



# CLIMATE CHANGE Vs EXTREME WEATHER

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# 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



A dramatic, dark night sky filled with heavy, dark clouds. A bright, jagged lightning bolt strikes down from the top center of the frame. The word "DATA" is written in large, white, bold, sans-serif capital letters in the center of the image. The overall mood is mysterious and powerful.

# DATA

# Climate Variables



**Temperature**



**Humidity**



**Co2**



**Precipitation**

# Extreme Weather



**Tornado**



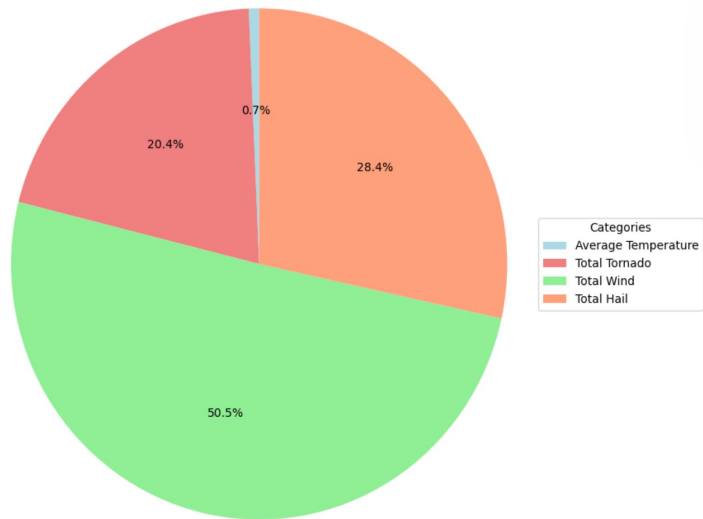
**Hail**



**Wind**

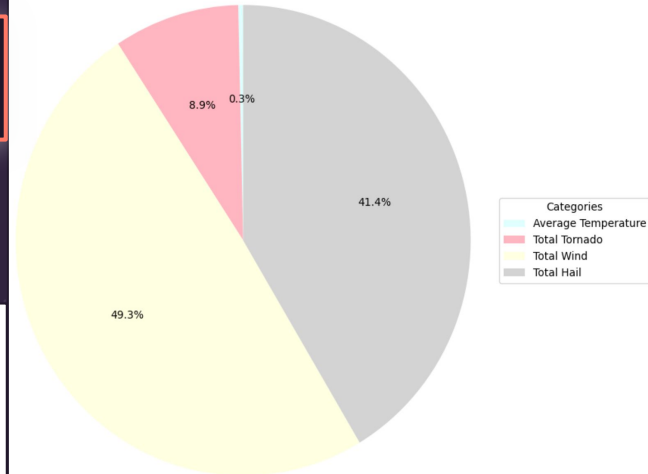


Average Temperature Vs. Extreme Weather (1975-1976)

