CLIMATE CHANGE
Vs
EXTREME WEATHER

Shahryar Ahmed (NetID: sahme34, GitHub: shahryarahmed3)
Shoaib Ahmed (NetID: fahme8, GitHub: FnuShoaibAhmed)
Noura Almasri (NetID: nalma7, GitHub: nalmasri17)
Lorena Castillejo (NetID: lcasti39, GitHub: LorenaCastillejo)
Sakinah Chadrawala (NetID: schadr2, GitHub: sakkk90)

GitHub Link: https://github.com/shahryarahmed3/Forest-Fires-vs-Climate-Change.git

Problem

Does climate change impact
extreme weather events?

Climate → long term pattern of weather in specific area, usually tracked over at least 30 years

Weather → short-term atmospheric conditions, changing from hour-to-hour, day-to-day, month-to-month or even year-to-year

Hypothesis: Changes in climate patterns causes extreme weather

Why Should You Care?

Economic

Damage to property, businesses, crops.
Recovery burden

Health & Safety

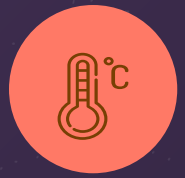
Injury & illness during severe weather
Stress & mental effect due to displacement
Need for emergency services and shelters

Community

Displacement of residents
Struggles with daily normal life


