

# AgBizClimate Progress Report

By: Shane Barrantes, Thomas Noelcke and  
Shengpei Yuan

# Overview

- Introduction to the Project
- Project Goal
- System Design
  - UI design / walkthrough
  - Front-end design
  - Back-end design
- Major Blockers
- Project Management
- Action Items

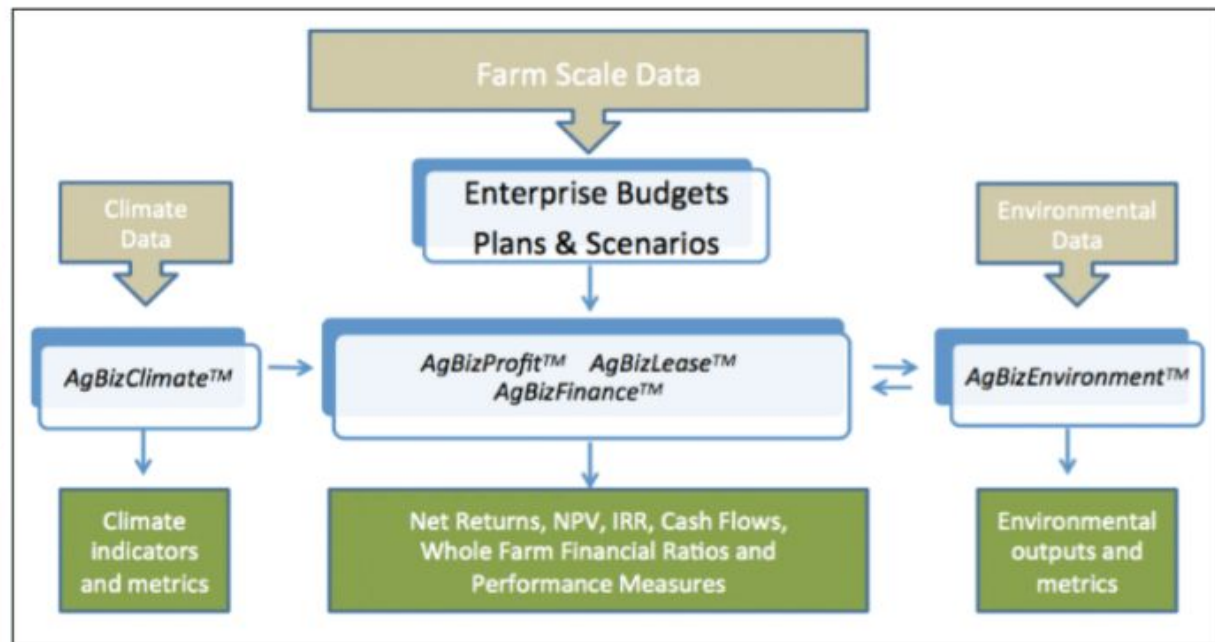
# Project Introduction

- What is AgBizLogic?
  - Suite of decision web tools
  - Current tools Include: AgBizProfit, AgBizLease, AgBizFinance, AgBizEnvironment
- Primary Goal: Create AgBizClimate
- Functionality: AgBizClimate aims to give farmers and ranchers tools to help mitigate the effects of Climate on crops and livestock.

# Scope

- Our Project Is part of the Greater AgBiz logic Platform.
- We are specifically adding functionality to the AgBizClimate Module.

## *AgBiz Logic Platform*




# Functionality Pipeline

- Users log in
- Users selects climate scenario type
- Users selects budget
- Users selects region
- Users get visualized climate data for region
- Users adjust yields based on results
- Users review their budgets
- Note: Process is iterative

# Landing Page

- Short and long term projects

 AgBiz Logic™

tnoelcke

## AgBizClimate

Plan for the future... Today

The Earth's climate is changing and will continue to change throughout the foreseeable future. For farmers these changes can be good (longer growing seasons) or bad (increased heat stress). With AgBizClimate, you can explore how climate change projections in your area impact your net returns for crop and livestock enterprises based on how you think long-term weather variability will affect your production and inputs.

### Long Term AgBizClimate Scenario

### Short Term AgBizClimate Scenario

An AgBizClimate Scenario consists of one or more crop and/or livestock budgets for which you want to evaluate the impact of climate change. You can modify these budgets to reflect changes to yields or product quality and production inputs based on climate model data for your county. The end result is a view of projected net returns for your selected budgets, before and after climate change.