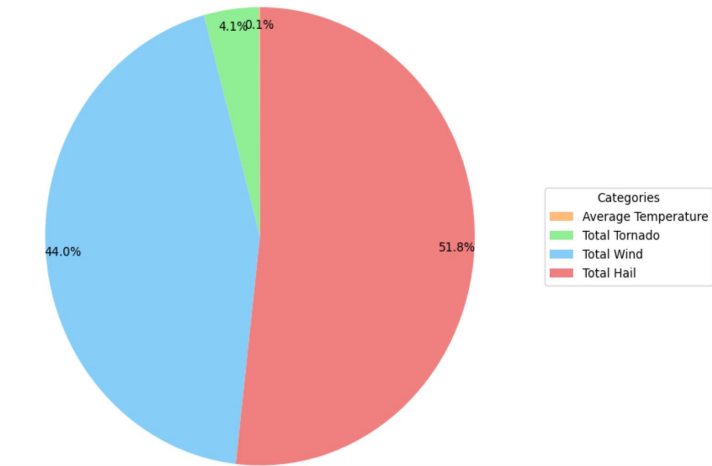


# Temperature

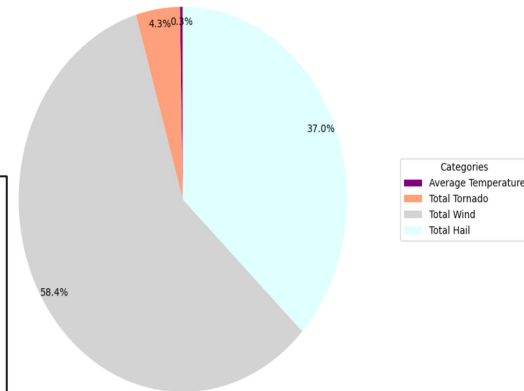
Average Temperature Vs. Extreme Weather (1985-1986)



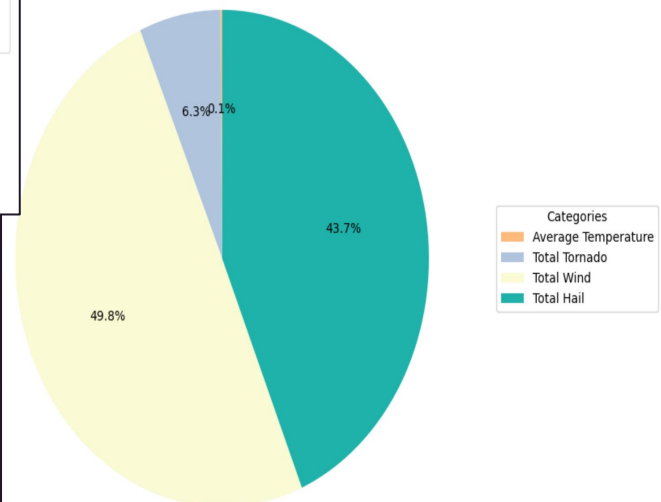
Average Temperature Vs. Extreme Weather (2005-2006)



