

Island Arc Subduction

Review:

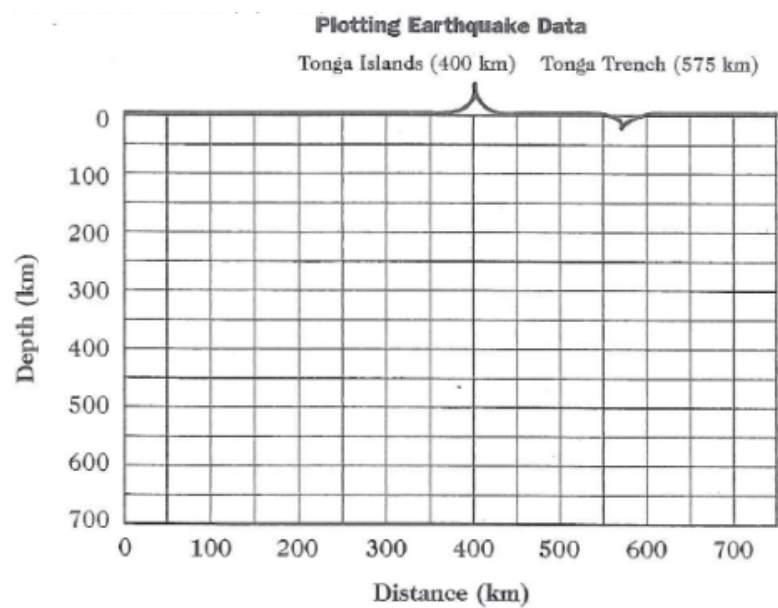
1. What is the focus of an earthquake?
Where the earthquake begins inside the earth.
2. Why might two oceanic lithosphere plate edges be of different density?
One might be older, colder and therefore more dense.
3. How does the density of a plate's edge influence its behavior?
The more dense plate is more likely to sink when two plates are forced together at a convergent boundary.

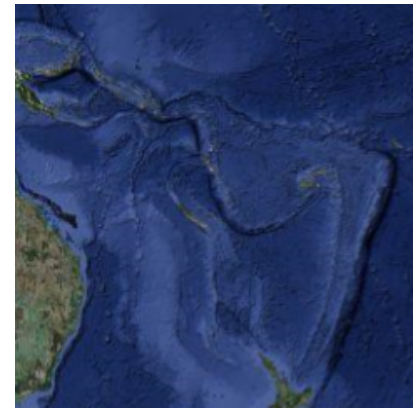
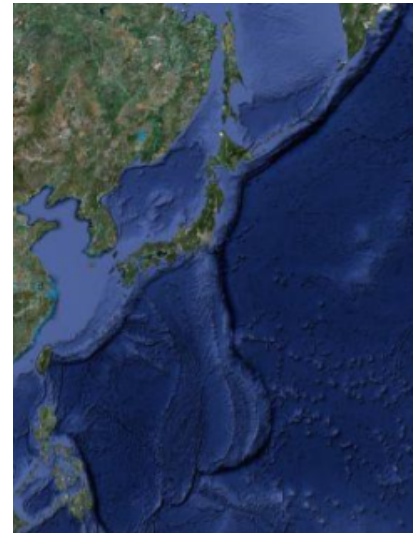
Procedure 1:

Here you will see how plotting foci (Foci is the plural of focus, pronounced with a soft c.) of earthquakes helps us understand how the lithospheric plates are moving. Plot this data on the graph. Make sure you use colored pencils and match the colors in the data table. (4 points)

