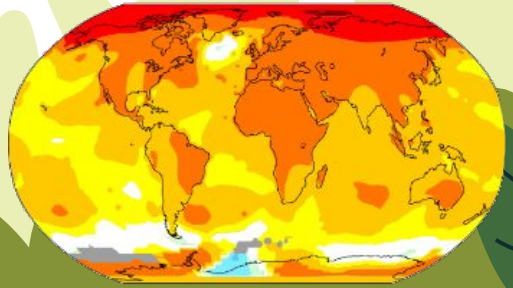
Allie's Goal for this project:

- Make carbon credits more accessible and profitable
- Create a UI and back end system to aid in the planning of reforestation plots

What is the Problem?

- Carbon Credits:
  - Not profitable enough
  - Long development period
- Problem/Broken?
  - Accessibility
  - Speed (or lack thereof)
- Why is this important?
  - Reforestation
  - Reduction of Climate Change





Envisioned Solution

Front End

- Web interface
- Ability to upload shapefiles or draw polygons

Back End

- Monsoon
- Python Based Prediction System

Plan For Development

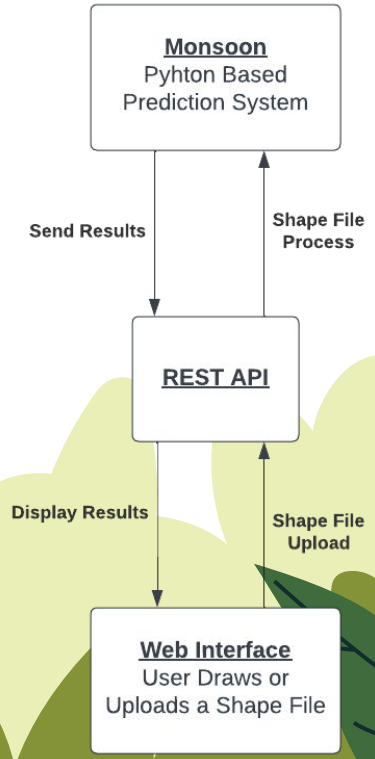
Requirements Acquisition/Refinement

- Weekly Team and Mentor Meetings
- Weekly Sponsor Meetings
- Using Trello to Track Assignments

Plan For Development

Technical Investigation

- REST API
  - Link between the web interface and Monsoon
  - Sends any given shape file to Monsoon
  - Returns results back to the web interface
- Global prediction system on Monsoon written in Python
- User access control system
  - Manage respective account
  - View query logs



Closing

We as a team and as programmers are extremely excited about the project and the potential applications for our software in the future.

Benefits of our design:

- Drastically improved speeds uploading/computing large datasets
- A new, intuitive interface to model potential reforestation areas
- Calculation of the modelled areas to determine the amount of carbon credits a company would earn
- Versatile API to provide a base for future applications