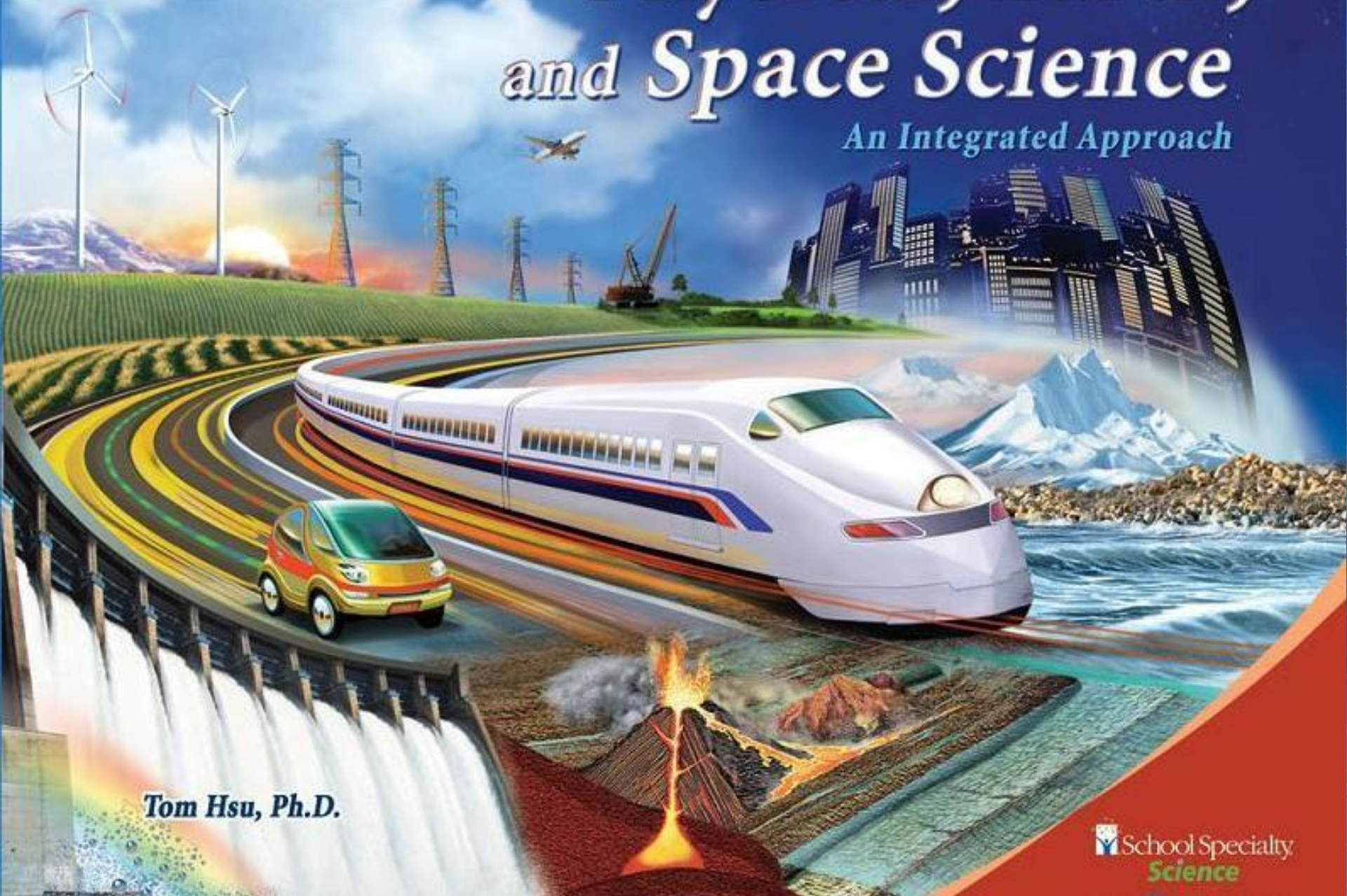


cpo science

Physical, Earth, and Space Science

An Integrated Approach



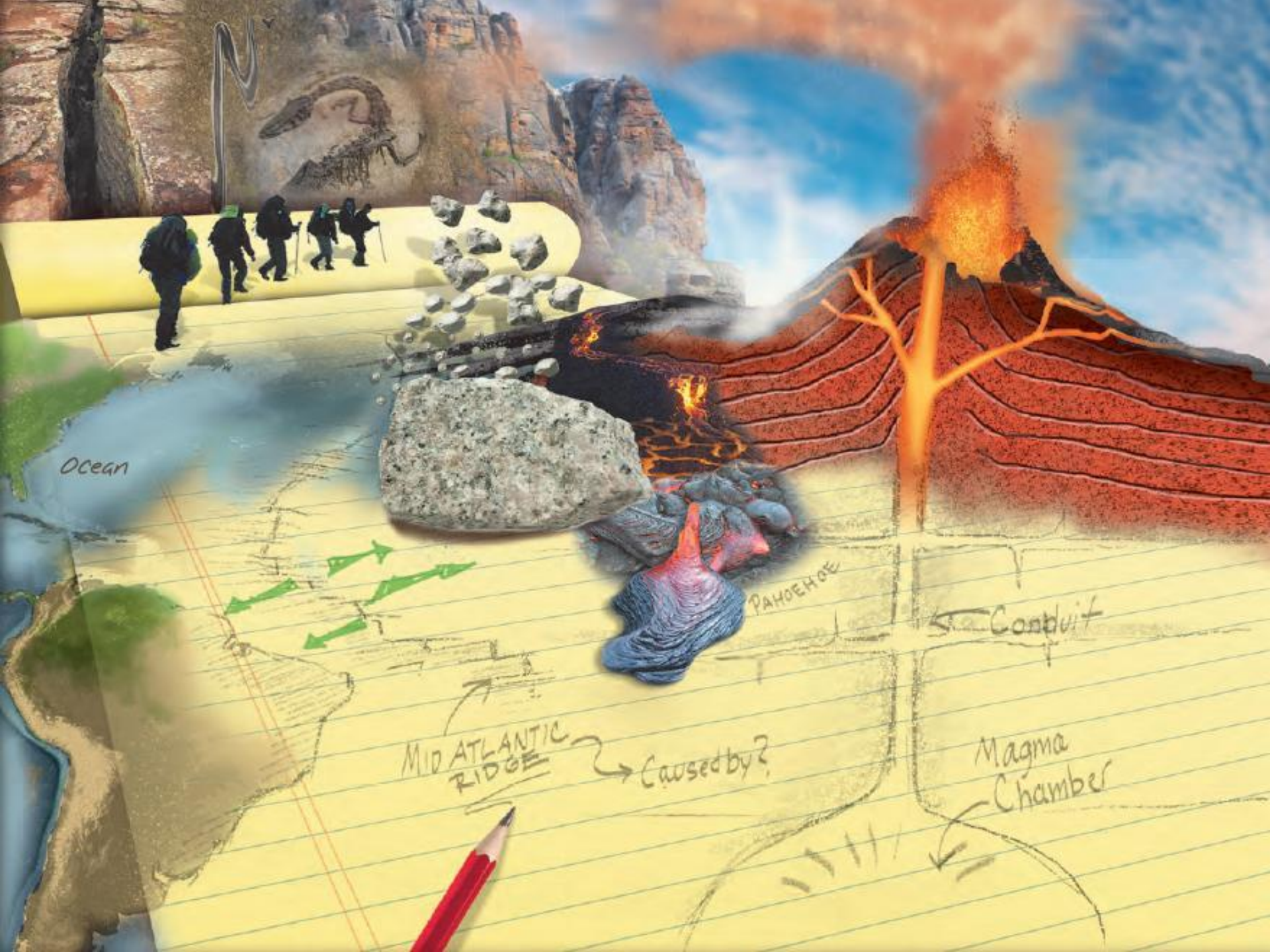
Tom Hsu, Ph.D.

 School Specialty
Science



UNIT SIX: Earth's Structure

- **Chapter 18 Earth's History and Rocks**
- **Chapter 19 Changing Earth**
- **Chapter 20 Earthquakes and Volcanoes**



Ocean

РАЗОЕЖЕ

Conduit

MID ATLANTIC RIDGE

Caused by?

