MAPPING EARTH'S FEATURES

LEXILE®

differentiated passages

Ring of Fire Questions

1. How was the ring of fire formed?

980L

Name: _____ Date: _____

Ring of Fire

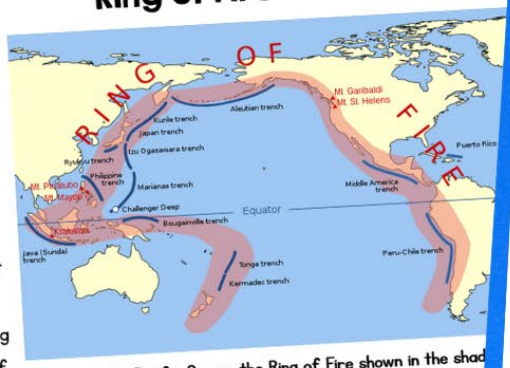
The Ring of Fire is located in the Pacific Ocean and got its name [illegible] many [illegible] on its [illegible] This

790L

Name: _____ Date: _____

Ring of Fire

The Ring of Fire is located in the Pacific Ocean. It got its name from the many volcanoes on its borders. This horseshoe-shaped belt is about 25,000 miles long. It stretches along the western coasts of North and South America. It then heads north toward the Aleutian Islands. The Ring of Fire goes there to the islands of East and Southeast Asia through Japan. Finally, it turns toward New Zealand. Several mountain ranges such as the Cascade Mountains in [illegible] States are part of the Ring of Fire.



Map of the Pacific Ocean, the Ring of Fire shown in the shad

Three-fourths of the w

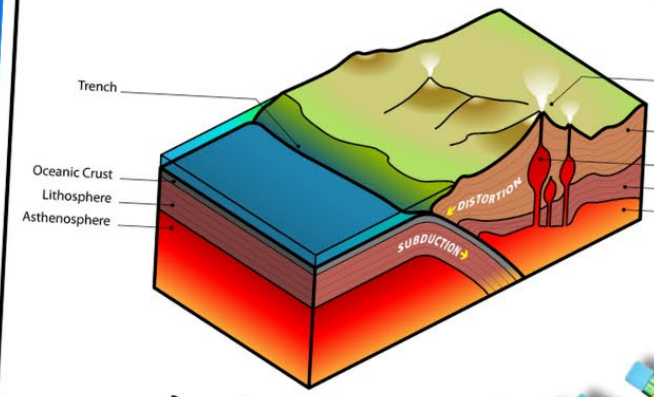
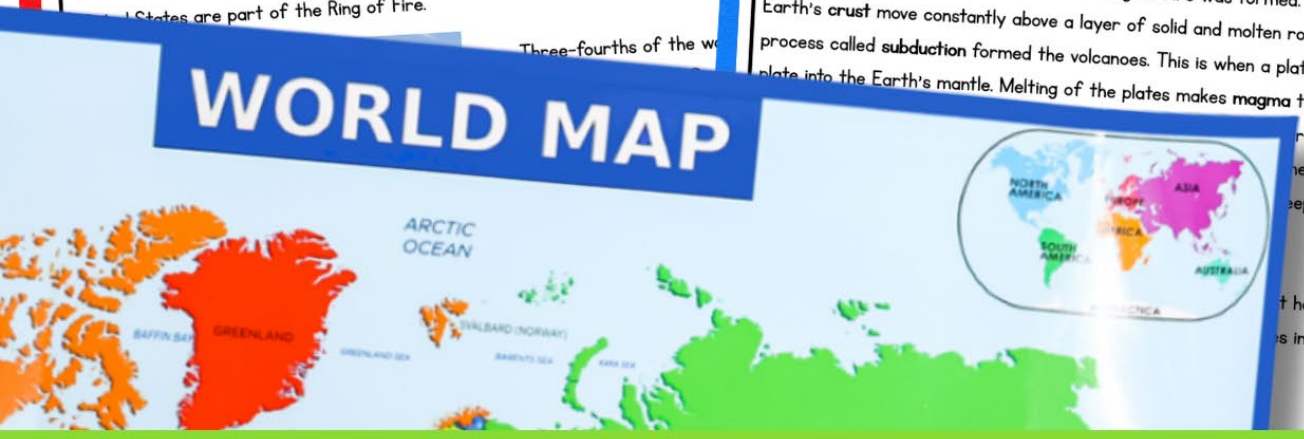


Diagram showing moving plates and the pr[illegible] of

Tectonic plates are the reason the Ring of Fire was formed. Th[illegible] Earth's **crust** move constantly above a layer of solid and molten rock called th[illegible] process called **subduction** formed the volcanoes. This is when a plate is shoved under a[illegible] plate into the Earth's mantle. Melting of the plates makes **magma** that shoots up through the [illegible]raping and bending of these [illegible]here. The Ring of F[illegible] [illegible]eep and loc[illegible]

[illegible]t has r[illegible] [illegible]s in the



MagCORE

4th Grade NGSS 4-ESS2-2

ABOUT LEXILE LEVELS

MagiCore Learning, LLC is a certified Lexile® Partner. These texts are officially measured and approved by Lexile and MetaMetrics® to ensure appropriate rigor and differentiation for students.

The Lexile Framework® for Reading measures are scientific, quantitative text levels. When the Lexile of a text is measured, specific, measurable attributes of the text are considered, including, but not limited to, word frequency, sentence length, and text cohesion. These are difficult attributes for humans to evaluate, so a computer measures them.

Common Core State Standards uses Lexile level bands as one measure of text complexity. Text complexity ranges ensure students are college and career ready by the end of 12th grade. Lexile measures help educators scaffold and differentiate instruction as well as monitor reading growth.

Grade Band	Lexile® Bands Aligned to Common Core Expectations
K-1	N/A
2-3	420L-820L
4-5	740L-1010L
6-8	1185L-1385L

Keep in mind when using any leveled text that many students will need scaffolding and support to reach text at the high end of their grade band. According to Appendix A of the Common Core Standards, "It is important to recognize that scaffolding often is entirely appropriate. The expectation that scaffolding will occur with particularly challenging texts is built into the Standards' grade-by-grade text complexity expectations, for example. The general movement, however, should be toward decreasing scaffolding and increasing independence both within and across the text complexity bands defined in the Standards."

Mapping Earth's Features

4th grade

Table of Contents

Each passage set includes two differentiated passages on a fourth-grade level (one at the beginning of the band, one towards the end) and a question set geared towards comprehension and science mastery. The first question is differentiated to include a fill-in-the-blank diagram (lower complexity) or an open-ended diagram (higher complexity).

How to Use This Resource

This resource was created with the NGSS Science Standards in mind. It includes six differentiated passages aligned to the following standard:

4-ESS2-2 Mapping Earth's Features

Analyze and interpret data from maps to describe patterns of earth's features.

Clarification Statement: Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.

