JEOLOJİ'NİN DÜNÜ VE BUGÜNÜ

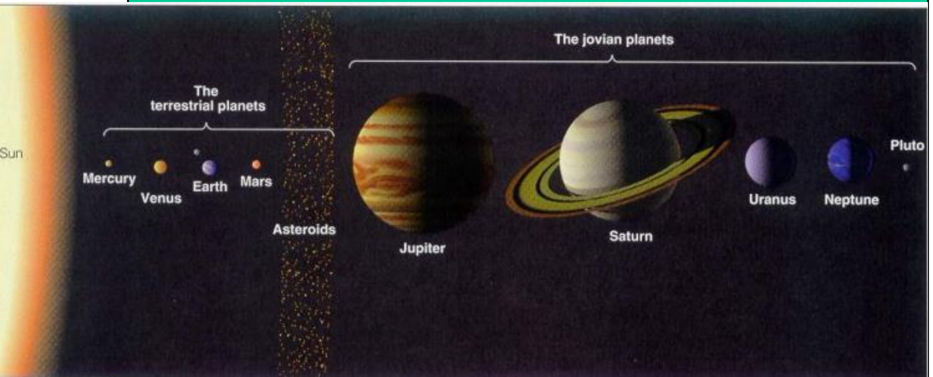
GÖKBİLİMİN TARİHSEL ŞAHSİYETLERİ

COPERNICUS (1540)

BRAHE (1580)

KEPLER (1590)

GALILEO (1620)

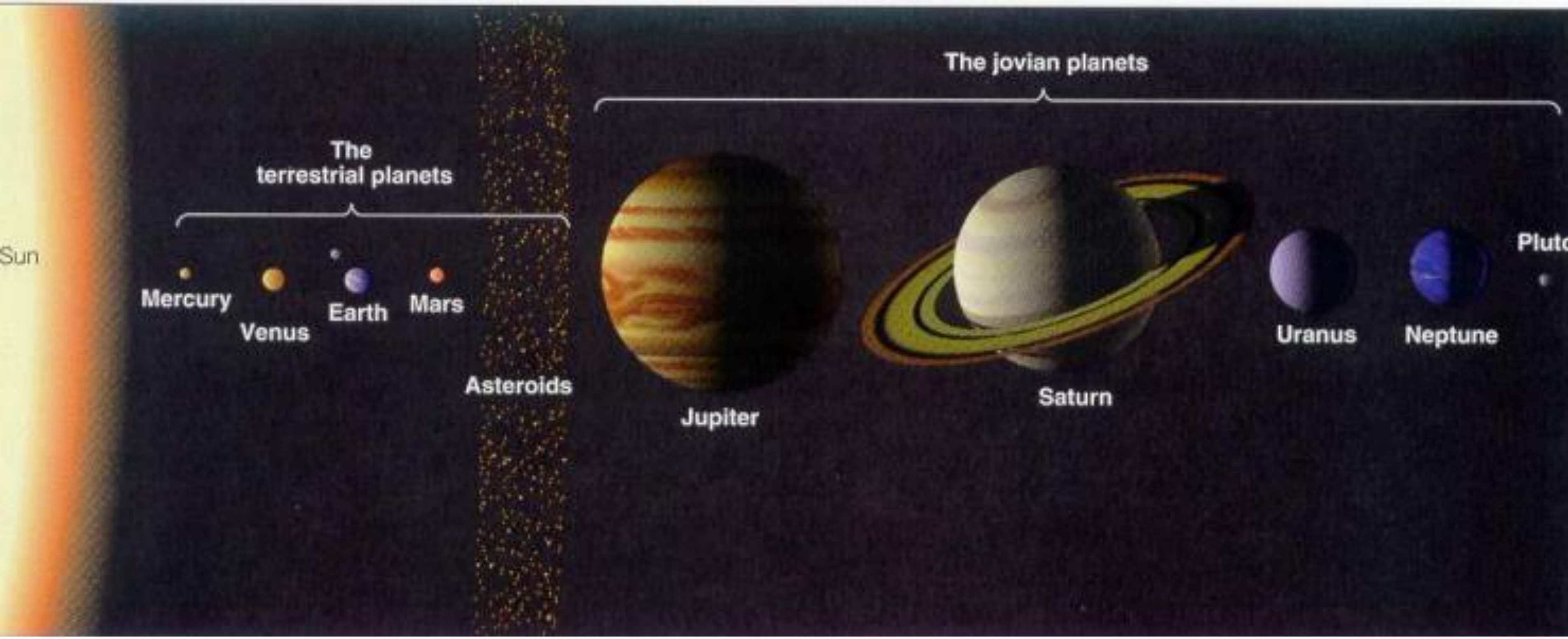


YERBİLİMİN TARİHSEL ŞAHSİYETLERİ

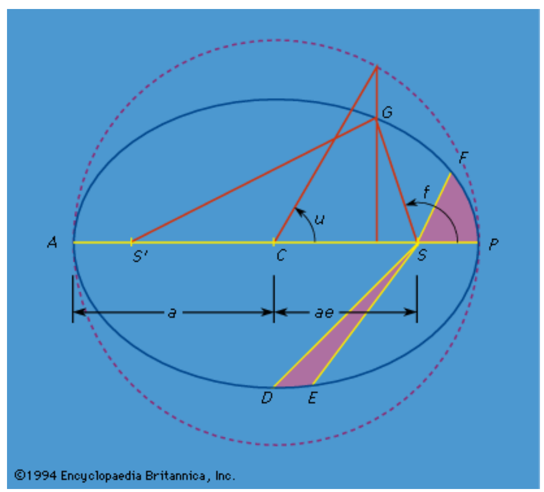
WERNER (1780)

HUTTON (1770)

LYELL (1830)


The jovian planets
The
terrestrial planets
Sun
Mercury
Venus
Earth
Mars
Asteroids
Jupiter
Saturn
Uranus
Neptune
Pluto

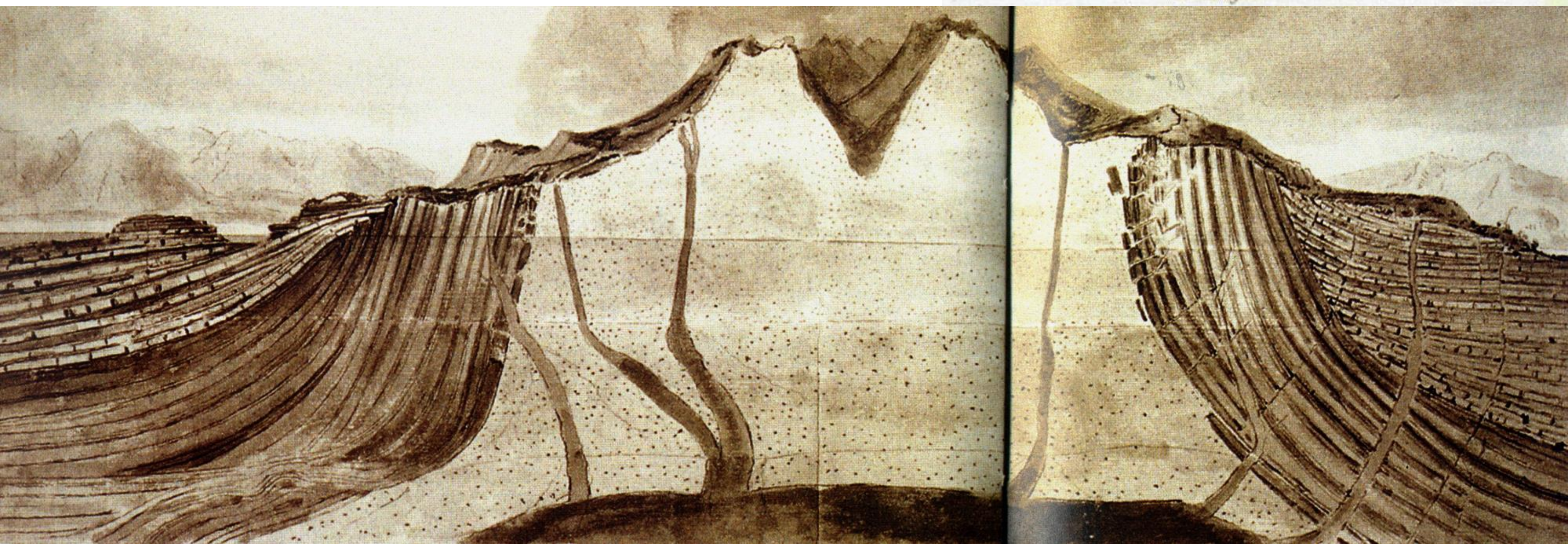
Galileo, oil painting by J. Sustermans, *c.* 1637. In the Uffizi, Florence.
Alinari--Art Resource



Johannes Kepler, oil painting by an unknown artist, 1627. In the cathedral, Strasbourg, France.

