



Predicting Abnormal Climate Phenomena





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Introduction

Problem Statement: Earthquakes and volcanic eruptions pose significant risks to human populations and infrastructure, highlighting the need for accurate forecasting and early warnings.



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Nordamerikanische Platte

Eurasische Platte

Pazifische
Platte

Karibische
Platte

Cocos-
platte

Arabische
Platte

Indische
Platte

Philippinische
Platte

Pazifische
Platte

Nazca-Platte

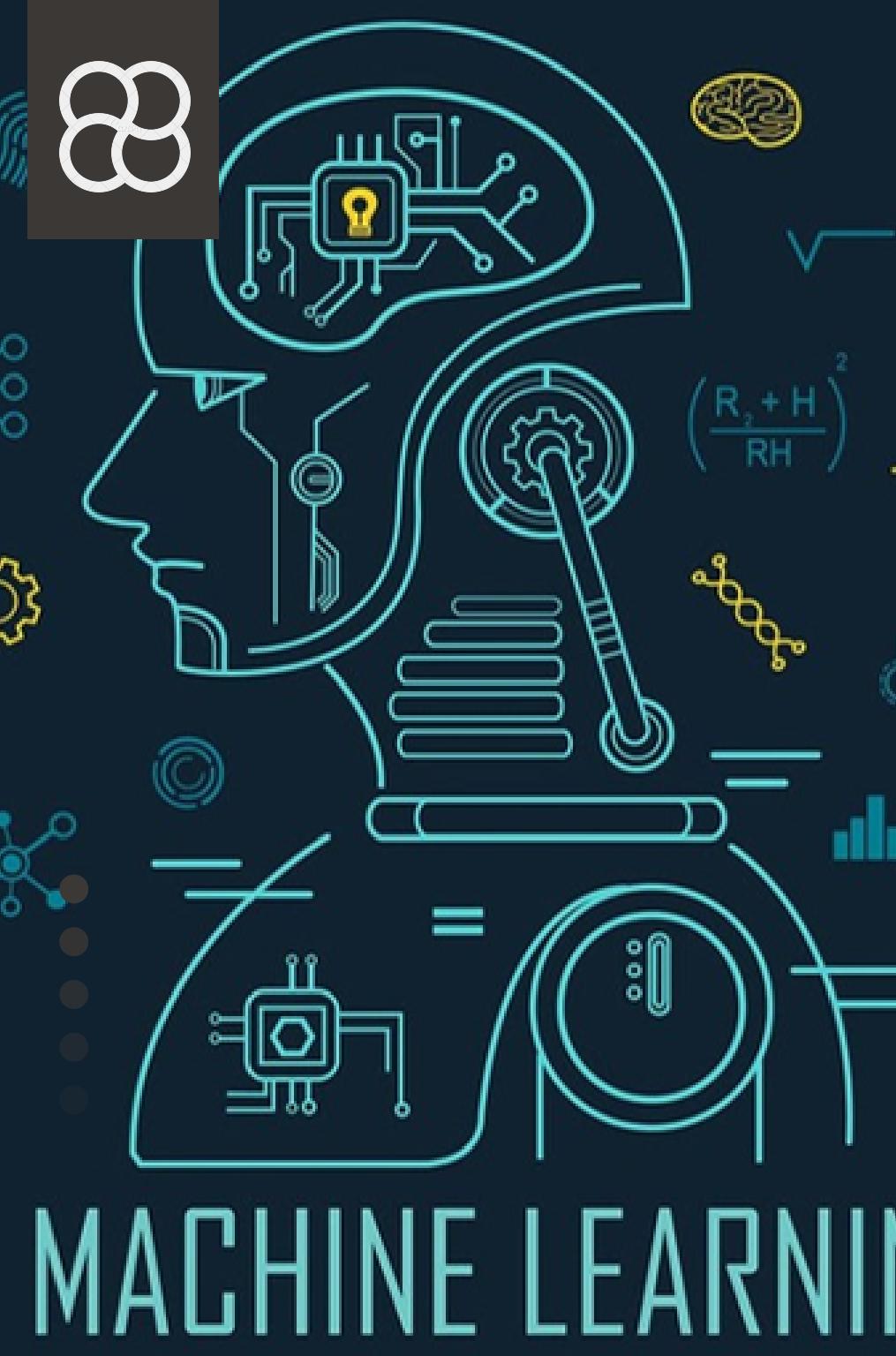
Südamerikanische
Platte

Afrikanische Platte

Australische Platte

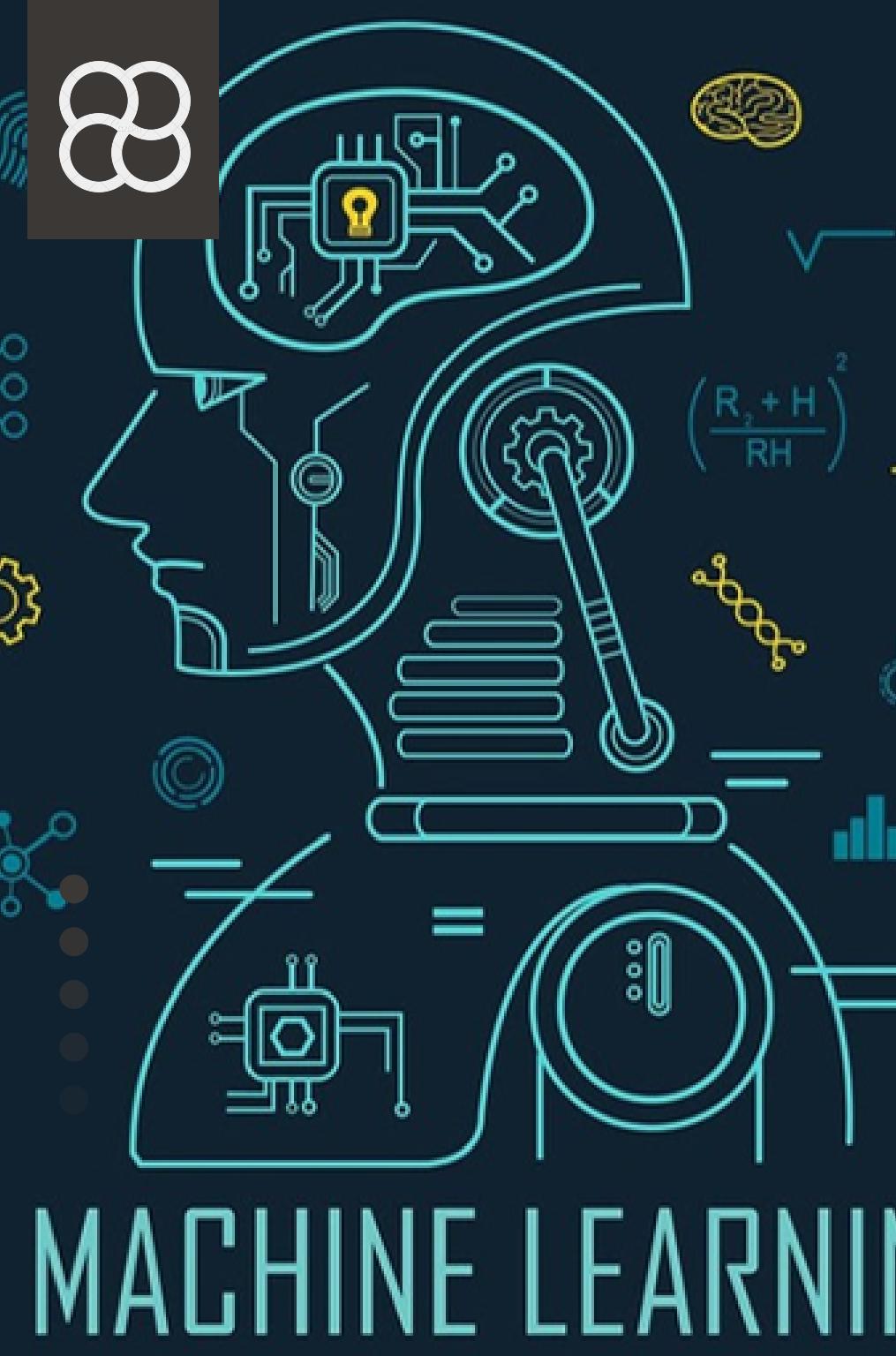
Introduction

Opportunity: By leveraging AI techniques, we aim to improve prediction accuracy and enable proactive measures to mitigate the impacts of these natural disasters.