Magma Chamber



Chapter Nineteen: Changing Earth

- **19.1 Inside Earth**
- **19.2 Plate Tectonics**
- **19.3 Plate Boundaries**
- **19.4 Metamorphic Rocks**



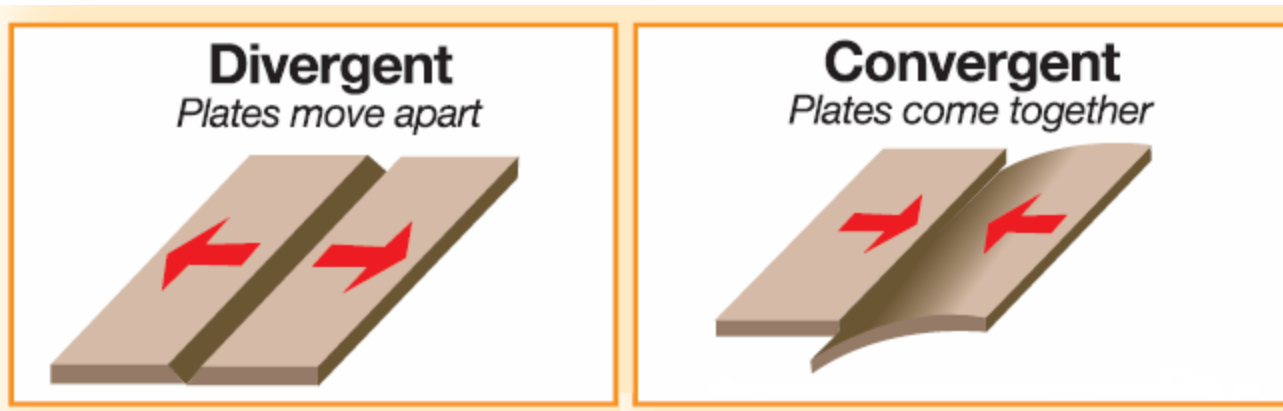
19.3 Learning Goals

- **Characterize plate boundaries.**
- **Relate geologic processes and features to specific plate boundaries.**
- **Locate areas where certain boundaries are likely to form.**



19.3 Plate boundaries

- Imagine a single plate, moving in one direction on Earth's surface.
- One edge of the plate—the *divergent boundary*—moves away from things.
- The opposite edge—the *convergent boundary* bumps into anything in the way.



19.3 Plate boundaries

- An edge of a lithospheric plate that slides by another plate is called a *transform fault boundary*.

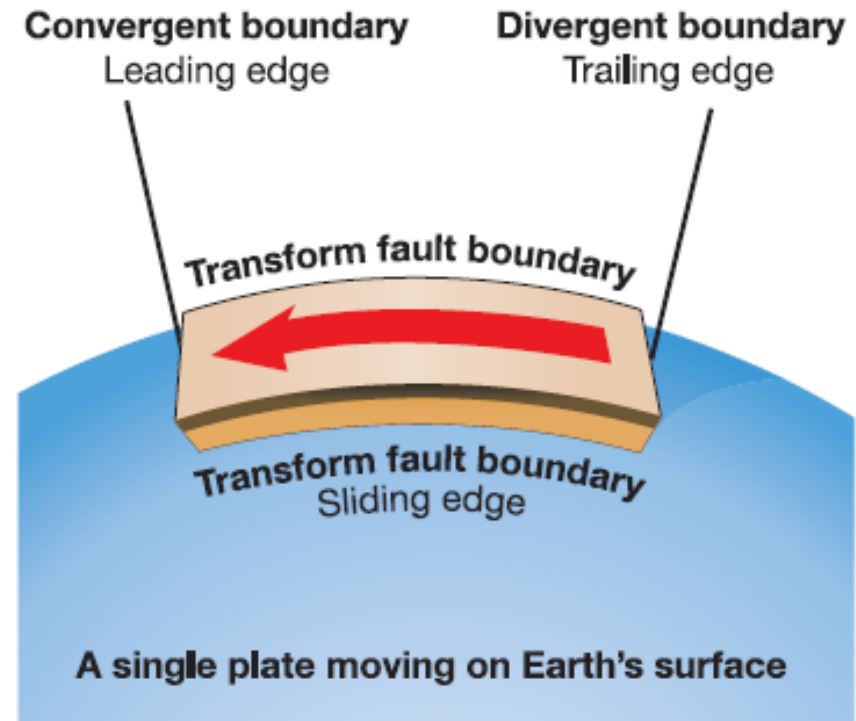
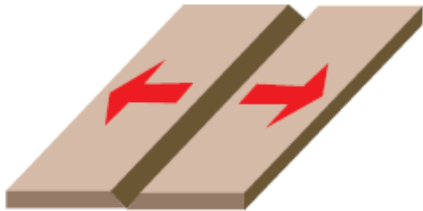




