CO2 EMISSIONS FROM-AGRIC

TEAM MEMBERS

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PROBLEM STATEMENT

TRODUCTION

*Identify major contributions of CO2 emissions

* Mitigate emissions through regenerative practices

* Predict temperature variations using climate models

* Develop sustainable practices like agroecology and climate-resilient agriculture

*Support the agric food industry transition to a more sustainable future

INTRODUCTION

Context and Importance:
Objective:
Actions:
Sustainability Practices:
Outcomes:
Impact Goal:

Dataset Overview

Area	Year	Savanna fires	Forest fires	Crop Residues	Rice Cultivat	Drained organic so	Pesticides Manufact	Food Transport	Forestland	Net Forest conversion	Food Household Consumption	Food Reta
Afghanistan	1990	14.7237	0.0557	205.6077	686.0	0.0	11.807482956246297	63.1152	-2388.803	0.0	79.0851	109.6446
Afghanistan	1991	14.7237	0.0557	209.4971	678.16	0.0	11.712073091310696	61.2125	-2388.803	0.0	80.4885	116.6789
Afghanistan	1992	14.7237	0.0557	196.5341	686.0	0.0	11.712073091310696	53.317	-2388.803	0.0	80.7692	126.1721
Afghanistan	1993	14.7237	0.0557	230.8175	686.0	0.0	11.712073091310696	54.3617	-2388.803	0.0	85.0678	81.4607
Afghanistan	1994	14.7237	0.0557	242.0494	705.6	0.0	11.712073091310696	53.9874	-2388.803	0.0	88.8058	90.4008
Afghanistan	1995	14.7237	0.0557	243.8152	666.4	0.0	11.712073091310696	54.6445	-2388.803	0.0	90.1626	98.868
Afghanistan	1996	38.9302	0.2014	249.0364	686.0	0.0	11.712073091310696	53.1637	-2388.803	0.0	93.7905	21.6458
Afghanistan	1997	30.9378	0.1193	276.294	705.6	0.0	11.712073091310696	52.039	-2388.803	0.0	93.9696	28.2132
Afghanistan	1998	64.1411	0.3263	287.4346	705.6	0.0	11.712073091310696	52.705	-2388.803	0.0	95.2597	30.887
Afghanistan	1999	46.1683	0.0895	247.498	548.8	0.0	11.712073091310696	35.763	-2388.803	0.0	98.9876	39.4317
Afghanistan	2000	22.781	0.7111	168.807	509.6	0.0	11.712073091310696	38.556	-2388.803	0.0	103.4192	73.7401
Afghanistan	2001	0.2219	0.0	170.9884	474.32	0.0	11.712073091310696	39.1935	121.9016	0.0	105.3407	102.0122
Afghanistan	2002	9.0562	0.0	266.1975	529.2	0.0	11.712073091310696	37.5246	121.9016	0.0	108.7956	128.807
Afghanistan	2003	55.8052	0.0	324.2195	568.4	0.0	11.712073091310696	60.7014	121.9016	0.0	110.807	157.5576
Afghanistan	2004	11.9759	0.0	266.9995	764.4	0.0	11.712073091310696	48.7587	121.9016	0.0	105.601	190.2416
Afghanistan	2005	5.3259	0.0	383.7498	627.2	0.0	11.983047178614395	73.1813	121.9016	0.0	115.7245	230.9986
Afghanistan	2006	4.4081	0.0	333.6093	627.2	0.0	12.931389156127368	103.2846	121.9016	0.0	107.8508	241.914
Afghanistan	2007	2.8238	0.0	403.3749	666.4	0.0	13.429486261685545	114.7556	121.9016	0.0	113.8165	246.2696
Afghanistan	2008	27.7623	0.0	287.9099	744.8	0.0	29.919741112811362	230.5945	121.9016	0.0	130.3898	254.0779
Afghanistan	2009	2.6183	0.0	451.8647	784.0	0.0	75.01625720031335	385.5834	121.9016	0.0	188.6719	261.1027
Afghanistan	2010	24.8111	0.0	413.6467	815.36	0.0	81.61085024272248	468.253	121.9016	0.0	286.0954	255.1159
Afghanistan	2011	1.8412	0.0	335.0379	823.2	0.0	81.61085024272248	478.8137	-246.2191	0.0	522.6275	270.6066
Afghanistan	2012	2.8955	0.0	445.5858	803.6	0.0	107.38644368886752	530.8213	-246.2191	0.0	534.4065	271.2397
Afghanistan	2013	3.1595	0.0	455.0727	803.6	0.0	76.06187429144417	391.0777	-246.2191	0.0	833.2319	276.2396
Afghanistan	2014	2.6796	0.0	473.4174	862.4	0.0	49.782873216883466	304.1804	-246.2191	0.0	1094.1338	333.4255
Afghanistan	2015	0.8454	0.0	403.3181	642.88	0.0	81.85255537903275	440.0315	-246.2191	0.0	1570.3394	370.6039
Afghanistan	2016	1.6558	0.0	387.613	466.48	0.0	54.90968136194072	340.8931	154.6574	0.0	1649.8382	425.9346
Afghanistan	2017	0.4015	0.0	344.6447	429.0518	0.0	55.14842703573336	345.7609	154.6574	0.0	1431.53	477.3314