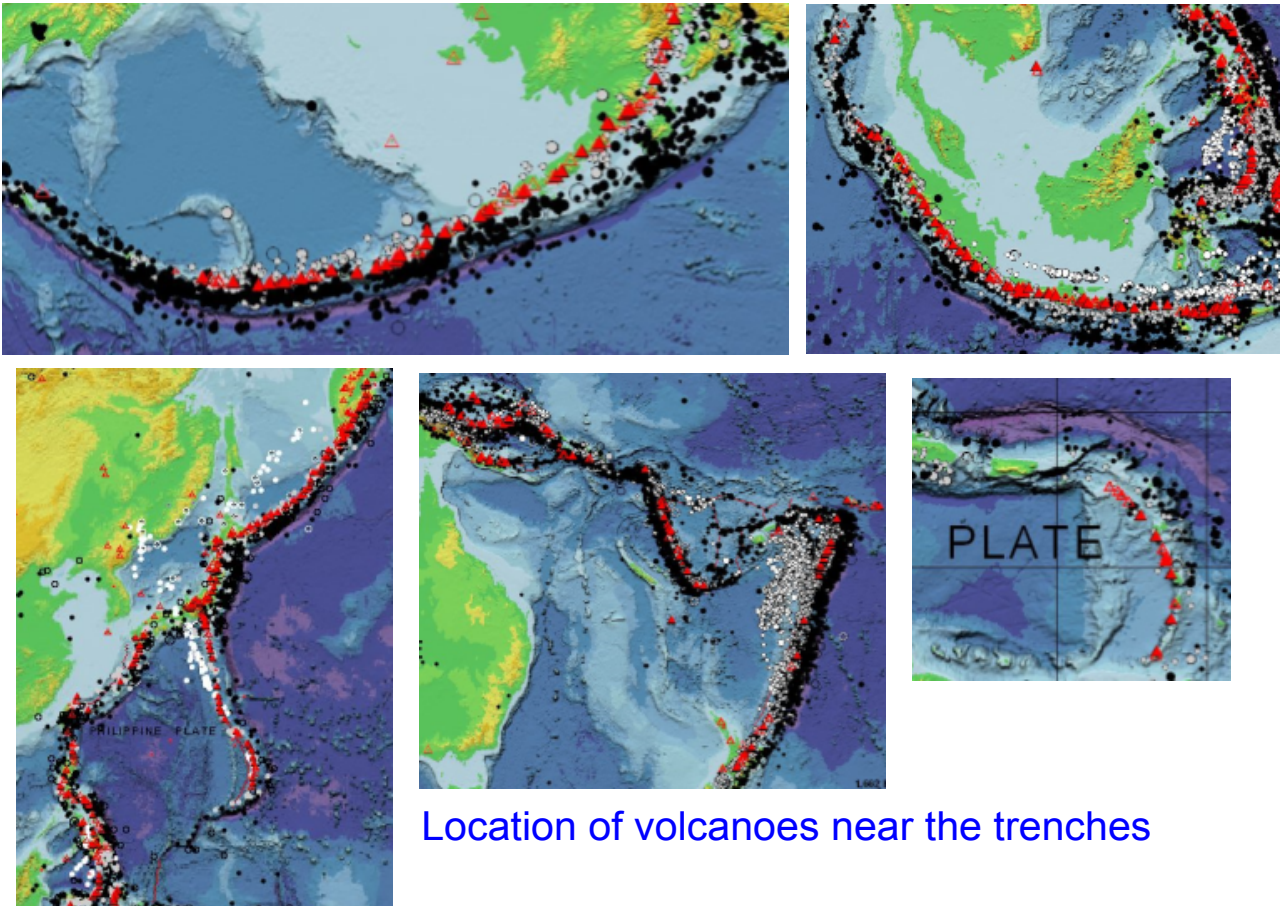
| Earthquake focus* | Distance from Mainland(km) | Depth (km) |
|-------------------|----------------------------|------------|
| Red | 450 | 25 |
| Red | 520 | 50 |
| Blue | 50 | 650 |
| Blue | 200 | 500 |
| Green | 320 | 300 |
| Red | 450 | 90 |
| Green | 450 | 200 |
| Red | 610 | 20 |
| Red | 575 | 80 |
| Green | 375 | 250 |
| Blue | 100 | 575 |
| Red | 550 | 40 |
| Green | 425 | 275 |
| Blue | 250 | 425 |
| Green | 500 | 125 |
| Green | 375 | 325 |
| Red | 475 | 70 |
| Green | 310 | 350 |
| Green | 525 | 175 |

