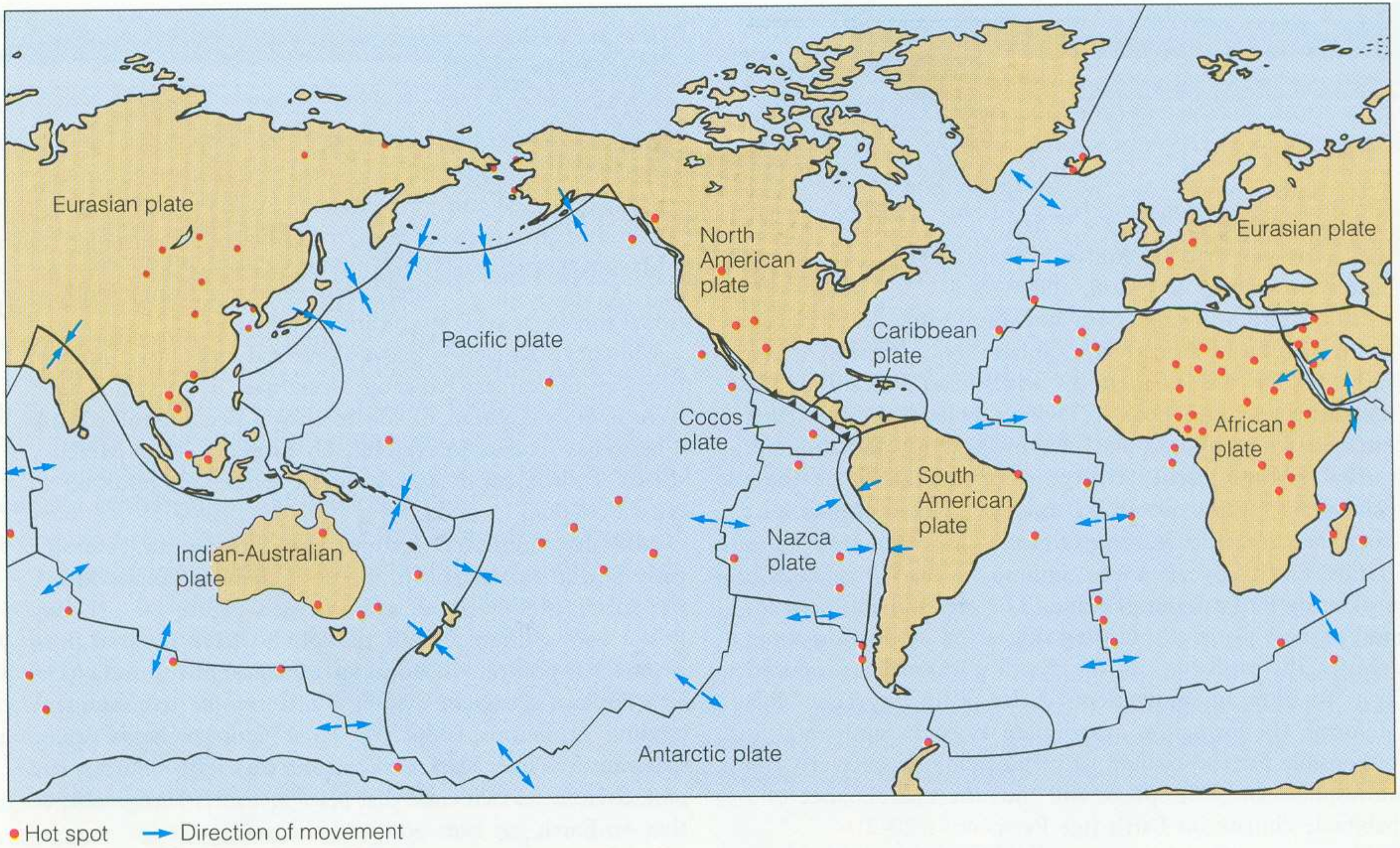
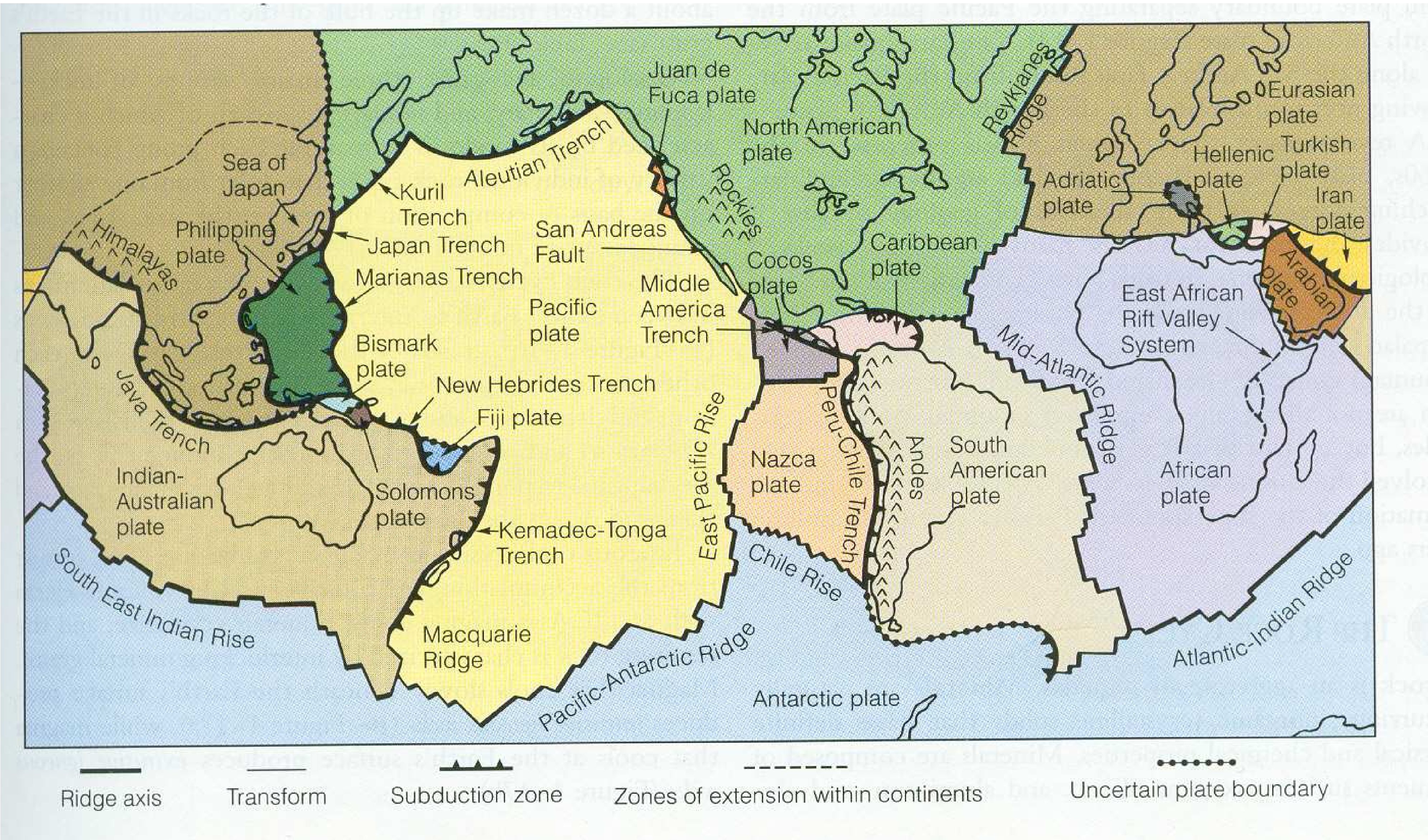