INSIGHTS AND VISUALS

Correlation Matrix
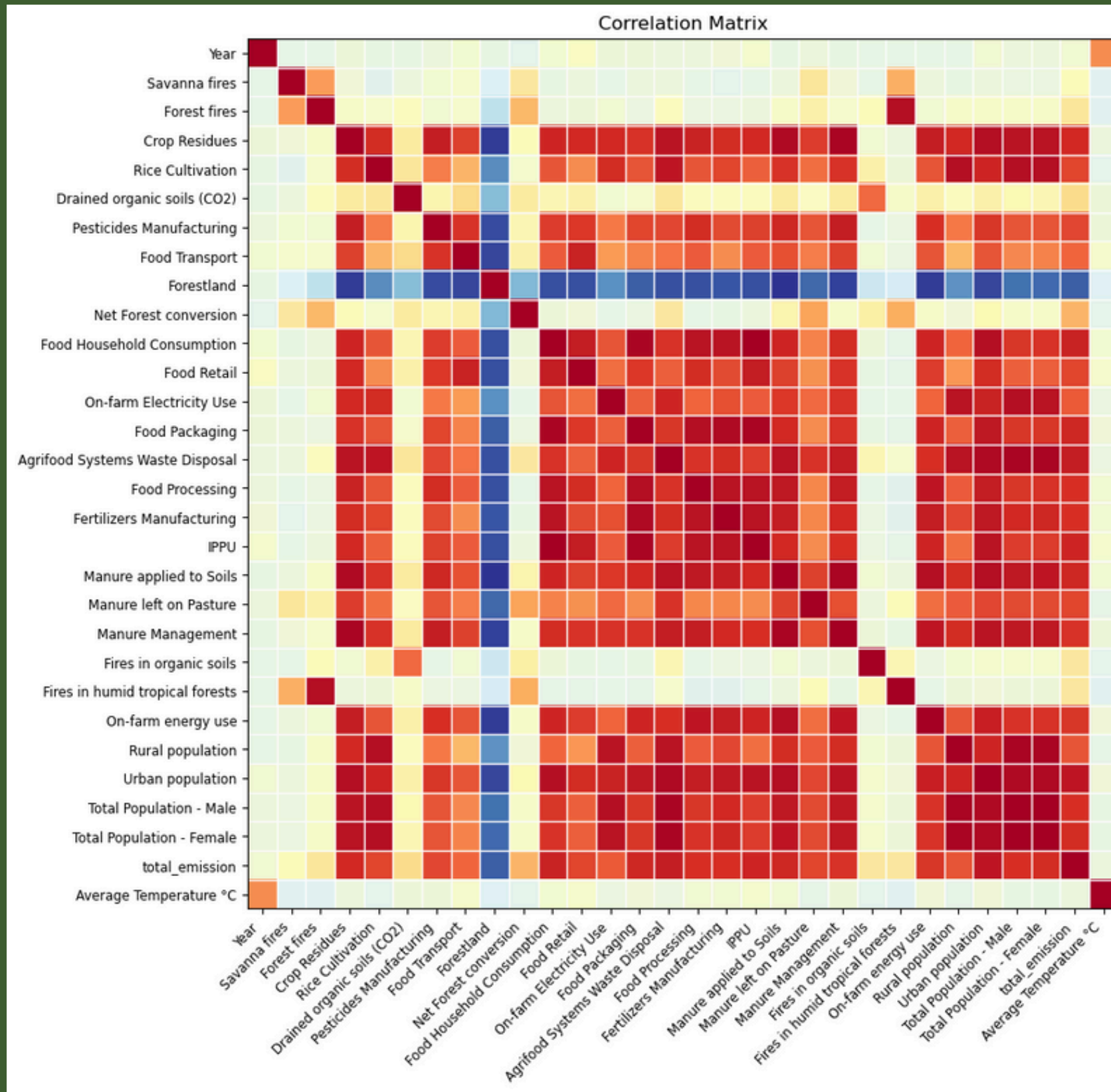
- **Total emission**