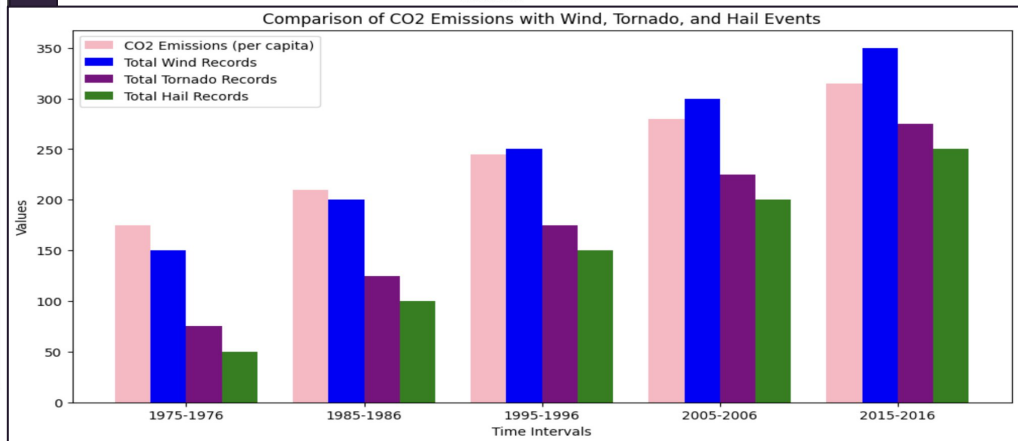
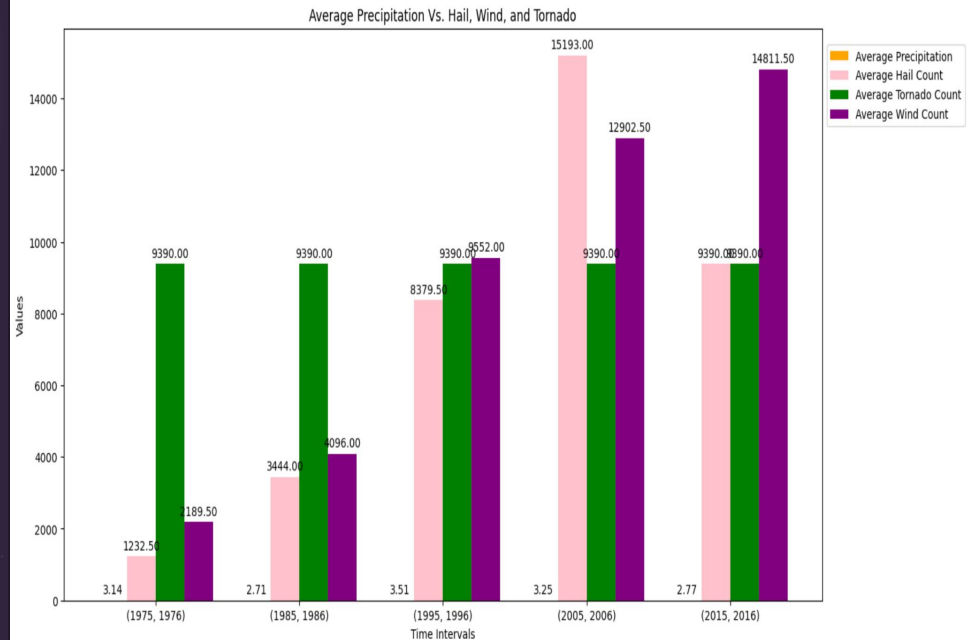
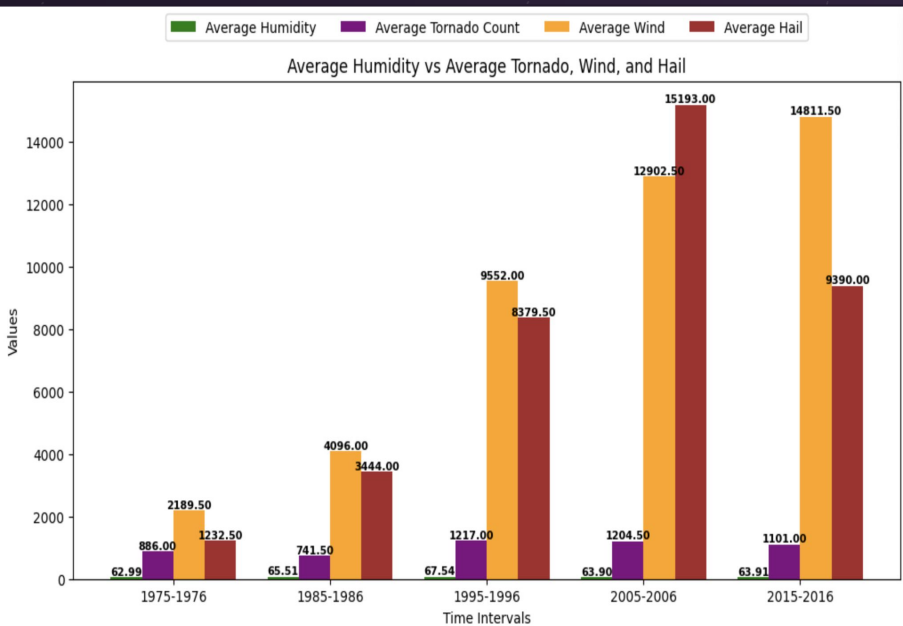
Average Temperature Vs. Extreme Weather (2015-2016)



Average Temperature Vs. Extreme Weather (1995-1996)