Figure 1.1 At 6194 meters (20,320 feet), Mt. McKinley in Alaska's Denali National Park is the highest peak in North America. Geologists study the process that created this majestic peak. (Photo by Carr Clifton)

ABRAHAM GOTTLOB WERNER



JAMES HUTTON

0 50 100 150 200 mi
0 100 200 300 km
55°
60°
65°
70°
75°
70°
Novaya Zemlya
KARA SEA
YAMAL PENINSULA
GYDAN PEN.
BARENTS SEA
Vaygach Island
Kolguyev Island
KANIN PENINSULA
PAY-KHOY RIDGE
Ob
Gulf of Ob
Vorkuta
Mount Payer 1472
POLAR URALS
Pechora
Kolva
Usa
TILMAN RIDGE
Mezen
65°
Mount Narodnaya 1895
NETHER-POLAR URALS
Pechora
WEST
Sosva
Vashka
Izhma
Lyapin
Northern
Nadym
Kazym
Mount Telpos-Iz 1617
SIBERIAN
Ilych
Pechora
Tapsuy
VYCHEGDA VALLEY
Vychegda
Syktyvkar
Sysola
PLAIN
Ob
Luza
RUSSIA
NORTHERN URALS
Mount Denezhkin 1492
Khanty-Mansiysk
60°
NORTHERN HILLS
Kama
Vishera
Vasyuganye
Mount Konzhakovsky 1569
Kama Reservoir
Berezniki
Tavda
Swamp
Vyatka
Kirovo-Chepetsk
Kosva
Kachkanar
Krasnokamsk
Tura
Tobolsk
Irtysh
Perm
CENTRAL URALS
Nizhny Tagil
Vyatka
Votkinsk Reservoir
UFIMSKOYE PLATEAU
Tyumen
Izhevsk
Yekaterinburg
Ishim
Volga
Lower Kama Reservoir
Ufa
Iset
Kazan
Tobol
Naberezhnye Chelny
Nizhny Ufaley
Kama
Belaya
55°
Chelyabinsk
Kurgan
Samara Reservoir
SOUTHERN URALS
Ik
Ufa
Miass
Dyoma
Mount Yamantau 1640
Tolyatti
Ural
Uy
Samara
Ishimbay
Magnitogorsk
Samara
Sibay
Tobyl
Sakmara
Oral
Orenburg
Gay
Irklinsky Reservoir
Orsk
Zhayyq
50°
Aqtöbe
50°
MUGHALZHAR HILLS
CASPIAN DEPRESSION
Zhem
Atyraū
KAZAKSTAN
Aral
CASPIAN SEA
ARAL SEA
Elevation
metres
feet
1,000
3,281
500
1,640
200
656
0
0
Spot elevations in metres
Swamps and marshes
©1998, Encyclopædia Britannica, Inc.

GEORGES CUVIER
(1769-1832)

LEVHA TEKTONİĞİ

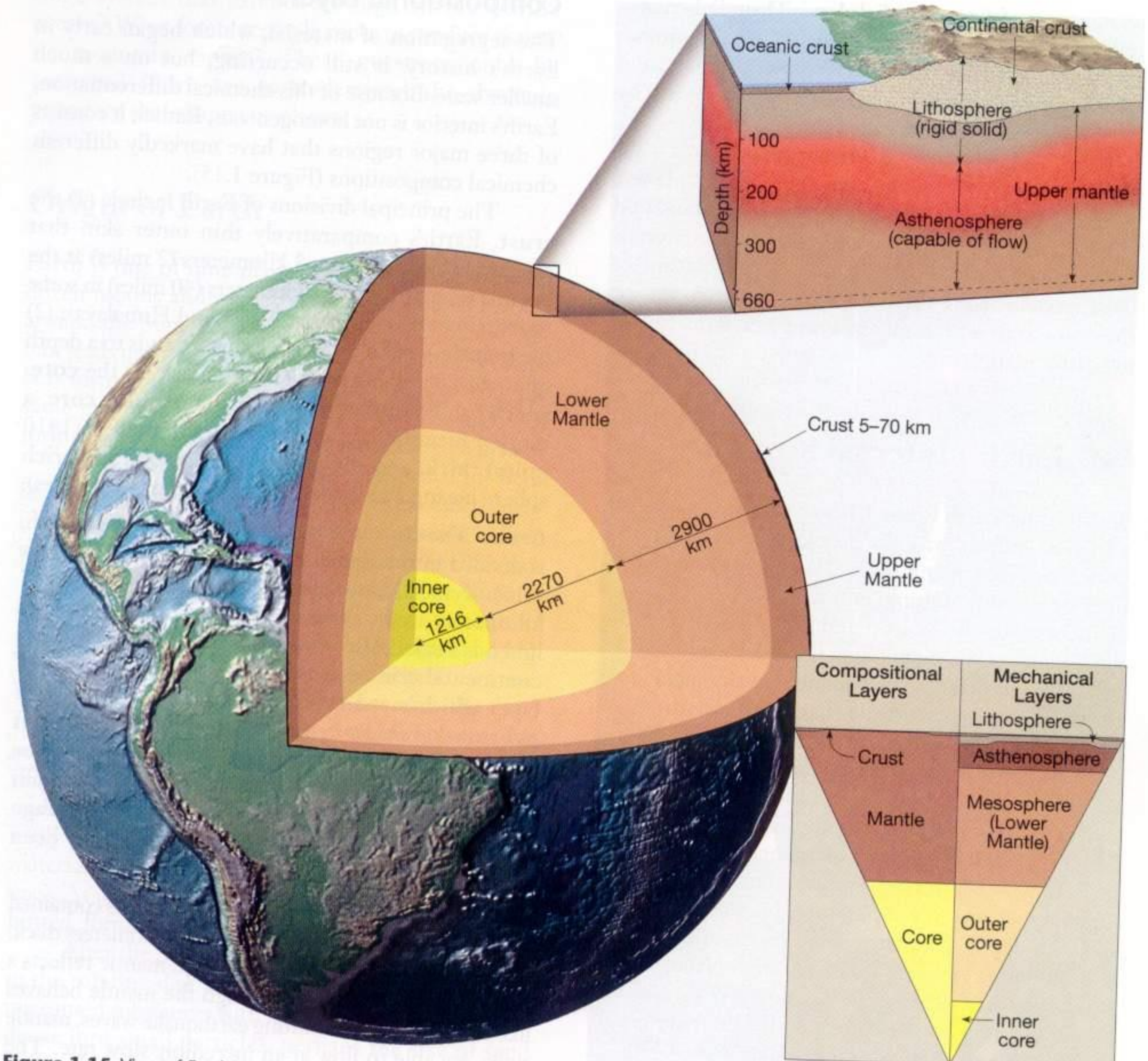


Figure 1.15 View of Earth's layered structure. **A.** The inner core, outer core, and mantle are drawn to scale, but the thickness of the crust is exaggerated by about five times. **B.** A blowup of Earth's outer shell. It shows the two types of crust (oceanic, continental), the rigid lithosphere, and weak asthenosphere.