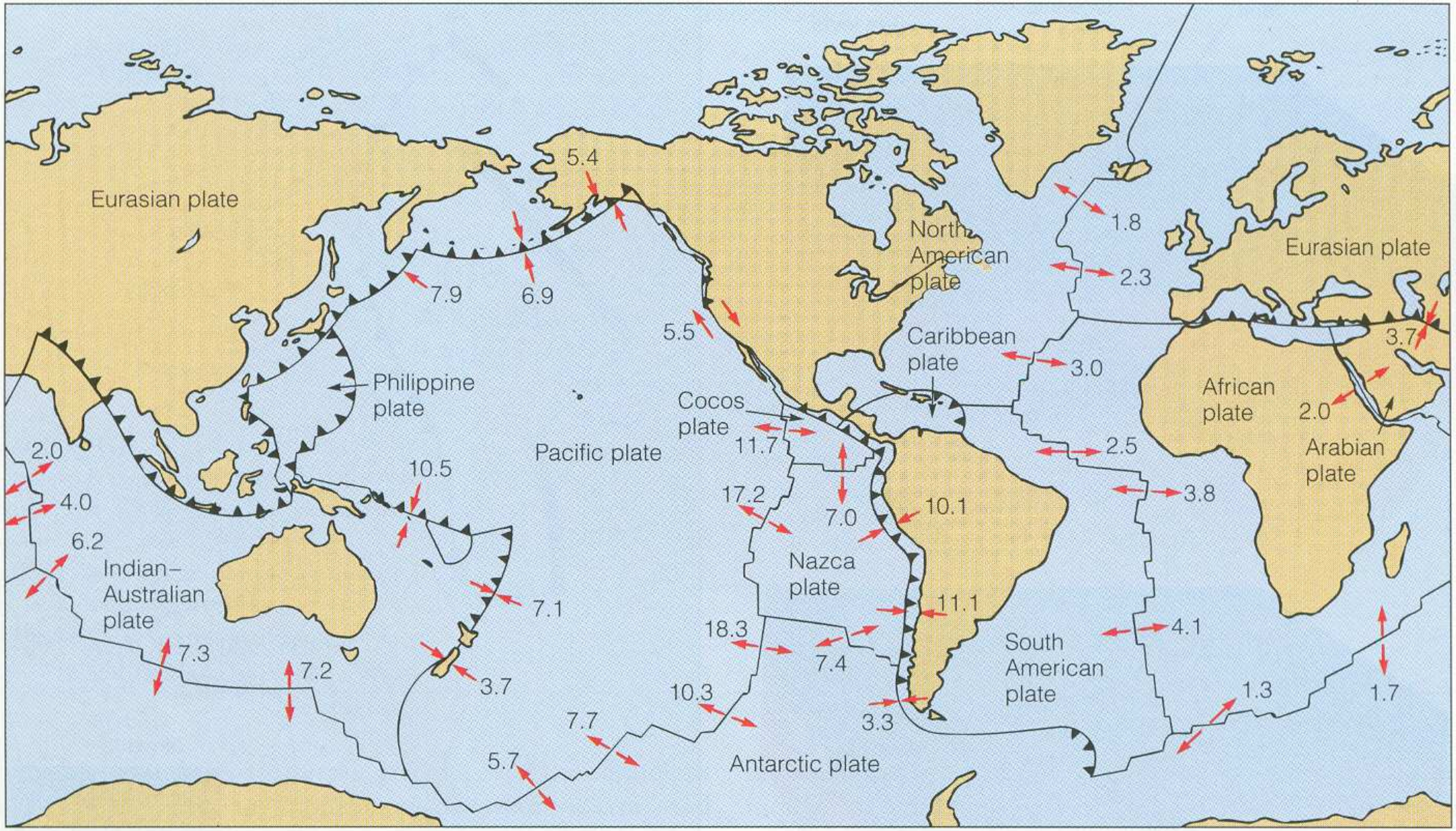