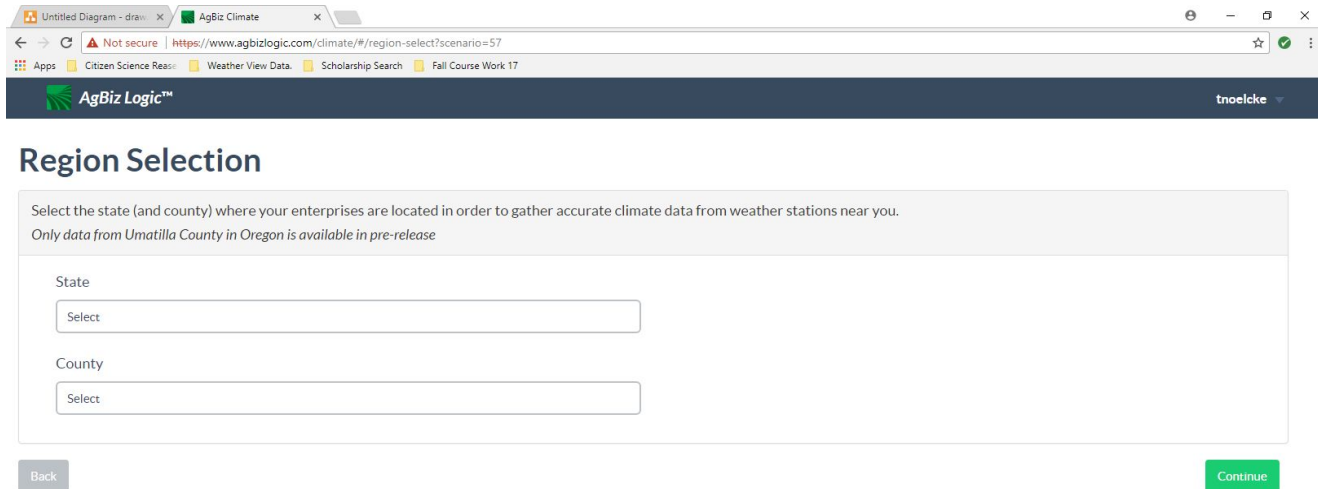
Create New

Create New

Title	Notes	Created	Last Modified
-------	-------	---------	---------------

# Location Selection

- U.S. only
- Stretch Goal



The screenshot shows a web browser window with the AgBiz Logic website. The browser's address bar shows the URL <https://www.agbizlogic.com/climate/#/region-select?scenario=57>. The website has a dark blue header with the AgBiz Logic logo and the name 'tnoelcke' in the top right corner. Below the header, the page title is 'Region Selection'. The main content area has a light gray background and contains the following text: 'Select the state (and county) where your enterprises are located in order to gather accurate climate data from weather stations near you.' and 'Only data from Umatilla County in Oregon is available in pre-release'. There are two dropdown menus: 'State' with a 'Select' button and 'County' with a 'Select' button. At the bottom of the form, there are two buttons: 'Back' (gray) and 'Continue' (green).

AgBiz Logic™ tnoelcke

## Region Selection

Select the state (and county) where your enterprises are located in order to gather accurate climate data from weather stations near you.  
*Only data from Umatilla County in Oregon is available in pre-release*