Assessment Boundary: None

Here are some suggestions for using these passages:

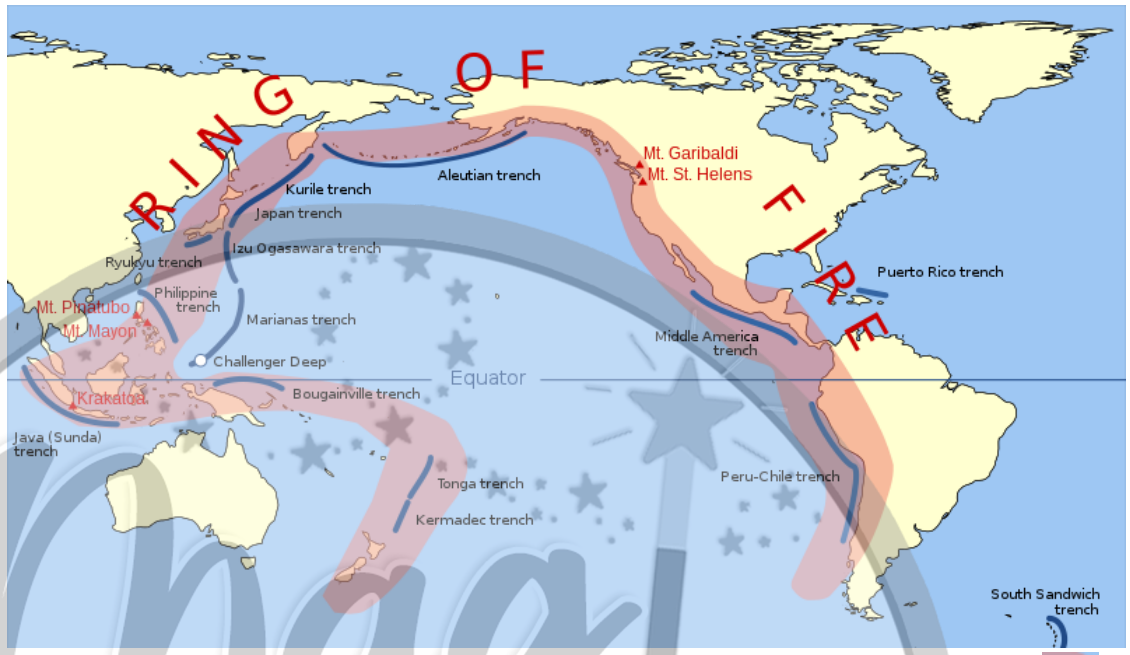
- Use as independent work after you have taught an overview of this standard. Assign the different levels based on the passage students can read and comprehend independently.
- Use as a reading center to reinforce key comprehension and science concepts at the same time!
- Use as a homework or review packet.
- Use as an intervention for students who need to revisit science concepts.

790L

Name: _____ Date: _____

Ring of Fire

The Ring of Fire is located in the Pacific Ocean. It got its name from the many volcanoes on its borders. This horseshoe-shaped belt is about 25,000 miles long. It stretches along the western coasts of North and South America. It then heads north toward the Aleutian Islands. The Ring of Fire goes south from there to the islands of East and Southeast Asia through Japan. Finally, it turns slightly east toward New Zealand. Several mountain ranges, such as the Cascade Mountains in the western United States, are part of the Ring of Fire.



Map of the Pacific Ocean, the Ring of Fire shown in the shaded area.

Mount Saint Helens, a volcano in the Ring of Fire

Three-fourths of the world's active volcanoes are found in the Ring of Fire. It is made up of more than 450 volcanoes. Mount Tambora and Mount Saint Helens are part of the Ring of Fire. They have had major eruptions since the 1800s. Ninety percent of Earth's earthquakes happen here, as well. The Ring of Fire has had several of the largest earthquakes. The Chile earthquake of 1960 and the Japan earthquake of 2011 happened in this area. An undersea earthquake that happened in the Ring of Fire also caused the Indian Ocean tsunami of 2004. This natural disaster was responsible for much destruction.