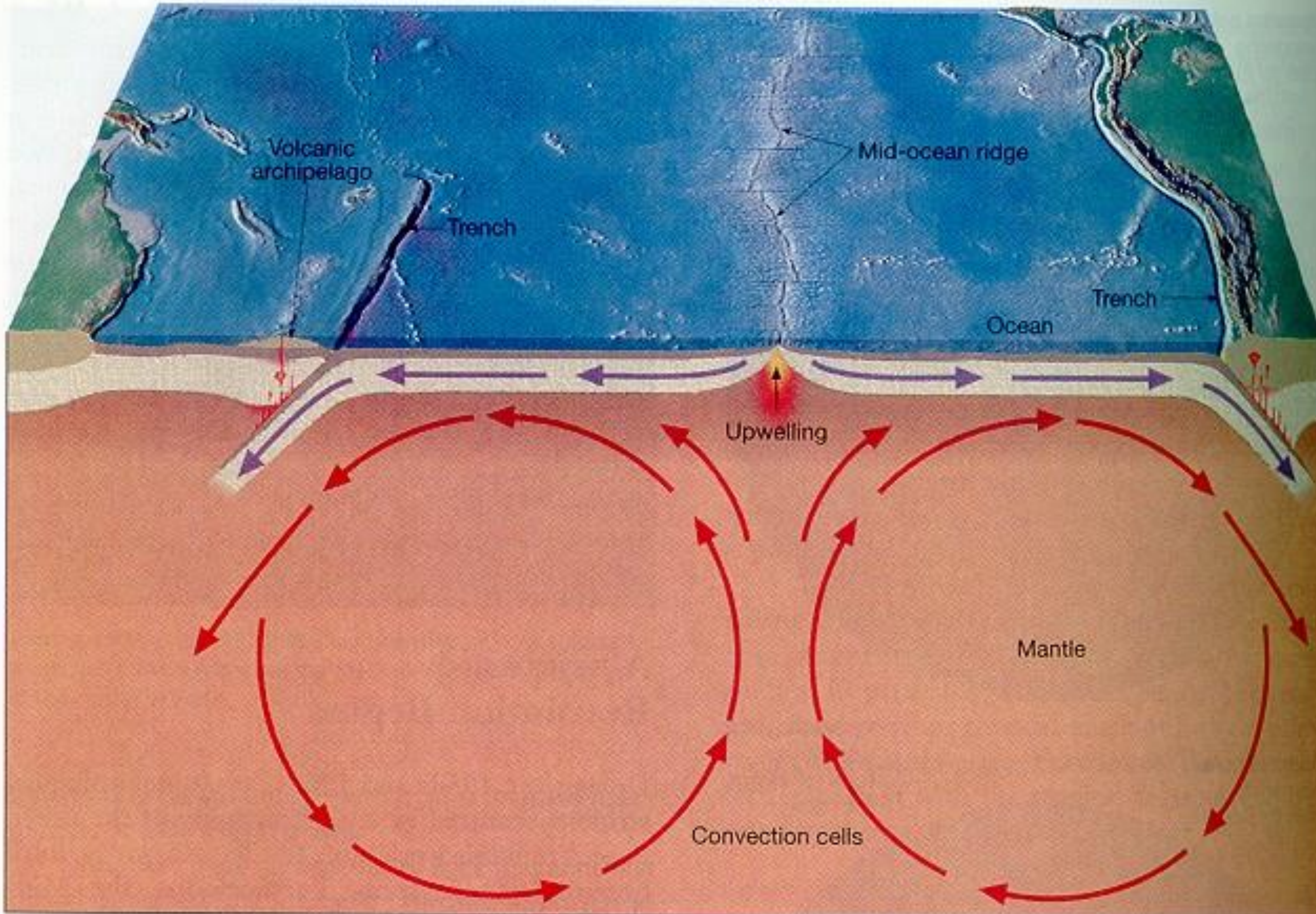


Figure 19.12 Seafloor spreading. Harry Hess proposed that upwelling of mantle material along the mid-ocean ridge system created new seafloor. The convective motion of mantle material carries the seafloor in a conveyor-belt fashion to the deep-ocean trenches, where the seafloor descends into the mantle.

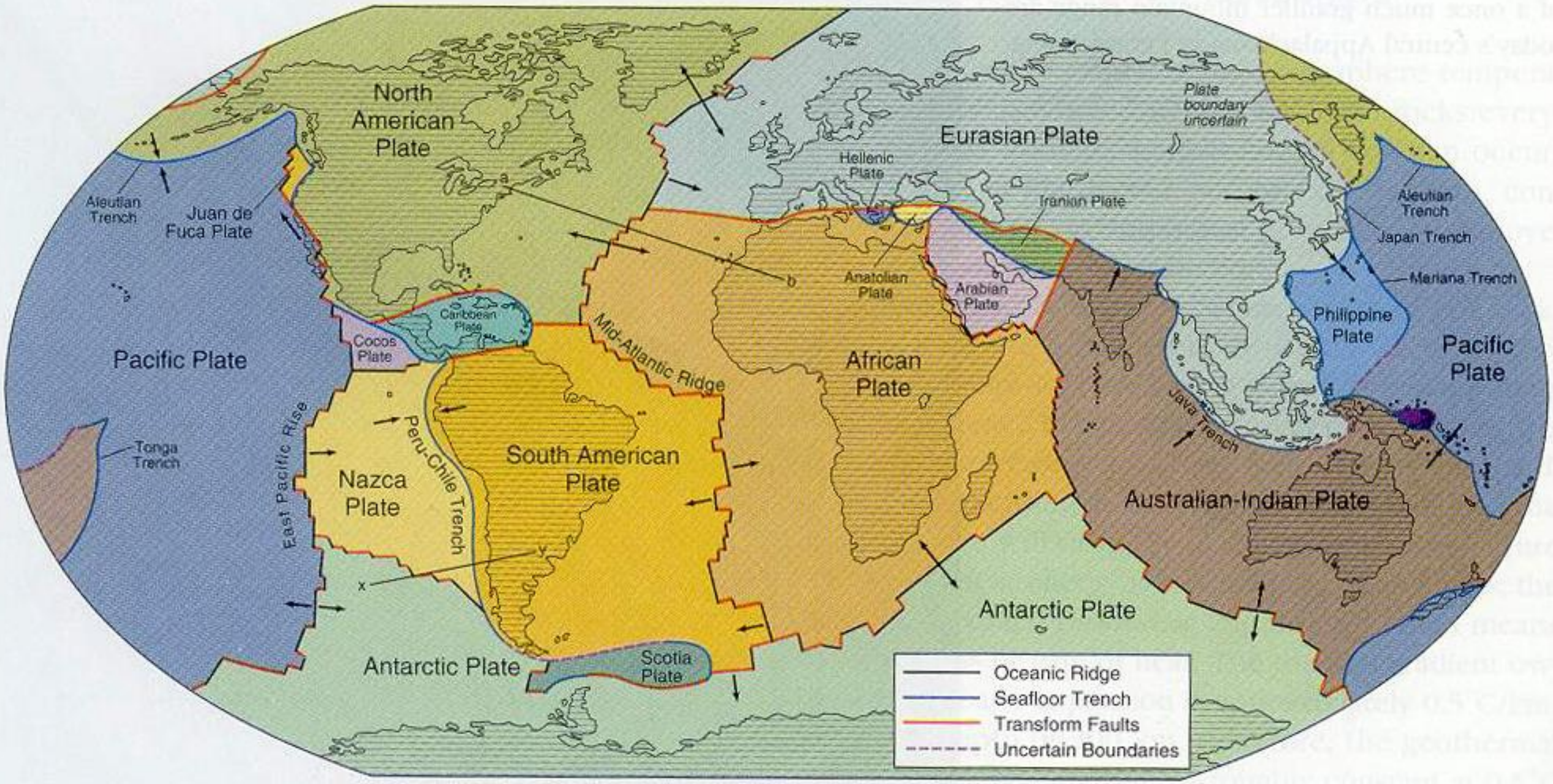


FIGURE 1.11 Six large plates of lithosphere and several smaller ones cover the Earth's surface and move steadily in the directions shown by the arrows. The profile shown in Fig. 1.13 lies along the line a-b, that in Fig. 1.15 lies along the line x-y.

