VOLCANOES OF EARTH

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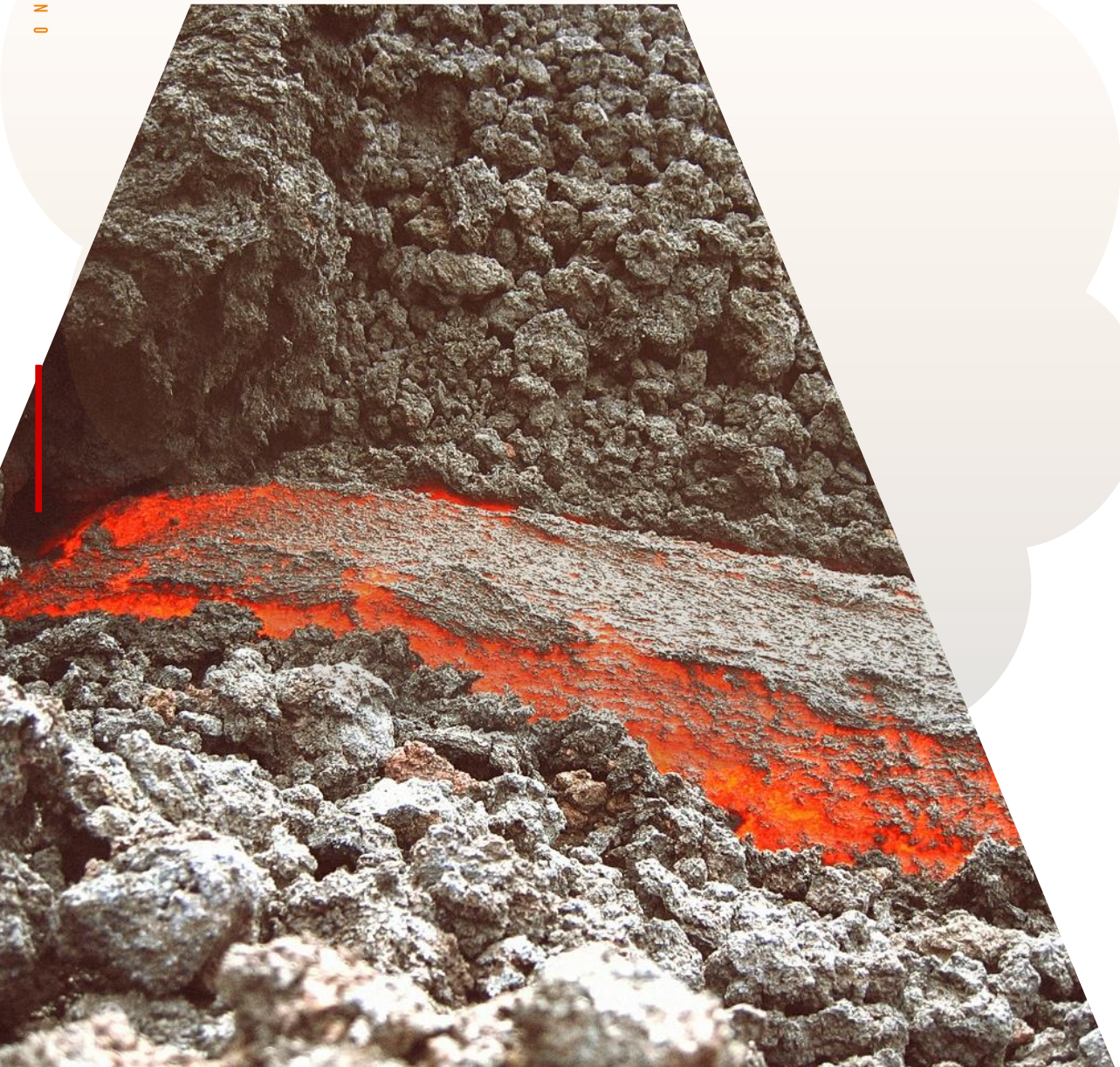

iNSPiRATiON

Ring of Fire by Johnny Cash

Due to a shared love of the Johnny Cash song "Ring of Fire," group 3 has expressed interest in working on our visualization project on volcanoes. We were all painfully and recently dealing with relationship issues, so the song's lines, "Love is a burning thing, and it makes a fiery ring, bound by wild desire, I fell into a ring of fire," resonated with us. As you may or may not know, The Ring of Fire, also referred to as the Circum-Pacific Belt, is a path along the Pacific Ocean characterized by active volcanoes and frequent earthquakes. Most of Earth’s volcanoes and earthquakes occur along the Ring of Fire.