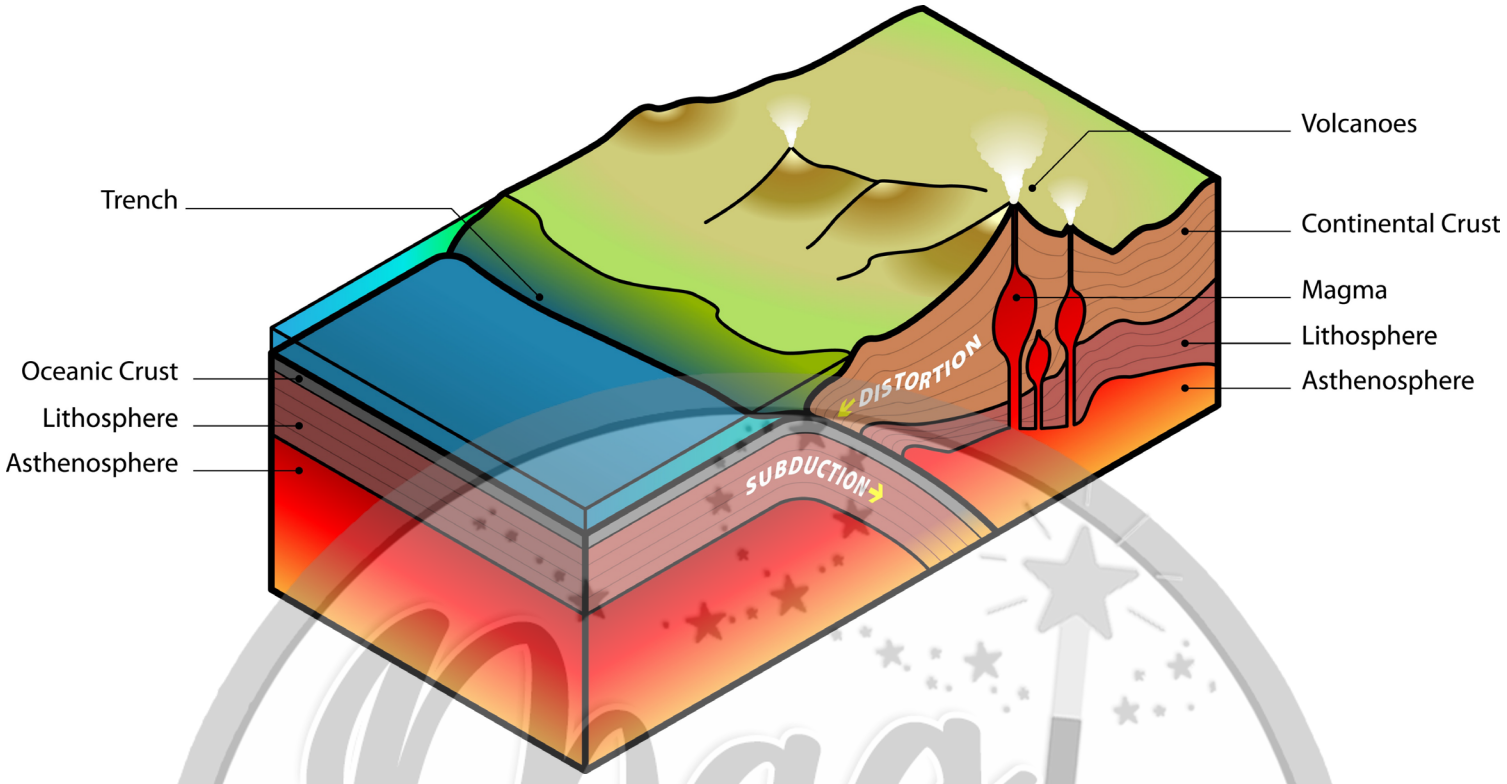


Diagram showing moving plates and the process of subduction

Tectonic plates are the reason the Ring of Fire was formed. These large slabs of the Earth's **crust** move constantly above a layer of solid and molten rock called the **mantle**. A process called **subduction** formed the volcanoes. This is when a plate is shoved under another plate into the Earth's mantle. Melting of the plates makes **magma** that shoots up through the overlapping plates. This creates an erupting volcano. It is at the scraping and bending of these plates that earthquakes occur as well. Ocean **trenches** also form here. The Ring of Fire is home to the deepest one. The Mariana Trench is almost 7 miles deep and located east of Guam.

The Ring of Fire is very active **geologically**. It's an area that has mountains, volcanoes, earthquakes, and ocean trenches. The movement of Earth's plates in the Ring of Fire keeps scientists busy studying what might happen next there.

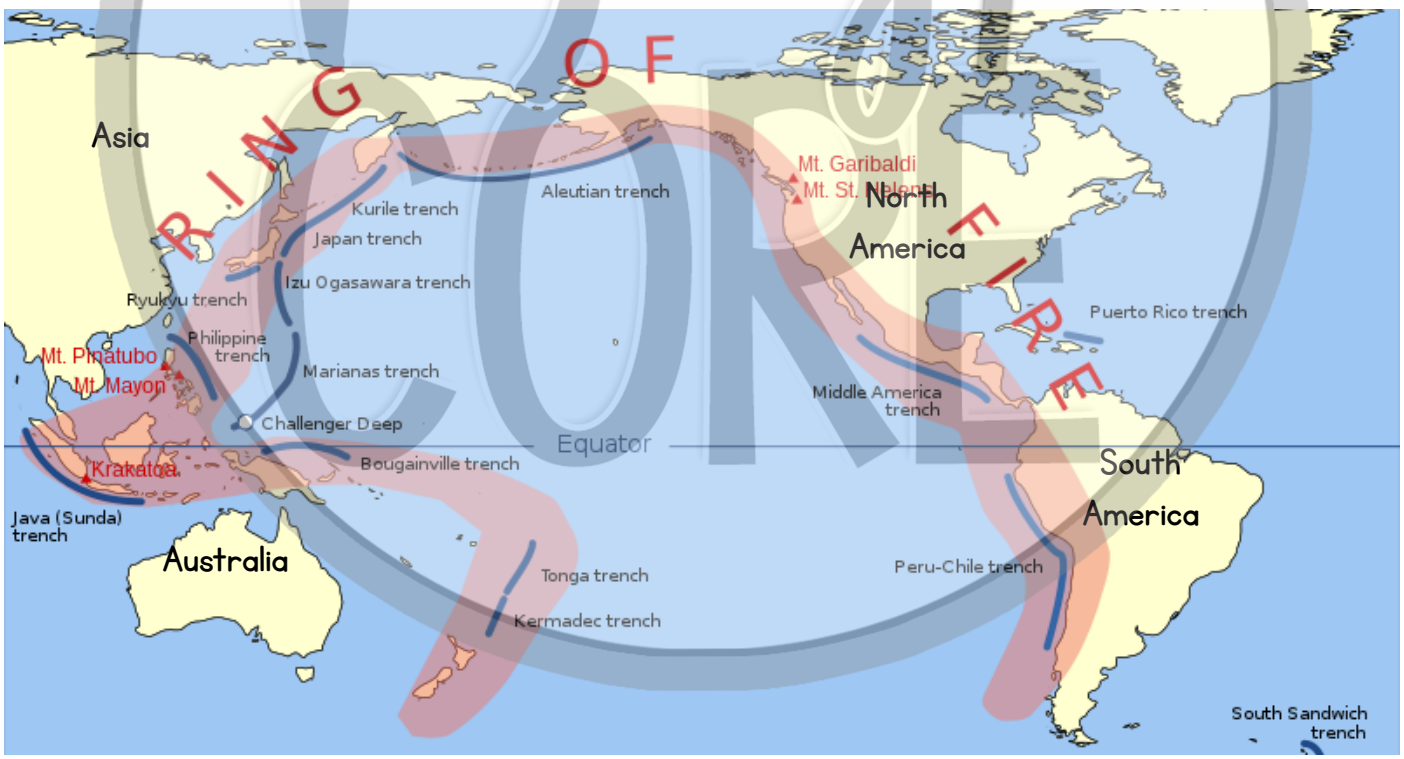
Ring of Fire Questions

1. How was the ring of fire formed?

---

2. What causes a trench?

Use the map to answer the following questions:



3. Which continent is Mt. St. Helens located in? _____

4. Which continent is home to the Peru-Chile trench? _____

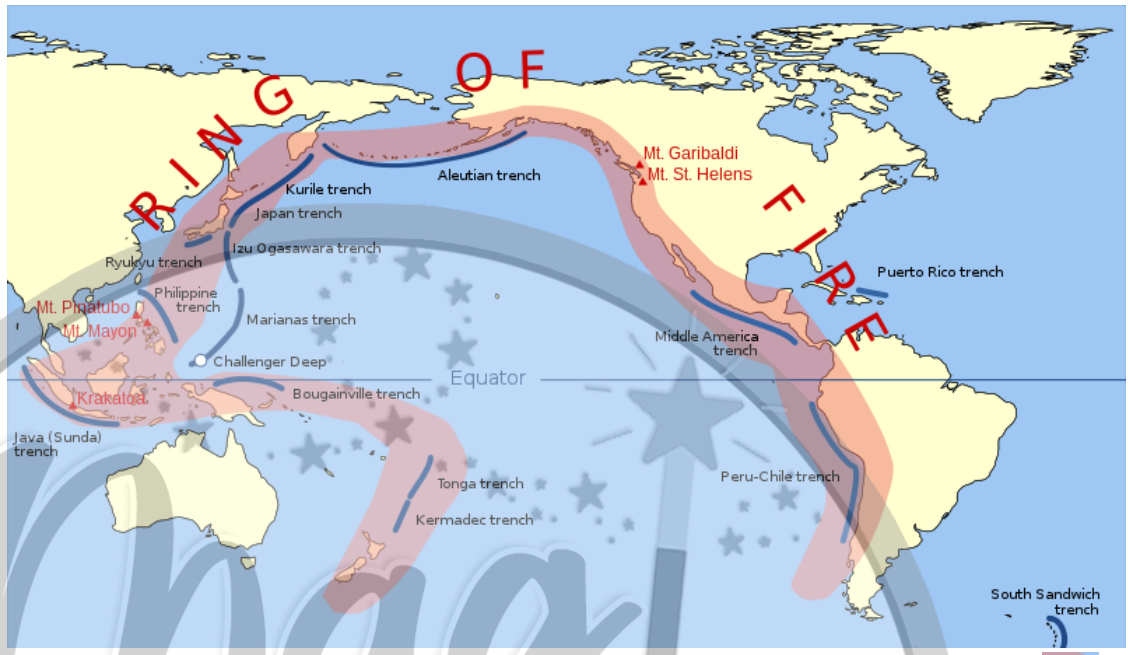
5. Which continent has the most trenches? _____