Proposed Data Science Solution

Vision: Our project focuses on analyzing historical seismic and volcanic event data, geological survey information, satellite imagery, atmospheric and gas emission data, and other relevant datasets.



MACHINE LEARNIN

Proposed Data Science Solution

Approach: We will use machine learning algorithms to identify precursory patterns or indicators of these phenomena, aiming to enhance prediction accuracy and provide timely warnings.



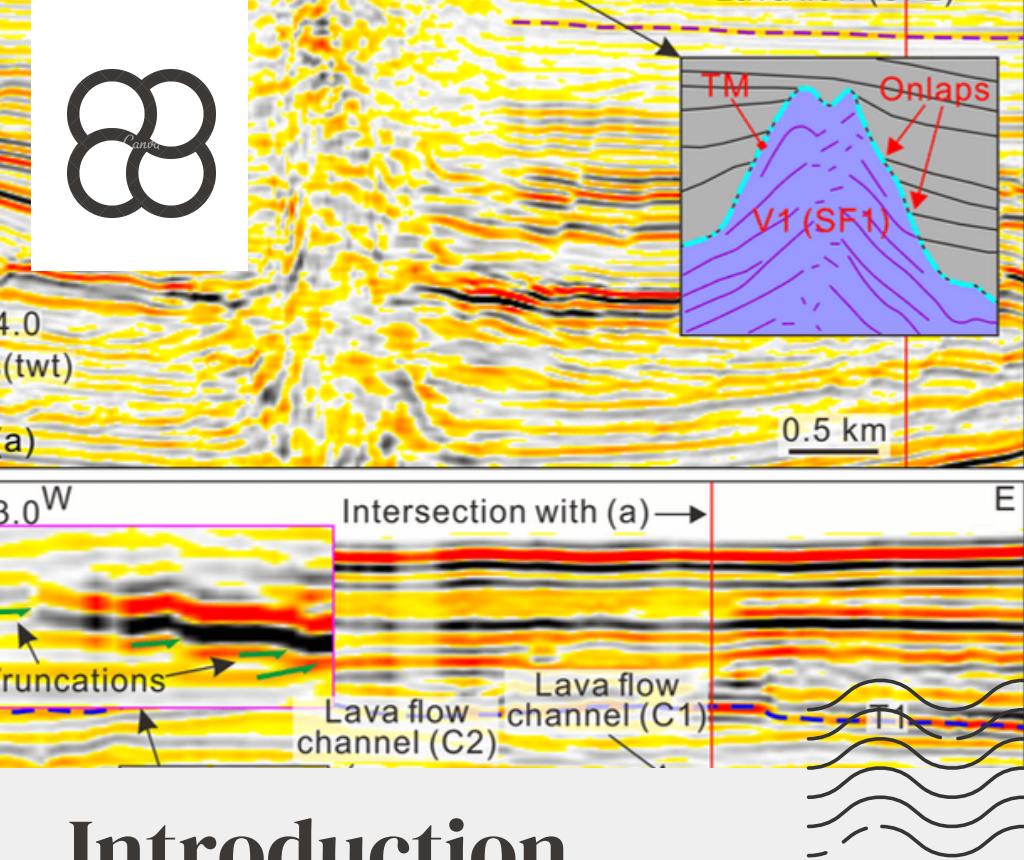
Potential Impact

Impact: Implementing accurate prediction models can significantly reduce the loss of lives and infrastructure damage caused by earthquakes and volcanic eruptions.



Beneficiaries: Government agencies, disaster management organizations, researchers, and the general public can benefit from improved disaster preparedness and response strategies.