Plate Boundaries

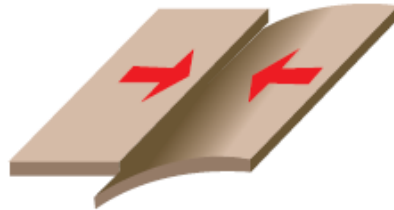
Divergent

Plates move apart



Convergent

Plates come together



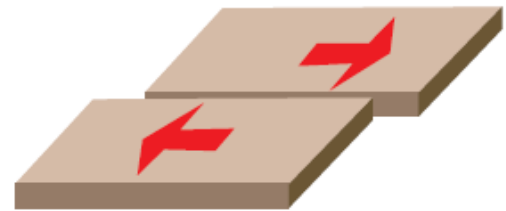
One plate goes under another



Mountains form

Transform

Plates slide past each other

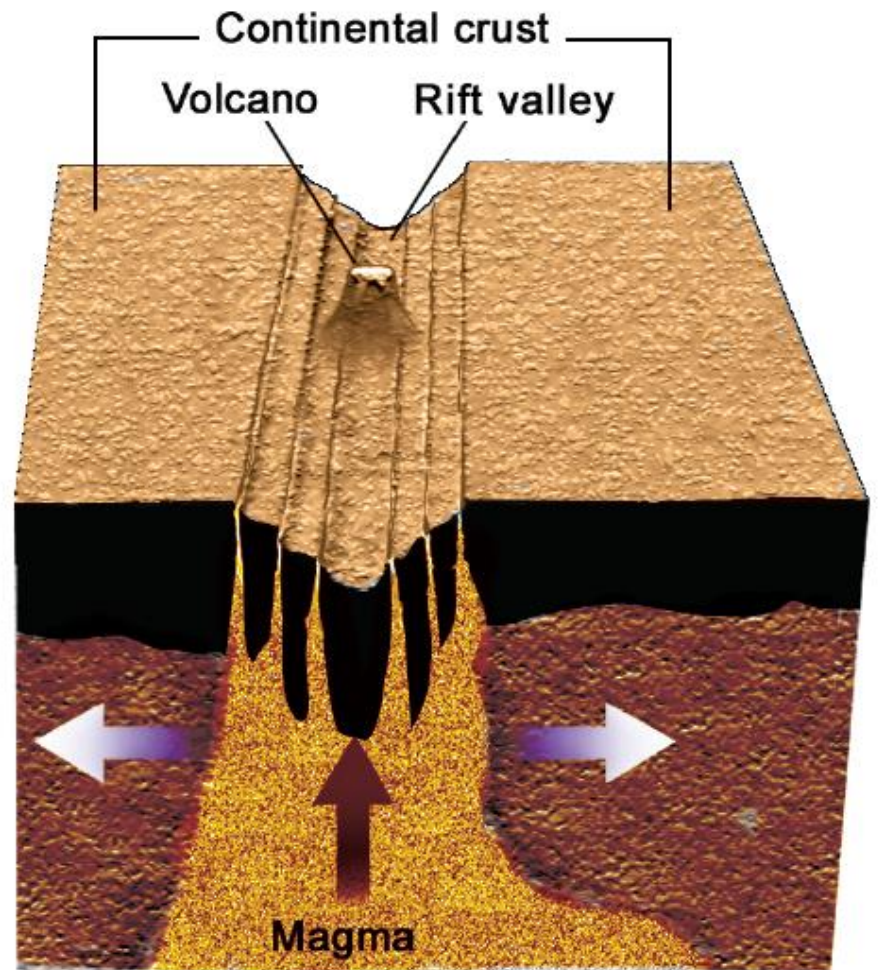