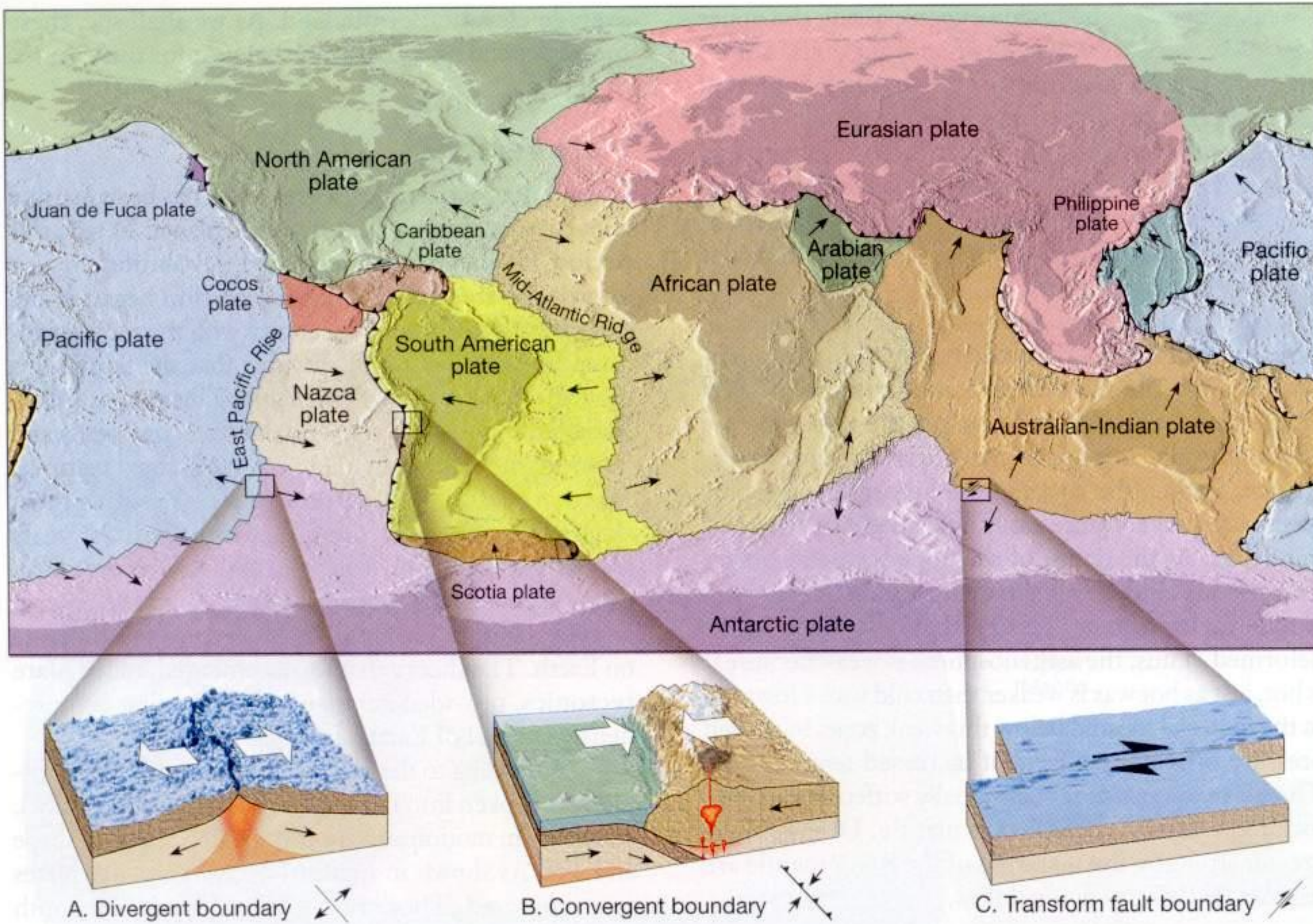


Figure 1.16 Mosaic of rigid plates that constitute Earth's outer shell. (After W. B. Hamilton, U.S. Geological Survey)

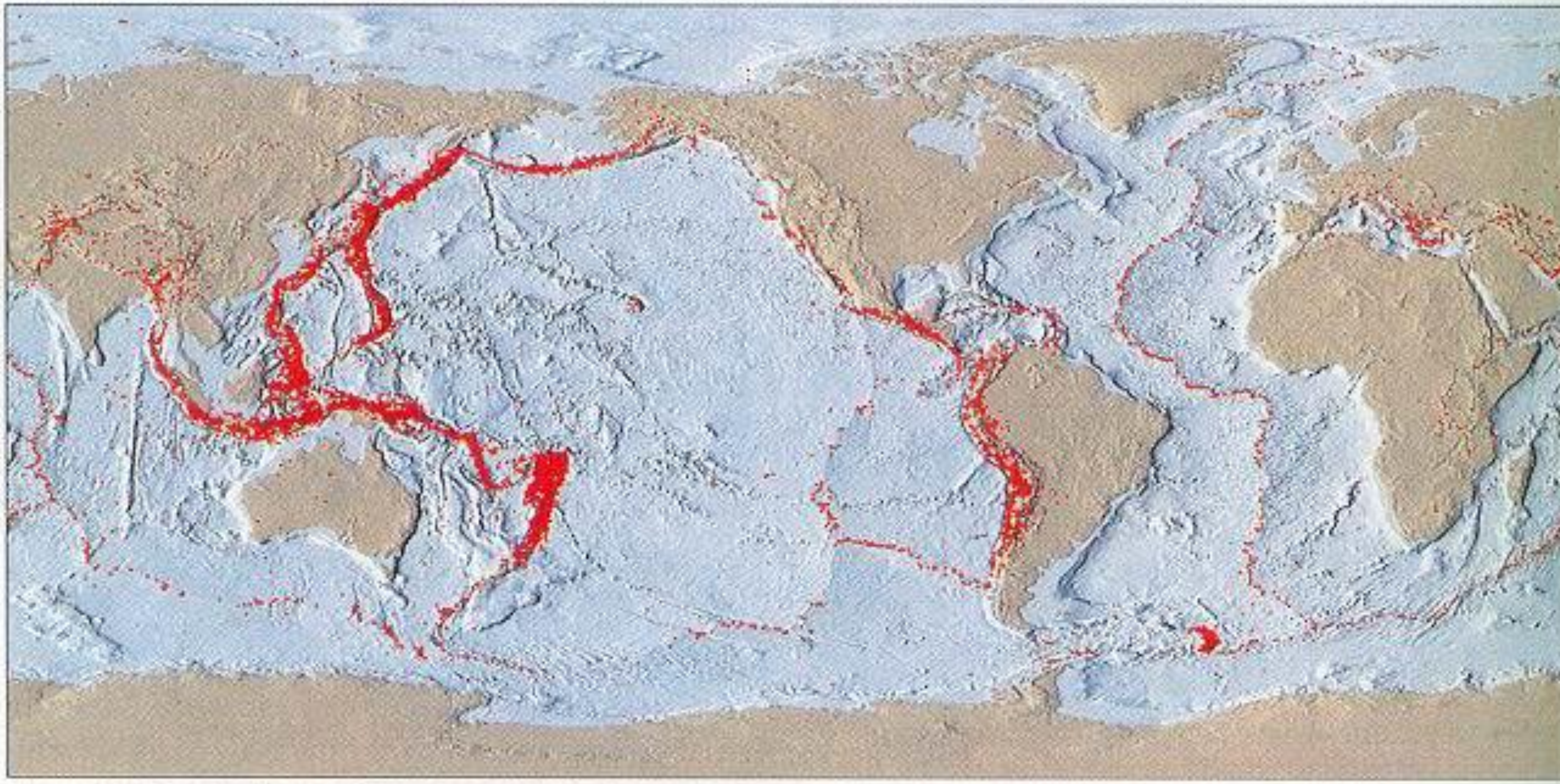


Figure 16.15 Distribution of the 14,229 earthquakes with magnitudes equal to or greater than 5 for the period 1980–1990. (Data from National Geophysical Data Center/NOAA)