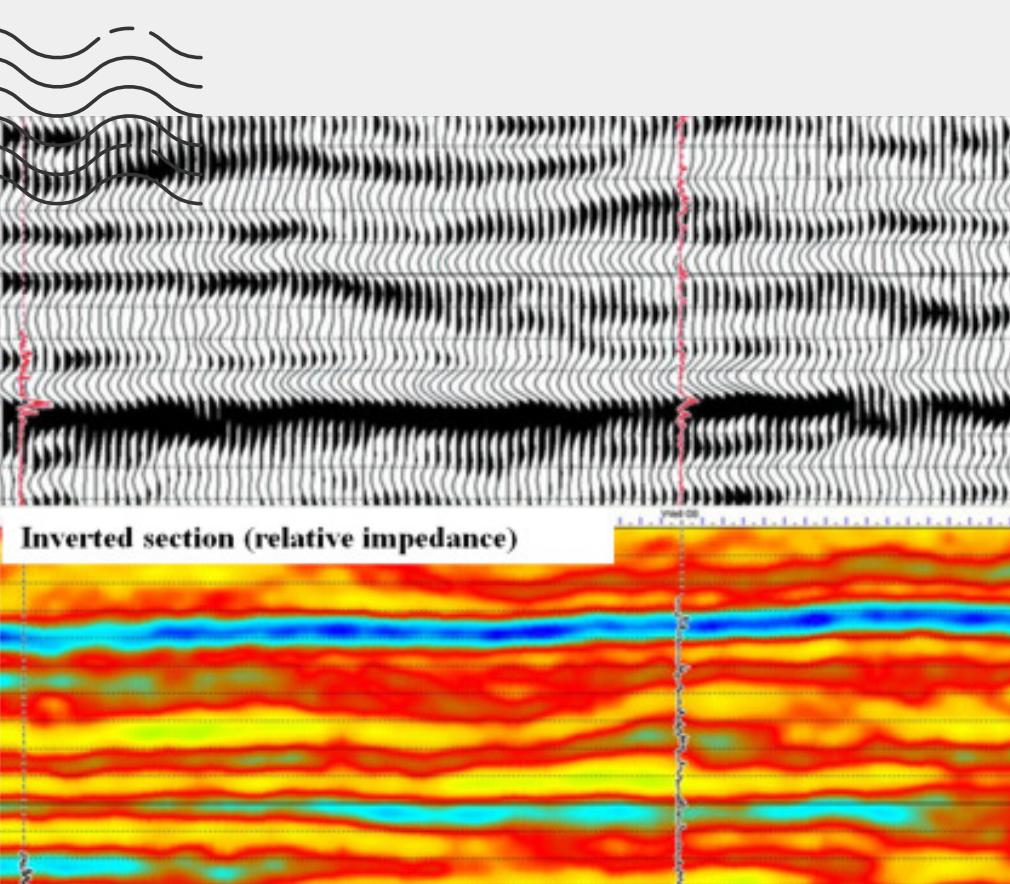




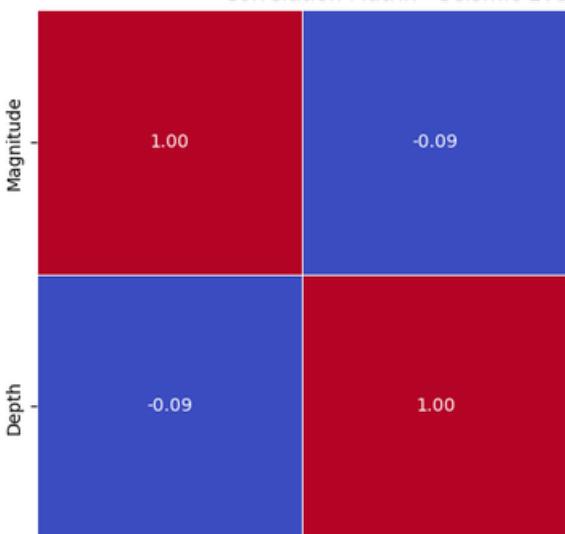
Introduction to Dataset

Dataset Overview: Our datasets include seismic event data, volcanic activity records, geospatial data, atmospheric and gas emission data, satellite imagery for ground deformation, and historical environmental factors.

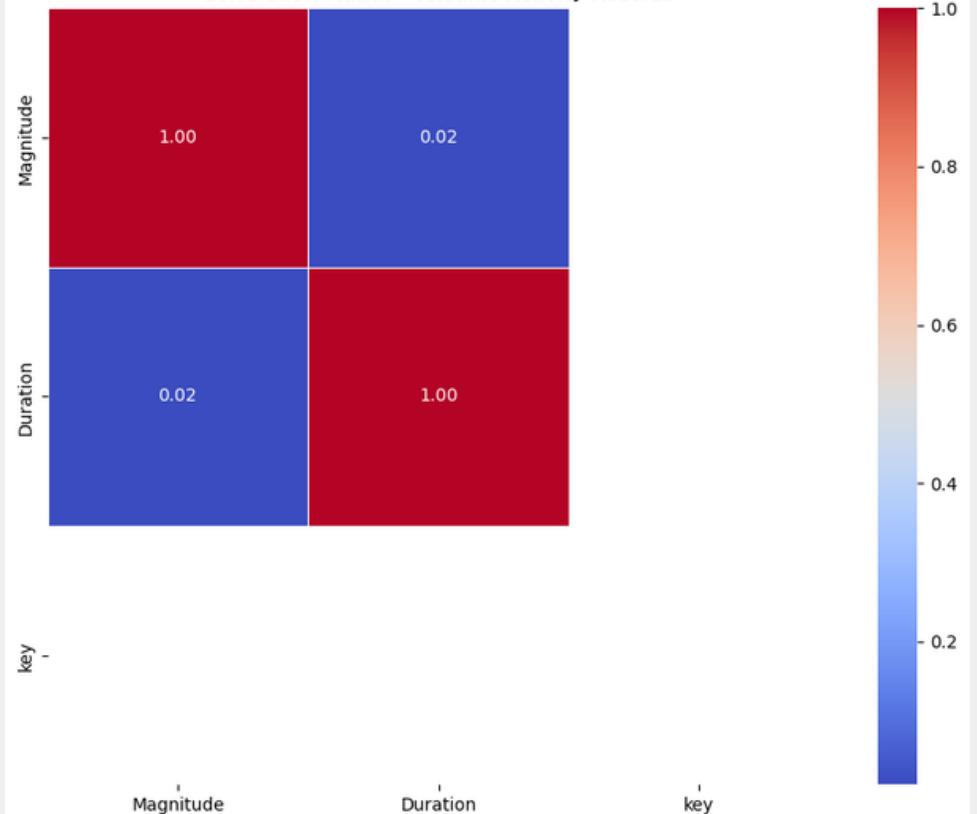
Data Quality Concerns: We are aware of potential concerns such as missing or inconsistent data, outliers, and formatting issues. Ensuring data accuracy and reliability is crucial for building robust predictive models.