DATA

Climate Variables



Temperature

Humidity

Co2

Precipitation

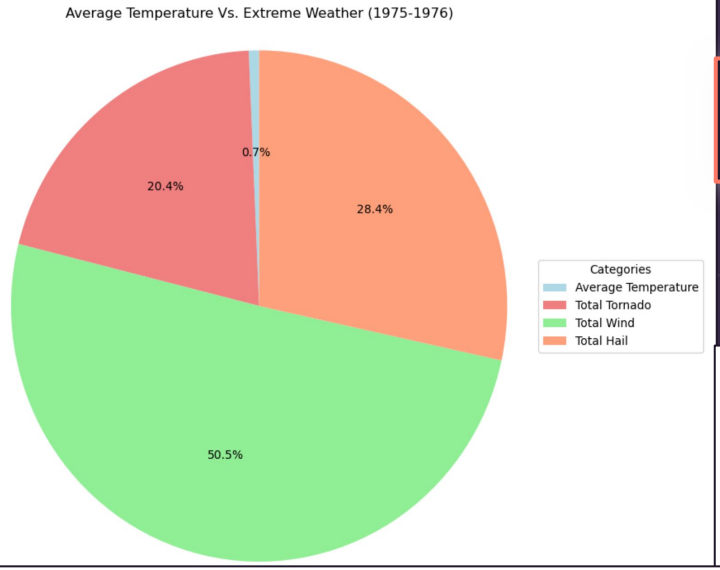
Extreme Weather

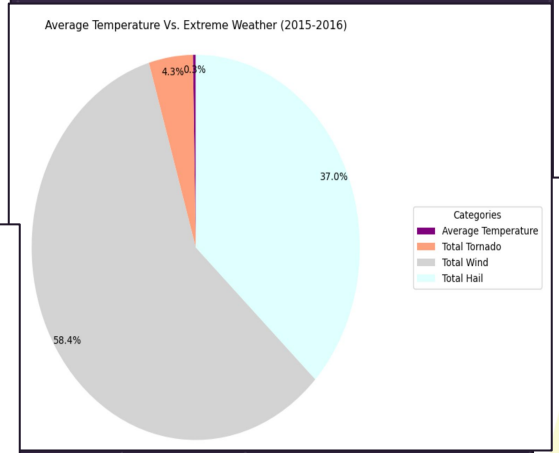
Tornado

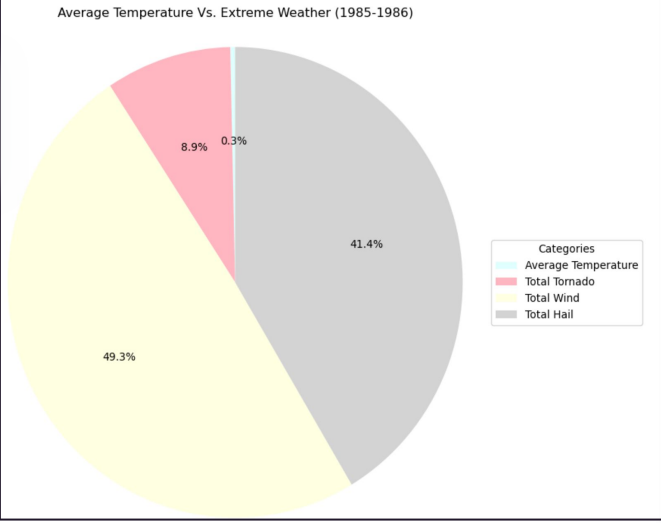
Hail

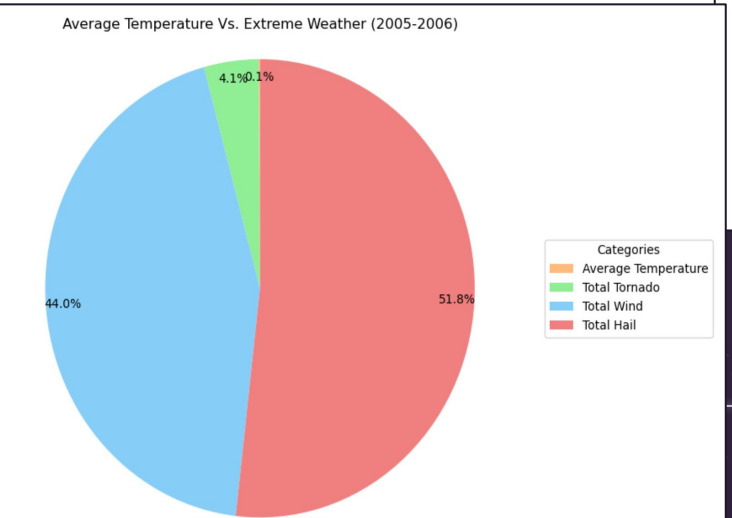
Wind

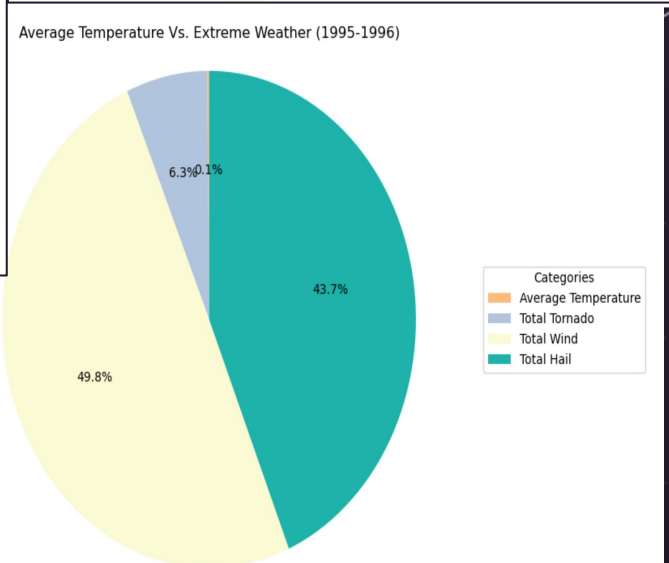
Temperature



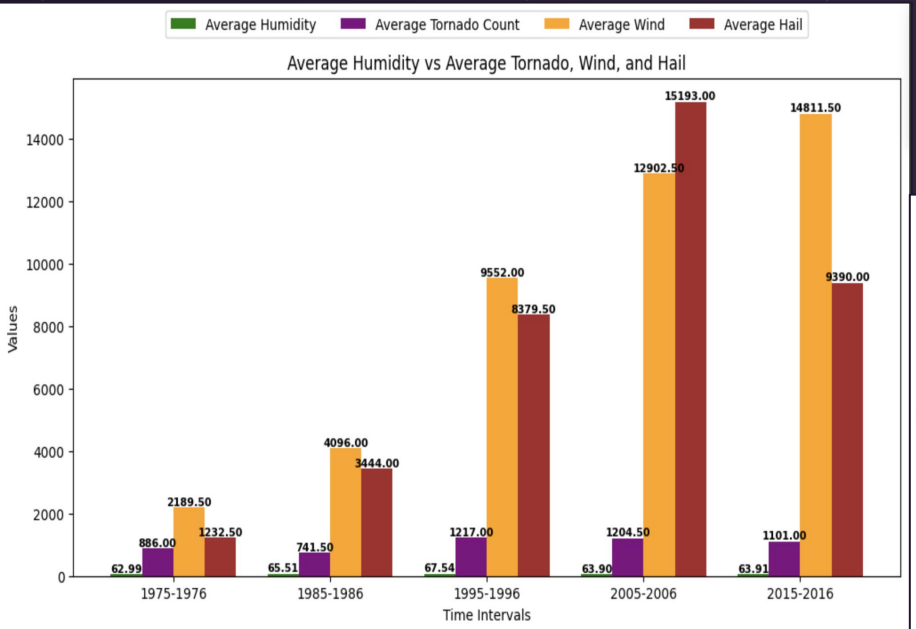