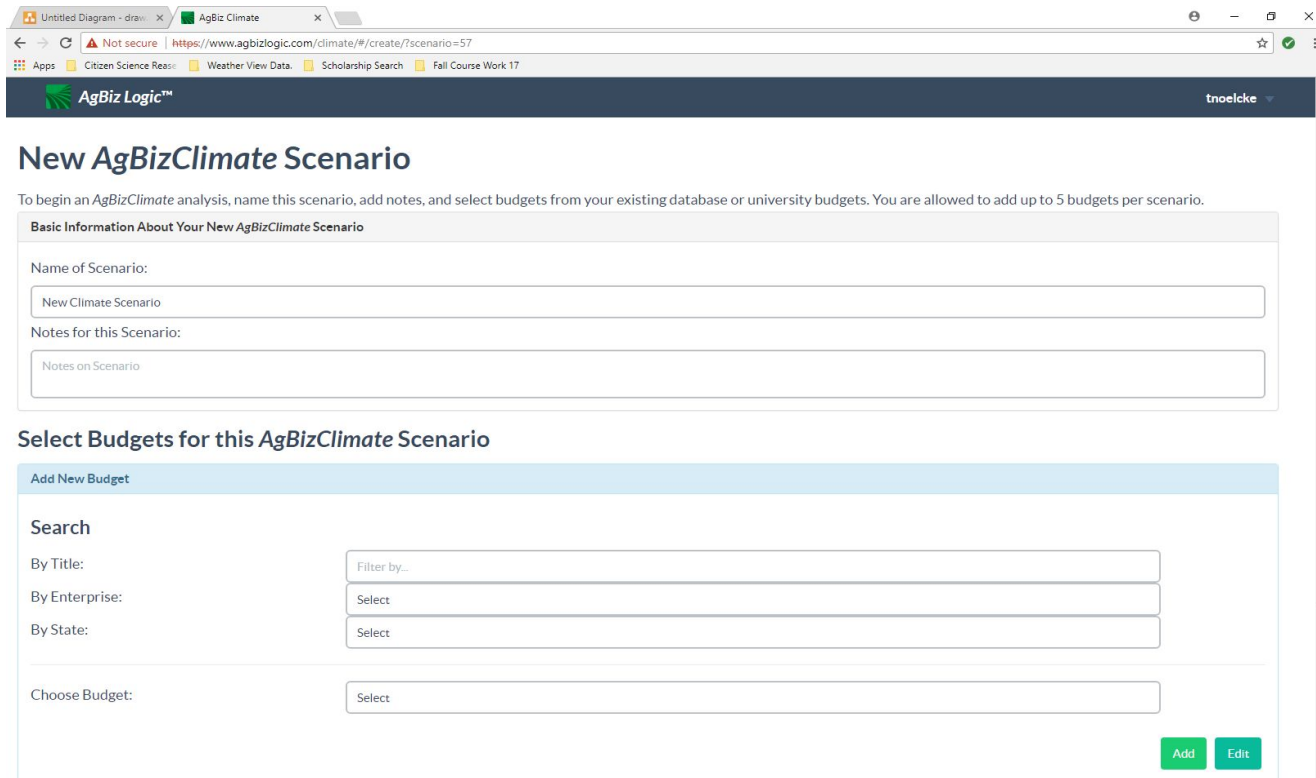
State  
Select

County  
Select

Back Continue

# Climate Scenario

- Scenario name
- Scenario Notes
- Budgets



The screenshot shows a web browser window with the AgBiz Climate application. The browser's address bar shows the URL <https://www.agbizlogic.com/climate/#/create/?scenario=57>. The application's header includes the AgBiz Logic logo and the username 'tnoelcke'. The main heading is 'New AgBizClimate Scenario'. Below this, a paragraph states: 'To begin an AgBizClimate analysis, name this scenario, add notes, and select budgets from your existing database or university budgets. You are allowed to add up to 5 budgets per scenario.' The form is divided into two main sections. The first section, 'Basic Information About Your New AgBizClimate Scenario', contains two text input fields: 'Name of Scenario:' with the value 'New Climate Scenario' and 'Notes for this Scenario:' with the value 'Notes on Scenario'. The second section, 'Select Budgets for this AgBizClimate Scenario', has a sub-header 'Add New Budget' and a 'Search' section. The search section includes three filters: 'By Title:' with a 'Filter by...' dropdown, 'By Enterprise:' with a 'Select' dropdown, and 'By State:' with a 'Select' dropdown. Below these is a 'Choose Budget:' dropdown with a 'Select' option. At the bottom right of the form are two green buttons labeled 'Add' and 'Edit'.

AgBiz Climate

https://www.agbizlogic.com/climate/#/create/?scenario=57

AgBiz Logic™ tnoelcke

## New AgBizClimate Scenario

To begin an AgBizClimate analysis, name this scenario, add notes, and select budgets from your existing database or university budgets. You are allowed to add up to 5 budgets per scenario.

### Basic Information About Your New AgBizClimate Scenario

Name of Scenario:

New Climate Scenario

Notes for this Scenario:

Notes on Scenario

### Select Budgets for this AgBizClimate Scenario

#### Add New Budget

#### Search

By Title: Filter by...