Correlation Matrix - Seismic Event Data

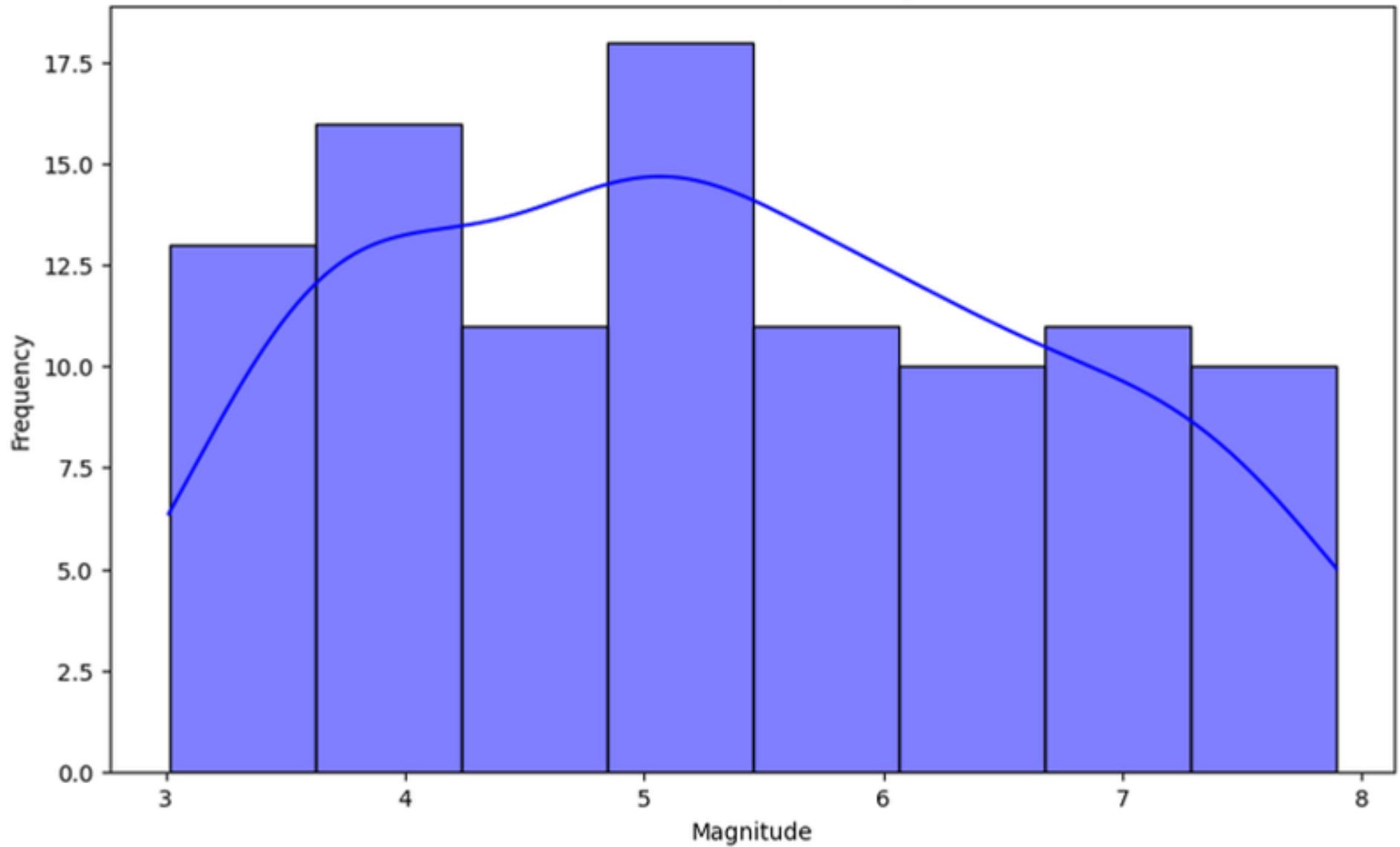


Correlation Matrix - Volcanic Activity Records



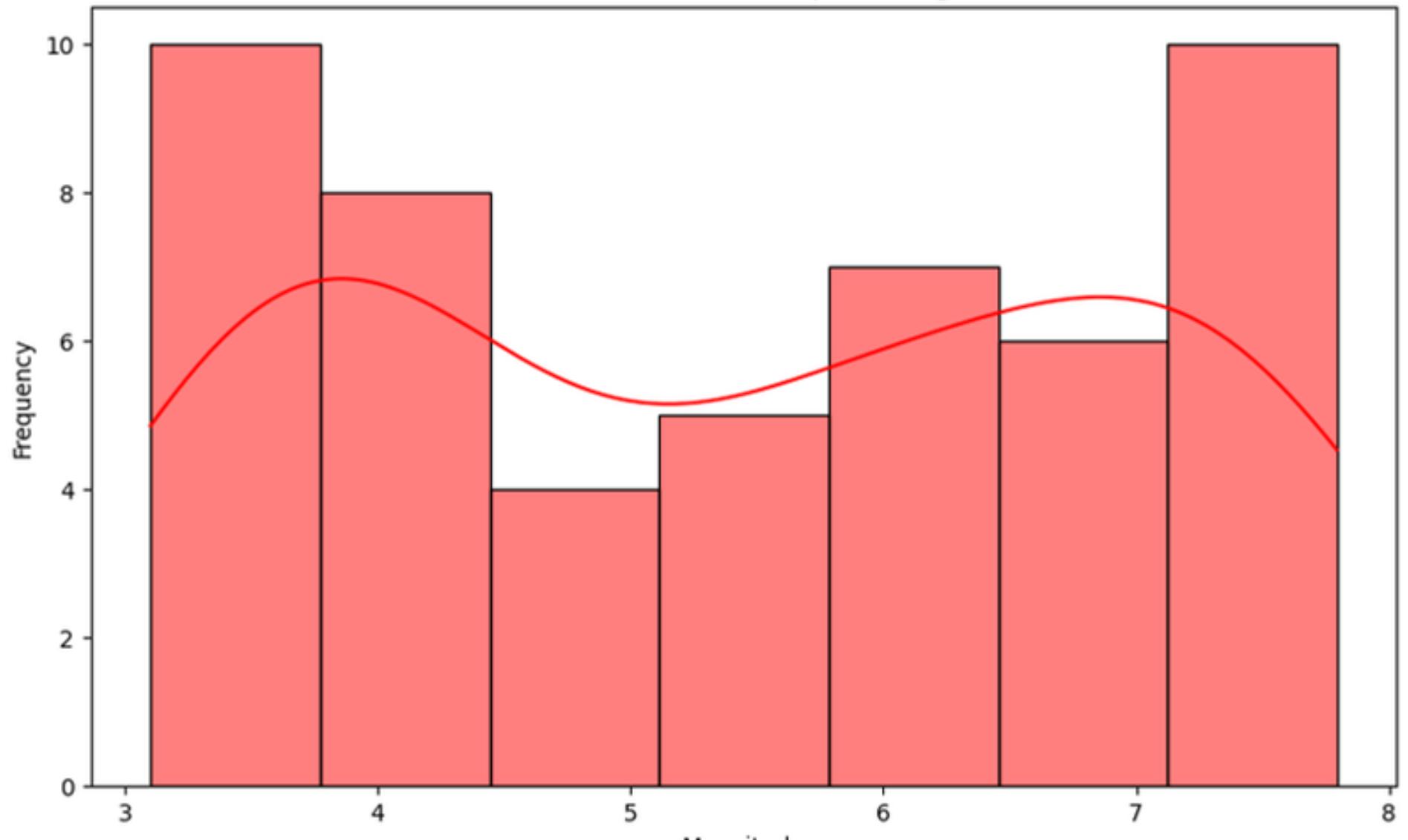


Distribution of Earthquake Magnitudes



