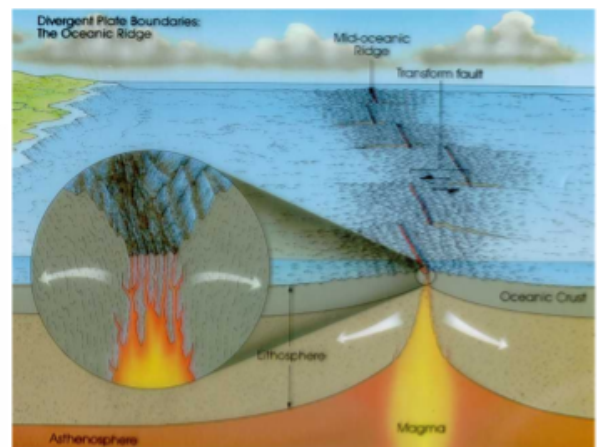
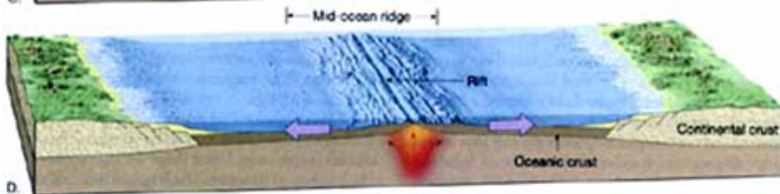
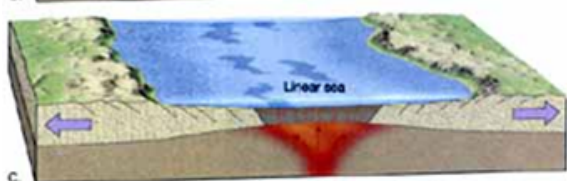
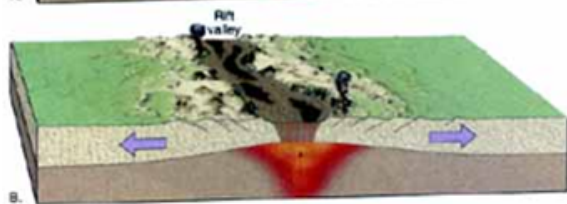
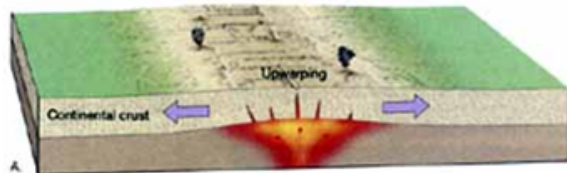