980L

Name: _____ Date: _____

Ring of Fire

The Ring of Fire is located in the Pacific Ocean and got its name from the many volcanoes on its borders. This horseshoe-shaped belt is about 25,000 miles long. It stretches along the western coasts of North and South America and heads north toward the Aleutian Islands. The Ring of Fire arcs south from there to the islands of East and Southeast Asia through Japan. Finally, it shifts slightly east toward New Zealand. Several mountain ranges, such as the Cascade Mountains in the western United States and the Andes Mountains in western South America, are part of the Ring of Fire.



Map of the Pacific Ocean, the Ring of Fire shown in the shaded area.

Mount Saint Helens, a volcano in the Ring of Fire

Three-fourths of the world's active volcanoes are found in the Ring of Fire. It is made up of more than 450 volcanoes, and eruptions have occurred here. Mount Tambora, Krakatoa, and Mount Saint Helens are all part of the Ring of Fire and have had major eruptions since the 1800s. Ninety percent of Earth's earthquakes happen here as well. The Ring of Fire has been the host of several of the largest earthquakes. The Chile earthquake of 1960, the Alaska earthquake of 1964, and the Japan earthquake of 2011 all happened in this area. An undersea earthquake that happened in the Ring of Fire also caused the Indian Ocean tsunami of 2004. This natural disaster was responsible for much destruction and loss.

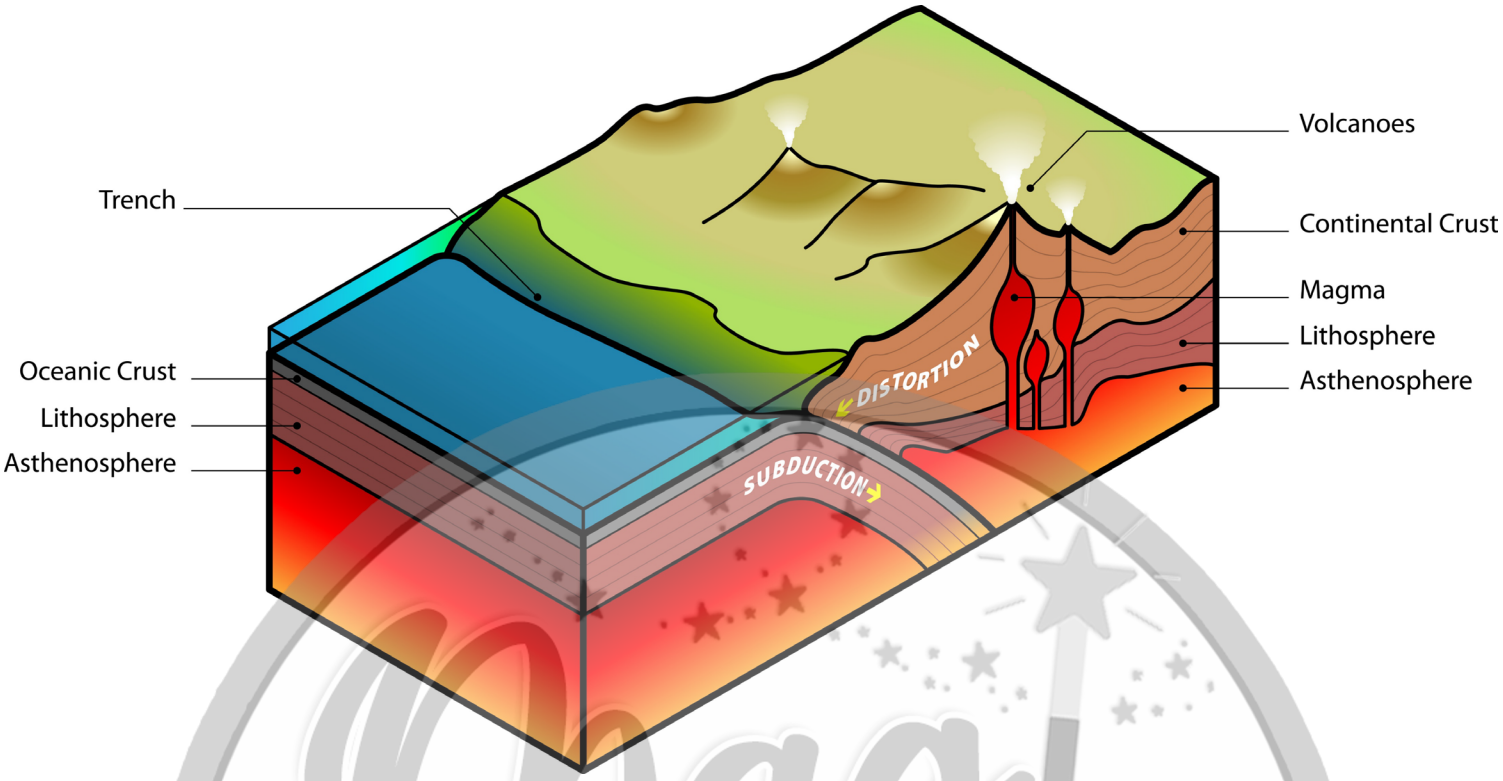


Diagram showing moving plates and the process of subduction

Tectonic plates are the reason the Ring of Fire was formed. These large slabs of the Earth's **crust** move constantly above a layer of solid and molten rock called the **mantle**. A process called **subduction** formed the volcanoes along the Ring of Fire. This is when an ocean plate is shoved under a continental plate into the Earth's mantle. Melting of the plates produces **magma** that shoots up through the overlapping plates. This makes an erupting volcano. It is at the scraping and bending of these plates that earthquakes occur as well. Plate movement also produces ocean **trenches**. The Ring of Fire is home to the deepest one called the Mariana Trench, almost 7 miles deep and located east of Guam.

The Ring of Fire is very active **geologically**. It's an area that has mountains, volcanoes, earthquakes, and ocean trenches. The movement of Earth's plates in the Ring of Fire keeps scientists busy studying what might happen next there.