FIGURE 12-14 A map of the world showing the plates, their boundaries, direction of movement, and hot spots.


Juan de Fuca plate
North American plate
Reykjanes Ridge
Eurasian plate
Sea of Japan
Kuril Trench
Aleutian Trench
Rockies
Hellenic plate
Turkish plate
Adriatic plate
Iran plate
Himalayas
Philippine plate
Japan Trench
San Andreas Fault
Caribbean plate
Cocos plate
Arabian plate
Marianas Trench
Middle America Trench
Pacific plate
East African Rift Valley System
Bismark plate
Mid-Atlantic Ridge
New Hebrides Trench
Java Trench
Fiji plate
East Pacific Rise
Peru-Chile Trench
Andes
South American plate
Nazca plate
Indian-Australian plate
Solomons plate
African plate
Kemadec-Tonga Trench
Chile Rise
South East Indian Rise
Macquarie Ridge
Pacific-Antarctic Ridge
Atlantic-Indian Ridge
Antarctic plate
Ridge axis
Transform
Subduction zone
Zones of extension within continents
Uncertain plate boundary



▶ FIGURE 12-22 This map shows the average rate of movement in centimeters per year and relative motion of the Earth's plates.

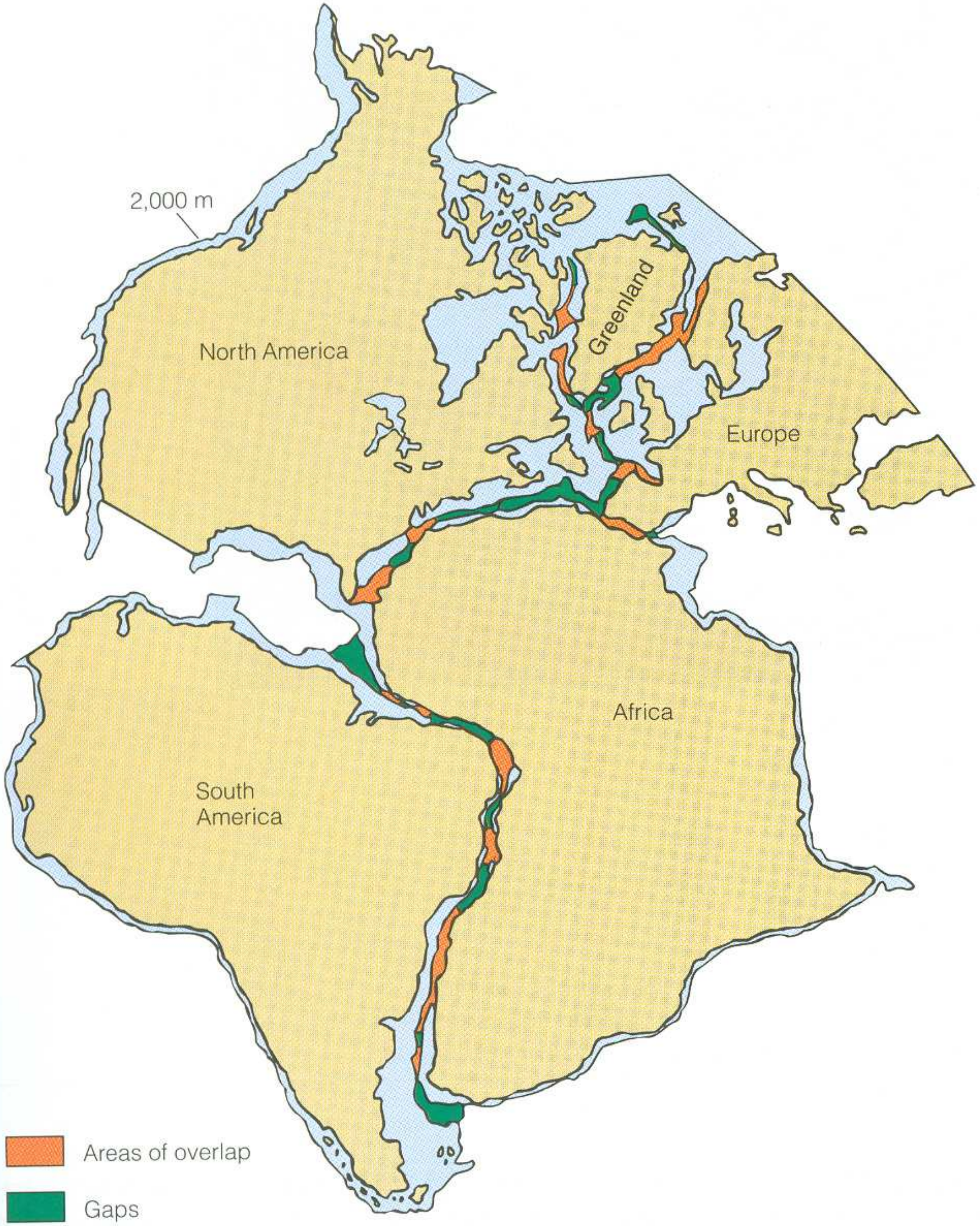
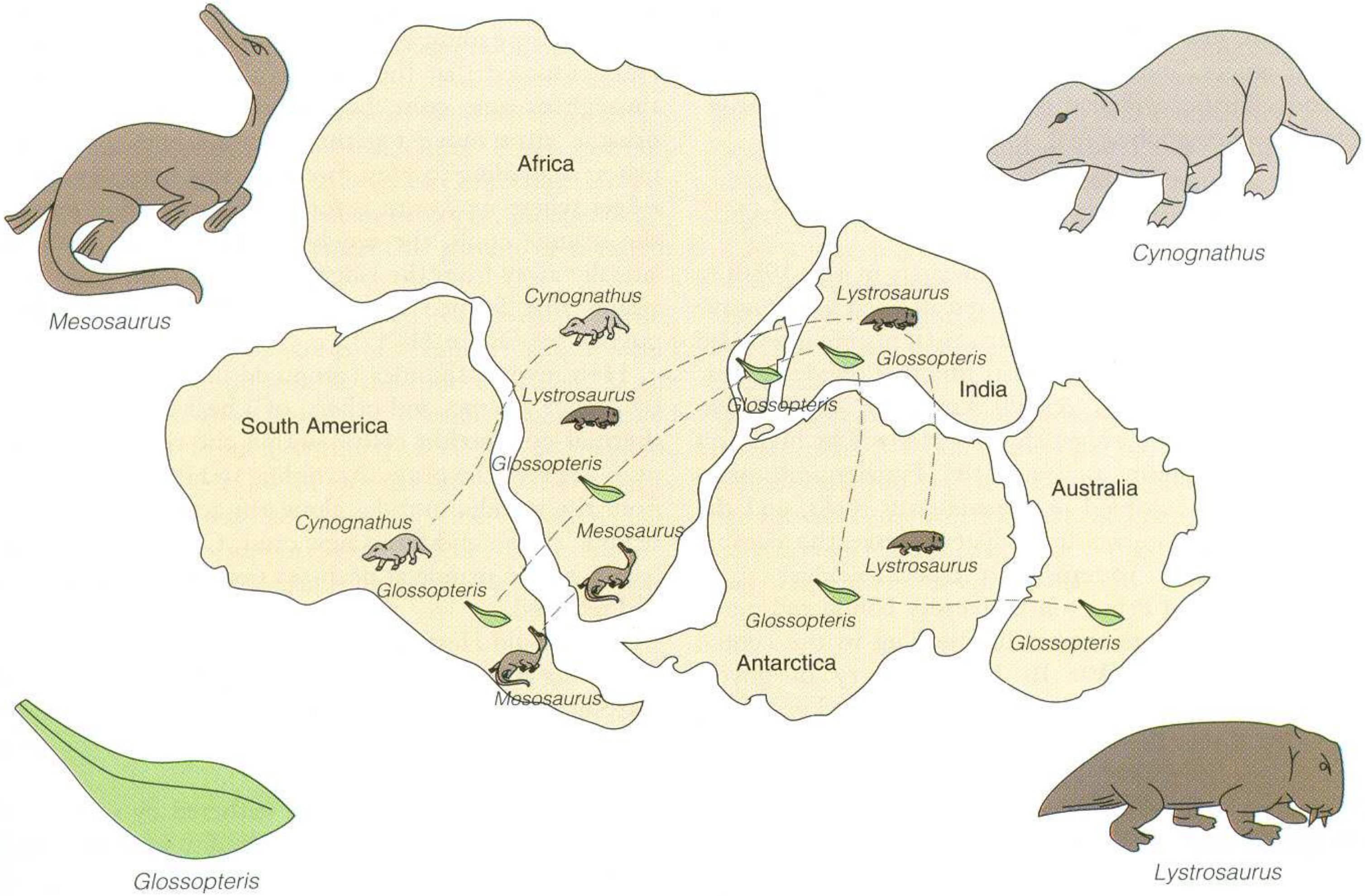
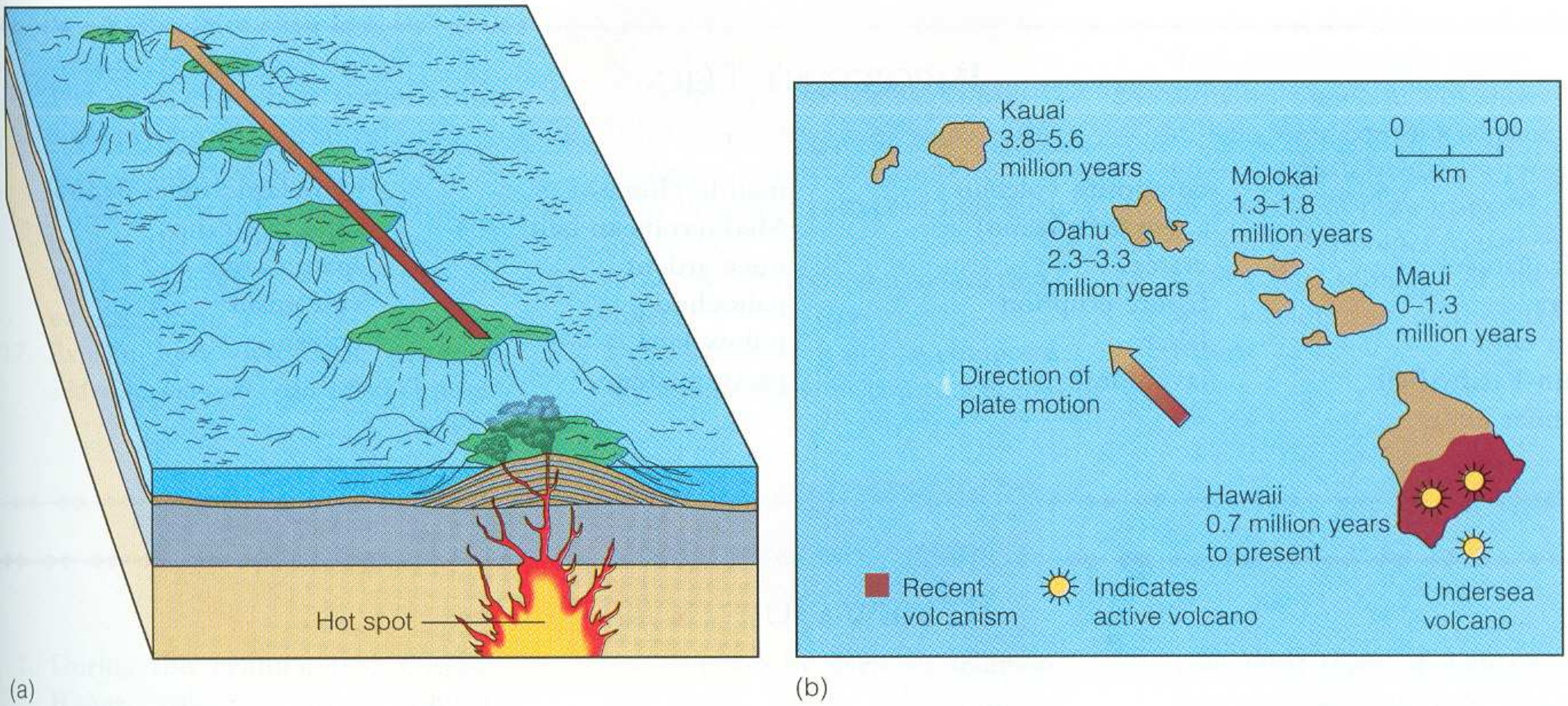