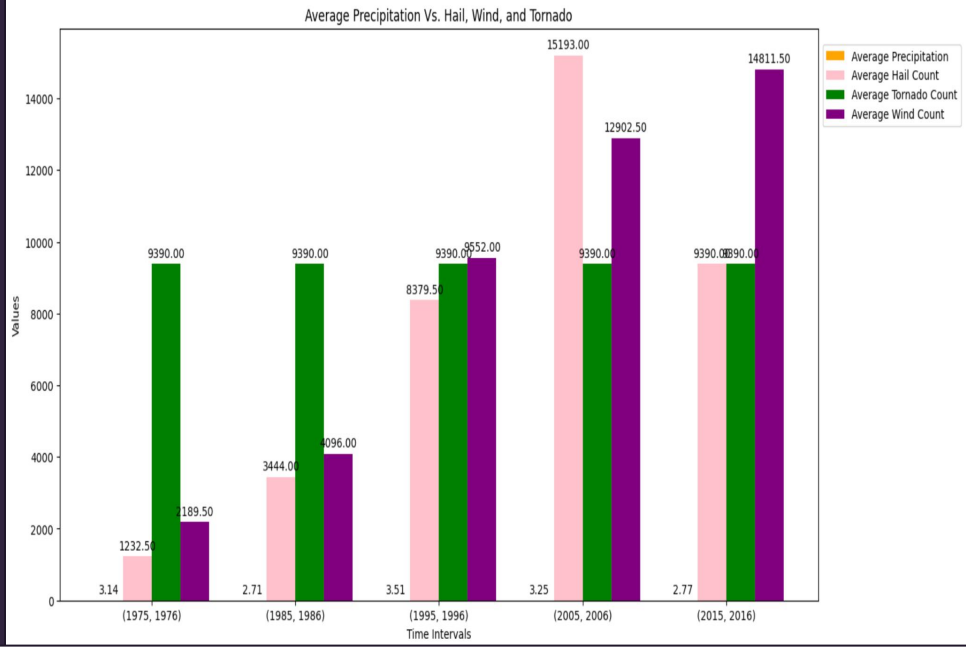


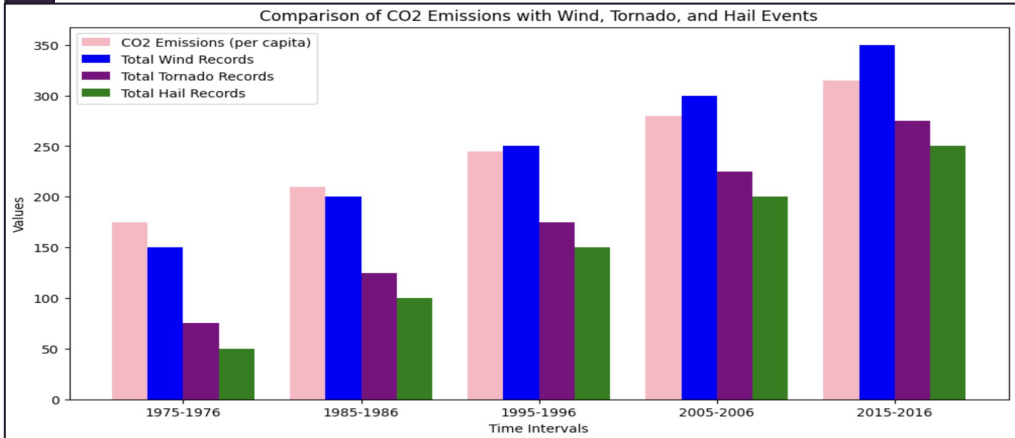




Visualizations

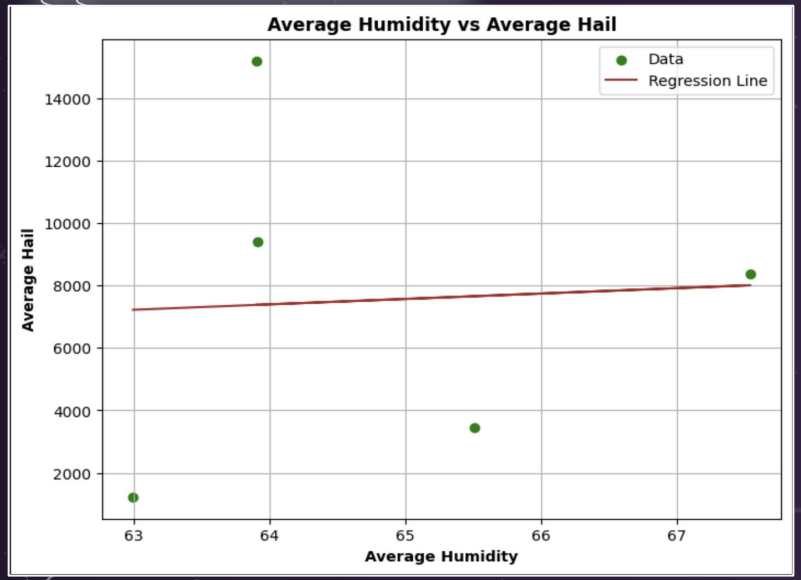


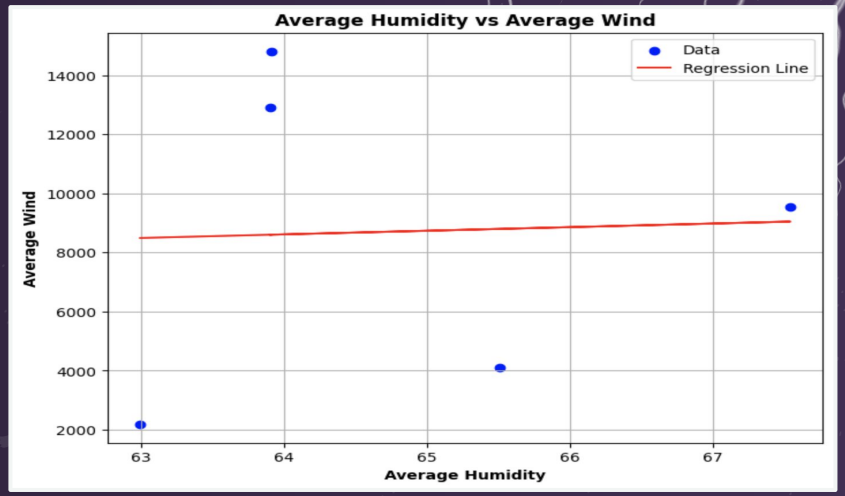


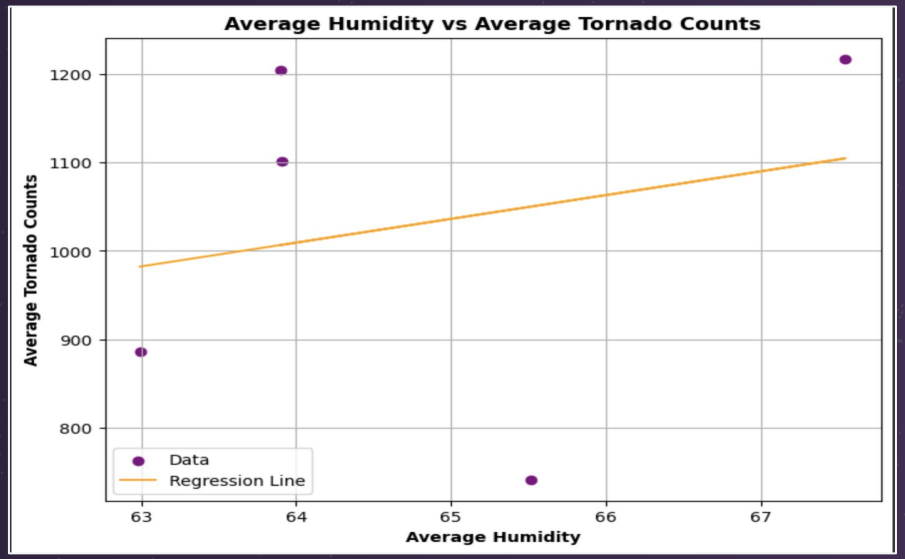


Findings

Humidity

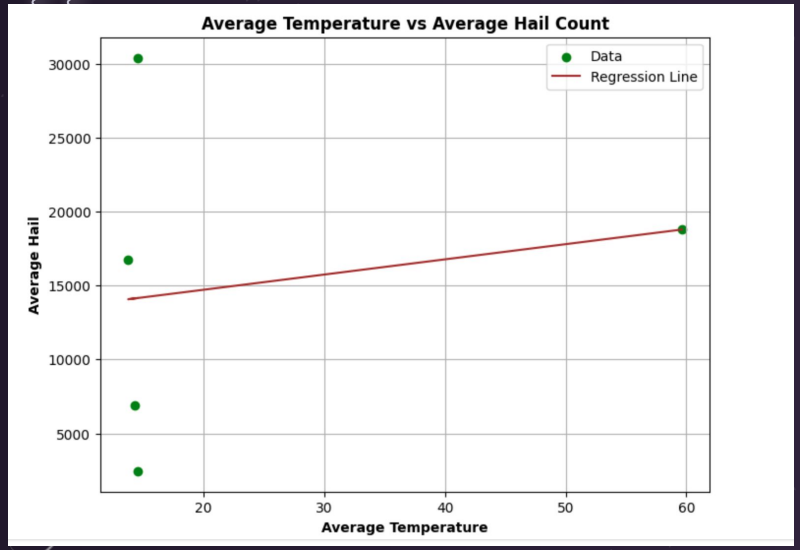


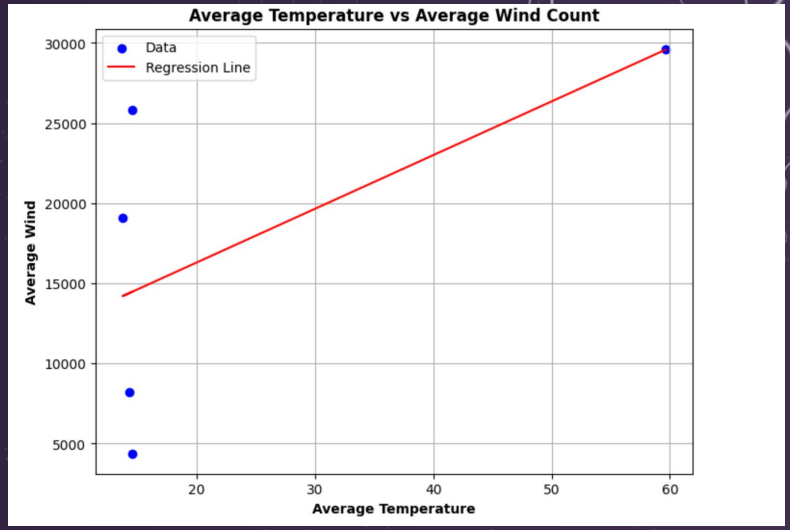