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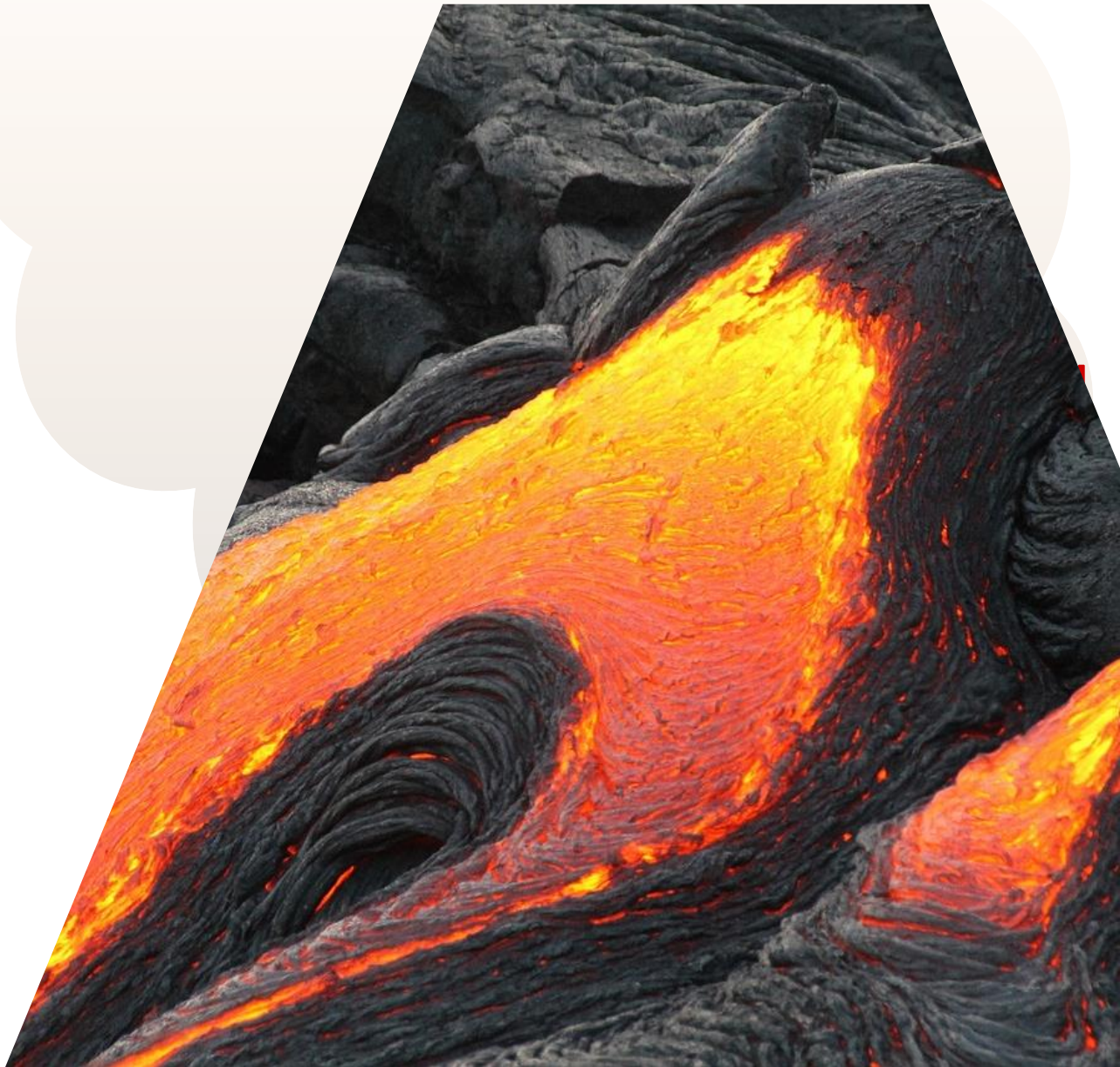
Objective

Create a dashboard for volcano research

Our objective is to compare the summit and elevation of volcanoes in various regions, compare volcanic types according to epoch periods, and provide information on the number of volcanoes in various regions.