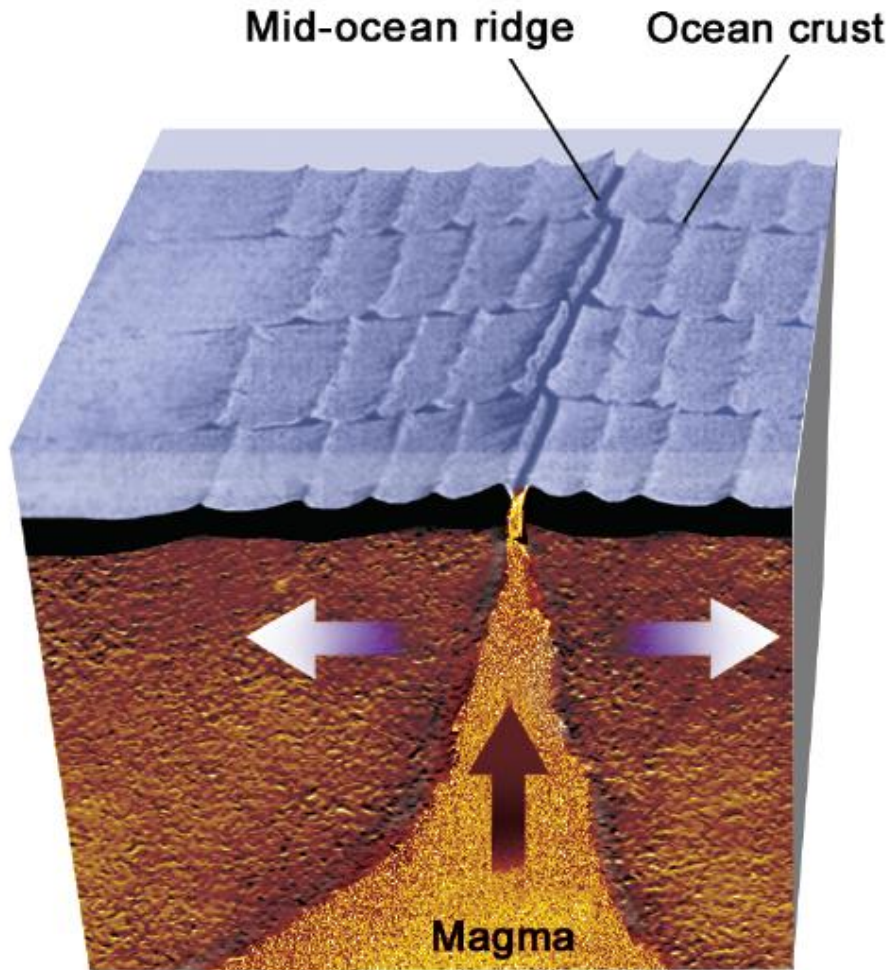




19.3 Divergent boundaries

- *** Divergent boundaries are found in the ocean as mid-ocean ridges.**
- *** A divergent boundary is the line between two plates where they are moving apart.**
- *** This type of boundary is found over the rising plume of a mantle convection cell.**