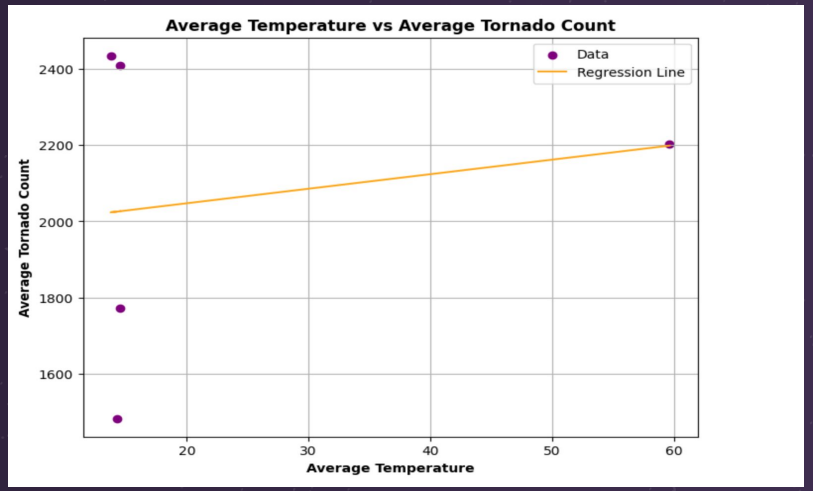


PCC:
Humidity vs tornado → 0.23
Humidity vs wind → 0.04
Humidity vs hail → 0.06

Temperature

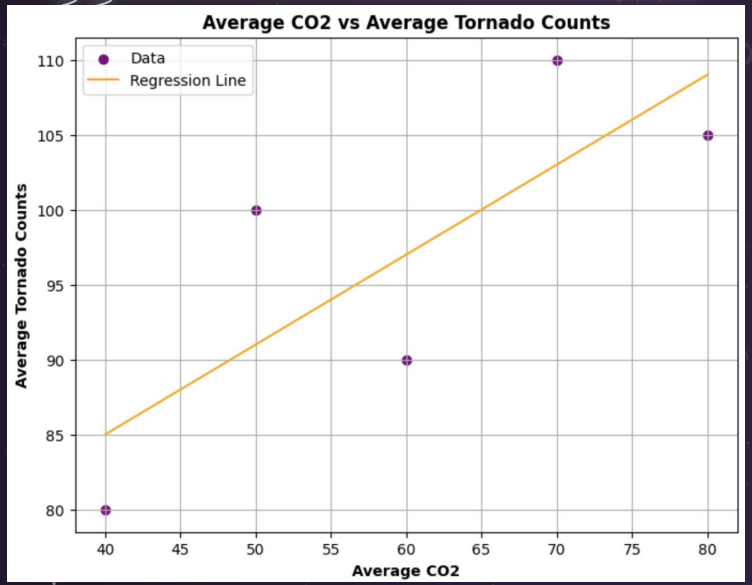


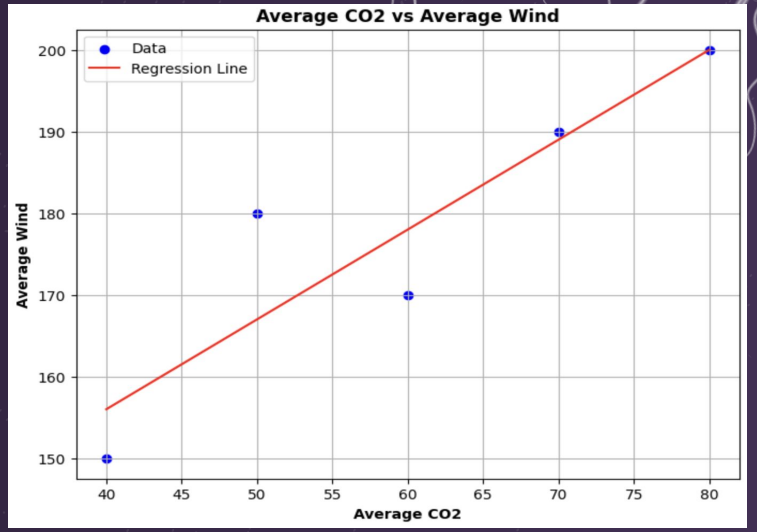


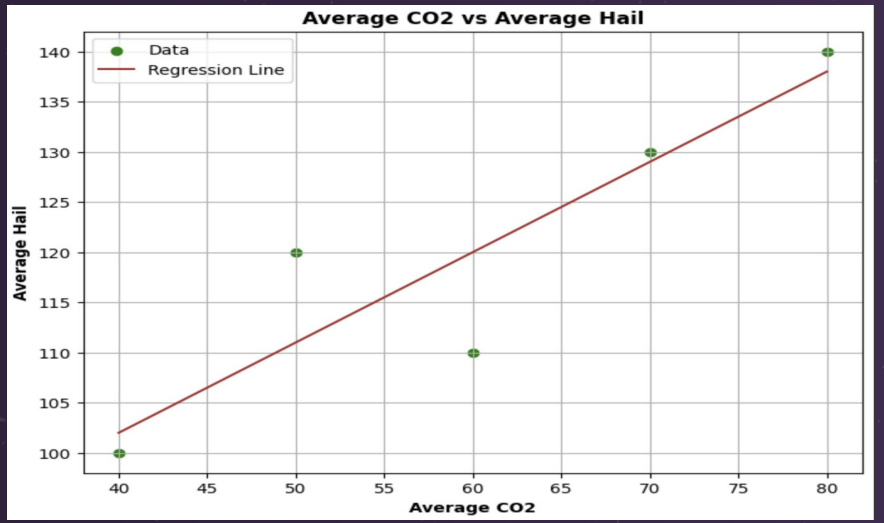


PCC:
Temperature vs tornado → 0.19
Temperature vs wind → 0.62
Temperature vs hail → 0.19