- **Average Temperature°C**
- **Positive correlations**
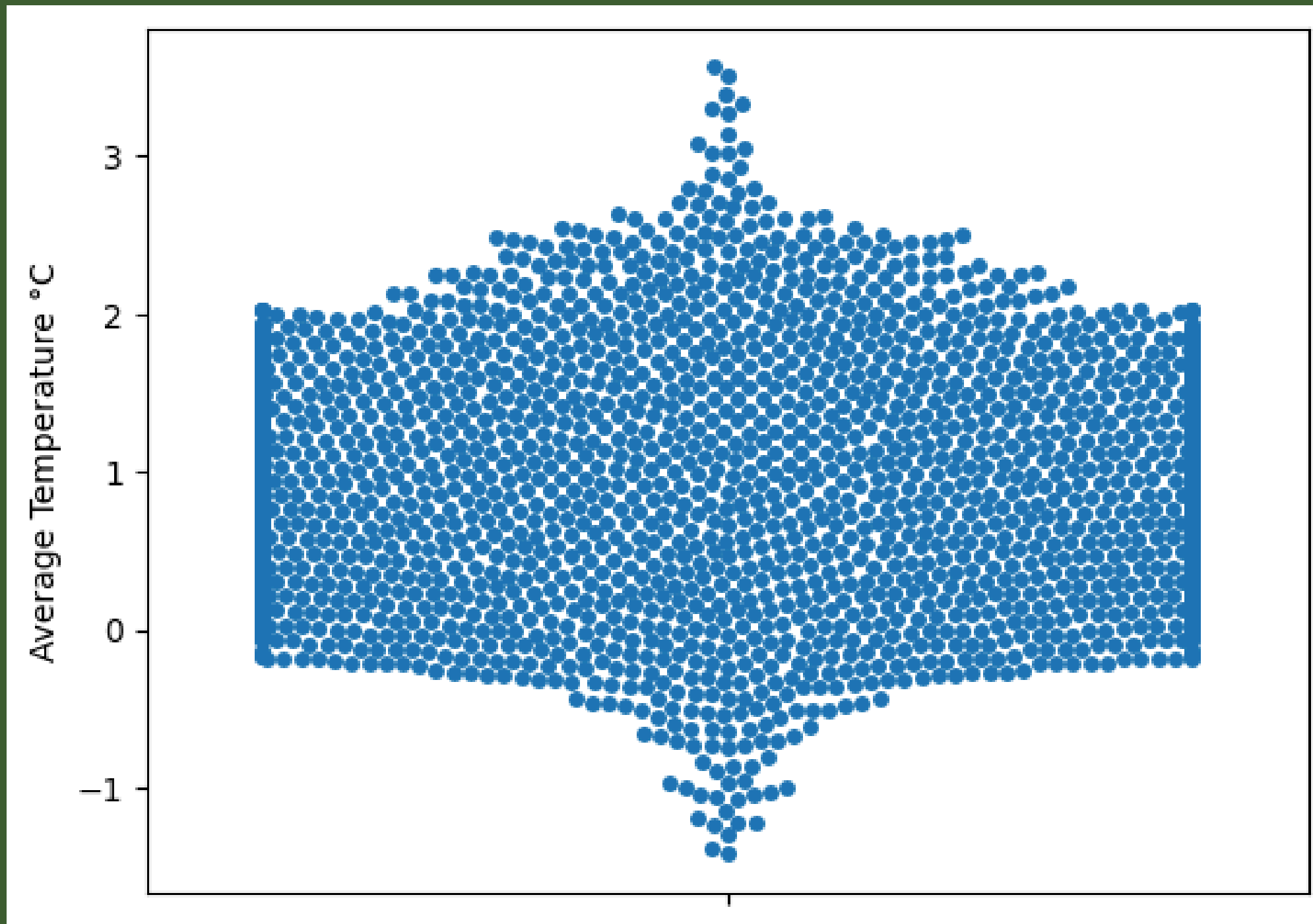- **Negative correlation**