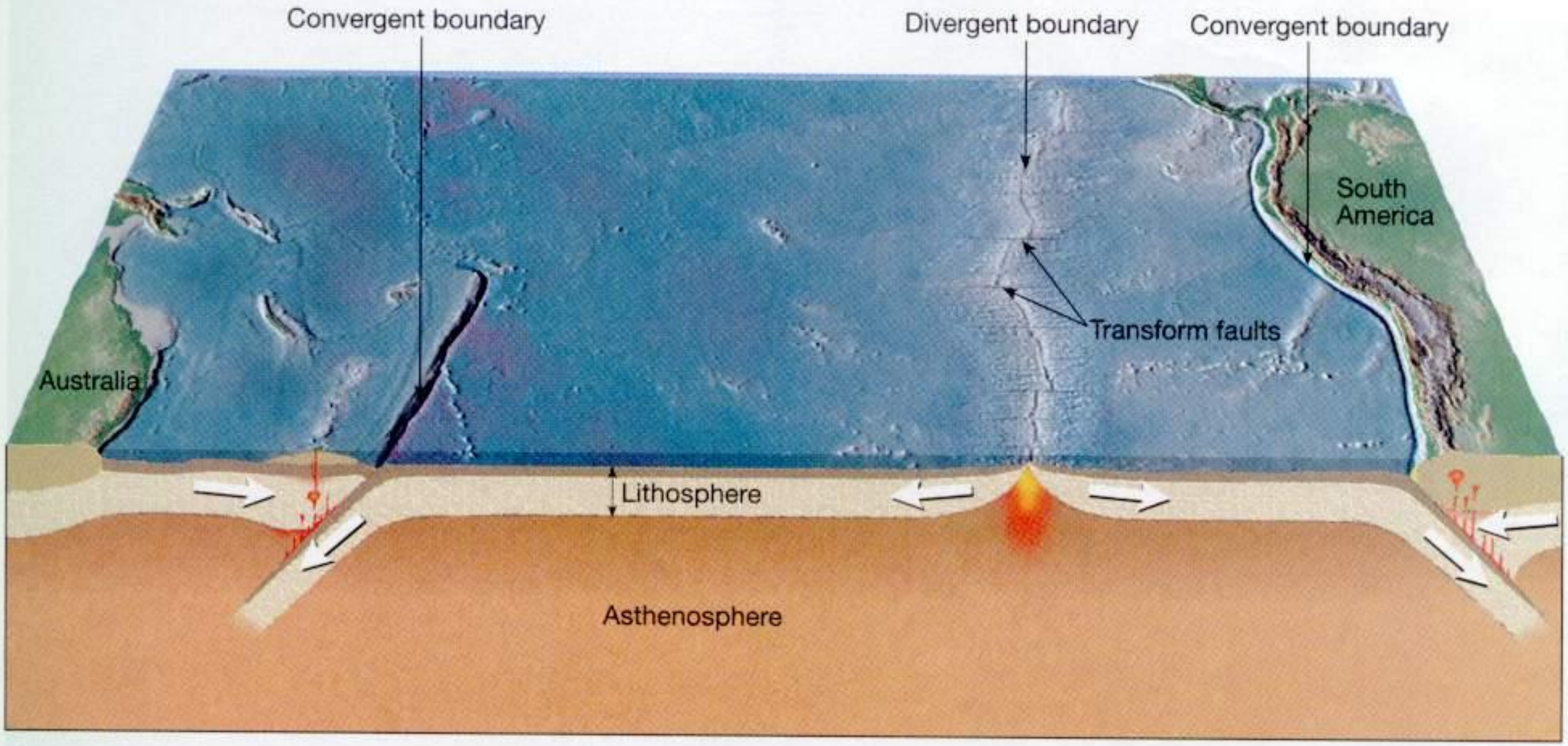


Figure 1.17 View of Earth showing the relationship between divergent and convergent plate boundaries.

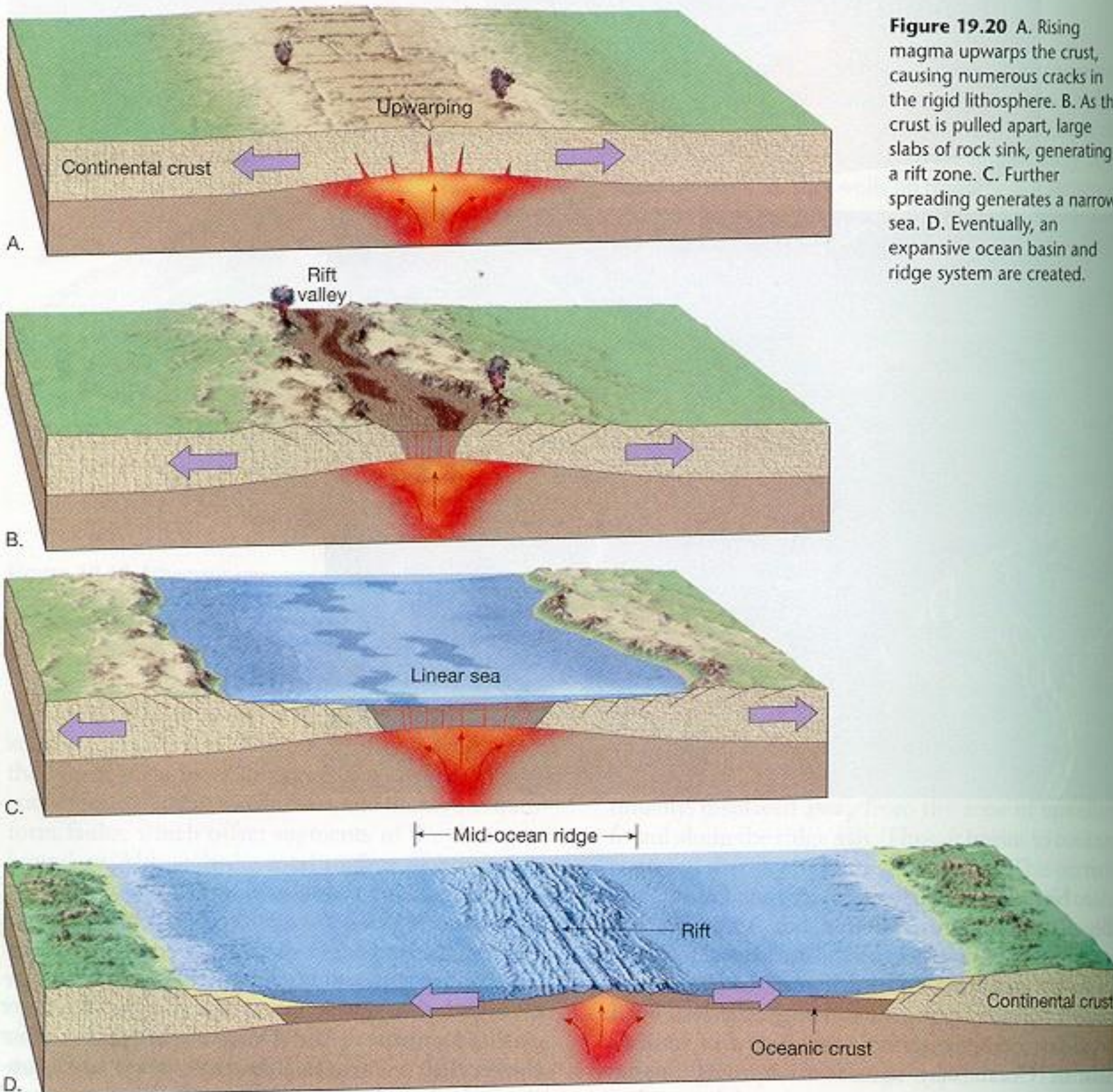


Figure 19.20 A. Rising magma upwarps the crust, causing numerous cracks in the rigid lithosphere. B. As the crust is pulled apart, large slabs of rock sink, generating a rift zone. C. Further spreading generates a narrow sea. D. Eventually, an expansive ocean basin and ridge system are created.

