

Team Number:

School Name: Los Alamos High School

Area of Science: Climate Change and Agriculture

Project Title: America's Farming Future: The Impact of Climate Change on Crop Yields

This project investigates how climate change will affect the crop yields of many several crops throughout the U.S. First, I downloaded past observations of crop yield data by year and county since 1970. Next, I also downloaded historical daily weather data from individual stations across the U.S. After finding the closest weather station to the center of each county, I correlated temperature means and extremes (such as warm days, cold days, heat waves, cold spells, average yearly temperature , etc.) with the crop yield for that year and county. I found that the highest correlation was between crop yields and summer average temperature, heat waves (3 days in a row above the 90th percentile), and killing degree days (summing daily maximum temperatures in excess of 84 degrees Fahrenheit). Next, I downloaded daily future model data from a CMIP5 dataset going out until year 2100. I found the closest model grid to the center of each county. Finally, I used my statistical model to predict the crop yield of 5 different crops out into year 2100 for every county and two different scenarios (high and low fossil fuel usage). Next, I plan on making an interactive map of this data so people can explore for themselves how today's crops will do in the future.

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