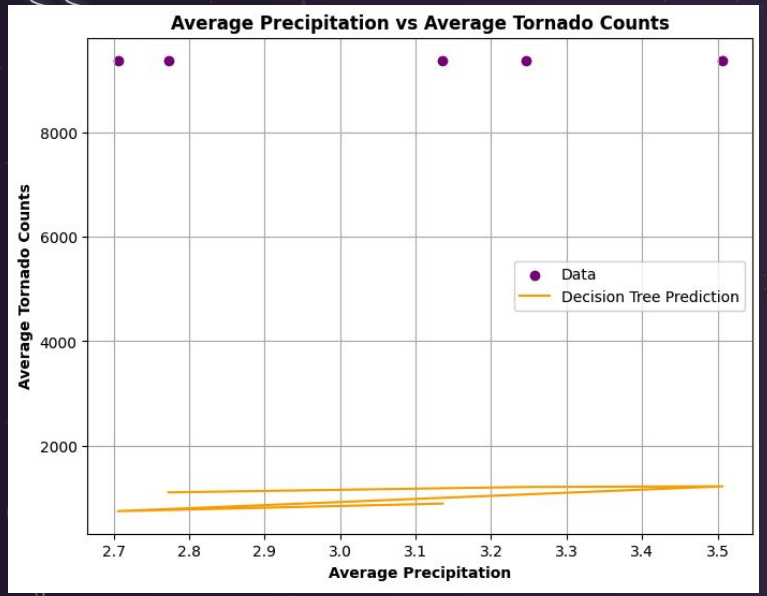
Carbon dioxide

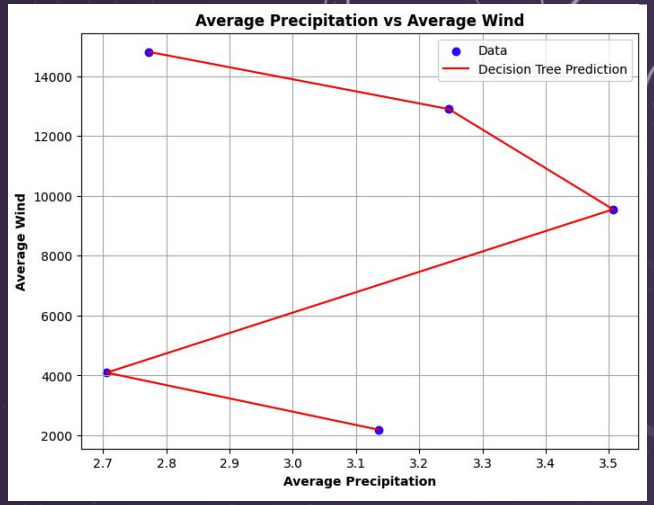


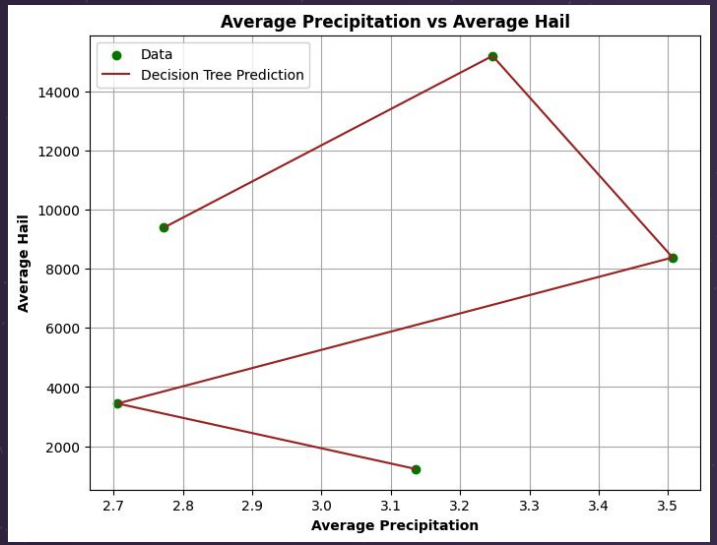




Precipitation

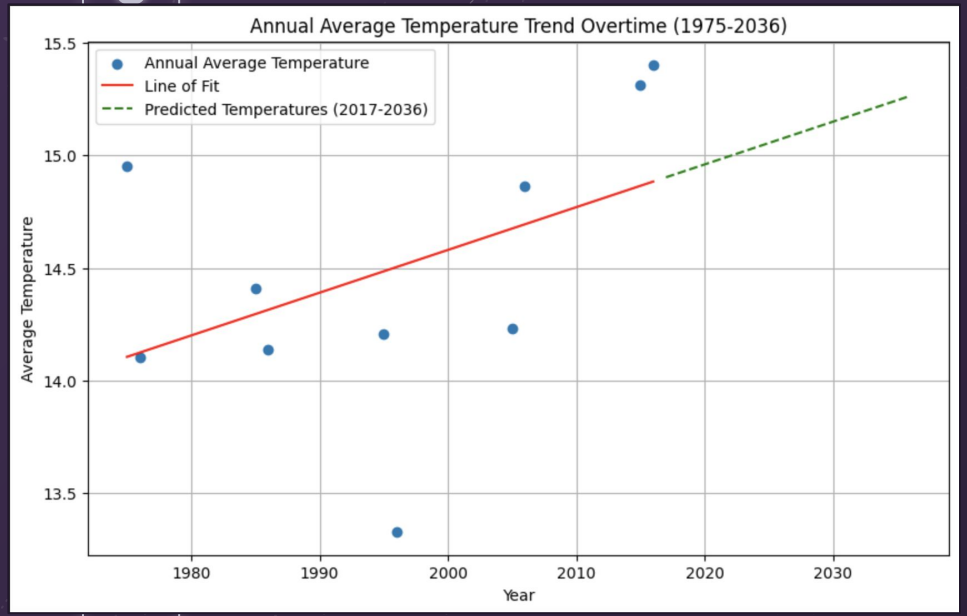


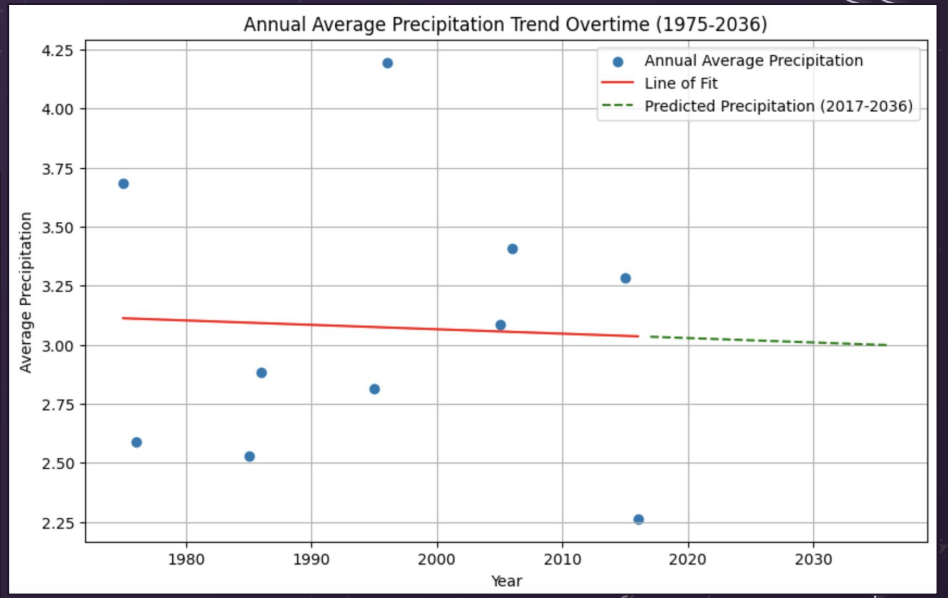




Solutions & Conclusions

Forecast


Annual Average Temperature Trend Overtime (1975-2036)
Annual Average Temperature
Line of Fit
Predicted Temperatures (2017-2036)
Average Temperature
Year
15.5
15.0
14.5
14.0
13.5
1980
1990
2000
2010
2020
2030


Annual Average Precipitation Trend Overtime (1975-2036)
Annual Average Precipitation
Line of Fit
Predicted Precipitation (2017-2036)
Average Precipitation
Year
4.25
4.00
3.75
3.50
3.25
3.00
2.75
2.50
2.25
1980
1990
2000
2010
2020
2030

Conclusion

Temperature + Wind → moderate positive relationship
Humidity + Tornado → slight positive relationship
Precipitation + Hail + Wind → moderate relationship
Co2 + Tornado / Hail / Wind → strong positive relationship

Increase in temperature causes increase in severe winds
Increase in humidity causes increase in # of tornadoes
Increase in Co2 causes increase in winds, hail & tornado


Thank You