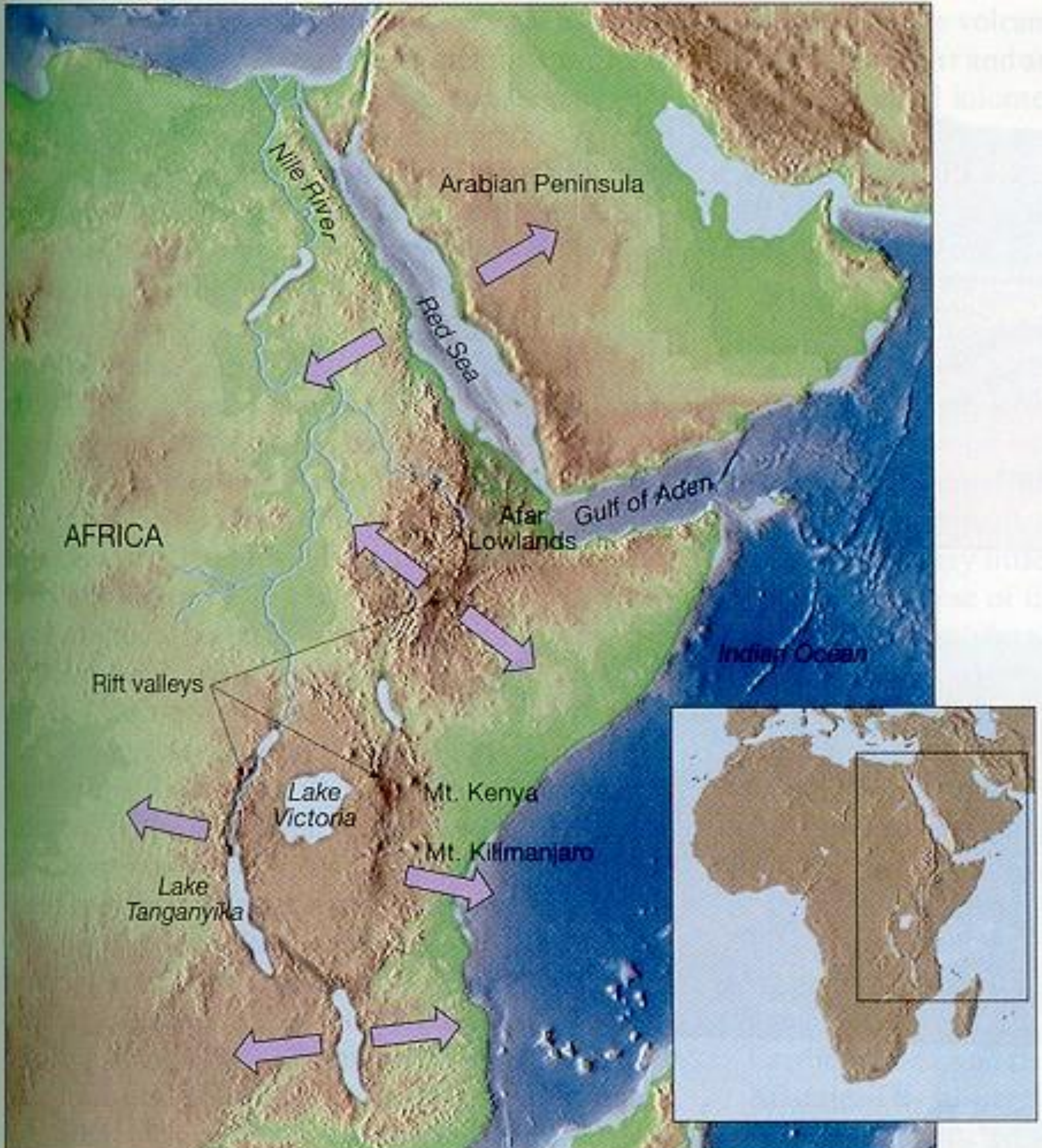


Figure 19.21 East African rift valleys and associated features.

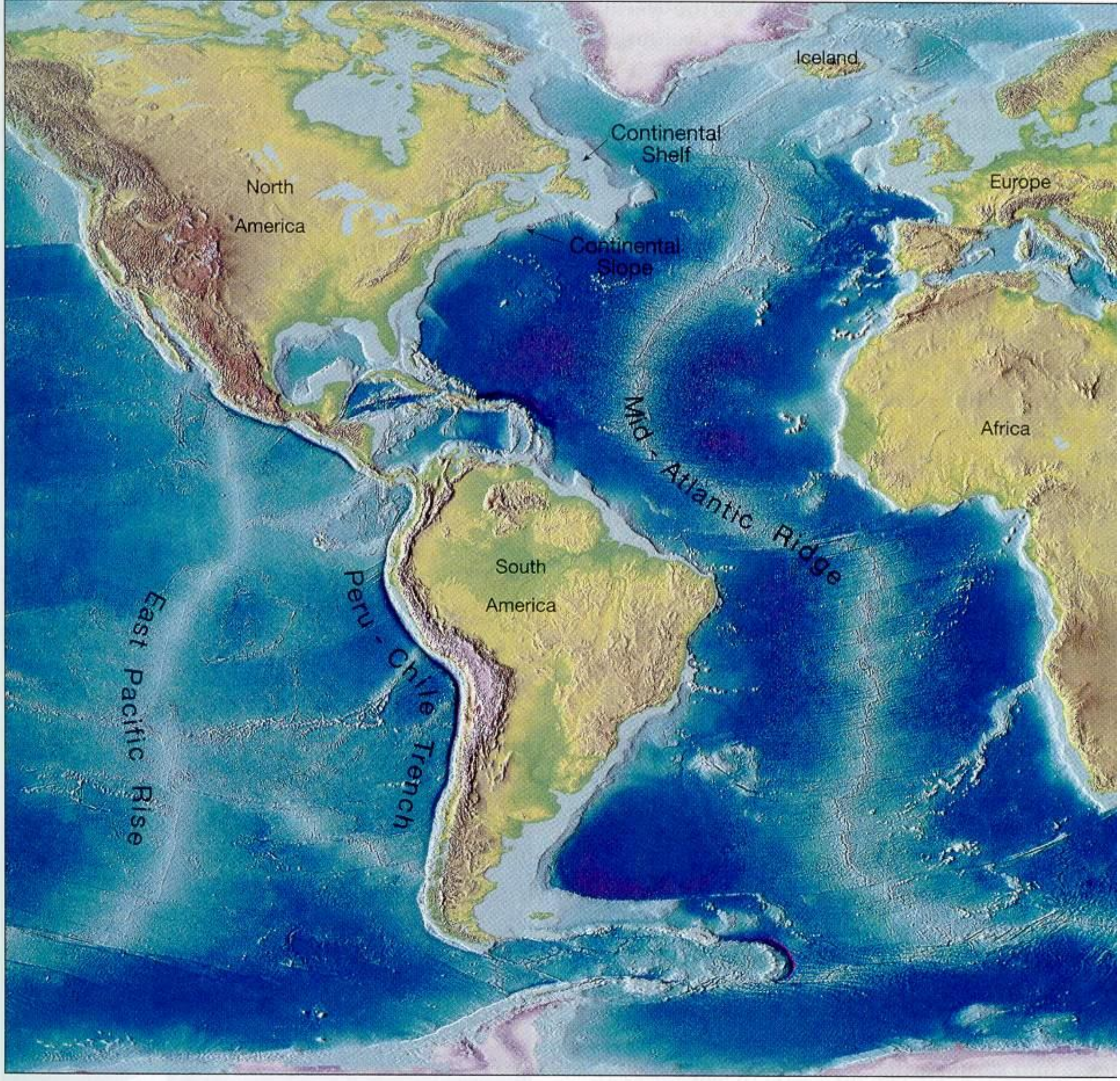


Figure 1.13 Major physical features of the continents and ocean basins. The diversity of features on the ocean floor is as varied as on the continents.