By Enterprise: Select

By State: Select

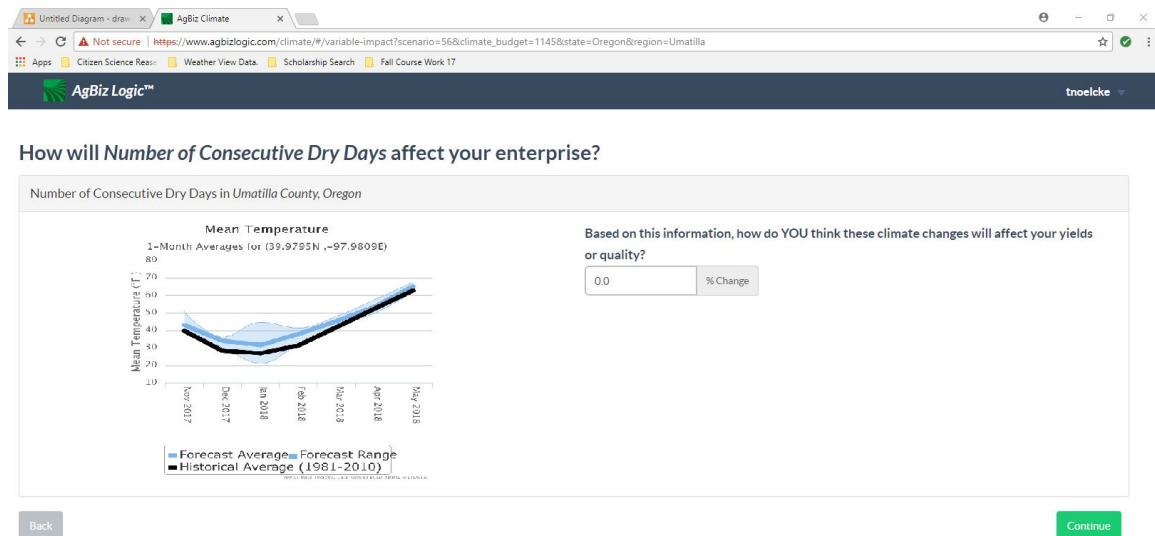
Choose Budget: Select

Add Edit



# Chart Page

- Shows climate data for user selected region
- Users input their estimated percentage of influence on yields



# Budget Review

- Users can adjust budgets.
- Users can Adjust inputs.
- User Can Adjust Costs.

The screenshot displays the AgBiz Climate web application interface. The browser address bar shows the URL: [https://www.agbizlogic.com/climate/#/budget-editor/climate/post-impact?scenario=578&budget=2028&climate\\_budget=1149&state=Oregon&region=Umatilla](https://www.agbizlogic.com/climate/#/budget-editor/climate/post-impact?scenario=578&budget=2028&climate_budget=1149&state=Oregon&region=Umatilla). The interface is divided into two main sections: 'Income' and 'General Cash Costs'.

**Income Section:**

Gross Return	Unit Sold by/as	Quantity Sold	Price per Unit Sold	Total Value		
Alfalfa Hay	Ton	1.00	\$605.00	\$605.00	<button>Edit</button>	<button>Remove</button>
<b>Total Gross Returns</b>				<b>\$605.00</b>		