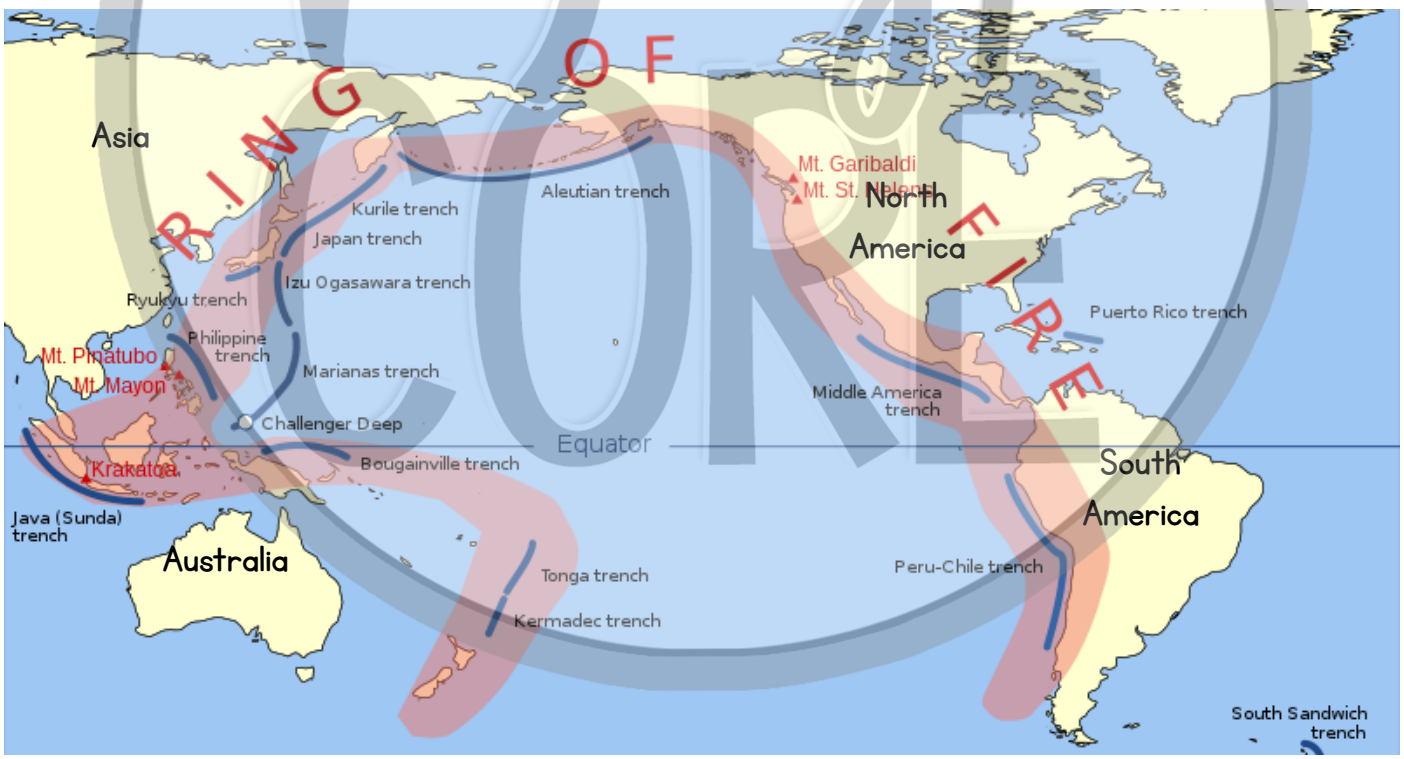
Ring of Fire Questions

1. How was the ring of fire formed?

---

2. What causes a trench?

Use the map to answer the following questions:



3. Which continent is Mt. St. Helens located in? _____

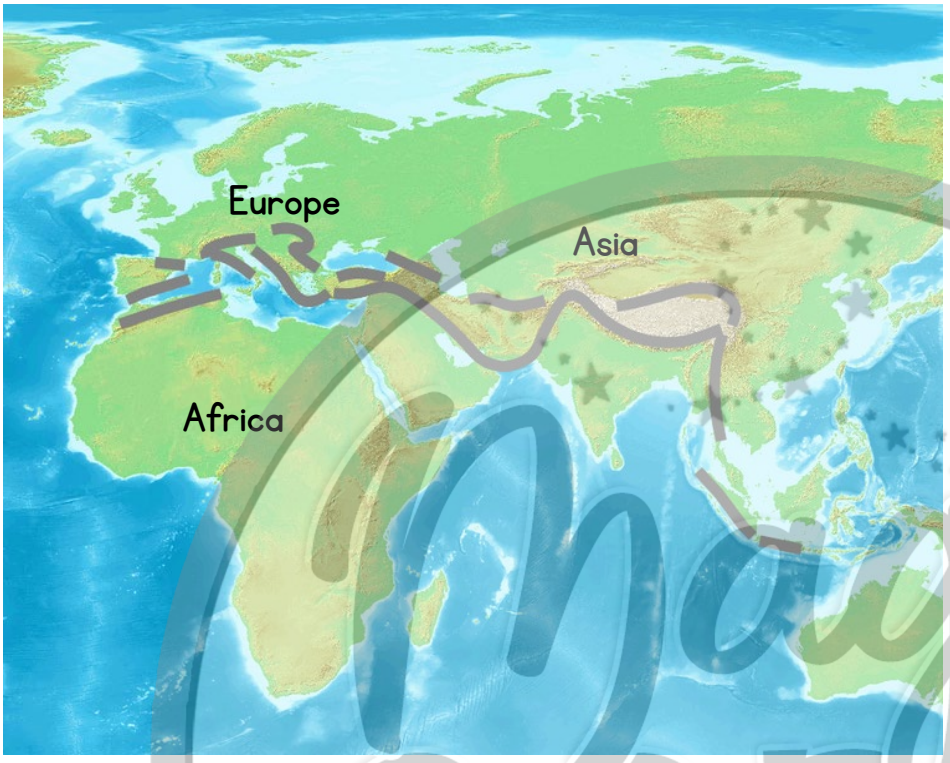
4. Which continent is home to the Peru-Chile trench? _____

5. Which continent has the most trenches? _____

780L

Name: _____ Date: _____

The Alpide Belt



Map showing an outline of the Alpide Belt.

Major earthquakes happen mainly in **belts** along the edges of **tectonic plates**. The most well-known belt is the Ring of Fire. A second belt called the Alpide Belt is also an active area for earthquakes. This belt stretches from the Azores through the Mediterranean region and heads east to Asia. It joins up with the Ring of Fire in the East Indies. The Alpide Belt is responsible for 15% of earthquakes around the world.

The Alpide Belt is an **orogenic belt**. Orogenic belts are created by the motion of tectonic plates. The rock layers in the ground fold upwards when two plates push against each other. This movement causes the formation of mountains. The Alpide Belt is home to many mountain ranges. Two ranges found here are the Himalayas and the Alps.

The Himalayan Mountain Range is in Southern Asia. It runs for 1,500 miles. This mountain range is one of the youngest ranges on the planet. It was formed between 40-50 million years ago. It has some of the highest peaks in the world. Mount Everest is the highest point on Earth at 29,032 feet. The Himalayas are made of **metamorphic rock,** such as granite, and **sedimentary rock,** such as limestone. Earthquakes happen here because of the shifting of the Indian and Asian tectonic plates. These mountains are also continuing to grow. The Indian and Asian plates move about an inch per year. This makes the mountains reach higher into the sky.