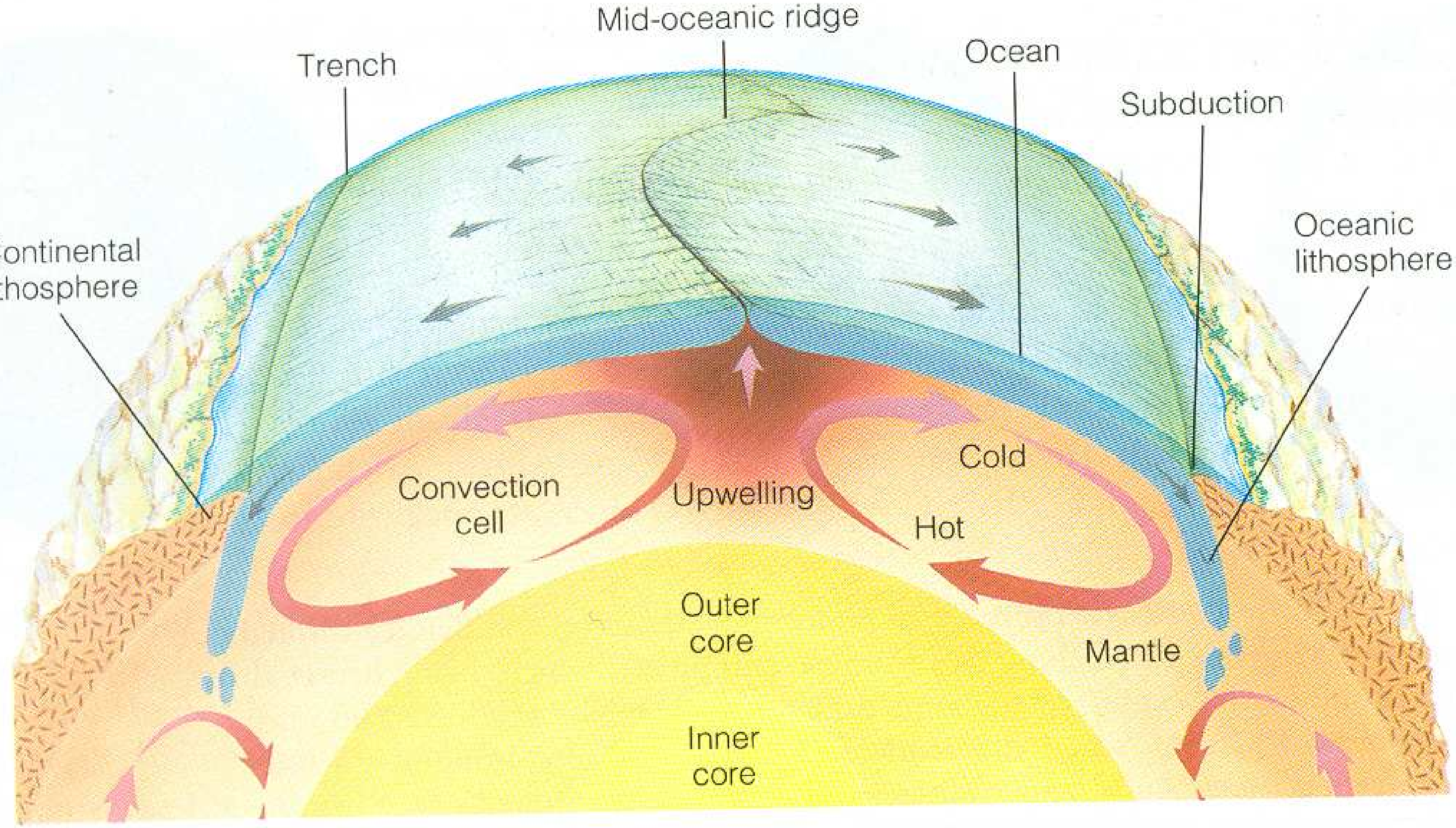
FIGURE 12-5 The best fit between continents occurs along the continental slope at a depth of 2,000 m.