Add New

**General Cash Costs Section:**

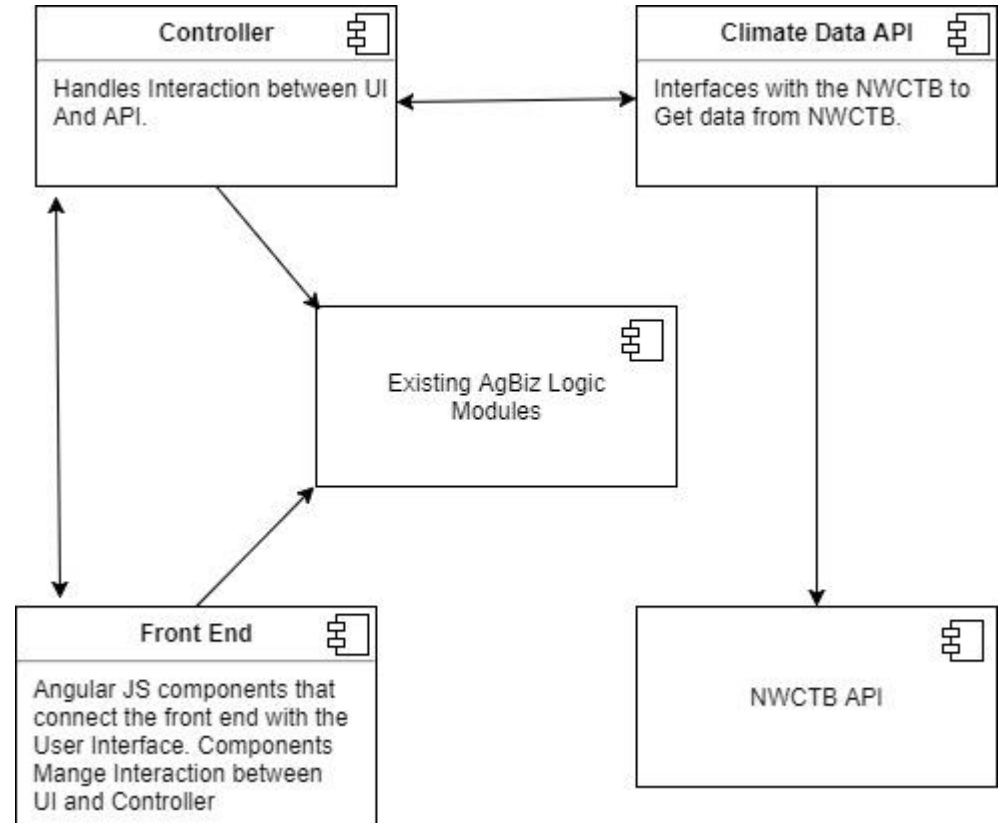
Name	Unit	Quantity	Price per Unit	Total Cost			
Chemicals	Acre	1.00	\$21.50	\$21.50	<button>Edit</button>	<button>Add Variable Cost</button>	<button>Remove</button>
Custom Hire (machine work)	Acre	1.00	\$27.95	\$27.95	<button>Edit</button>	<button>Add Variable Cost</button>	<button>Add Fixed Cash Cost</button> <button>Remove</button>
Depreciation and Section 179 Expenses	Acre	1.00	\$134.45	\$134.45	<button>Edit</button>	<button>Add Variable Cost</button>	<button>Add Fixed Cash Cost</button> <button>Remove</button>
Fertilizers and Lime	Acre	1.00	\$12.48	\$12.48	<button>Edit</button>	<button>Add Variable Cost</button>	<button>Remove</button>
Gasoline, Fuel, and Oil	Acre	1.00	\$55.43	\$55.43	<button>Edit</button>	<button>Add Variable Cost</button>	<button>Remove</button>
Insurance (other than health)	Acre	1.00	\$10.57	\$10.57	<button>Edit</button>	<button>Add Variable Cost</button>	<button>Add Fixed Cash Cost</button> <button>Remove</button>
Interest on Loans and Mortgages	Acre	1.00	\$7.05	\$7.05	<button>Edit</button>	<button>Add Variable Cost</button>	<button>Add Fixed Cash Cost</button> <button>Remove</button>
Labor Hired (less employment credits)	Acre	1.00	\$55.88	\$55.88	<button>Edit</button>	<button>Add Variable Cost</button>	<button>Remove</button>
Other Expenses	Acre	1.00	\$42.00	\$42.00	<button>Edit</button>	<button>Add Variable Cost</button>	<button>Add Fixed Cash Cost</button> <button>Remove</button>

# System Design

- Discuss Major Components
- Discuss how Major Components Communicate
- Design of individual components

# System Architecture

- Back End Controller
- Front End Controller
- Climate Data API
- NWCTB API
- Existing AgBiz Logic Modules



# Front End Controller Design

- Landing Page
- New Climate Scenario
- Region Selection
- Chart Page
- Budget Review

Landing Page
create_new_short_term
create_new_long_term
climate_scenario_viewer
createNewShortTerm()
createNewLongTerm()
getUserScenarios()

New Climate Scenario
add
edit
getBudgets()
searchBudgets()