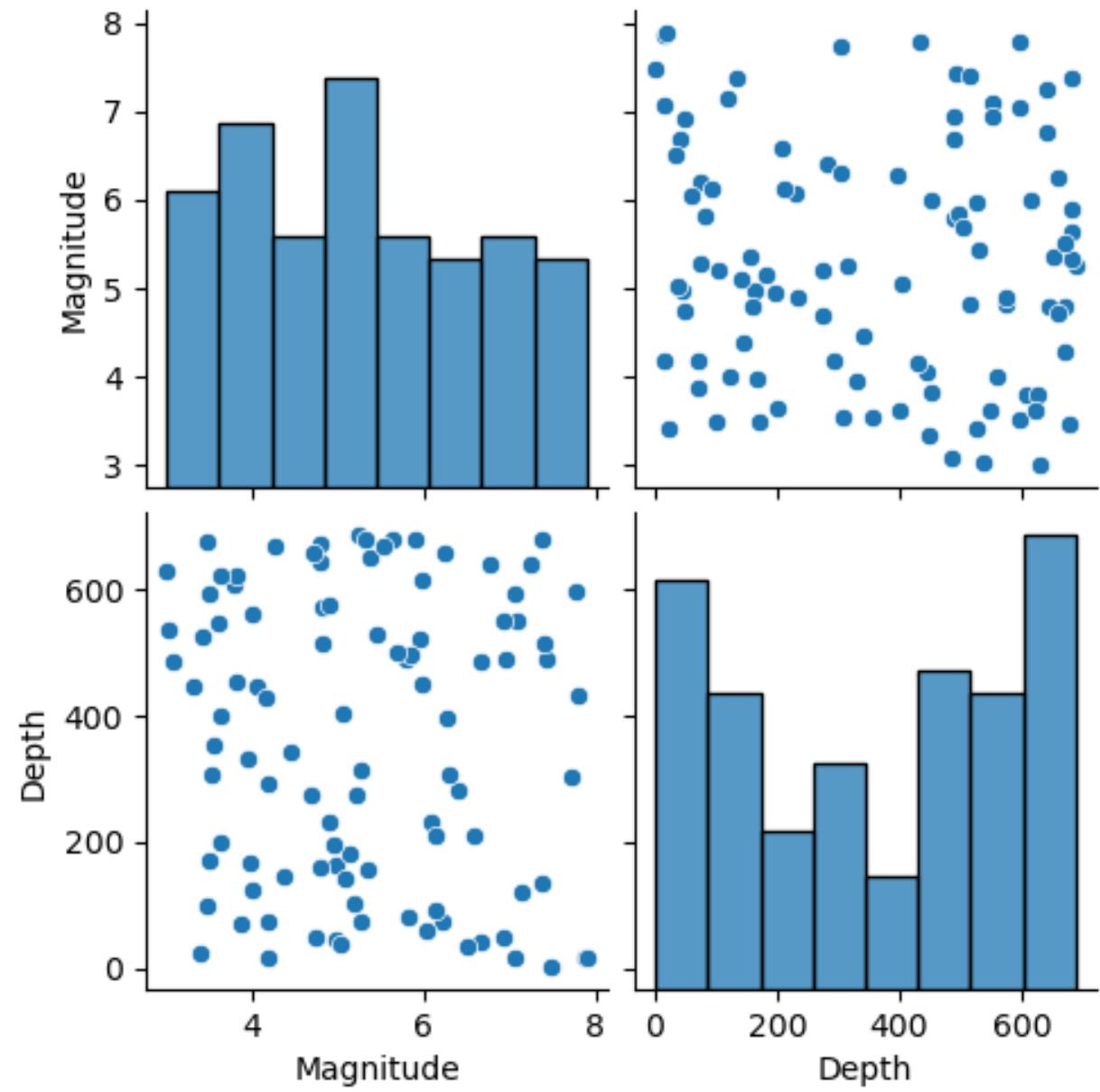


Distribution of Volcanic Eruption Magnitude



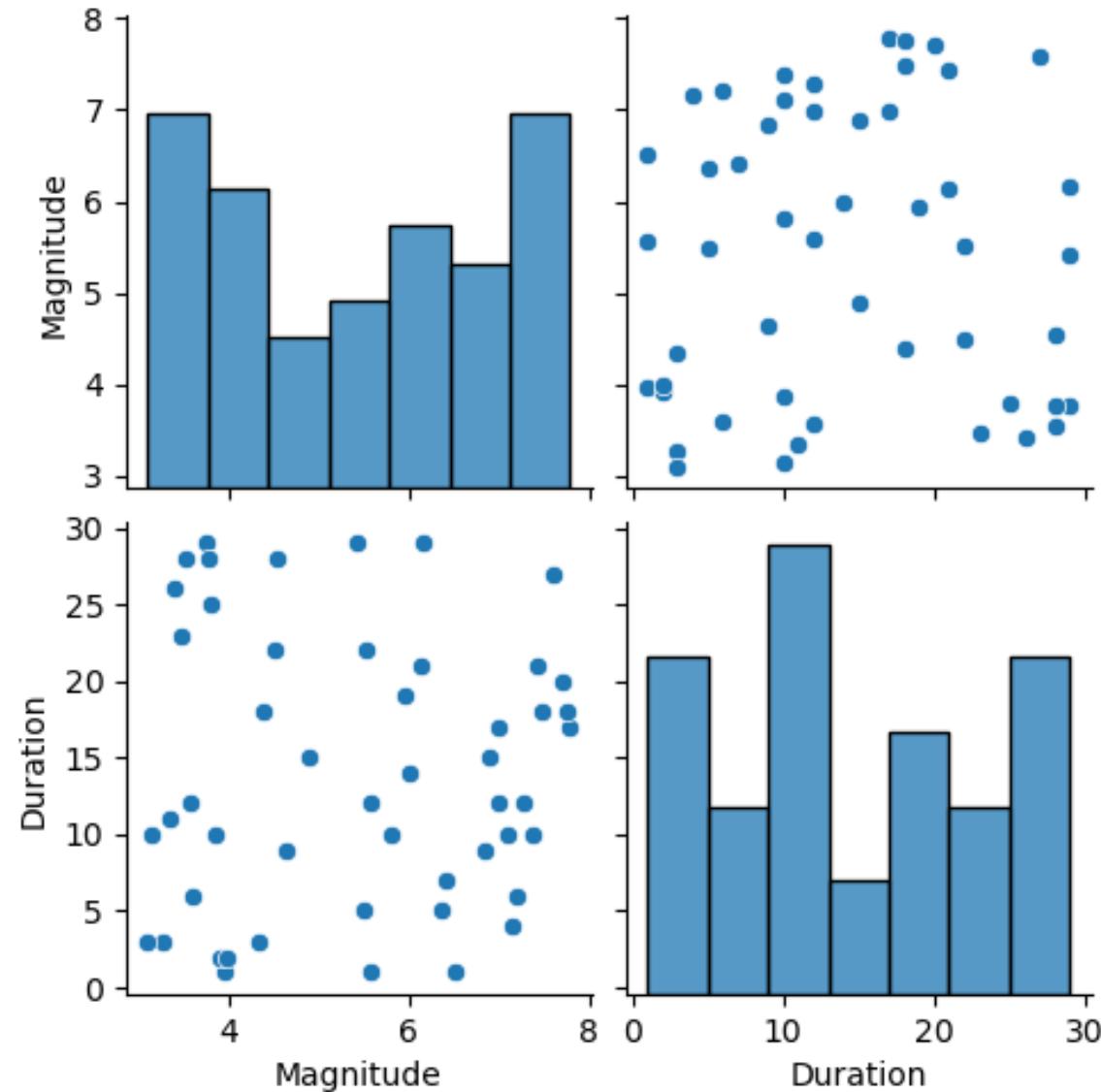


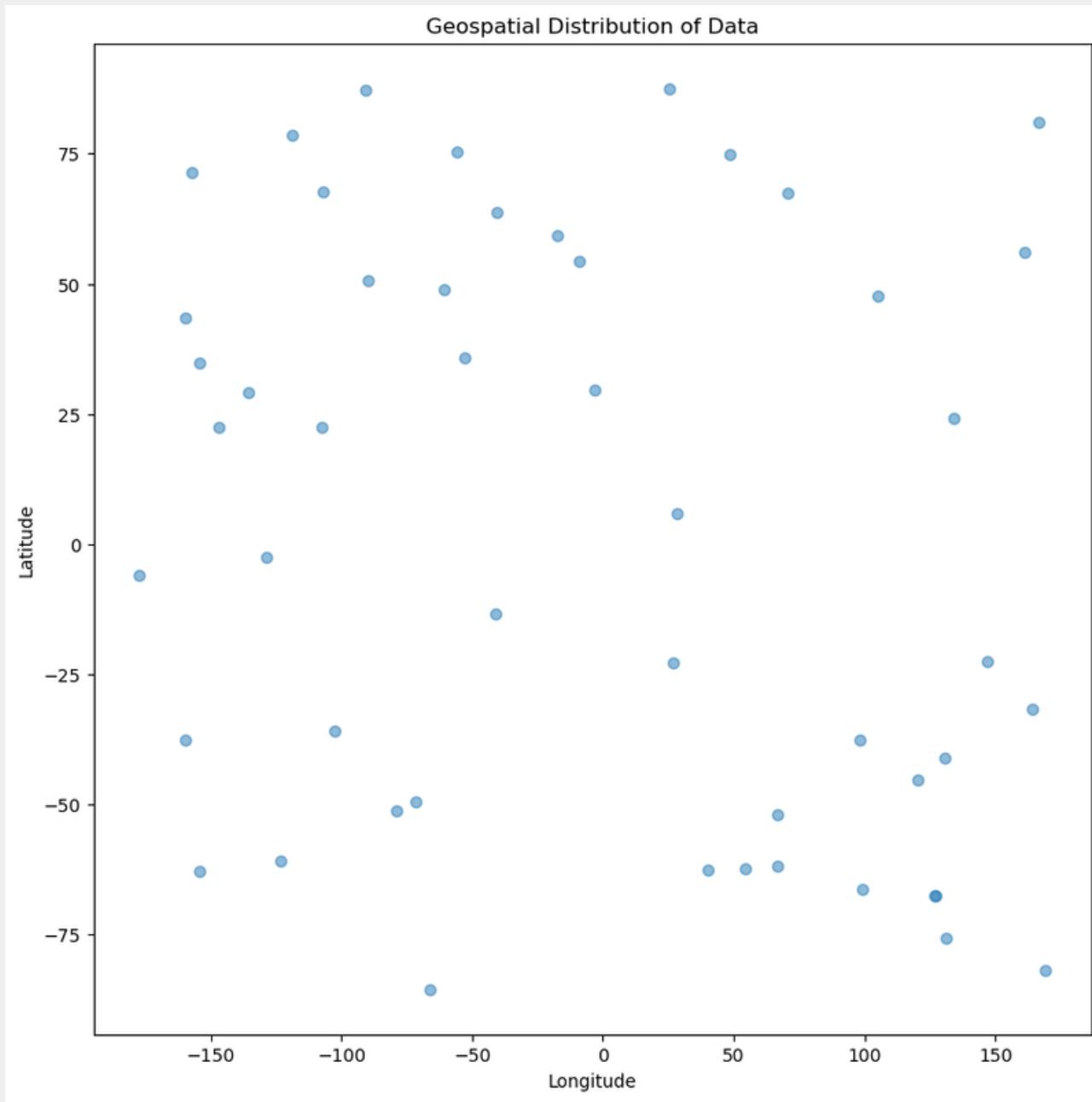