▶ FIGURE 12-9 Some of the animals and plants whose fossils are found today on the widely separated continents of South America, Africa, India, Australia, and Antarctica. These continents were joined together during the Late Paleozoic to form Gondwana, the southern landmass of Pangaea. *Glossopteris* and similar plants are found in Pennsylvanian- and Permian-aged deposits on all five continents. *Mesosaurus* is a freshwater reptile whose fossils are found in Permian-aged rocks in Brazil and South Africa. *Cynognathus* and *Lystrosaurus* are land reptiles who lived during the Early Triassic Period. Fossils of *Cynognathus* are found in South America and Africa, while fossils of *Lystrosaurus* have been recovered from Africa, India, and Antarctica.

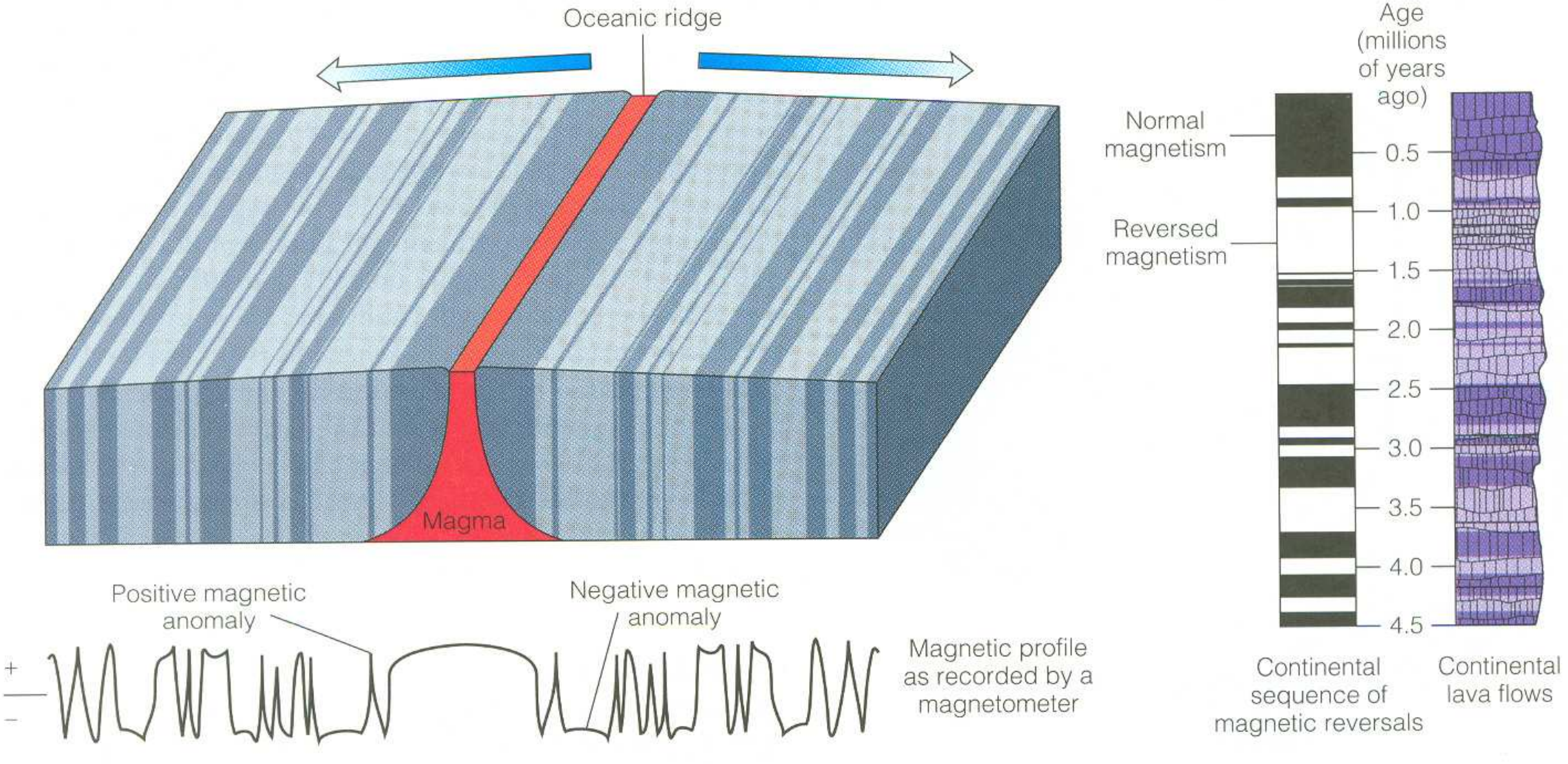


▶ FIGURE 4-26 (*a*) Generalized diagram showing the origin of the Hawaiian Islands. As the lithospheric plate moves over a hot spot, a succession of volcanoes forms. Present-day volcanism occurs only on Hawaii and beneath the sea just to the south. (*b*) Map showing the age of the islands in the Hawaiian chain.