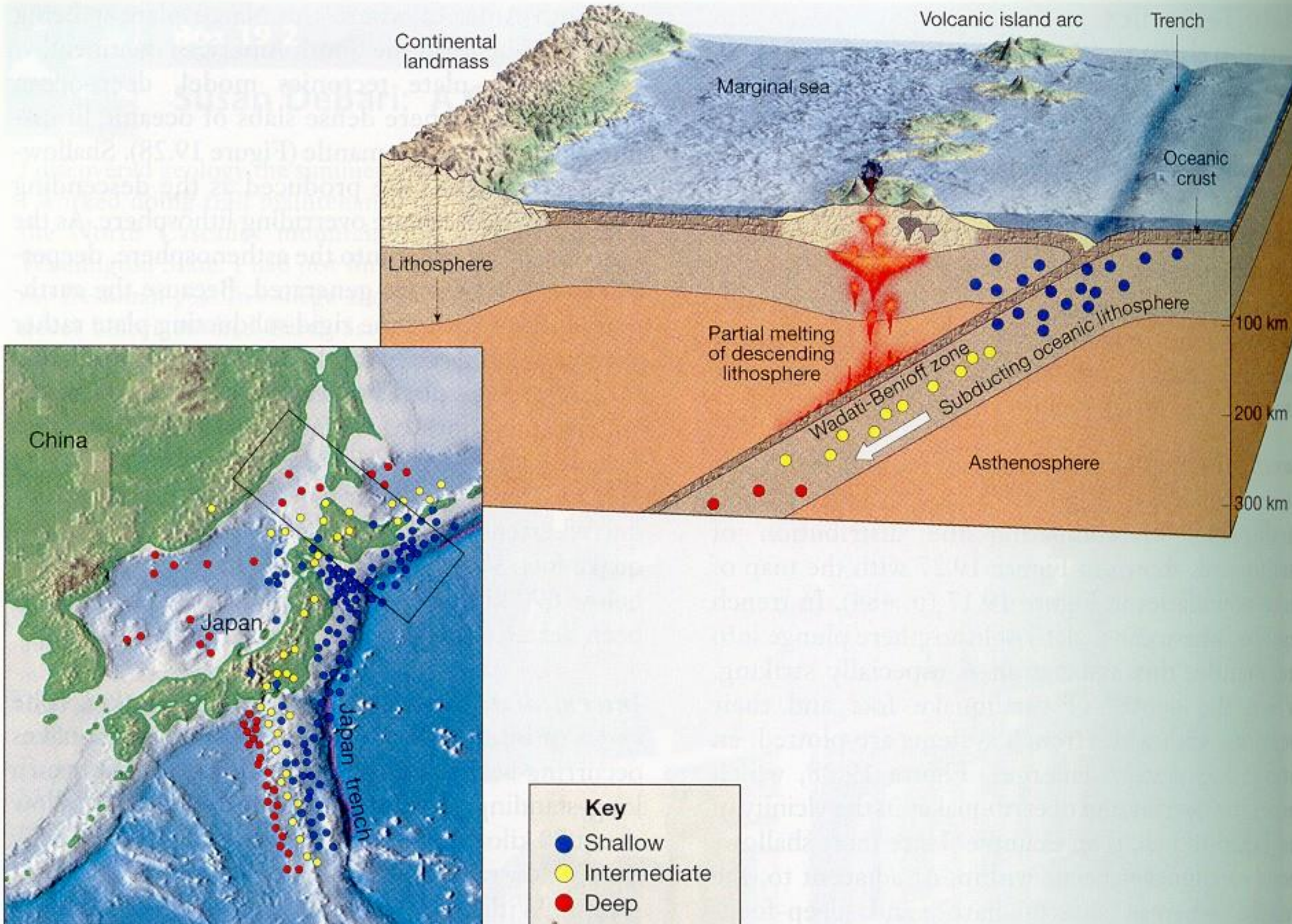


Figure 19.28 Distribution of earthquake foci in the vicinity of the Japan trench. Note that intermediate- and deep-focus earthquakes occur only within the sinking slab of oceanic lithosphere. (Data from NOAA)

