

MICHIGAN STATE

UNIVERSITY

Alpha Presentation

Wildfire Risks Forecasting Tool

The Capstone Experience

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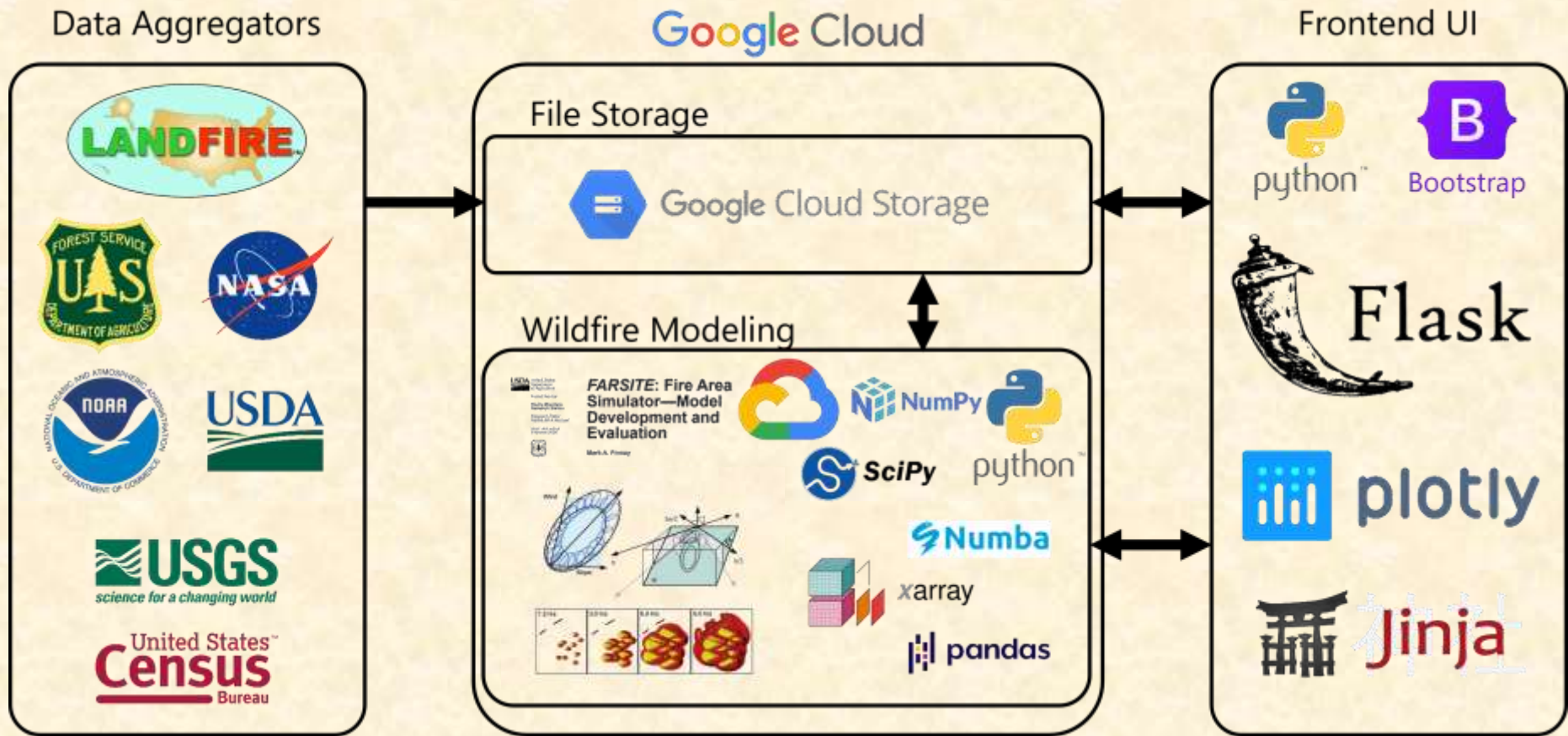
*From Students...
...to Professionals*

Project Overview

- Wildfires in San Francisco's Bay Area threaten lives, property and the environment
- Public understanding of wildfire risk lags wildfire & climate science
- We have created an intuitive web app to simulate wildfires and predict their impacts
 - Accessible from any internet-connected computer, phone, or tablet
 - Modern, minimalist, intuitive



System Architecture



Screenshot: Input > Risk Layer

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How might wildfire affect your local community? How can you protect your family, home, and neighbors? You've got questions. We've got answers. Visualize wildfire risk and simulate the impacts of a hypothetical wildfire below.

Date Layer: All

Map showing wildfire risk simulation results. A color scale on the right indicates risk levels from 0 (purple) to 100 (red).

Inputs Impacts

Step 1: Understand the Risks

Visualize the various risk factors at play when wildfires strike.

Wildfire Risk Population Housing

Step 2: Select an Ignition Point

Click on the map or type below to select an ignition point.