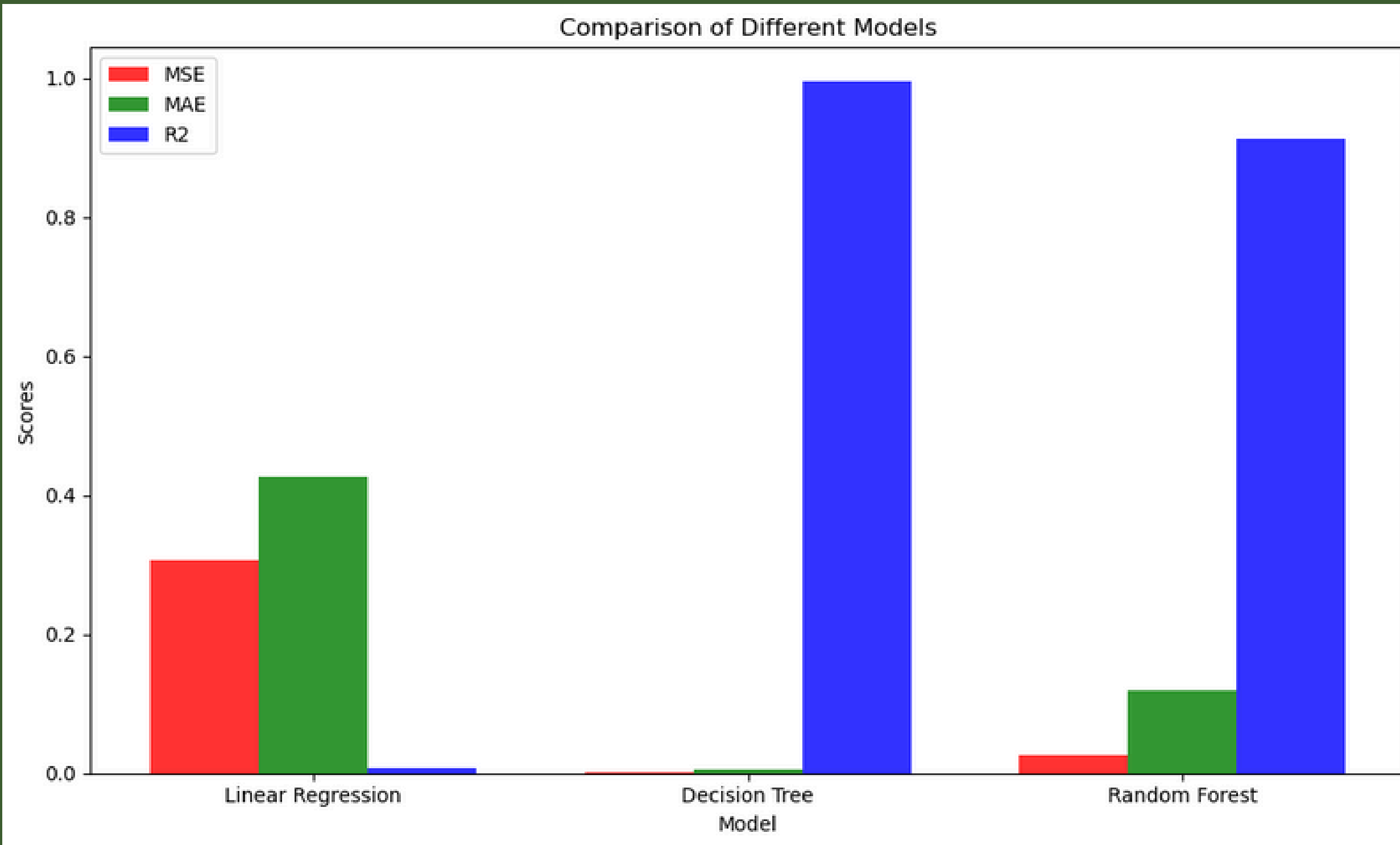# Total Emissions vs. Average Temperature