## Sea floor Spreading - Divergent boundaries with oceanic lithosphere

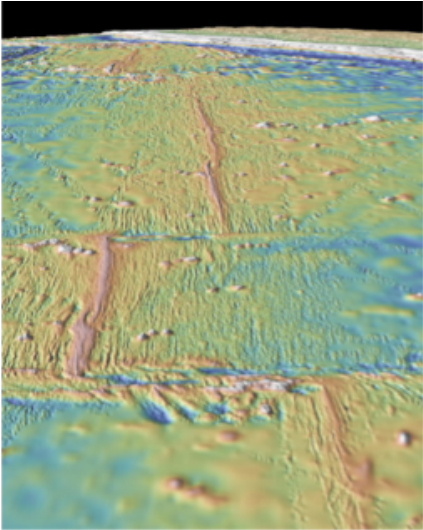
### **Review:**

1. What do we already know about divergent boundaries on the ocean floor?

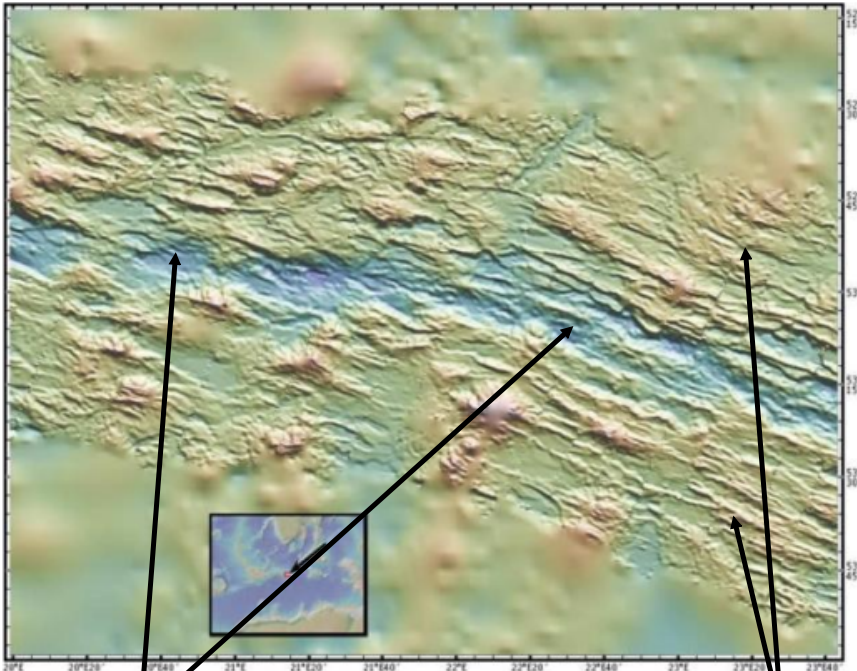
There is a mid-ocean ridge where the divergent boundary is. New rock is formed at the center of the mid-ocean ridge right on the divergent boundary.



These diagrams show the steps in the formation of the mid-ocean ridge from the rift valley sinking lower and lower into the asthenosphere. When the valley is low enough, ocean water can flow in and a linear sea is formed. As the two continental plates move farther and farther apart, more ocean floor is formed. When the ocean floor, which is more ductile than the continental material, is large enough, a mid-ocean ridge can bulge upwards.



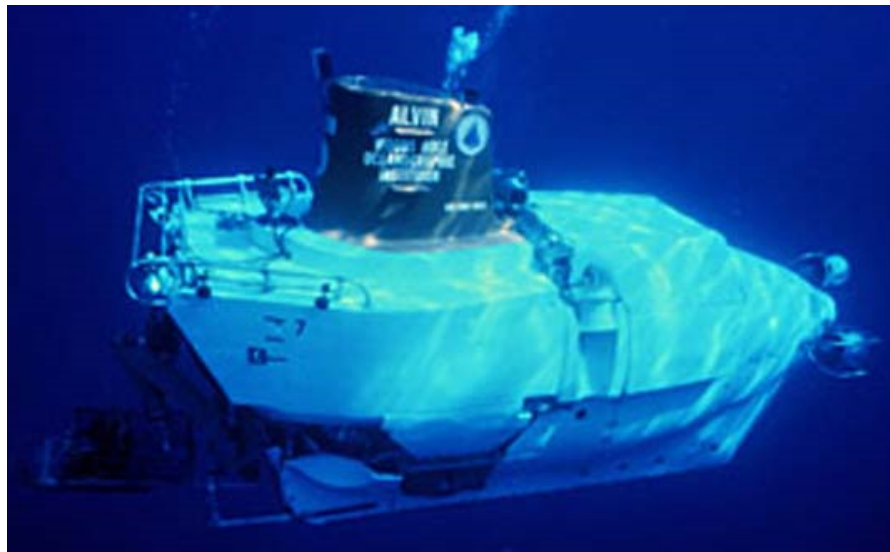
The mid-ocean ridge



The "rift valley" in the top of the mid-ocean ridge

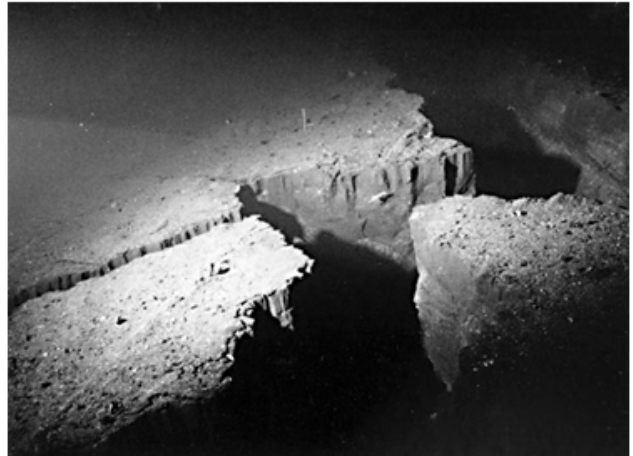
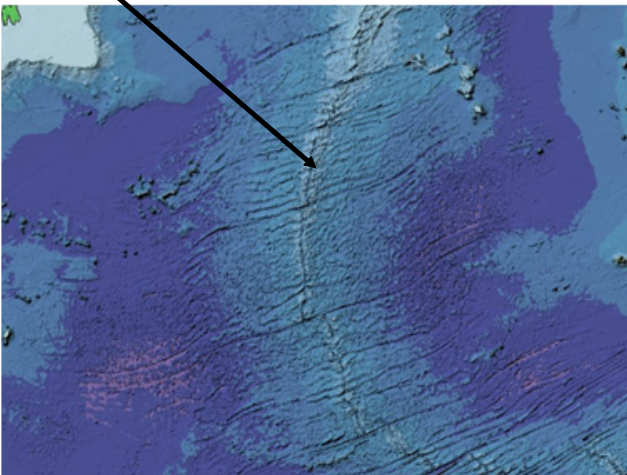
Alvin