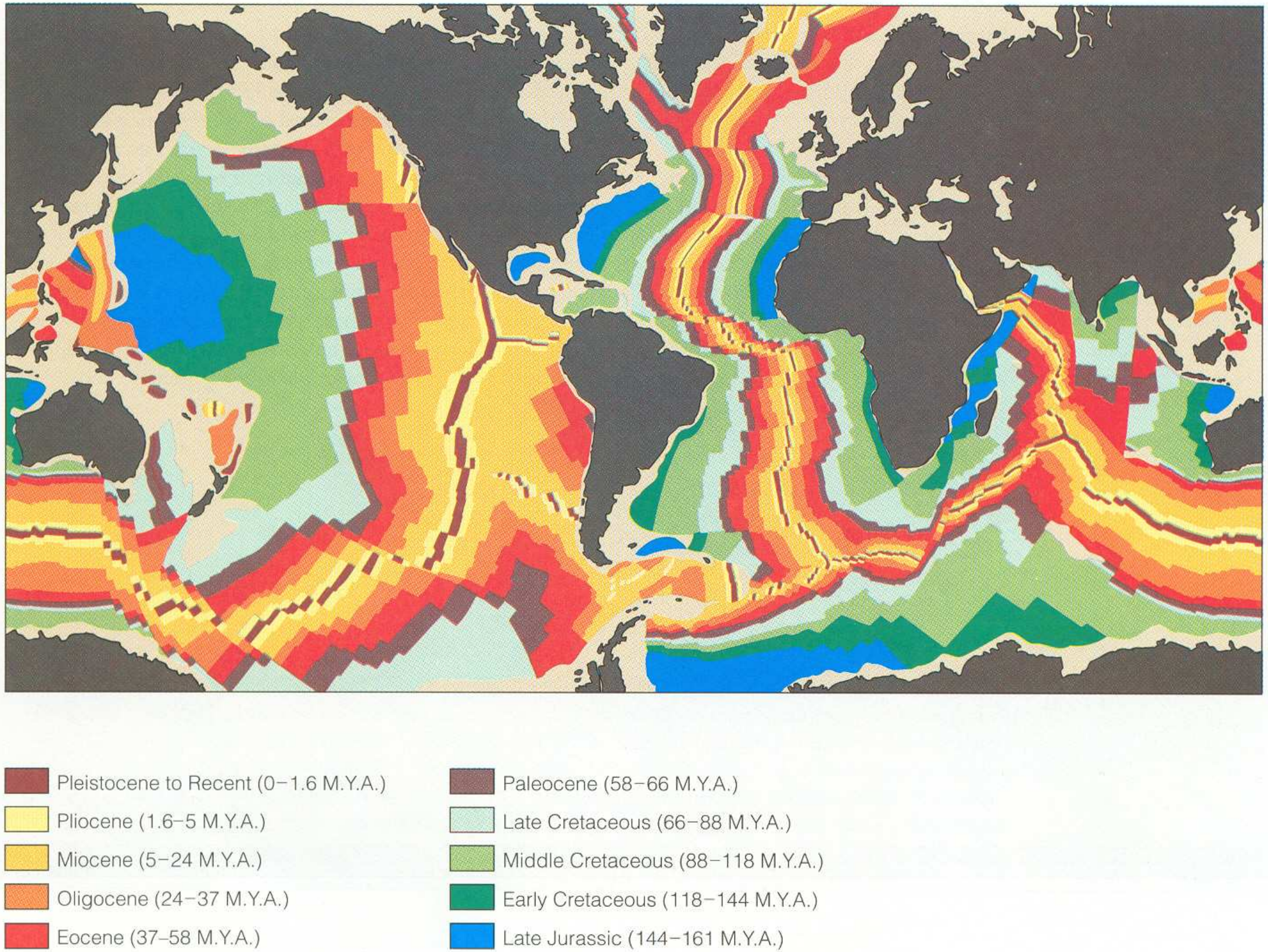


▶ FIGURE 1-13 The Earth's plates are thought to move as a result of underlying mantle convection cells in which warm material from deep within the Earth rises toward the surface, cools, and then, upon losing heat, descends back downward into the interior.

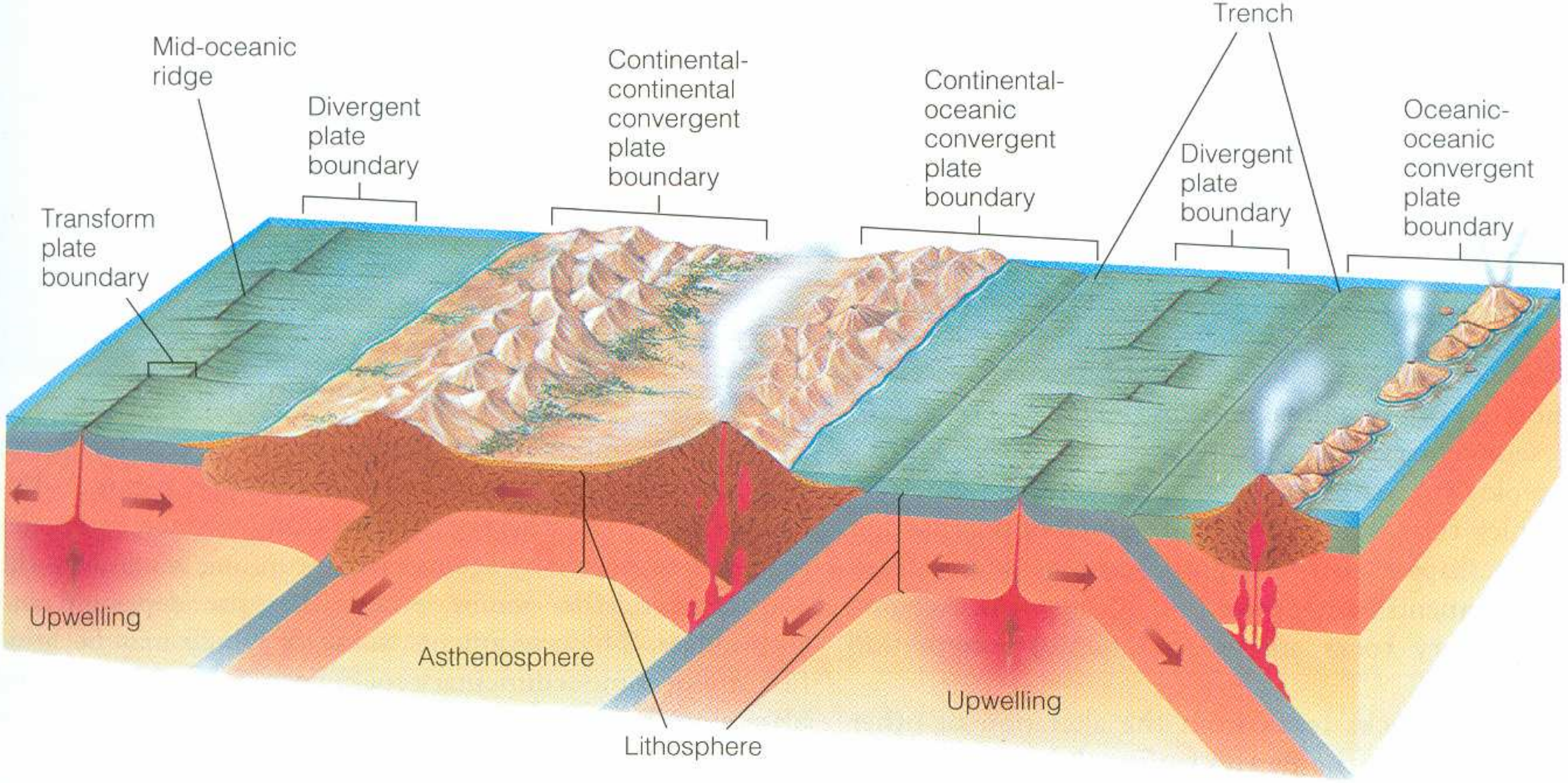
▶ FIGURE 12-11 The sequence of magnetic anomalies preserved within the oceanic crust on both sides of an oceanic ridge is identical to the sequence of magnetic reversals already known from continental lava flows. Magnetic anomalies are formed when basaltic magma intrudes into oceanic ridges; when the magma cools below the Curie point, it records the Earth's magnetic polarity at the time. Sea-floor spreading splits the previously formed crust in half, so that it moves laterally away from the oceanic ridge. Repeated intrusions record a symmetrical series of magnetic anomalies that reflect periods of normal and reversed polarity. The magnetic anomalies are recorded by a magnetometer, which measures the strength of the magnetic field.