*Red=shallow-focus, Green=medium-focus, Blue=deep focus-earthquakes

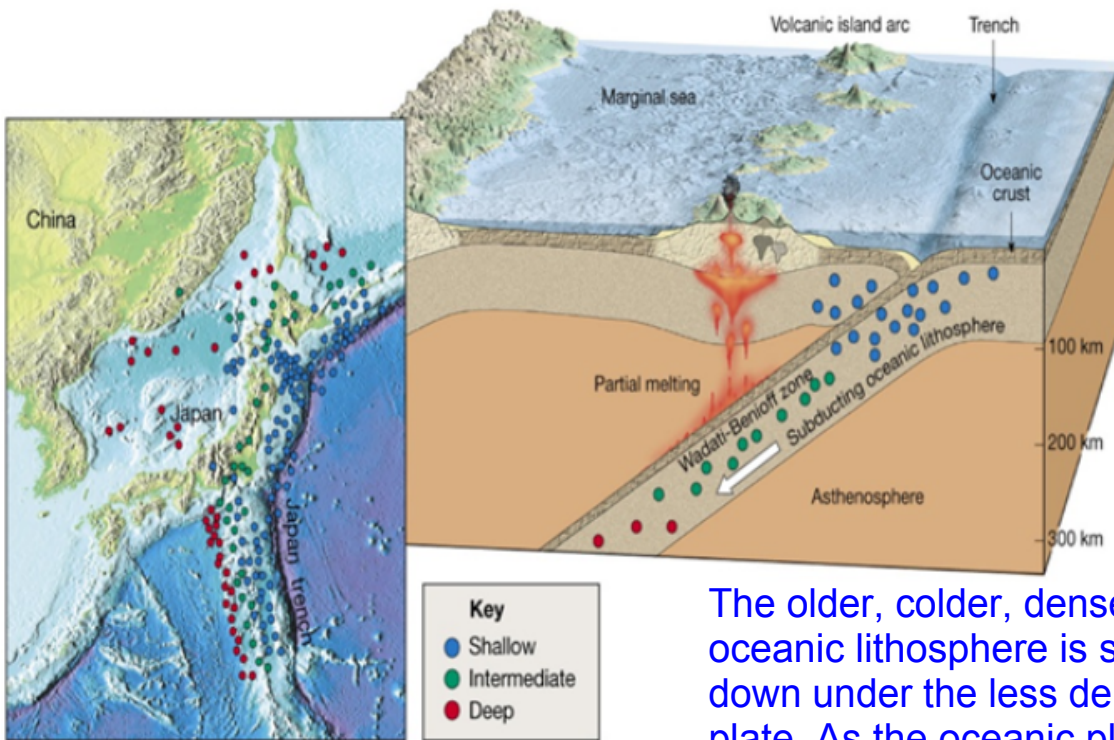




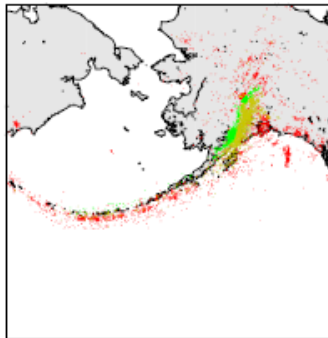
Trenches with islands in arcs



Location of volcanoes near the trenches



The older, colder, denser oceanic lithosphere is sinking down under the less dense plate. As the oceanic plate sinks into the asthenosphere it becomes hotter and part of it melts. The melted material rises as magma and forms volcanic islands.



Earthquakes

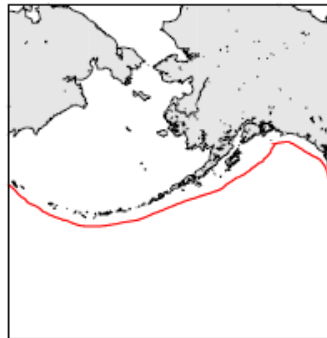
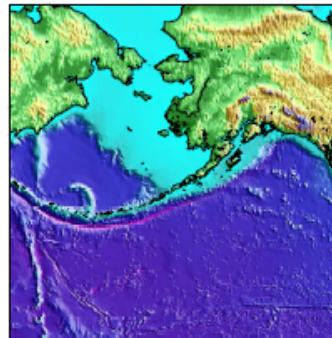
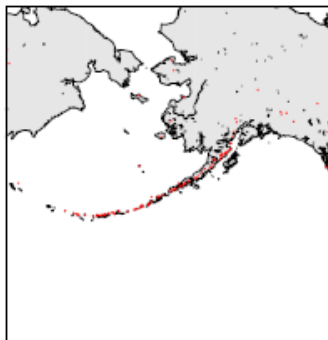