Can go 4500 m (14,764 feet) deep

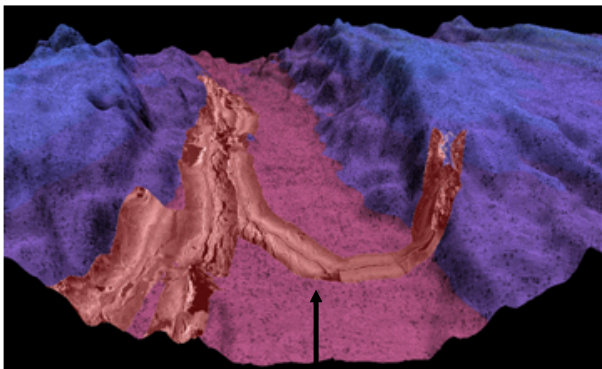


A submersible which explores the mid-ocean ridge.

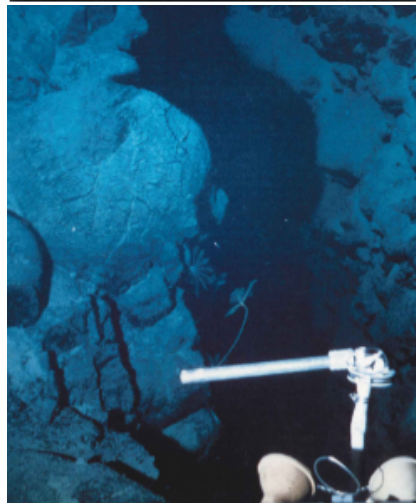
Rift valley on the mid-ocean ridge

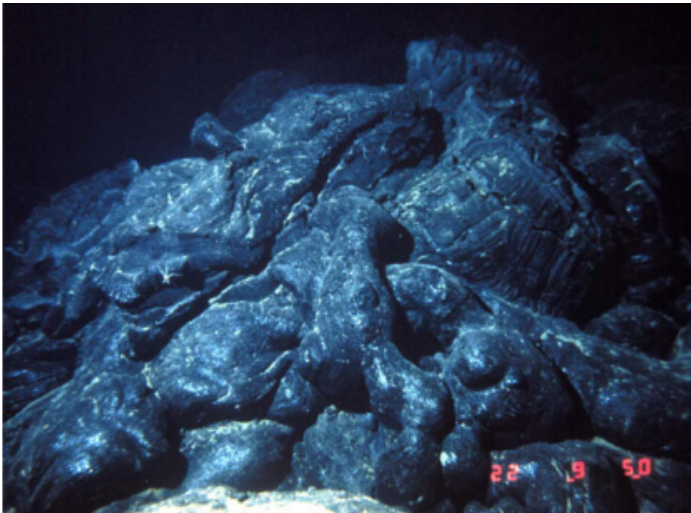


Cracks in the rift valley on the mid-ocean ridge



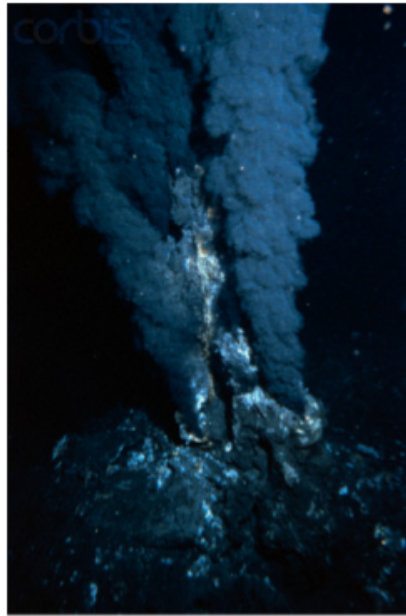
A computer generated view of the rift valley at the top of the mid-ocean ridge.