Divergent Plate Boundaries





19.3 Divergent boundaries

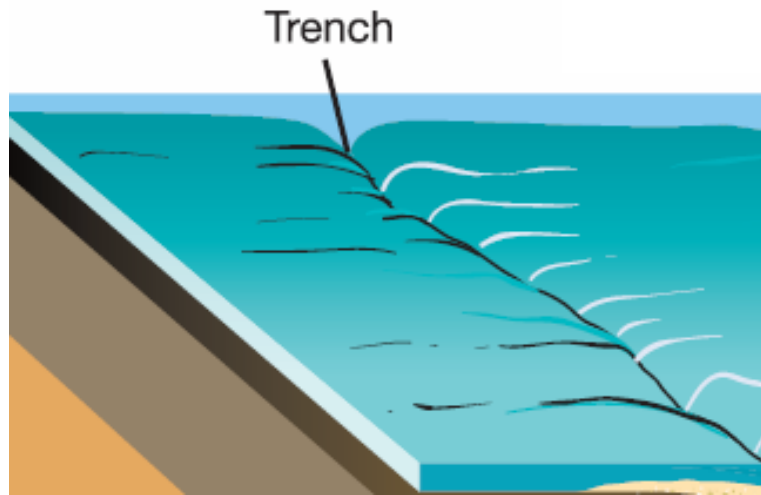


- * Divergent boundaries can also be found on continents as *rift valleys*.
- * When a rift valley forms on land, it may eventually split the landmass.



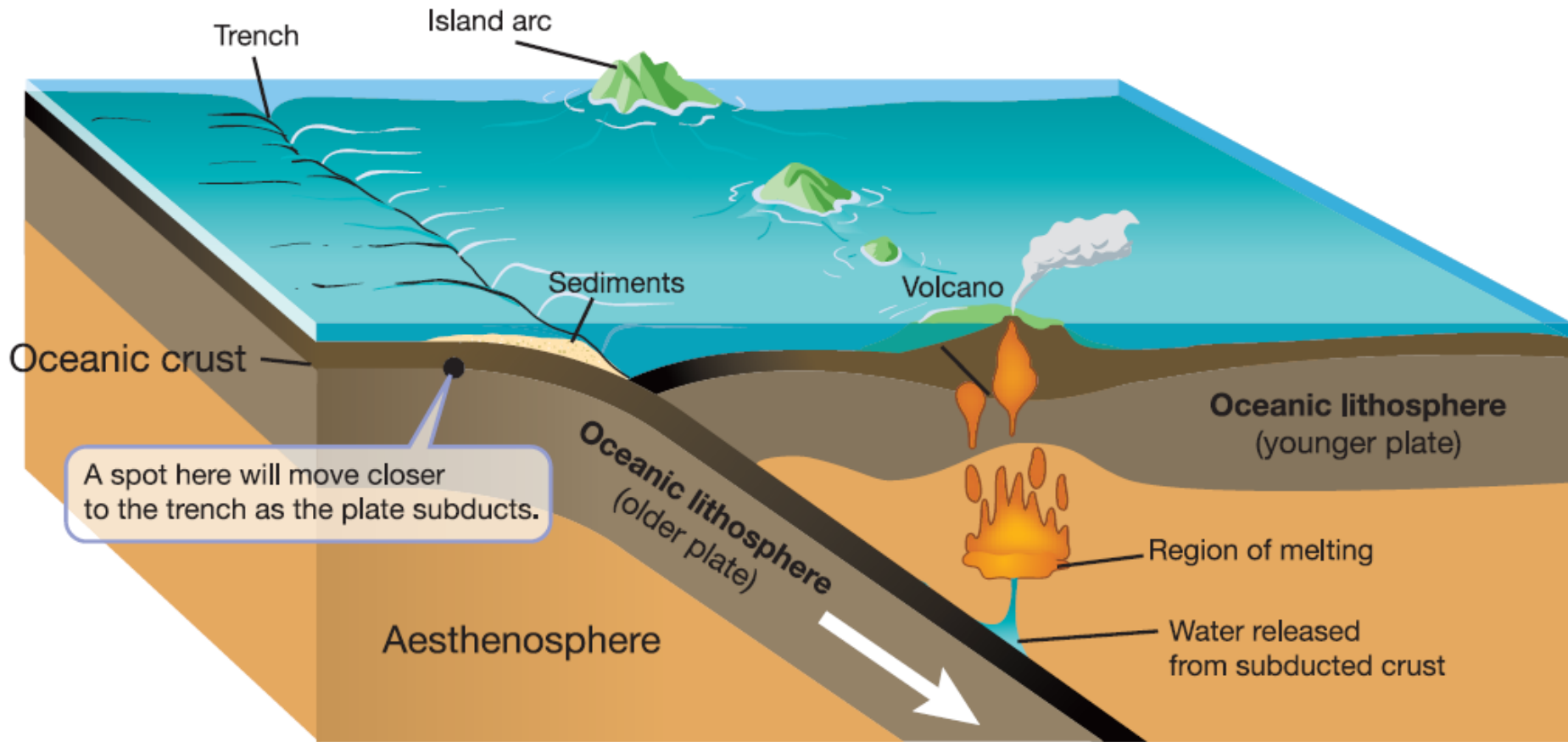
19.3 Convergent boundaries

- * When oceanic plates collide, one subducts under the other.
- * This forms a valley in the ocean floor called a *trench*.