# Visualizations





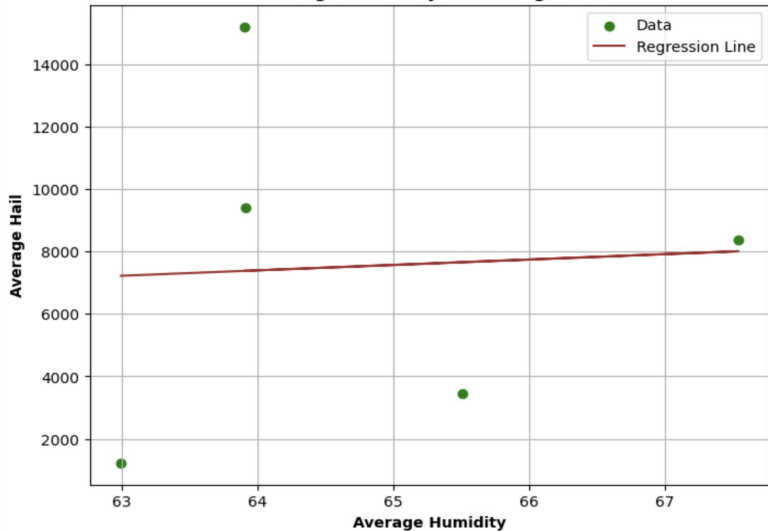
A person wearing a blue jumpsuit is running through heavy rain towards a white car. The person is in the foreground, slightly out of focus, with their arms outstretched. The white car is in the background, also slightly out of focus. The rain is very heavy, creating a misty atmosphere. The word "Findings" is overlaid in the center of the image.

# Findings

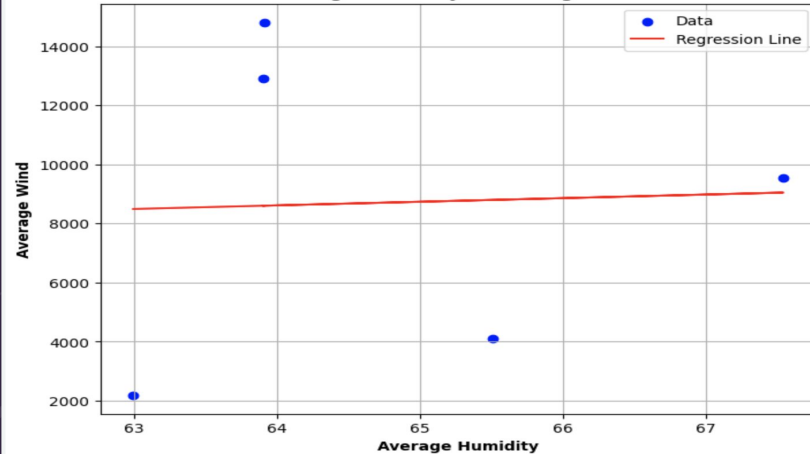
IT'S JUST A LITTLE RAIN

# Humidity

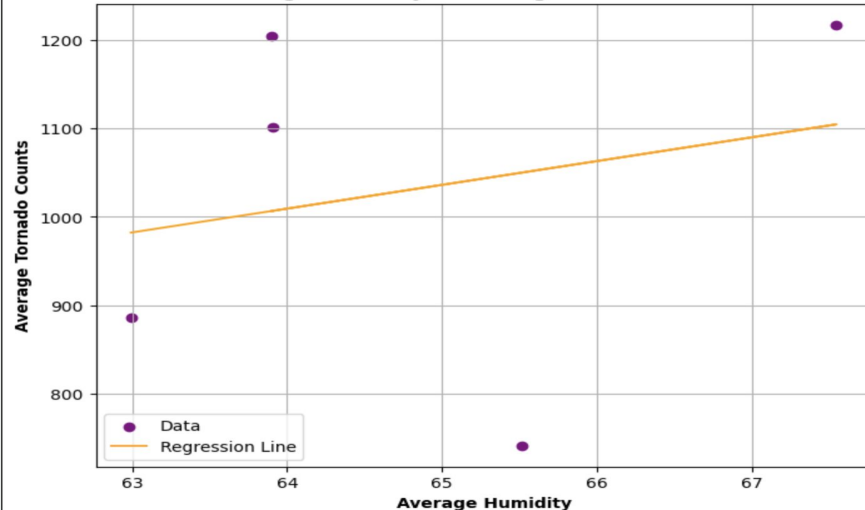
Average Humidity vs Average Hail



Average Humidity vs Average Wind



Average Humidity vs Average Tornado Counts



PCC:

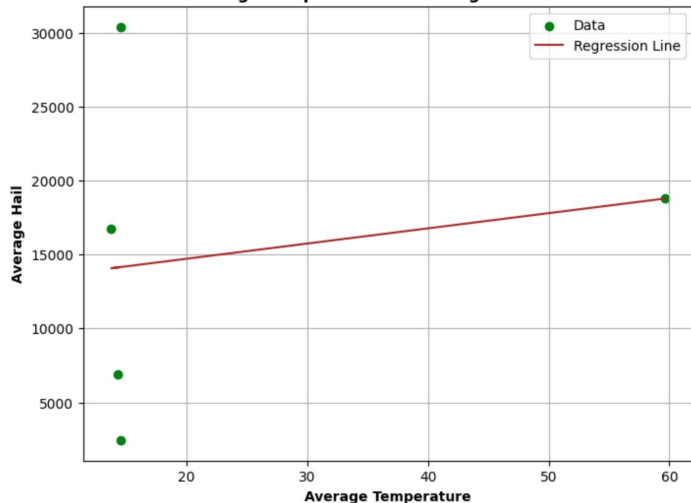
Humidity vs tornado  $\rightarrow 0.23$

Humidity vs wind  $\rightarrow 0.04$

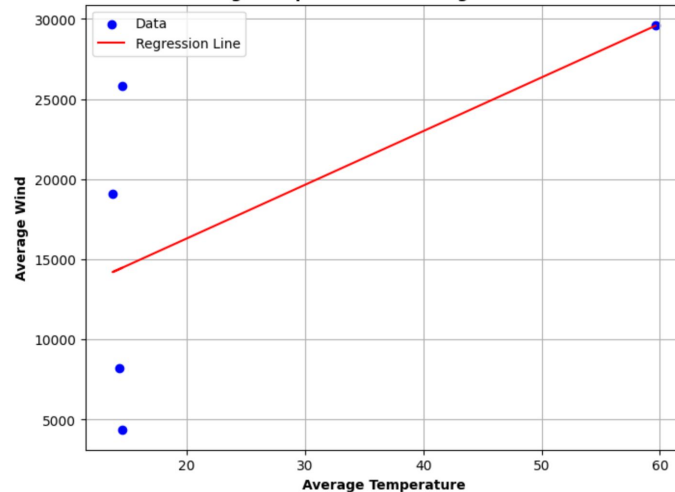
Humidity vs hail  $\rightarrow 0.06$

# Temperature

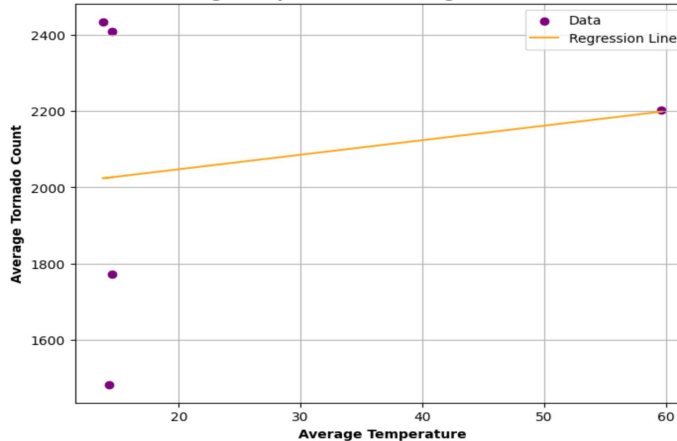
Average Temperature vs Average Hail Count



Average Temperature vs Average Wind Count



Average Temperature vs Average Tornado Count



PCC:

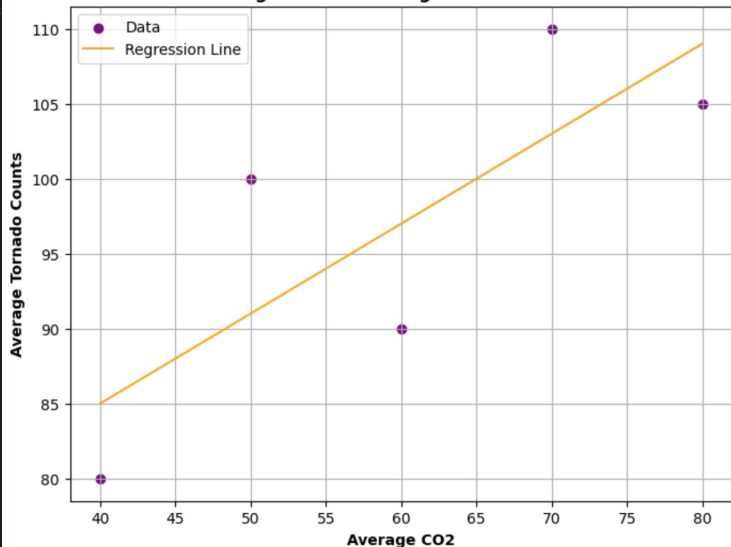
Temperature vs tornado  $\rightarrow 0.19$