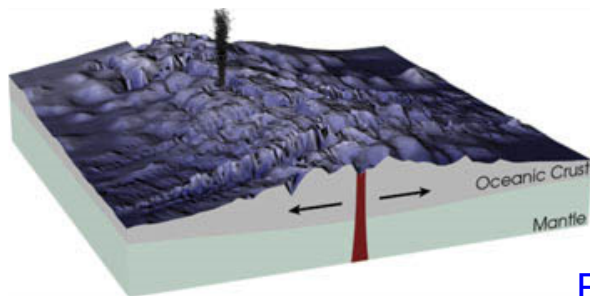


Pillow lava formed as lava comes from the cracks in the rift valley at the top of the mid-ocean ridge.



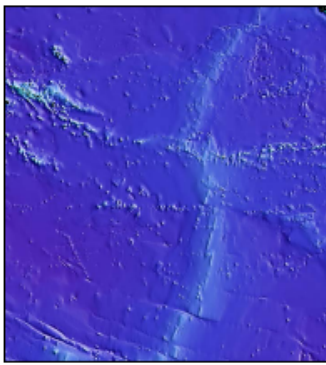


Smokers on the East Pacific Rise

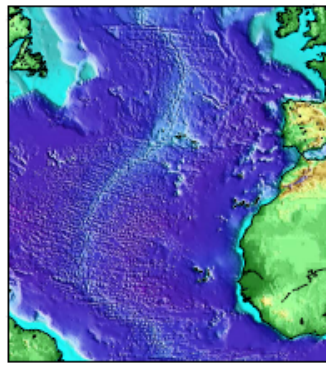


Extra activity produced by the lava under the surface.

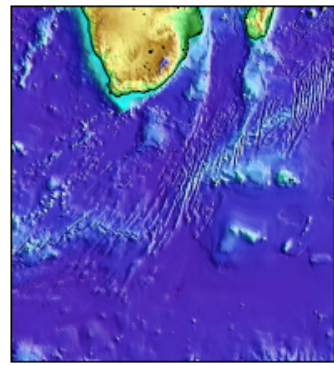
### Divergent Plate Boundaries - Varying Spreading Rate



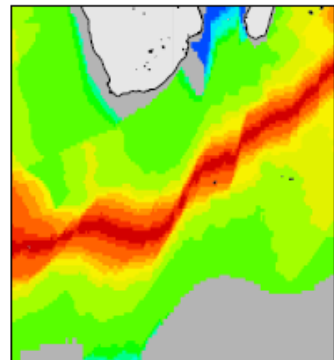
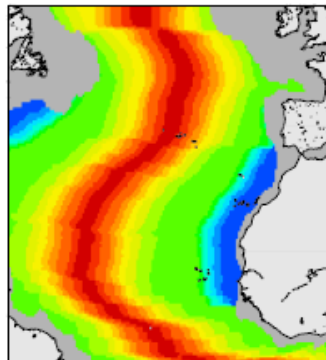
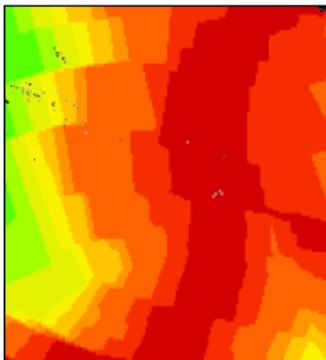
East Pacific Rise - Very Fast Spreading