Data

Kaggle: The Volcanoes of Earth

https://www.kaggle.com/datasets/deepcontractor/the-volcanoes-of-earth

Research Questions

1

Does type affect the size of a volcano?

2

Which region and subregions have the most amount of volcanoes?

3

Most common locations where volcanoes reside?

4

What does the summit and elevation look like when compared by region or volcano type?

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Dashboard Design

Our dashboard is an interactive webpage with multiple navigation tabs. There is a homepage, a dashboard, a map page, a graph page, an about us page, a works cited page, and a page with our data table.

Leaflet Map

The leaflet map has a regular and topographical version with markers that identify the location and type of the volcano.

Graphs

We created a bar graph, a sunburst graph, and a violin chart to display three of our research questions.

BootSwatch

We utilized the Solar theme on bootswatch because the color palette matches with our theme for volcanoes, darker tones as wells as reds and oranges.

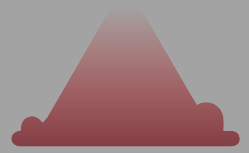
Bar Graph

Does type affect the size of a volcano?

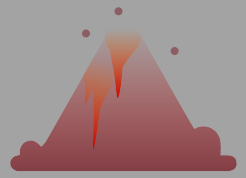
- Shield Volcanoes are largest
- Rises over 9km above sea floor
- Stratovolcanoes are the most prevalent
    - Also known as a composite volcano
    - Active for the longest periods (10s of hundreds of thousands of years)

Sunburst Observations

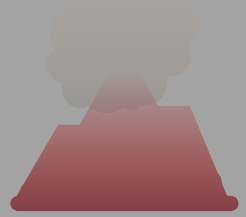
Which region and subregions have the most volcanoes?



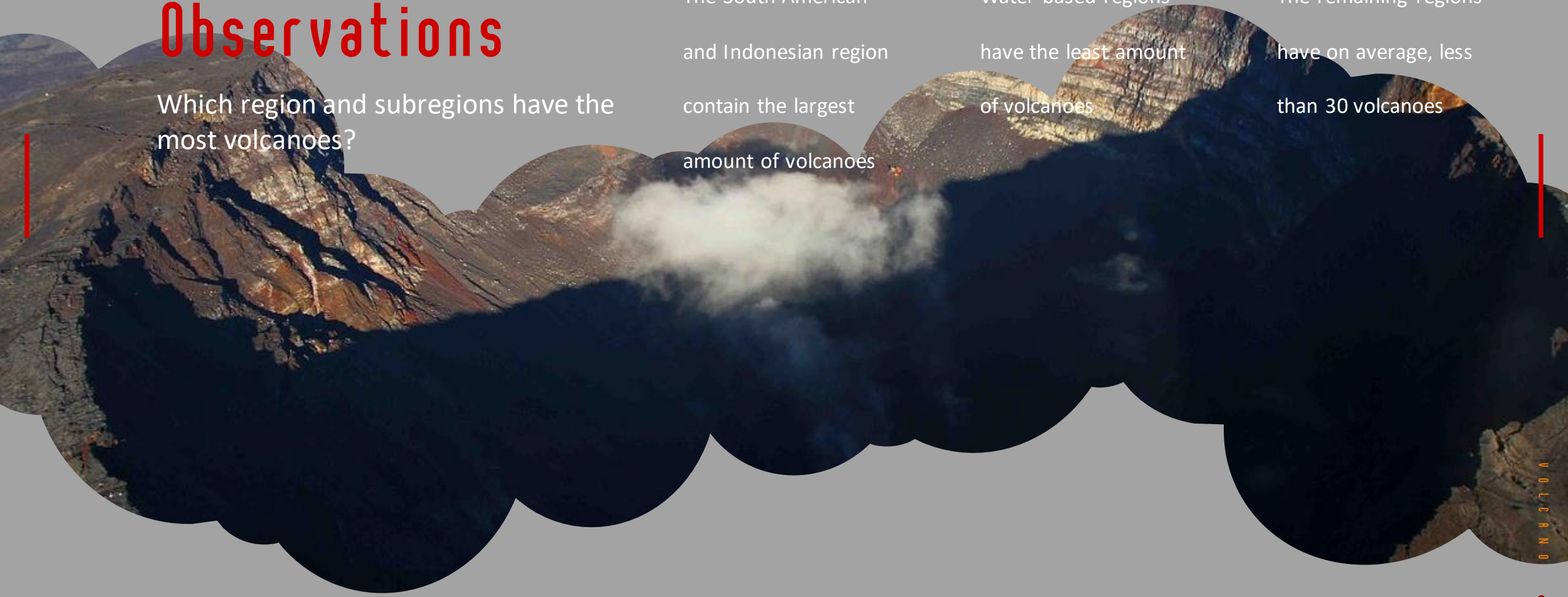
- The South American and Indonesian region contain the largest amount of volcanoes