Latitude: °N
Longitude: °W

Step 3: Set a Baseline

Specify baseline weather conditions for the wildfire simulation from a particular day, or as the climatological average conditions in a particular month.

Historical Data
 Climatological Data

Step 4: Adjust for Climate Change

Under climate change, higher temperatures, lower humidity, and higher winds are expected in the Bay Area. Adjust the weather conditions below away from their baseline to see how wildfire spread will be affected.

Temperature: 0°F
 Humidity: 0%
 Wind Speed: 0 mph
 Wind Direction:

Step 5: Simulate a Wildfire

Click "Run" to visualize the footprint of a simulated wildfire and its effects.

Run

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Screenshot: Input > Temperature Layer

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Home

How might wildfire affect your local community? How can you protect your family, home, and neighbors? You've got answers. We've got answers. Visualize wildfire risk and simulate the impacts of a hypothetical wildfire below.

Data Layer:

Temperature

Latitude: 37.33333333333333
Longitude: -121.94444444444444

Inputs

Impacts

Step 1: Understand the Risks
Visualize the various risk factors at play when wildfire strikes.

Wildfire Risk Population Housing

Step 2: Select an Ignition Point
Click on the map or type below to select an ignition point.

Latitude: °N
Longitude: °E

Step 3: Set a Baseline
Specify baseline weather conditions for the wildfire simulation from a particular day, or as the climatological average conditions in a particular month.

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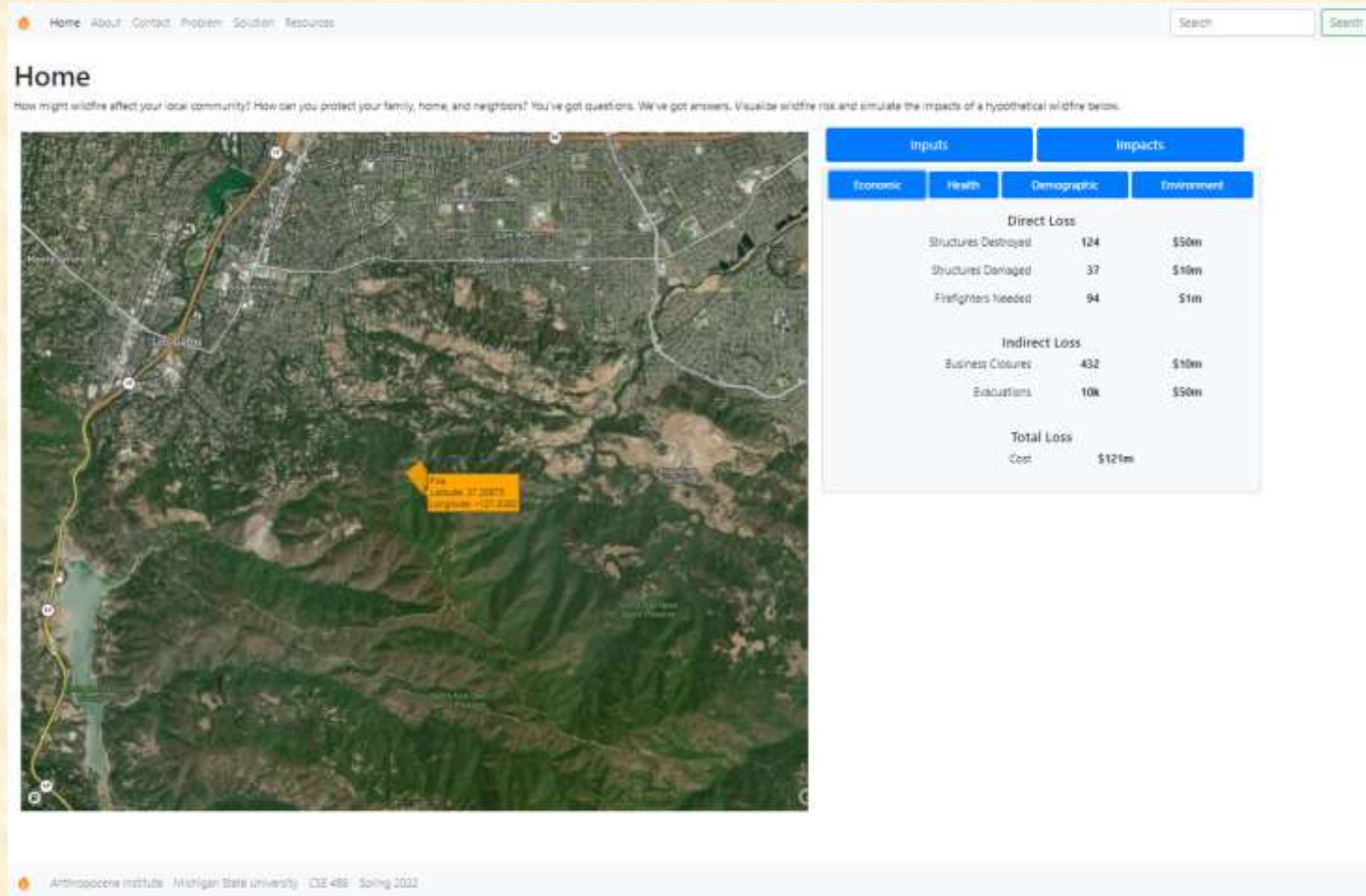
Temperature 0 F
 Humidity 0 %
 Wind Speed 0 mph
 Wind Direction

Step 5: Simulate a Wildfire
Click "Run" to visualize the footprint of a simulated wildfire and its effects.