Mont Blanc in the Alps.

The Alps are the biggest range in Europe. They are 750 miles long. These mountains are about 65 million years old. The Alps run through 8 countries including Italy, France, and Switzerland. This mountain range was created by the motion of the African and Eurasian tectonic plates. The highest peak is Mont Blanc at 15,774 feet tall. The mountains are mostly limestone, slate, and granite. This area is also famous for its clear lakes such as Lake Geneva.

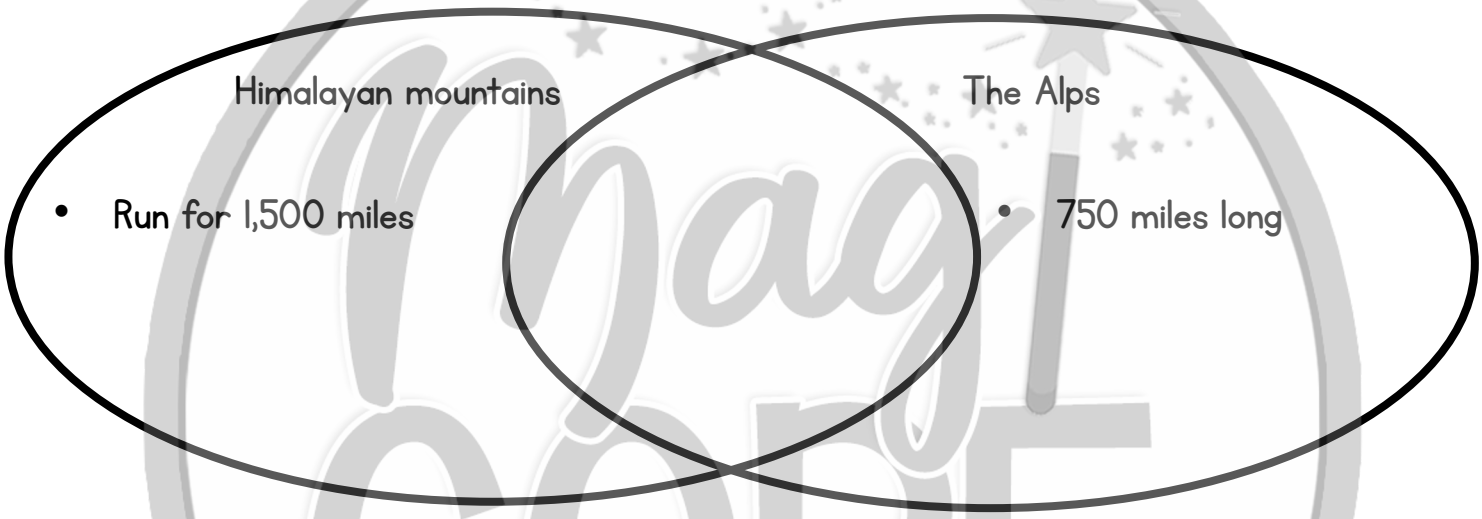
The Alpide Belt has **seismic** activity due to shifting tectonic plates. This area is a good place to study the interesting **geology** and **geography** found on planet Earth.

The Alpide Belt Questions

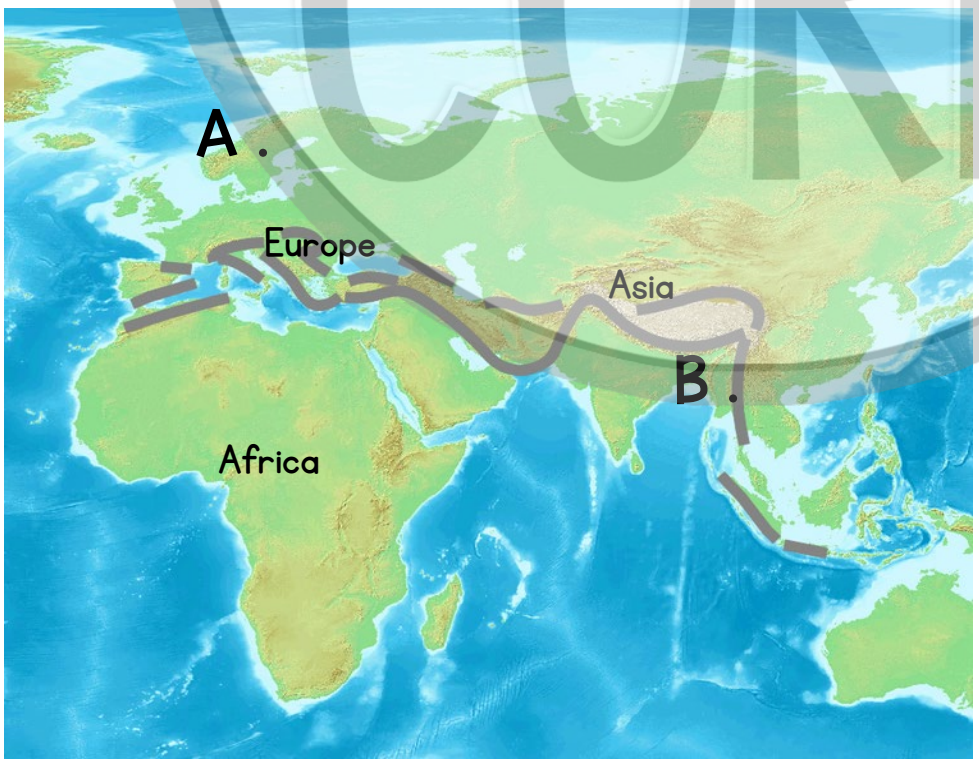
1. Describe how mountains were formed in the Alpide belt.

---

2. Compare and contrast the Himalayan mountains with the Alps.



Use the map to answer the following questions:



3. Which 3 continents is the Alpide belt part of?

---

4. Where would you be likely to feel an earthquake? At point A or at point B?

950L

Name: _____ Date: _____

The Alpide Belt

Major earthquakes happen mainly in **belts** along the edges of **tectonic plates**. The most well-known belt is the Ring of Fire, but a second belt called the Alpide Belt is also an active area for earthquakes. This belt stretches from the Azores through the Mediterranean region and heads east to Asia where it joins up with the Ring of Fire in the East Indies. The Alpide Belt is responsible for 15% of earthquakes around the world.

Map showing an outline of the Alpide Belt.

The Alpide Belt is an **orogenic belt**. Orogenic belts are created by the motion of tectonic plates. When two plates push against each other, the rock layers in the ground fold upwards. This causes the formation of mountains. The Alpide Belt is home to many mountain ranges including the Himalayas and the Alps.

The Himalayan Mountain Range is in Southern Asia and runs for 1,500 miles. This mountain range is one of the youngest ranges on the planet, formed between 40-50 million years ago. It has some of the highest peaks in the world. Mount Everest is the highest point on Earth at 29,032 feet. The Himalayas are made of **metamorphic rock** such as granite and **sedimentary rock** such as limestone. Earthquakes happen here because of the shifting and colliding of the Indian and Asian tectonic plates. These mountains are also continuing to grow. The Indian and Asian plates move about an inch per year, making the mountains reach higher into the sky.