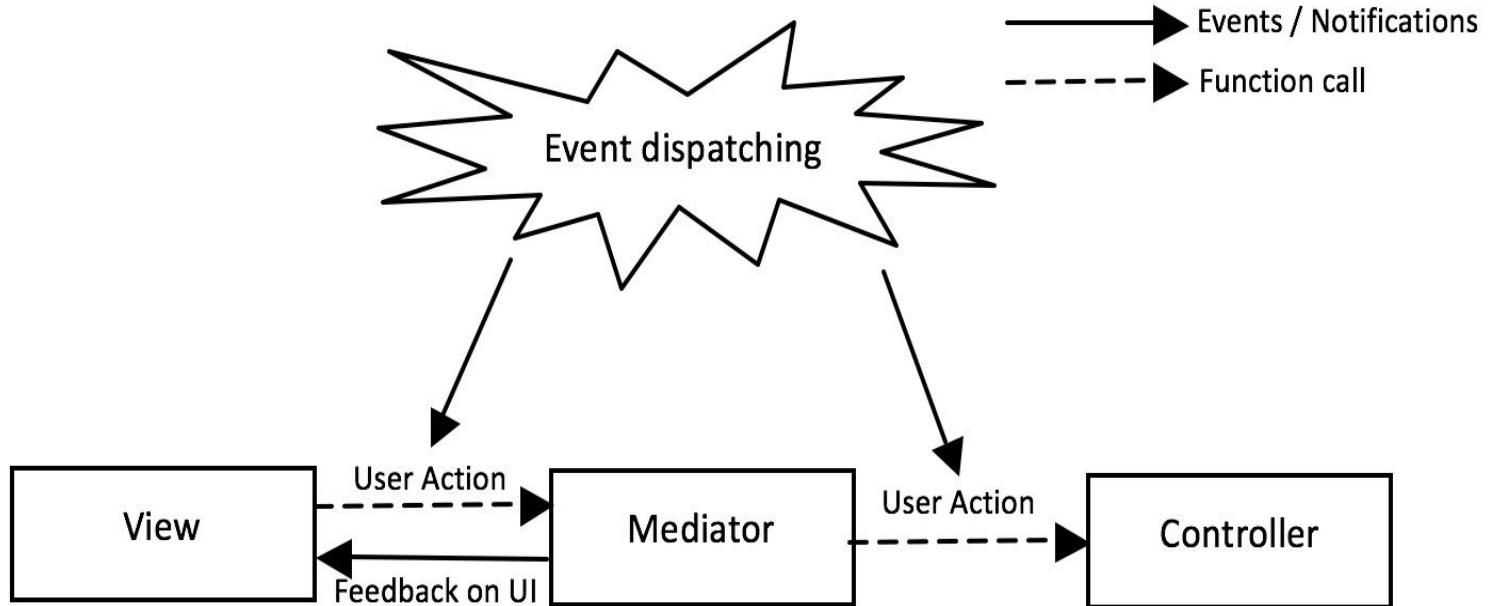
Chart Page
back
continue
graphs
estimateYieldChange()

Budget Review
income
general_cash_costs
general_cash_costs_edit
general_cash_costs_remove
cash_costs_add_fixed_cost
cash_costs_edit
cash_costs_add_var_cost
cash_costs_add_fixed_cost
cash_costs_remove
save
back
getIncome()
addIncome()
editIncome()
removeIncome()
removeCashCosts()
addCashCostsVariable()
addCashCostsFixed()
getCashCosts()

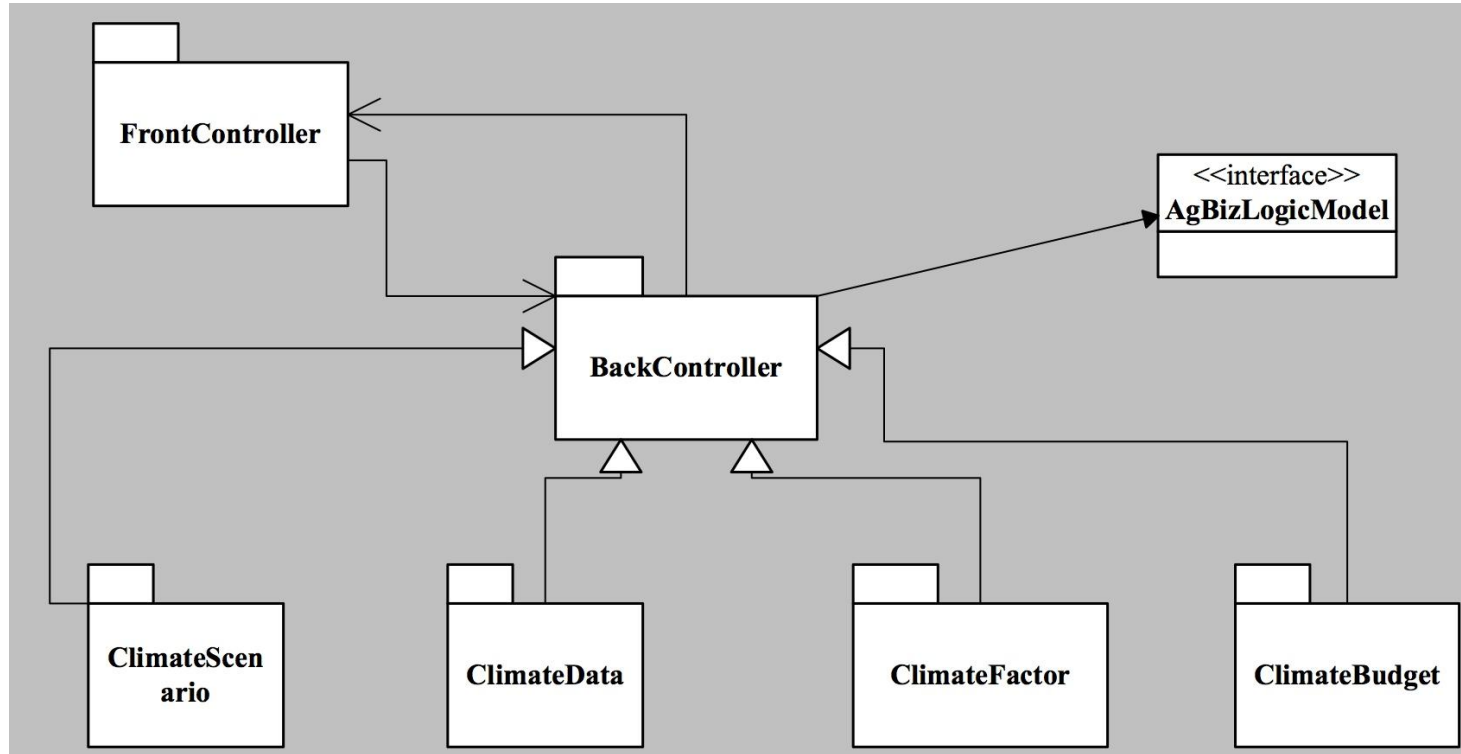
Region Selection
continue
back
getStates()
getCounties()