Plate Boundaries

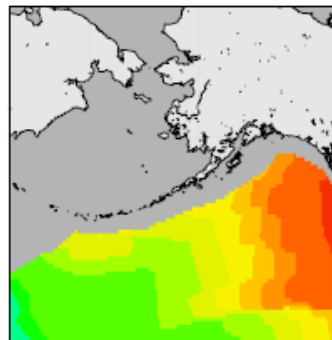


Topography



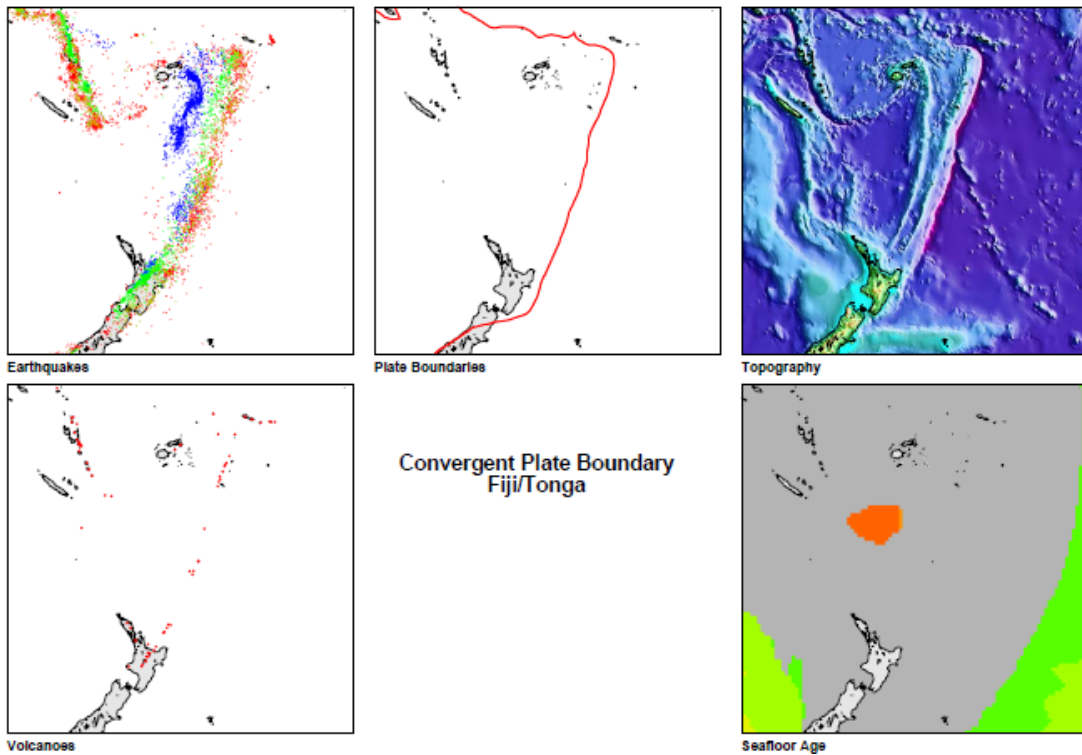
Volcanoes

Convergent Plate Boundary
Aleutian Arc

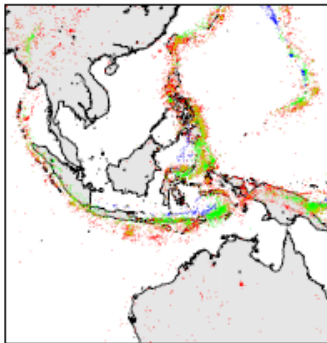


Seafloor Age

Location of trenches, volcanoes and the depth of the earthquake foci.



More examples. This one shows the depth of the foci very clearly.



Earthquakes

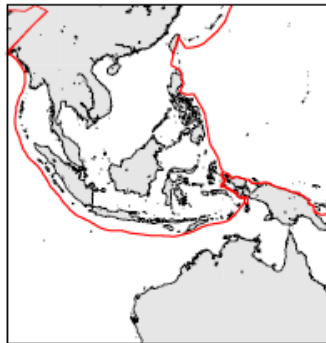
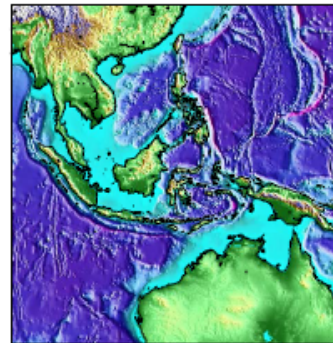
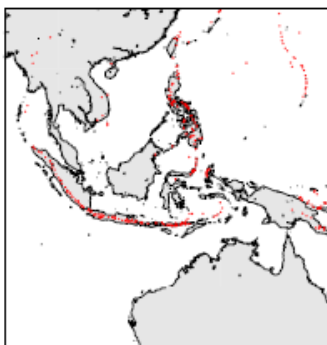