Convergent Plate Boundary





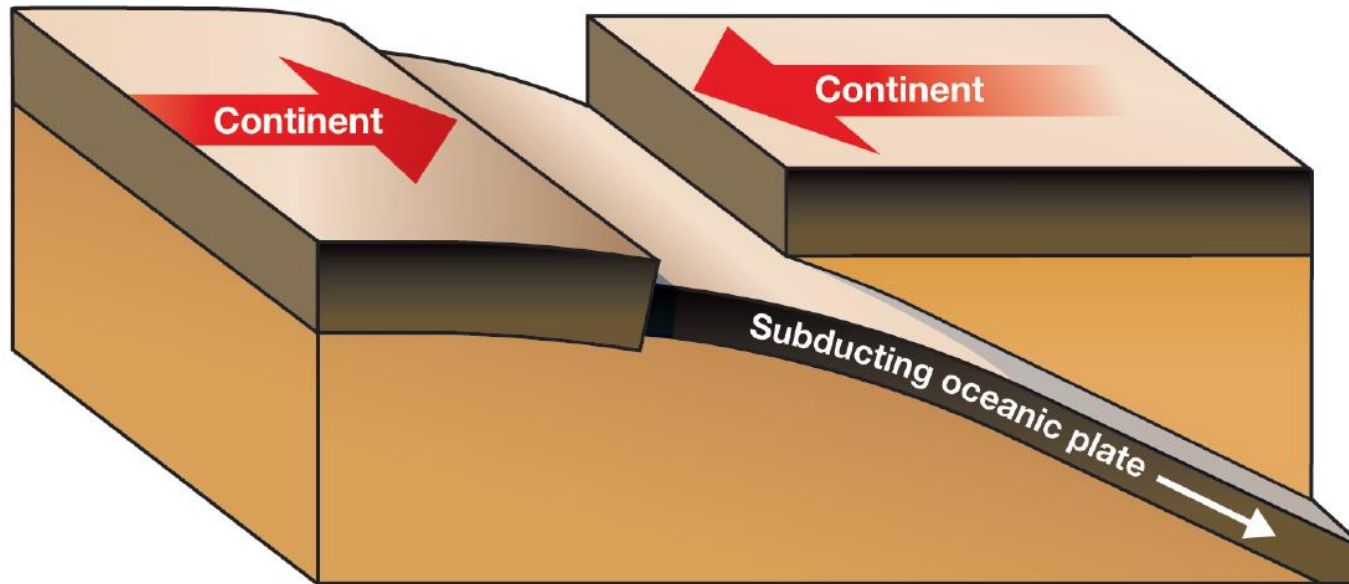
19.3 Convergent boundaries

- * What happens if an oceanic plate and a continental plate collide?
- * Which plate would subduct?
- * The oceanic plate must subduct under the continental plate.
- * A continental plate is simply too buoyant to subduct under an oceanic plate.



19.3 Mountains and convergent boundaries

What happens when two continents collide?



- Mountain ranges are formed when continents collide.



19.3 Mountains and convergent boundaries

- *** What happens if an oceanic plate with a continent on it subducts under a continental plate?**
- *** The continents cannot be sucked into the trench because their granite rocks.**
- **The two continents collide!**

Formation of the Himalayan Mountains



19.3 Transform fault boundaries

- * A good clue for locating transform faults is *offsetting*.
- * When seen from above, the feature will appear to make a zig-zag.





19.3 Transform fault boundaries



- * The San Andreas Fault is the transform fault boundary between two lithospheric plates—the Pacific Plate and the North American Plate.

Earth's Largest Lithospheric Plates