# Back End Design

- Mediator
- Event dispatch

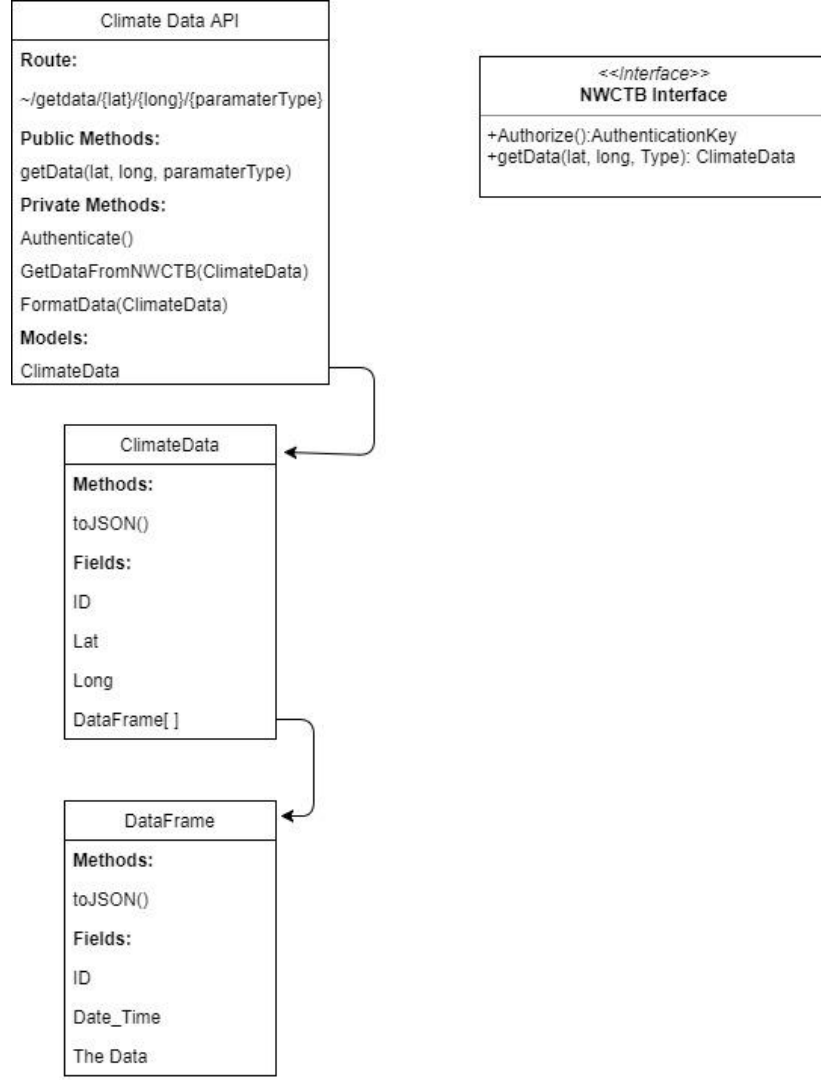


# Backend Design Part 2



# Climate Data API Design

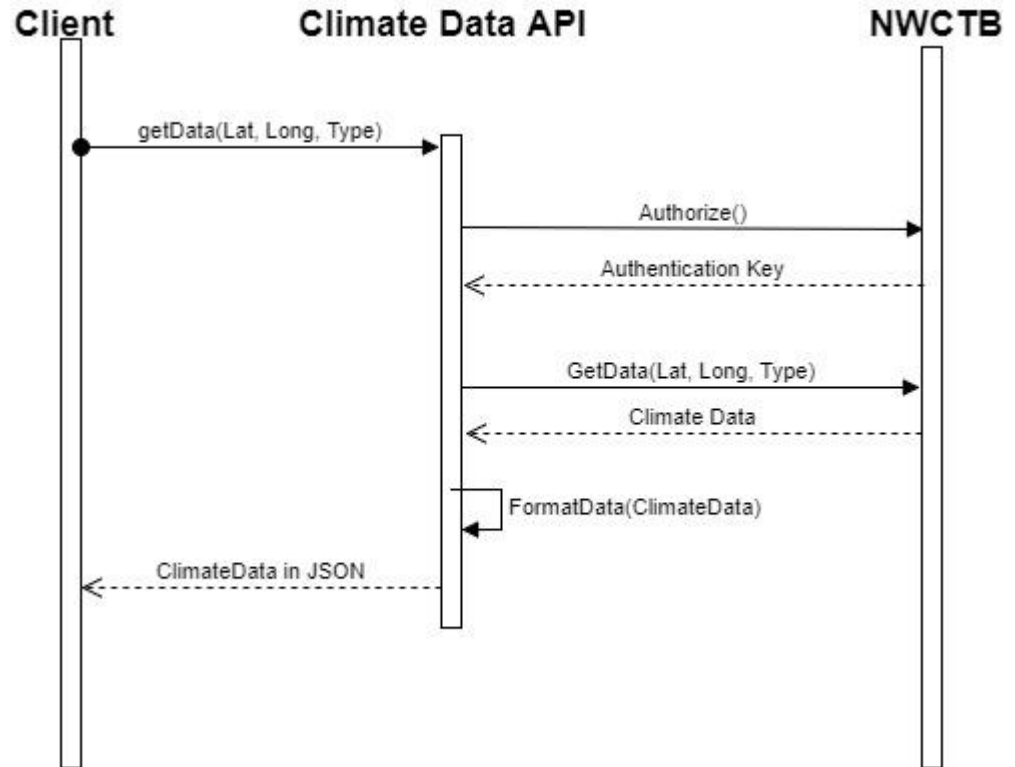
- Climate Data API
- Climate Models
- NWCTB Interface





# Climate Data Transaction

- Client Calls Get Data.
- Authorized with NWCTB API.
- Get Authentication key.
- Request the Data.
- Formate the resulting data.
- Return as a JSON Object.



# Testing

- Front End testing - UI responsiveness testing
- Back End Testing - Unit Tests.
- Climate API Testing - Unit Tests.
- Saving a Budget - Unit Tests.

# Major Blockers

- No API Access for Northwest Climate Toolbox (NWCTB).
  - We are currently trying to get a hold of the Dev Team At the NWCTB.
  - We Have also researched several alternatives to NWCTB.
- Not All group members have access to the code we will be forking from.
  - Will Need to work with lead Developer to gain access to the code.

# Alternatives to using the NWCTB

- It is possible to implement a service that goes and gets the relevant data directly from NOAA.
  - We did Not plan for this in our design or for our project requirements.
  - This would take lots of time and research.
- Find another service for the same data.
  - We aren't sure one exists.
  - We will likely have the same problems as with the NWCTB.
- Figure out how to get data from NWCTB without API Access.
  - Might not be possible.
  - Might involve doing something illegal.

# Project Management

- Success

- Communication.
  - We have been using slack as our primary mode of communication.
  - Communicating hasn't been a major issue for our group.
- Completing Work On Time
  - We have turned in all our work before the deadline.
  - Often have the bulk of the work done 3 or 4 days before the deadline.
  - Outlined Documents as soon as they were assigned.
  - Uploaded Skeleton of document to github ASAP.
  - Regularly Communicate with Client.

- Challenges

- Managing Everyone's schedules
  - We are all taking lots of credit hours this makes scheduling difficult.
  - Finding time to work on assignments together has been a challenge.

# Action Items

- Figure out whether or not we are going to get access to NWCTB API.
- Implement System.
  - Front End Controller
  - Back End Controller
  - UI
  - Climate Data API.
- Project wrap up.
  - Unit Testing
  - Manual Testing
  - Project Documentation.