Pairplot of Seismic Event Variables

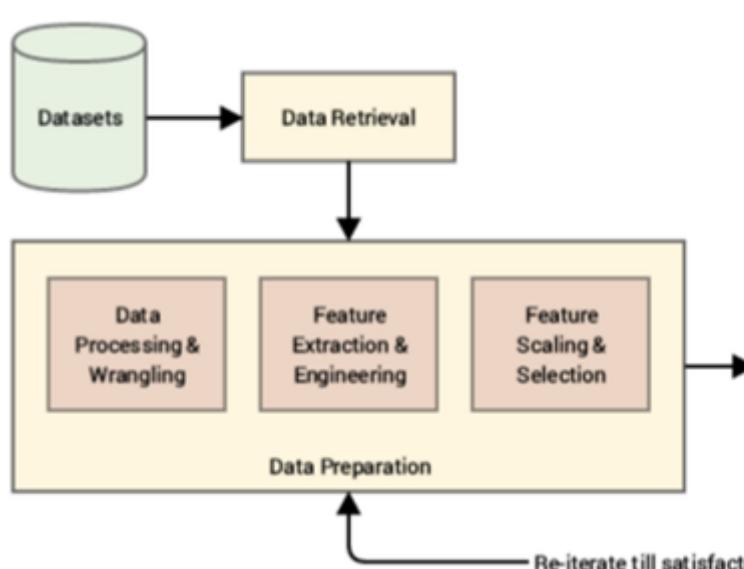




Pairplot of Volcanic Activity Variables

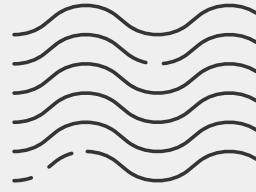
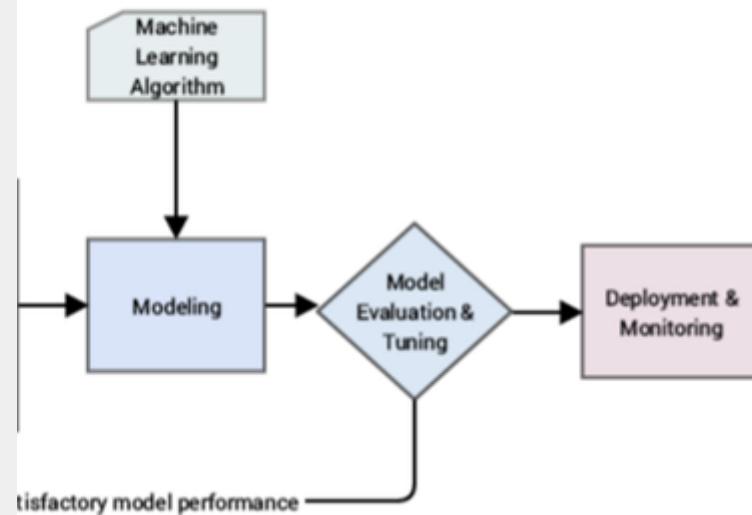