Temperature vs wind  $\rightarrow 0.62$

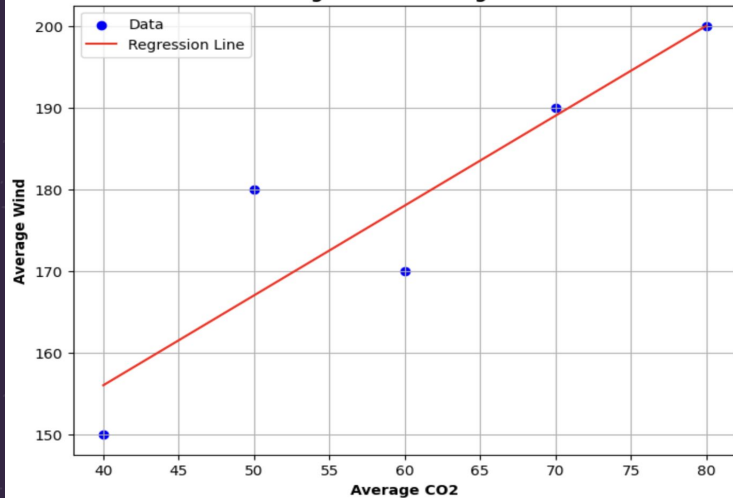
Temperature vs hail  $\rightarrow 0.19$

# Carbon dioxide

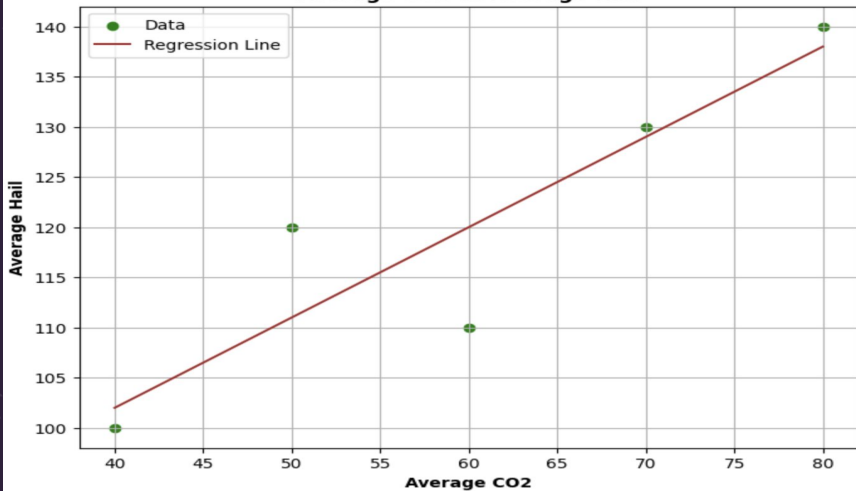
Average CO2 vs Average Tornado Counts



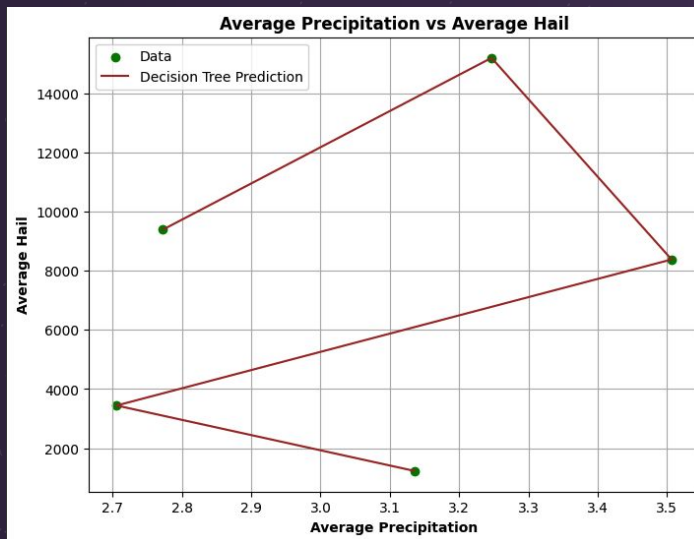
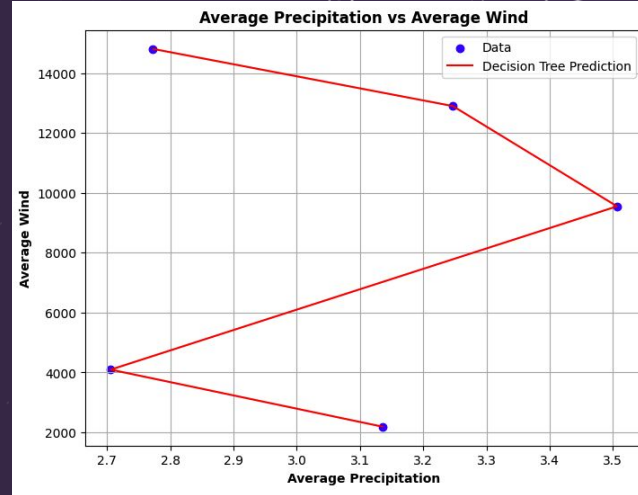
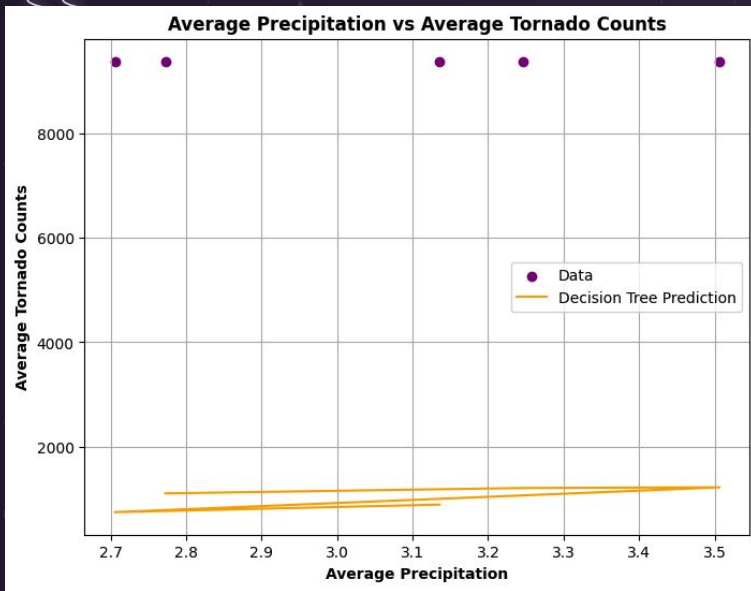
Average CO2 vs Average Wind



