

Ring of Fire Discussion

- The following slides address question 2 on handout 22.
- We will explore the 5 lines of evidence.
- We will explore the evidence in each line.
- After each line of evidence is a question that leads to the next line of evidence.

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- **BIG QUESTION:**
 - How did the ring of fire form?

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- **What are the lines of evidence used to find the answer?**
 - Explosive Eruptions
 - Carbon-12
 - Megathrust Earthquakes
 - Subduction Trenches
 - Mid-Ocean Ridges

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- **How does each line of evidence help answer the BIG question?**

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- **Line 1: Dangerous Eruptions**
 - Blocky lava flows is evidence of viscous magma which traps gasses inside volcanoes.
 - This provides evidence of silica in the magma.
 - Hornblende crystals reveals water deep underground which encourages the formation of magma that powers the volcanoes.
- **New question: where did the water come from?**

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- **Line 2: Carbon-12**
 - Carbon 12 samples indicates ocean sediments (including the remains of living things) are getting deep into the earth.
 - Mixed seafloor rocks 20 miles inland are evidence the seafloor is moving.
- **New question: How did the remains of oceanic organisms get near the volcano?**

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- **Line 3: Megathrust Earthquakes**
 - Raised shoreline: evidence of the megathrust earthquakes that accompany the ring of fire
 - Seismic data shows the subduction occurring beneath the ring of fire.
- **New question: What other evidence supports subduction near the volcanoes?**

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- **Line 4: Trenches**
 - Subduction trenches reveal the shape of the plate.
 - GPS Data reveals the forces of the plates against each other, causing subduction to occur. This is evidence of convection.
- **New question: So, plate is being destroyed; where is new plate being created?**

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- **Line 5: Mid-ocean ridges**
 - Black smokers reveal where new sea-floor is created.