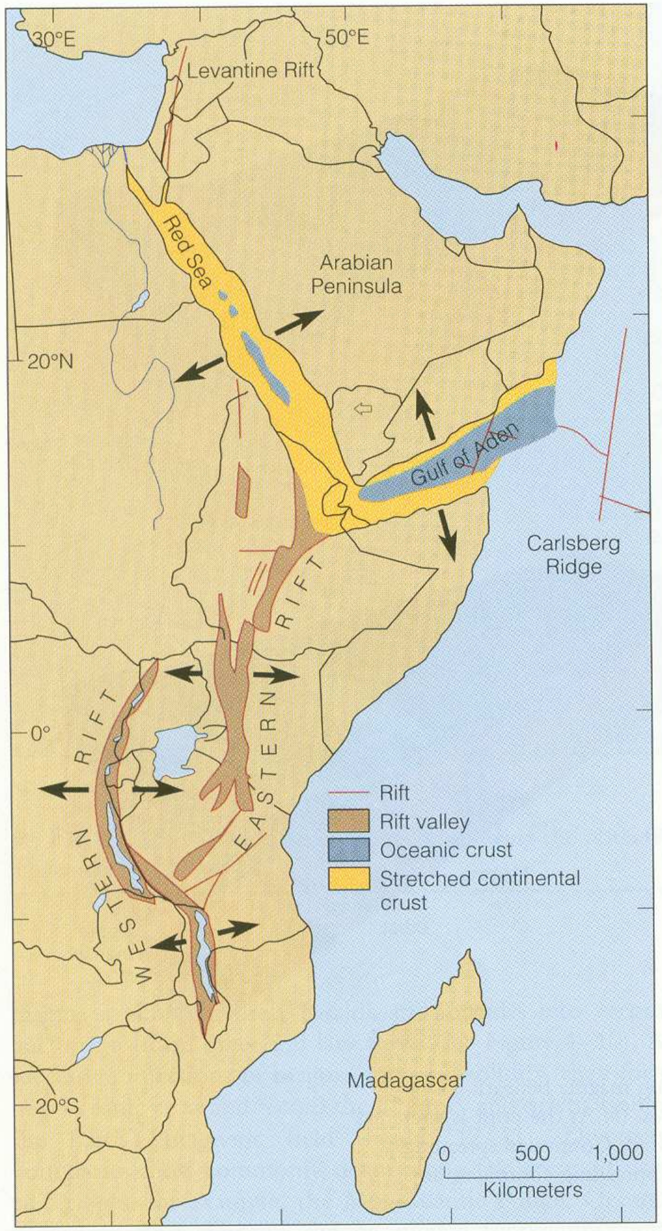


▶ FIGURE 12-12 The age of the world's ocean basins established from magnetic anomalies demonstrates that the youngest oceanic crust is adjacent to the spreading ridges and that its age increases away from the ridge axis.



➢ FIGURE 1-15 An idealized cross section illustrating the relationship between the lithosphere and the underlying asthenosphere and the three principal types of plate boundaries: divergent, convergent, and transform.





➤ FIGURE 12-16 The East African rift valley is being formed by the separation of eastern Africa from the rest of the continent along a divergent plate boundary. The Red Sea represents a more advanced stage of rifting, in which two continental blocks are separated by a narrow sea.

FIGURE 12-21 Transform plate boundary. The San Andreas fault is a transform fault separating the Pacific plate from the North American plate. Movement along this fault has caused numerous earthquakes. The photograph shows a segment of the San Andreas fault as it cuts through the Leona Valley, California. (Photo courtesy of Eleanora I. Robbins, U.S. Geological Survey.)