Average CO2 vs Average Hail



# Precipitation

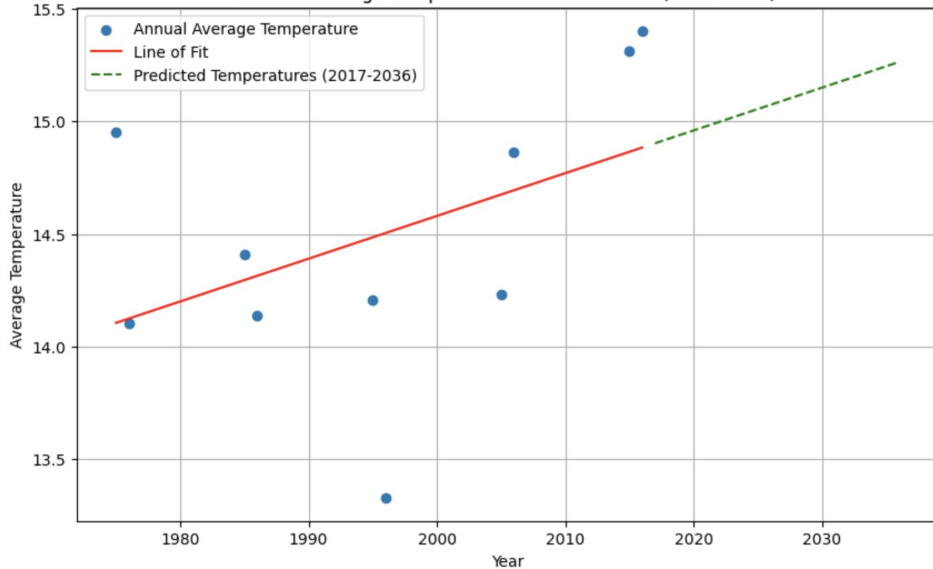


A photograph of a snowy winter street scene. The ground is covered in a thick layer of snow. On either side of the street are trees heavily laden with snow. In the background, there are buildings, also partially covered in snow. The overall atmosphere is quiet and serene.

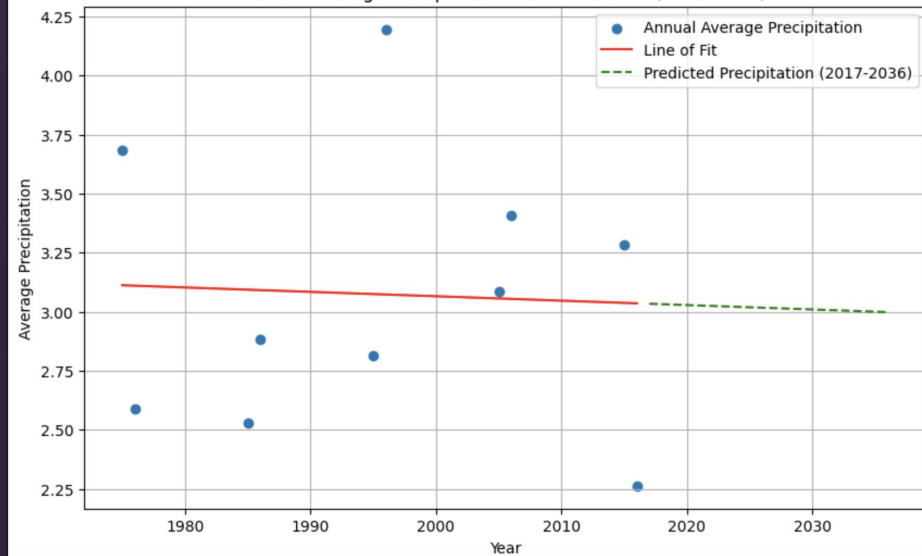
# **Solutions & Conclusions**

# Forecast

Annual Average Temperature Trend Overtime (1975-2036)



Annual Average Precipitation Trend Overtime (1975-2036)





# 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*