Mont Blanc in the Alps.

The Alps are the biggest range in Europe and are 750 miles long. They are about 65 million years old. The Alps run through 8 countries including Italy, France, and Switzerland. This mountain range was created by the motion of the African and Eurasian tectonic plates. The highest peak is Mont Blanc at 15,774 feet tall. The mountains are mostly limestone, slate, and granite. In addition to the mountains, this area is famous for its clear lakes such as Lake Geneva.

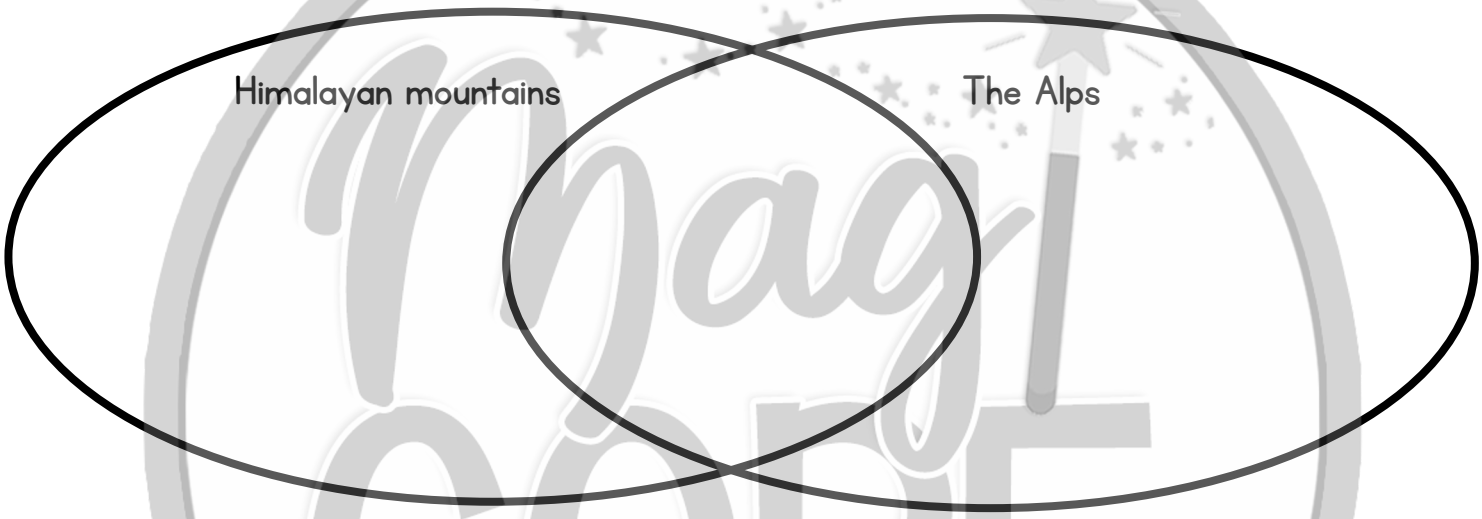
The Alpide Belt has **seismic** activity due to shifting tectonic plates. This area is a good place to study the interesting **geology** and **geography** found on planet Earth.

The Alpide Belt Questions

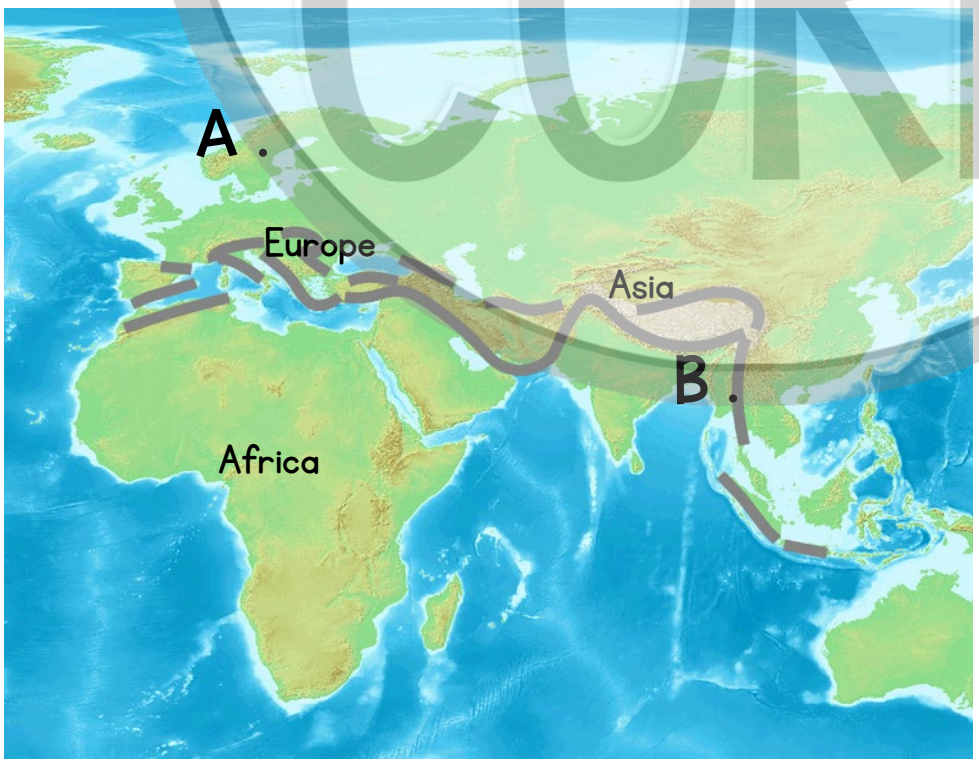
1. Describe how mountains were formed in the Alpide belt.

---

2. Compare and contrast the Himalayan mountains with the Alps.



Use the map to answer the following questions:



3. Which 3 continents is the Alpide belt part of?

---

4. Where would you be likely to feel an earthquake? At point A or at point B?

780L

Name: _____ Date: _____

Ojos del Salado

The world's highest active volcano is Nevados Ojos del Salado. It is over 22,600 feet tall. This volcano is part of the Andes Mountain Range. It is a **stratovolcano** located on the border of Chile and Argentina in South America. Stratovolcanoes are cone-shaped with steep sides. Sticky lava that doesn't flow easily builds up to form this type of volcano. Ojos del Salado has two peaks of about the same height. One peak is in Chile, and one is in Argentina.

View of Ojos del Salado

Ojos del Salado last erupted 1,000–1,500 years ago. That explosive eruption produced **pyroclastic flows**. A pyroclastic flow is an avalanche of hot ash, pumice, and rock fragments. It flows down the sides of a mountain. The flow can travel at speeds of up to 150 miles per hour. The temperature can reach 1,500°F inside the flow of hot gases and rock. A pyroclastic flow can destroy everything in its path.