Plate Boundaries

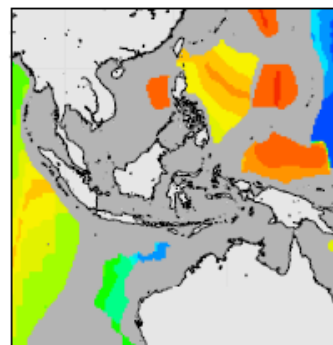


Topography



Volcanoes

**Convergent Plate Boundary
Southeast Asia**



Seafloor Age

An area with lots of complicated island arc subduction boundaries.



Indonesian volcanic island

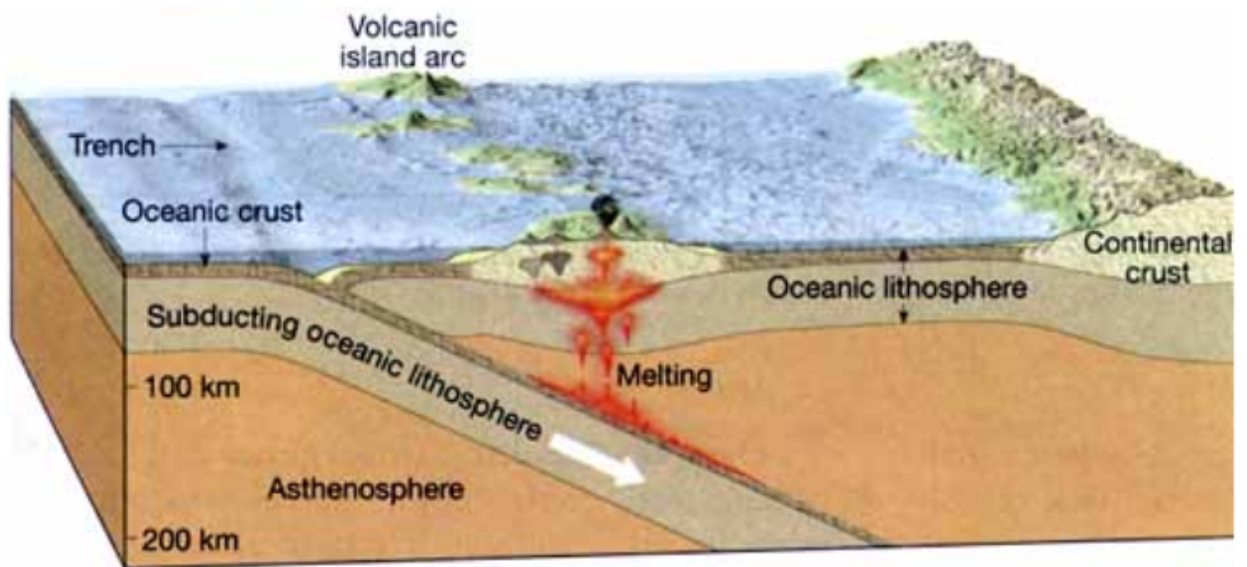


A couple of Aleutian Islands from the Space Shuttle with volcanoes topped with snow



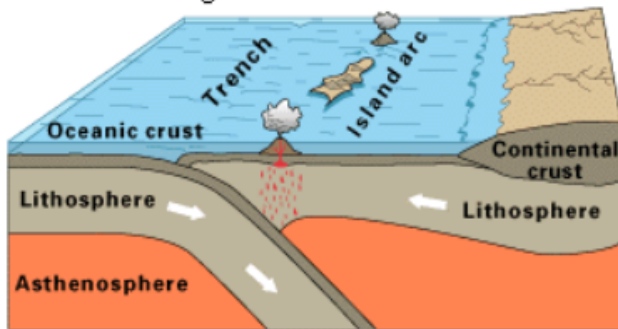
Volcanic islands produced by subduction.





Procedure 2:

1. Look at the photos on the two pages. Make three observations about the evidence for island arc subduction happening in these locations. (3 points)
2. Write a paragraph that describes in detail what is happening with island arc subduction. Use this diagram as well as the other ones in color on the separate paper for ideas. (5 points)



Oceanic-oceanic convergence

Extras