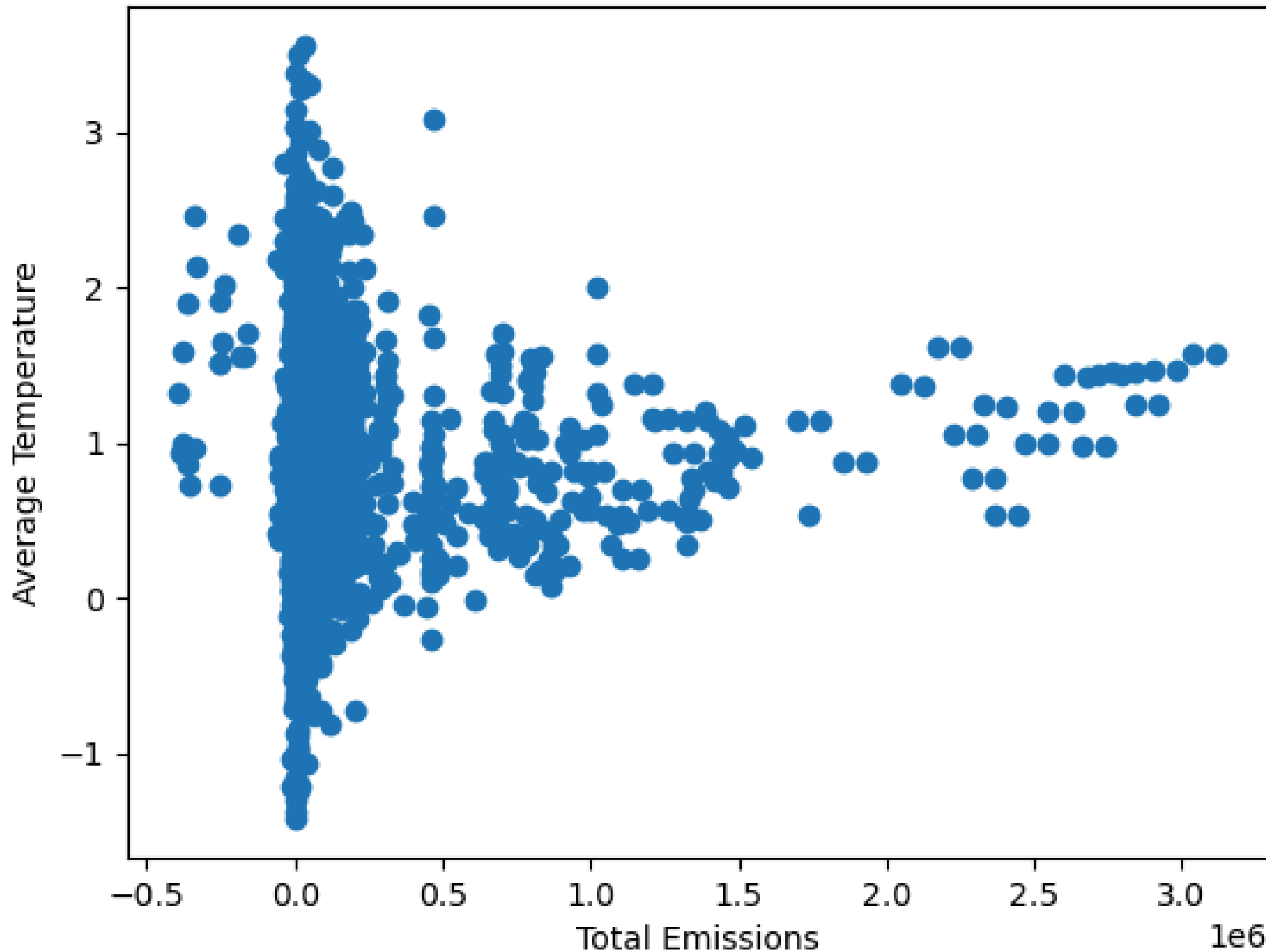
The scatter plot shows:

- Correlation
- Pattern
- Relationship or threshold
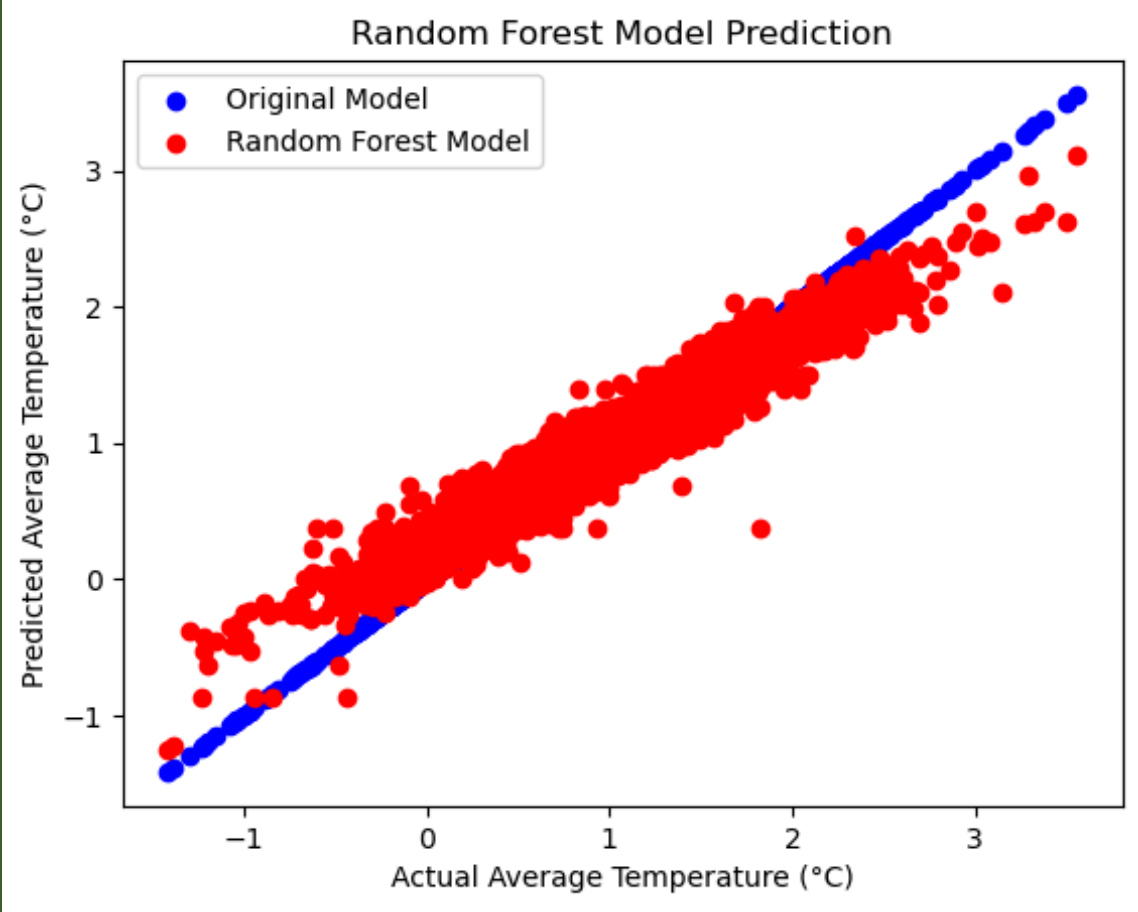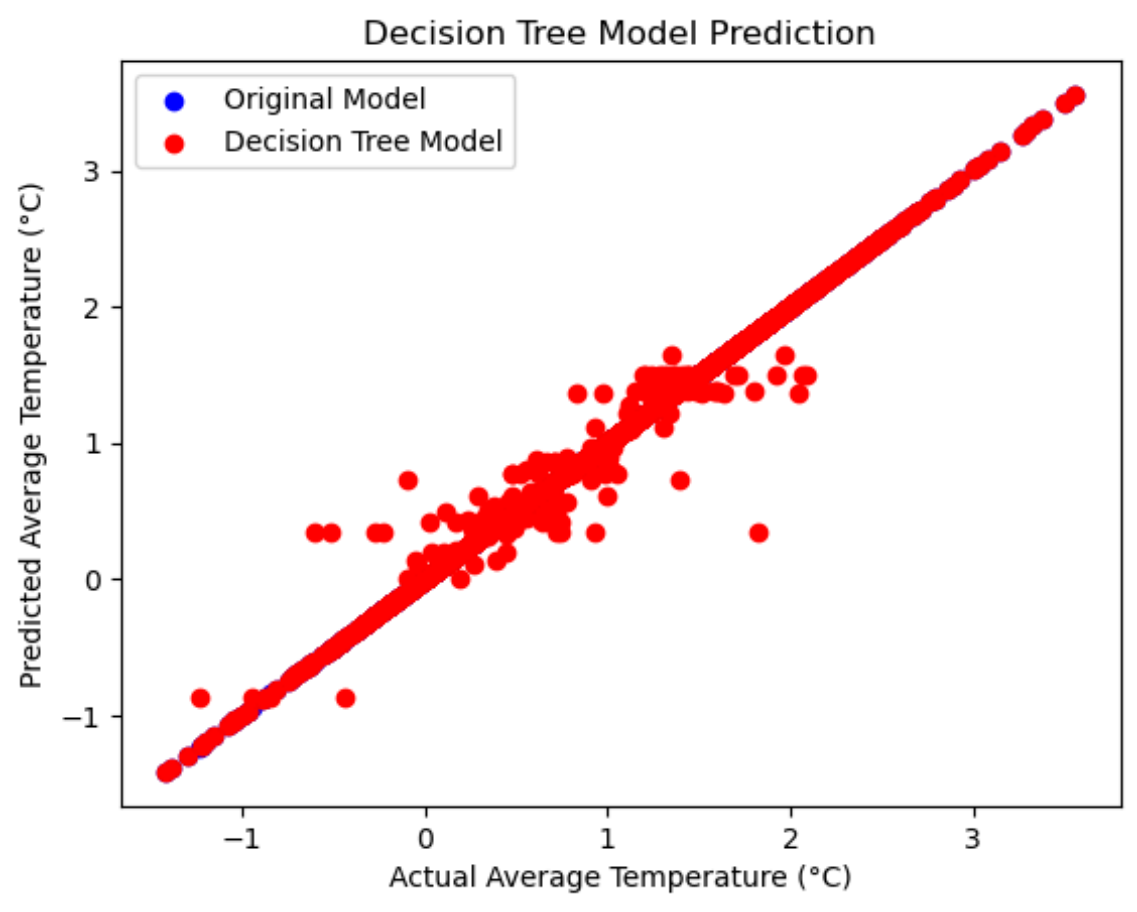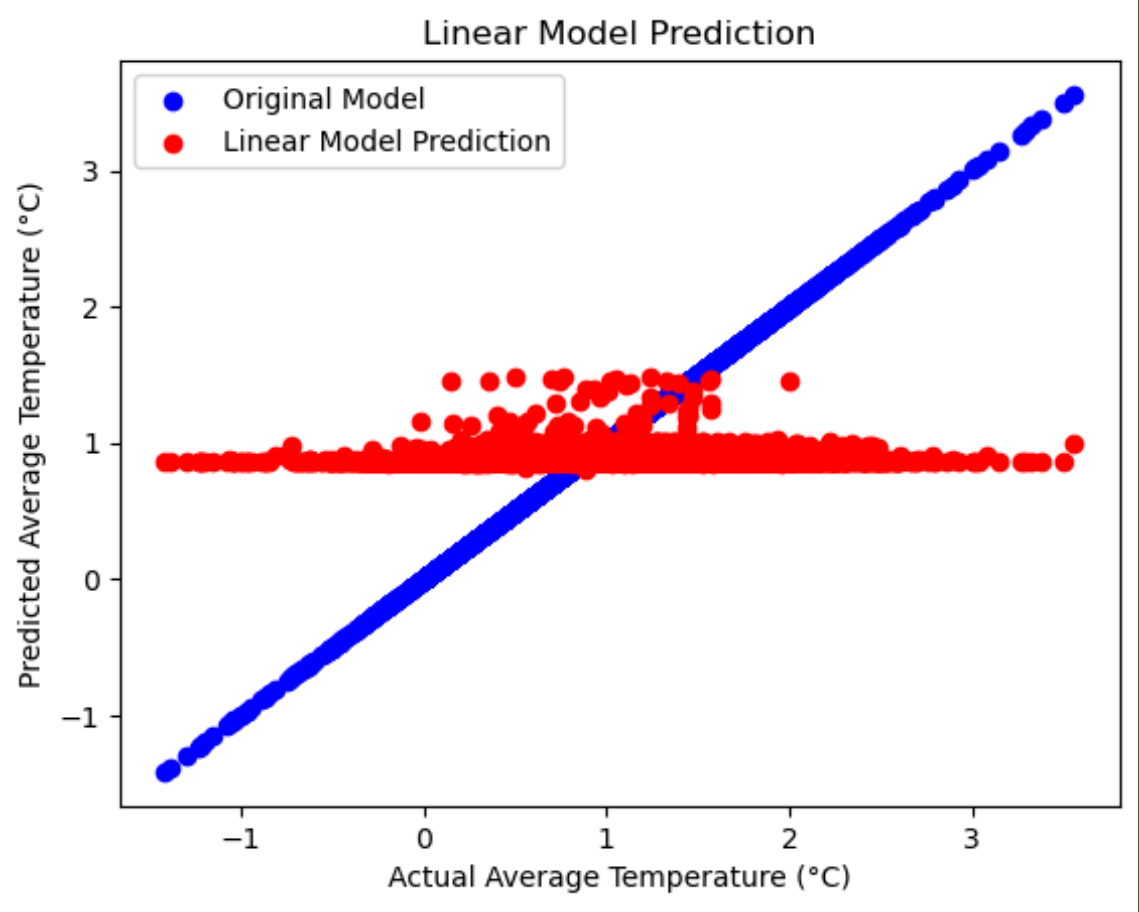
Distribution of Average Temperature.

- **Symmetrical distribution**
- **Central tendency**
- **Spread of values**
- **Mode and median**
- **Outliers**

Model Comparison.

- MSE
- MAE
- R-Squared

Models

Recommendations

- **Developing a life cycle assessments to evaluate environmental impact.**
- **Developing a framework to monitor and evaluate sustainnability efforts.**
- **Developing policy briefs and recommendations for policymakers**
- **To create a carbon footprint calculator for agricultural products.**
- **Collaborate with international organizations to align with global goals.**

CONCLUSION

This project provides a comprehensive analysis of CO2 emissions in the agri-food sector, predicts temperature variations based on various emission sources, and offers actionable insights for stakeholders. The project also demonstrates the use of machine learning models to predict temperature variations and evaluates their performance using various metrics.

THANK YOU