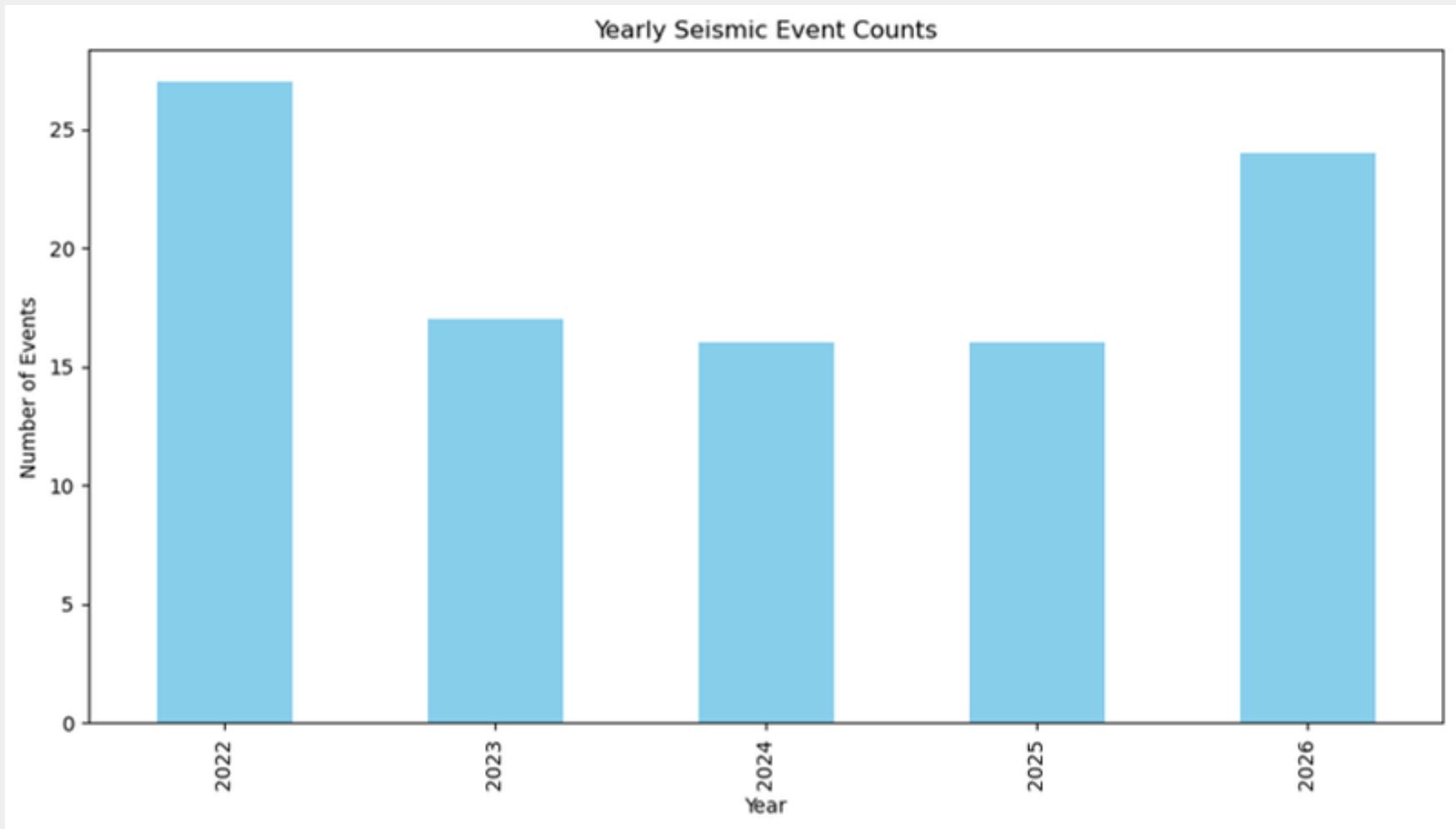


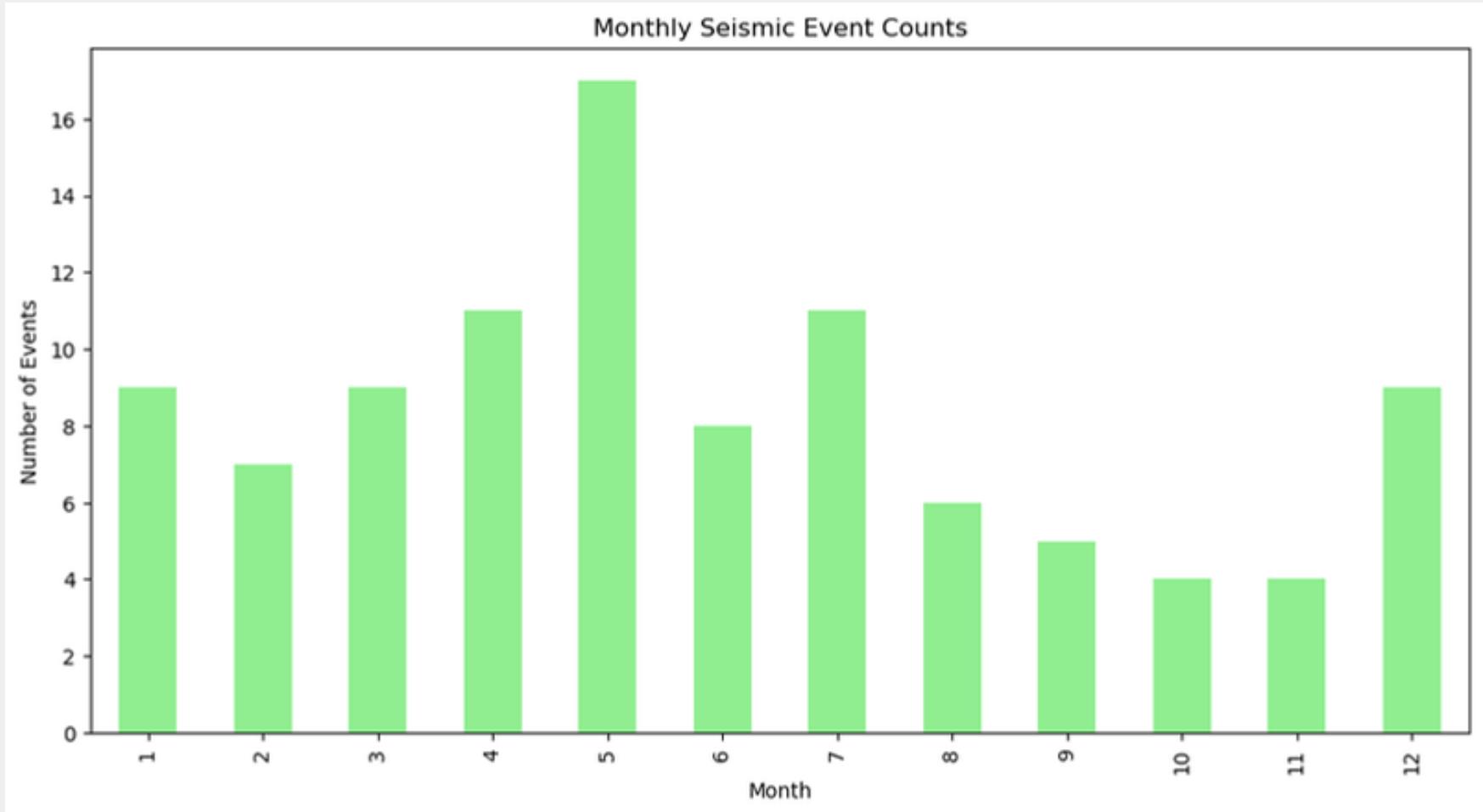


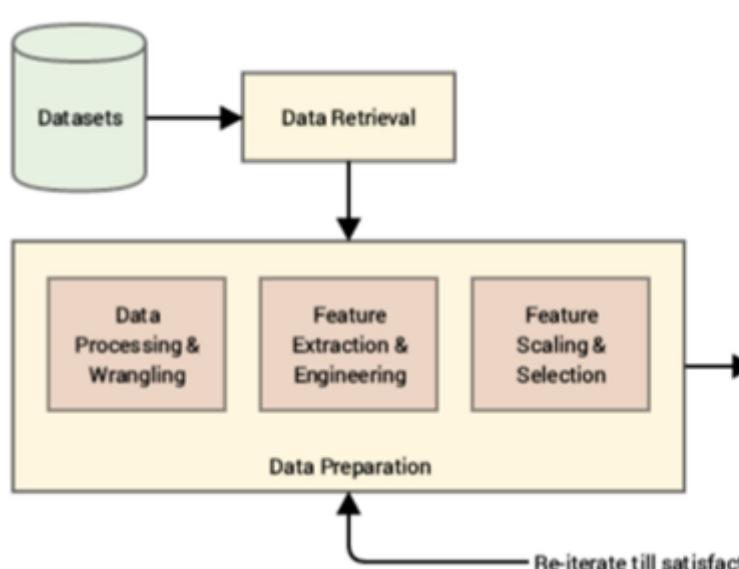
Data Processing: Our next steps include addressing data quality concerns, performing data cleaning, and preprocessing the datasets.

Next Steps



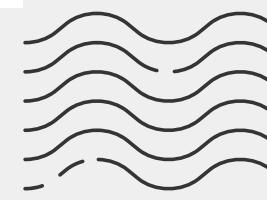
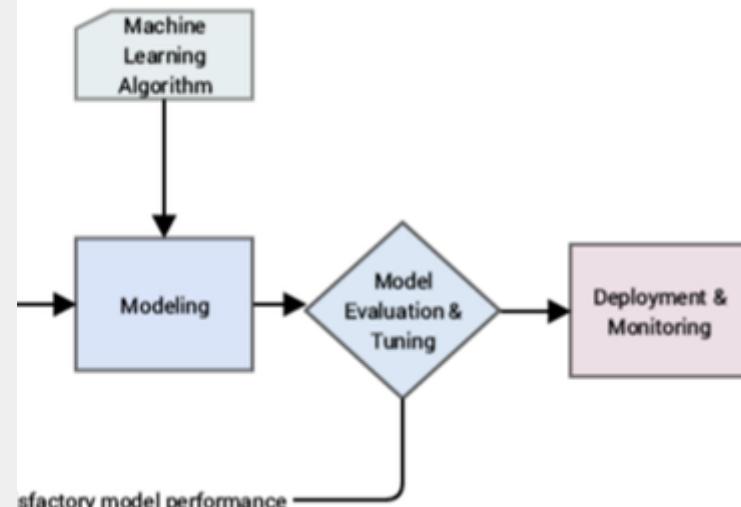


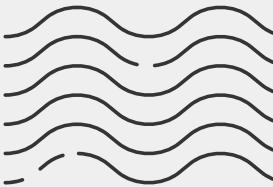




Baseline Modeling:
Developing initial models will help us establish a baseline for performance evaluation and guide further model refinement.

Feature Engineering: We will extract relevant features from the datasets to enhance the predictive power of our models.





THANK YOU!