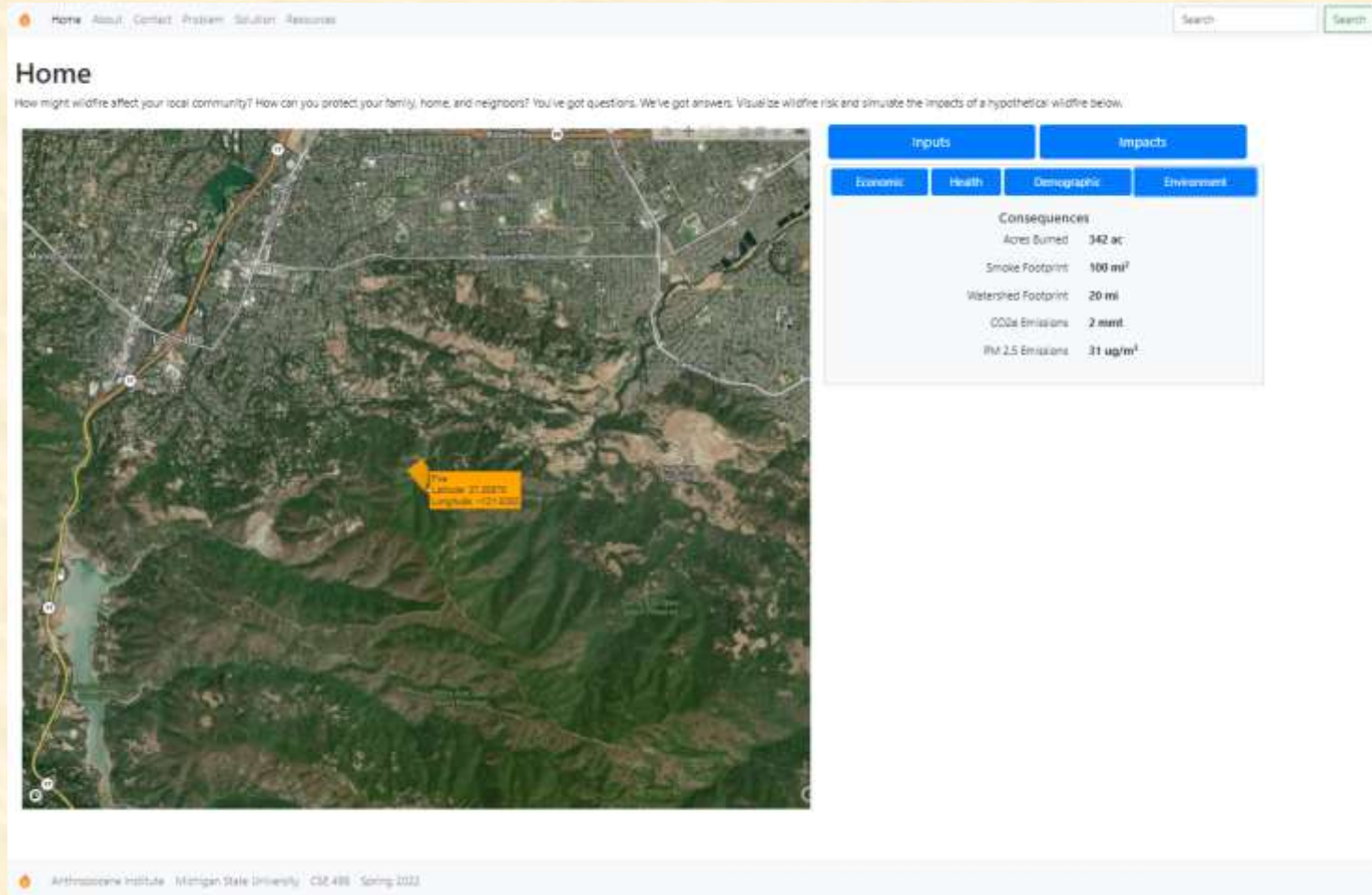
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Screenshot: Output > Economic Impact



Screenshot: Output > Environmental Impact



What's left to do?

- Include historical weather data and climate normals from NOAA
- Compute relevant economic, environment, and health impacts from existing data layers
- Integrate canopy spread, spotting, and fire acceleration in our model. Optimize computation time to create seamless user experience
- Update webpage design and continue to integrate frontend with backend
- Transition hosting to Anthropocene Institute Google Cloud resources



Questions?

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