Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_

**Pacific Rim**

**Ring of fire & Hot Spots**

**Objectives**:

* Students will plot the locations of Earthquakes and Volcanoes on a Pacific Ocean map.
* Students will review longitude and latitude.
* Students will observe patterns of Earthquake and Volcano locations.

**Procedure**

1. On the outline of the continents surrounding the Pacific Ocean, using **one color**, plot the latitude and longitude readings for the volcanoes listed in Figure 1 with a dot. Some may be very close to others.
2. Now use **a second color** to plot the latitude and longitude for the earthquakes listed in Figure 2 using a dot. Some may be very close to other dots or in the same locations.
3. When you have completed locating all of the volcanos and earthquakes, shade a line of best fit in **red** to reveal the Ring of Fire.
4. Answer the Analysis and Conclusion Questions below.

**Analysis and Conclusion**

1. How are earthquakes distributed on the map? Are they scattered evenly over the Pacific Ocean? Are they concentrated in definite zones?
2. How are volcanoes distributed? Are they scattered evenly or concentrated in zones?
3. Why are there spots in the middle of the Pacific Ocean that are not connected.
4. From your data, what can you infer about the relationship between earthquakes and volcanoes?



Figure 1: Readings for volcanoes.

|  |  |  |  |
| --- | --- | --- | --- |
| **Volcano Name** | **Location** | **Latitude** | **Longitude** |
| 1. Ngauruhoe | New Zealand | 38° S | 178° E |
| 2. Lamington | Papua, New Guinea | 5° S | 152° E |
| 3. Rabaul | Bismark Archipelago | 5° S | 152° E |
| 4. Soputan | Swlawesi | 3° S | 120° E  |
| 5. Apo | Philippines | 7° N | 125° E |
| 6. Pinatubo | Philippines | 7° N | 125° E |
| 7. Usu | Japan | 43° N | 143° E |
| 8. Fuji | Japan | 36° N | 138° E |
| 9. Kuril Islands | Russia  | 47° N | 153° E |
| 10. Klyuchevskoi | Russia | 55° N | 160° E |
| 11. Mt. Katamai | USA (Alaska) | 56° N | 162° W |
| 12. Mt. Spurr | USA (Alaska) | 61° N | 144° W |
| 13. Nouarupta | USA (Alaska) | 60° N | 138° W |
| 14. Mt. St. Helens | USA (WA) | 46° N | 122° W |
| 15. Mt. Shasta | USA (CA) | 41° N | 122° W |
| 16. Cerro de la Encantada | Mexico (Baja) | 30° N | 115° W |
| 17. Colima | Mexico | 20° N | 103° W |
| 18. San Cristobal | Nicaragua | 18° N | 87° W |
| 19. Pacaya | Guatemala | 14° N | 92° W |
| 20. Poas | Costa Rica | 10° N | 85° W |
| 21. Cotopoxi | Ecuador | 0° | 78° W |
| 22. El Misti | Peru | 10° S | 77° W |
| 23. Carro Azulfe | Chile | 27° S | 69° W |
| 24. Maipo | Argentina | 34° S | 70° W |
| 25. Antuco | Chile | 38° S | 69° W |
| 26. Mauna Loa | USA (Hawaii) | 19.4795° N | 155.6027° W |
| 27. Kilauea | USA (Hawaii) | 19.4211° N | 155.2868° W |
| 28. Lō’ihi | USA (Hawaii) | 18.54° N | 155.27° W |
| 29. [Hualālai](https://en.wikipedia.org/wiki/Hual%C4%81lai) | USA (Hawaii) | 19.4132° N | 155.5202° W |
| 30. Mauna Kea | USA (Hawaii) | 19.49° N | 155.28° W |

Figure 1: Readings for earthquakes.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Location** | **Date** | **Magnitude** | **Latitude** | **Longitude** |
| 1. Chile | 5/22/1960 | 9.5 | 39° S | 73° W |
| 2. Prince William Sound, Alaska | 3/28/1964 | 9.2 | 61° N | 148° W |
| 3. Sumatra-Andaman Islands | 12/26/2004 | 9.1 | 3° N | 95°E (Do not plot) |
| 4. Honshu, Japan | 3/11/2011 | 9.0 | 38°N | 142°E |
| 5. Kamchatka | 11/4/1952 | 9.0 | 53° N | 160° E |
| 6. Arica, Peru (now Chile) | 8/13/1868 | 9.0 | 18° S | 70° W |
| 7. Cascadia Subduction Zone | 1/26/1700 | 9.0 | 49° N | 125° W |
| 8. Bio-Bio, Chile | 2/27/2010 | 8.8 | 35° S | 72° W |
| 9. Esmeraldas, Ecudaor | 1/31/1906 | 8.8 | 1° N | 80° W |
| 10. Rat Islands, Alaska | 2/4/1965 | 8.7 | 52° N | 178° W |
| 11. Valparaiso, Chile  | 8/8/1730 | 8.7 | 33° S | 72° W |
| 12. Andreanof Islands, Alaska | 3/9/1957 | 8.6 | 51° N | 175° W |
| 13. Sumatra  | 9/12/2007 | 8.5 | 4° S | 101° E |
| 14. Kuril Islands | 10/13/1963 | 8.5 | 46° N | 151° E |
| 15. Banda Sea, Indonesia | 2/1/1938 | 8.5 | 5° S | 131° E |
| 16. Kamchatka | 3/3/1923 | 8.5 | 54° N | 161° E |
| 17. Chile-Argentina Border | 11/11/1922 | 8.5 | 29° S | 71° W |
| 18. Sanriku, Japan | 6/15/1896 | 8.5 | 39° N | 144° E |
| 19. Lima, Peru | 10/20/1687 | 8.5 | 12° S | 77° W |
| 20. Peru | 6/23/2001 | 8.4 | 16° S | 73° W |
| 21. Sanriku, Japan | 3/2/1933 | 8.4 | 39° N | 144° E |
| 22. Kuril Islands | 11/15/2006 | 8.3 | 46° N | 153° E |
| 23. Hokkaido, Japan | 9/25/2003 | 8.3 | 41° N | 143° E |
| 24. Kuril Islands | 11/6/1958 | 8.3 | 45° N | 149° E |
| 25. Shumagin Islands, Alaska | 11/10/1938 | 8.2 | 55° N | 159° W |