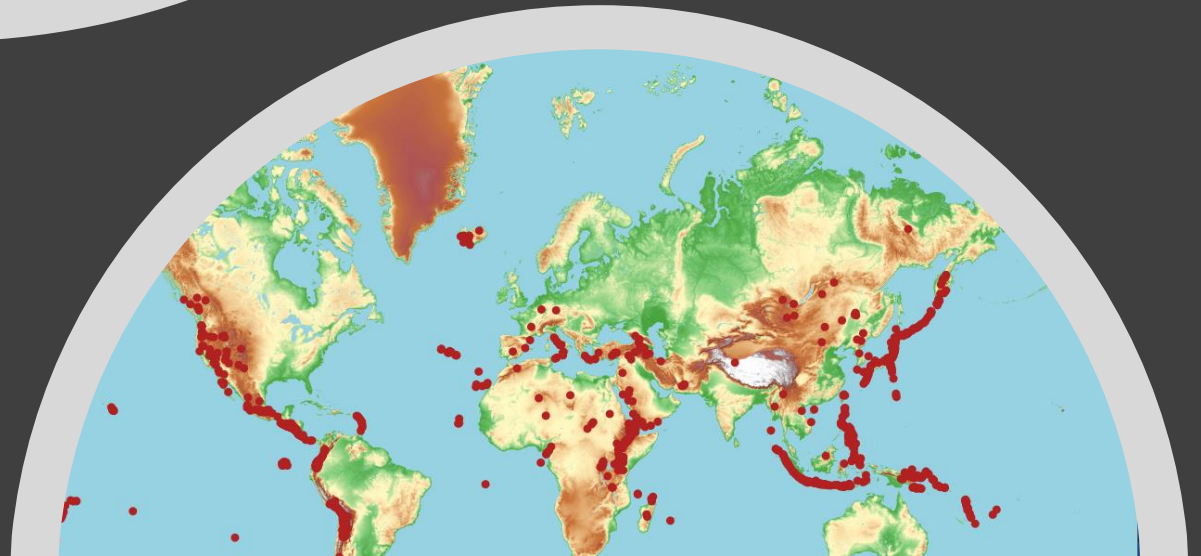


- Water based regions have the least amount of volcanoes



- The remaining regions have on average, less than 30 volcanoes





Map Observations

- Larger clusters of volcanoes are more prevalent on coasts or areas of higher topography
- Few volcanoes are found inland outside of Africa
- The primary water based volcanoes are in the Pacific Ocean (Ring of Fire)
- Volcanoes are more often grouped together than found individually

- The summit and elevation plots will look similar by volcano type because the summit elevation is relative sea level

- Volcanoes with summits above water will have a higher positive elevation

- Volcanoes with summits below water level will have higher negative elevation

Violin Plot Observations

What does the summit and elevation look like when compared by region or volcano type?

Limitations / Future Work

Limits

Our data is limited due to lack of information in our data set. Also the format of the last eruption dates are not an actual date but a time period.

Future

Future work on this project could include more datasets. There can be more attention paid to eruption times, impact of eruption, population around volcano sites, and a comparison of active and dormant volcanoes.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THANK YOU
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