Mid Atlantic Ridge - Slow Spreading



Southwest Indian Ridge - Very Slow Spreading



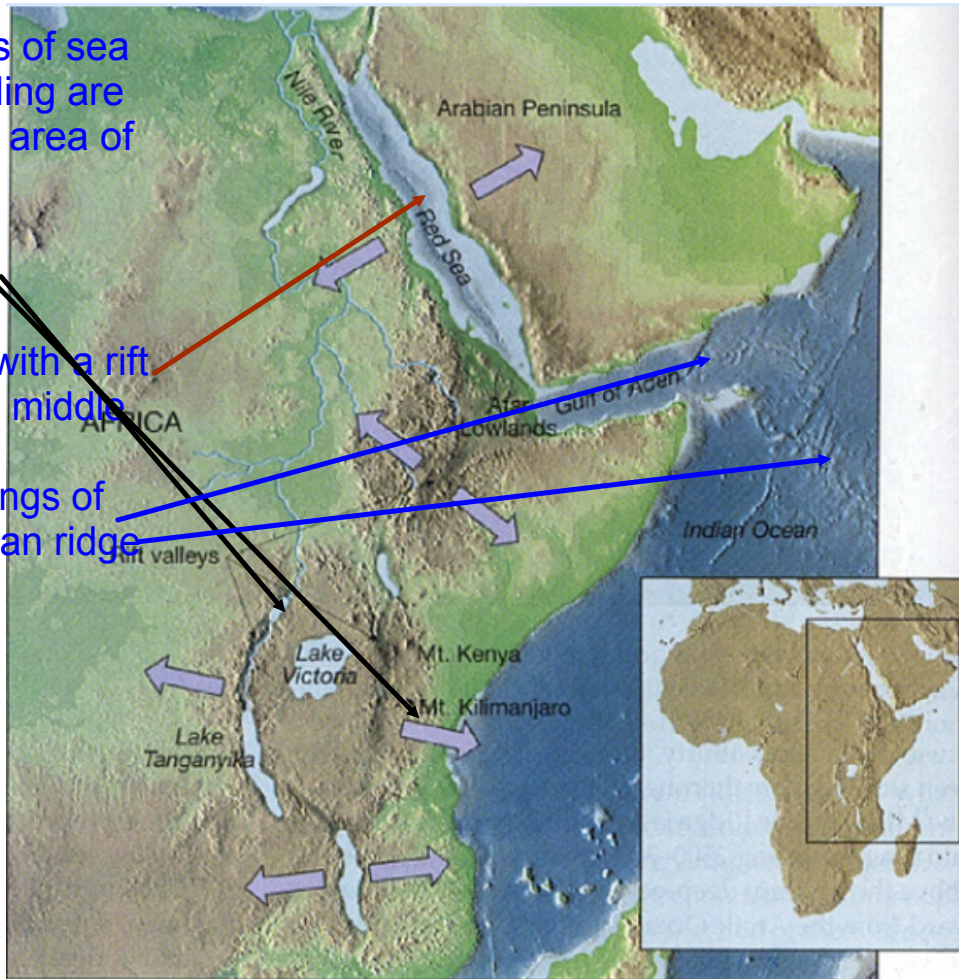
New rock is formed at different rates along the different mid-ocean ridge as the diverging plates are moving away from each other at different rates.

All the steps of sea floor spreading are seen in this area of Africa.

Rift valleys

Linear sea with a rift valley in the middle

The beginnings of the mid-ocean ridge

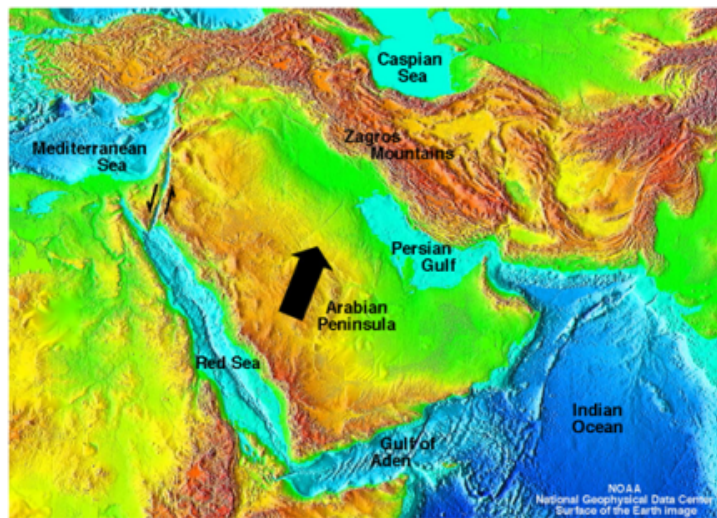




A very clear view of the same area from Google Maps



More views.





The San Andreas ends at the Gulf of California where again we see the beginnings of sea floor spreading and the mid-ocean ridge.