The name *Ojos del Salado* means "eyes of salt." This is a good name for the volcano because it has large, eye-shaped salt **lagoons** on its slopes. It's also home to the highest known lake in the world. The lake is located on the eastern side of the volcano in Argentina. It is 20,965 feet high and just over 300 feet across. The climate on this mountain is dry because it is near the Atacama Desert west of the Andes Mountain Range. Snow does fall on Ojos del Salado in the winter. It melts off the peaks by the summer.

Gas escaping through fumaroles

This South American volcano hasn't erupted again. Volcanic gas does escape today into the atmosphere through **fumaroles** on Ojos del Salado. Fumaroles are vents or openings at the surface of a volcano. Gases and vapors are released through them. They are a sign that a volcano is active and that heat is present inside it. Fumaroles may hiss or growl as the gases such as water vapor and hydrogen sulfide pass through them. A report stated that Ojos del Salado threw ash in 1993. That report remains unconfirmed. The fumaroles hint that an eruption is possible.

Stratovolcanoes are powerful landforms found on Earth. **Volcanologists** keep an eye on such volcanoes, hoping to learn more about them and one day be able to predict dangerous eruptions.

Ojos del Salado Questions

1. What is a stratovolcano and how are they formed?

---

2. What is a pyroclastic flow?

---

3. Ojos del Salado hasn't erupted in 1,000 – 1,500 years. Explain why scientists believe it could still erupt at any time.

---

4. Fill in the cause and effect below.

Cause	→	Effect
Sticky lava doesn't flow easily.		

5. Look at the map to the right. Based on the location of the Andes mountain range, would you be more likely to find another volcano south or east of Ojos del Salado? Why?

1010L

Name: _____ Date: _____

Ojos del Salado

The world's highest active volcano at over 22,600 feet is Nevados Ojos del Salado in the Andes Mountain Range. It is a **stratovolcano** located on the border of Chile and Argentina in South America. Stratovolcanoes are cone-shaped with steep sides. Sticky lava that doesn't flow easily builds up to form this type of volcano. Ojos del Salado has two peaks of about the same height. One peak is in Chile, and one is in Argentina.

View of Ojos del Salado

Ojos del Salado last erupted 1,000–1,500 years ago. That explosive eruption produced **pyroclastic flows**. A pyroclastic flow is an avalanche of hot ash, pumice, and rock fragments that flows down the sides of a mountain at speeds of up to 150 miles per hour. Inside the flow of hot gases and rock, the temperature can reach 1,500°F. A pyroclastic flow can destroy everything in its path.

The name *Ojos del Salado* means "eyes of salt." This name is appropriate for the volcano because it has large, eye-shaped salt **lagoons** on its slopes. It's also home to the highest known lake in the world. At 20,965 feet high and just over 300 feet across, the lake is located on the eastern side of the volcano in Argentina. The climate on this mountain is dry because it is near the Atacama Desert west of the Andes Mountain Range. Snow does fall on Ojos del Salado in the winter, but it melts off the peaks by the summer.

Gas escaping through fumaroles

This South American volcano hasn't erupted again, but volcanic gas does escape today into the atmosphere through **fumaroles** on Ojos del Salado. Fumaroles are vents or openings at the surface of a volcano. Gases and vapors are released through them. They are a sign that a volcano is active and that heat is present inside it. Fumaroles may hiss or growl as the gases such as water vapor, carbon dioxide, and hydrogen sulfide pass through them. A report stated that Ojos del Salado emitted ash in 1993, but that report remains unconfirmed. The fumaroles indicate that an eruption is possible.

Stratovolcanoes are powerful landforms found on Earth. **Volcanologists** keep an eye on such volcanoes, hoping to learn more about them and one day be able to predict dangerous eruptions.

Ojos del Salado Questions

1. What is a stratovolcano and how are they formed?

---

2. What is a pyroclastic flow?

---

3. Ojos del Salado hasn't erupted in 1,000 – 1,500 years. Explain why scientists believe it could still erupt at any time.

---

4. Fill in the cause and effect below.

Cause	→	Effect
Sticky lava doesn't flow easily.		

5. Look at the map to the right. Based on the location of the Andes mountain range, would you be more likely to find another volcano south or east of Ojos del Salado? Why?

Terms of Use

How Can I Use This Resource?

Thank you for trusting MagiCore. Our mission is to create resources that support teachers and promote student success. Please note that this resource is licensed for use by a single teacher in a classroom setting. If you need to use this resource with more than one teacher and/or across multiple classrooms, additional licenses are available at a discount. You can purchase additional licenses by visiting your TPT "Purchases" page and then selecting "Download Additional Licenses" or by contacting me at julie@magicorelearning.com.

Good to Go

- Use this resource personally or with your own children.
- Use this resource in your own classroom with your students.
- Provide this resource to your students to use at your instruction.
- Print and/or copy for use in your own classroom.
- Provide printed pages to a substitute teacher with the sole purpose of instructing your students.
- Share with your students via a secure document portal or electronic learning platform that requires individual user verification and limits access to only the students in your own classroom (e.g. Google Classroom).
- Review this resource with others with the sole purpose of recommending it to others for purchase, provided you share one of the links below:

https://magicorelearning.com/

https://www.teacherspayteachers.com/Store/Magicore

Not O.K.

- Share with others to use personally.
- Share with others to use in another classroom.
- Print or copy any page(s) and distribute them to other teachers or other classrooms.
- Publish or host online in a manner where any of the material is accessible to anyone who is not a student in your own classroom., including but not limited to personal, classroom, or district websites that are accessible to the general public.
- Use this resource commercially (e.g. Outschool).
- Publish, sell, or otherwise distribute this product to anyone in manner inconsistent with these terms of use.

Let's Connect!

www.magicorelearning.com

https://www.teacherspayteachers.com/Store/magicore

https://www.facebook.com/MagiCoreLearning/

https://www.instagram.com/magicorelearning/

https://www.pinterest.com/cckingdom/pins/

Julie@magicorelearning.com

Looking for more?

Membership Opportunity!

If you love these resources and want access to more, check out my membership opportunity with the Core Kingdom Club.

[Join my MagiCore Club waitlist!]

MagiCore Club opens its membership doors twice a year to offer teachers all the resources you love, with a membership discount. You can also find support through my custom learning plan.

Find out more https://magicorelearning.com/membership

CREDITS

InSapphoWeTrust from Los Angeles, California, USA, CC BY-SA 2.0 <https://creativecommons.org/licenses/by-sa/2.0>, via Wikimedia Commons

Dmitry A. Mottl, CC BY-SA 4.0 <https://creativecommons.org/licenses/by-sa/4.0>, via Wikimedia Commons

sergejf, CC BY-SA 2.0 <https://creativecommons.org/licenses/by-sa/2.0>, via Wikimedia Commons

Photograph by Mike Peel (www.mikepeel.net)., CC BY-SA 4.0 <https://creativecommons.org/licenses/by-sa/4.0>, via Wikimedia Commons

AndrewKPepper, CC BY-SA 4.0 <https://creativecommons.org/licenses/by-sa/4.0>, via Wikimedia Commons

mark byzewski, CC BY 2.0 <https://creativecommons.org/licenses/by/2.0>, via Wikimedia Commons