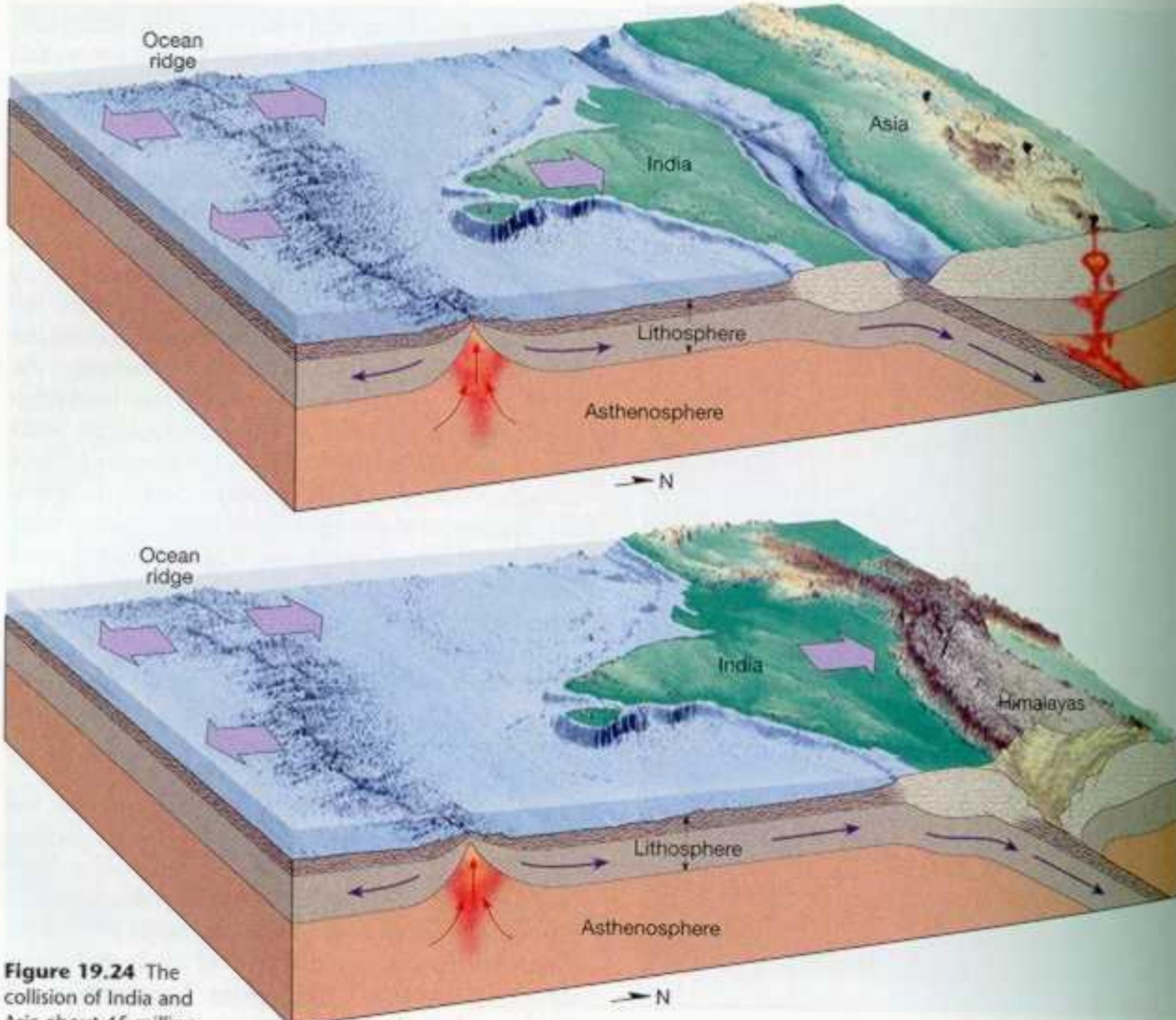


Figure 19.24 The collision of India and Asia about 45 million years ago produced the majestic Himalayas.

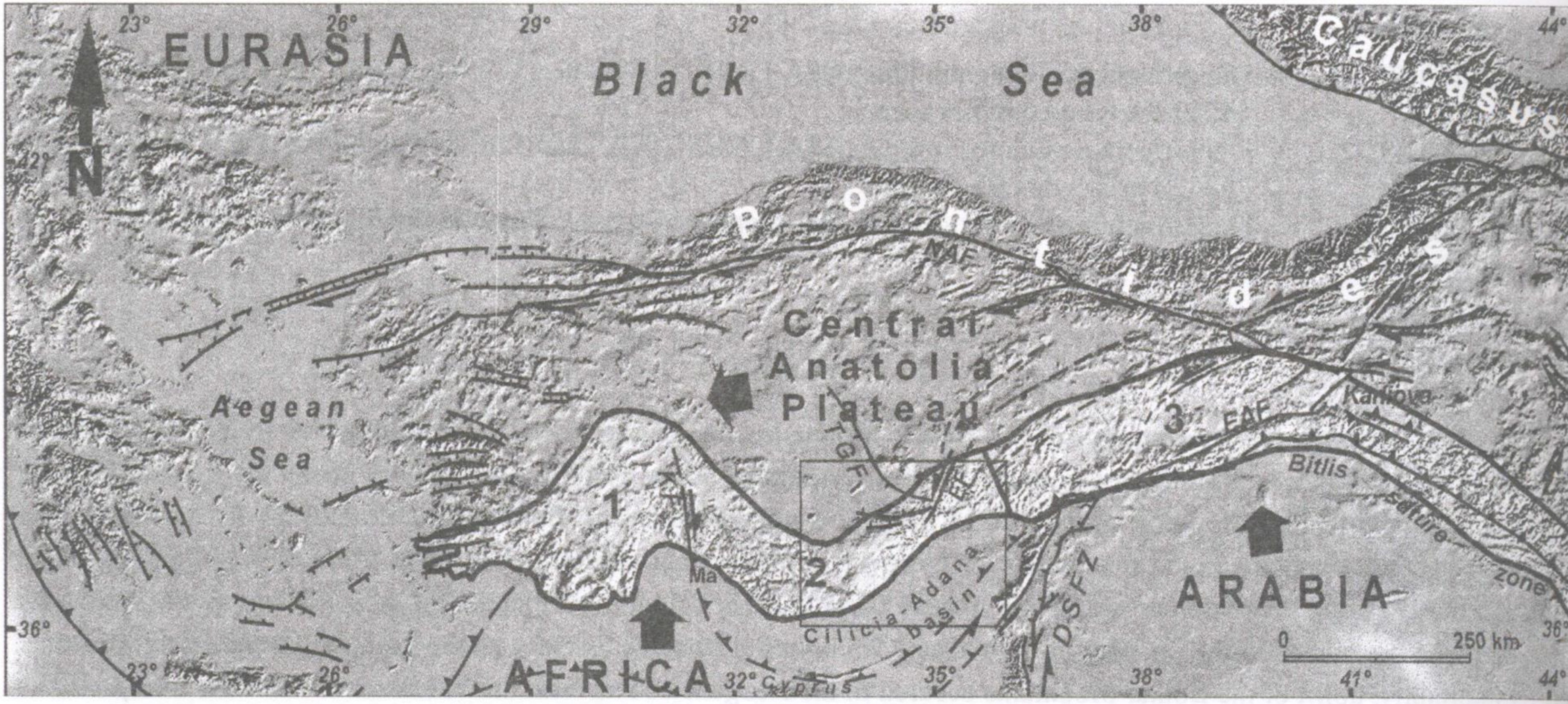
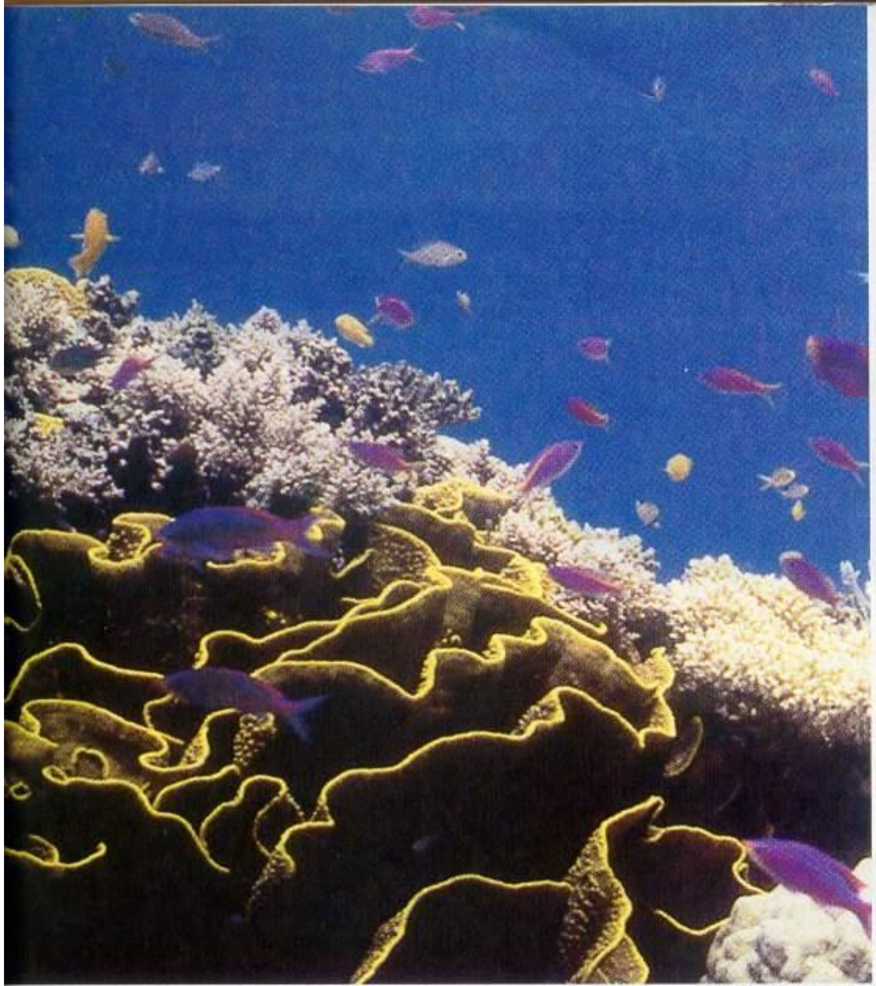
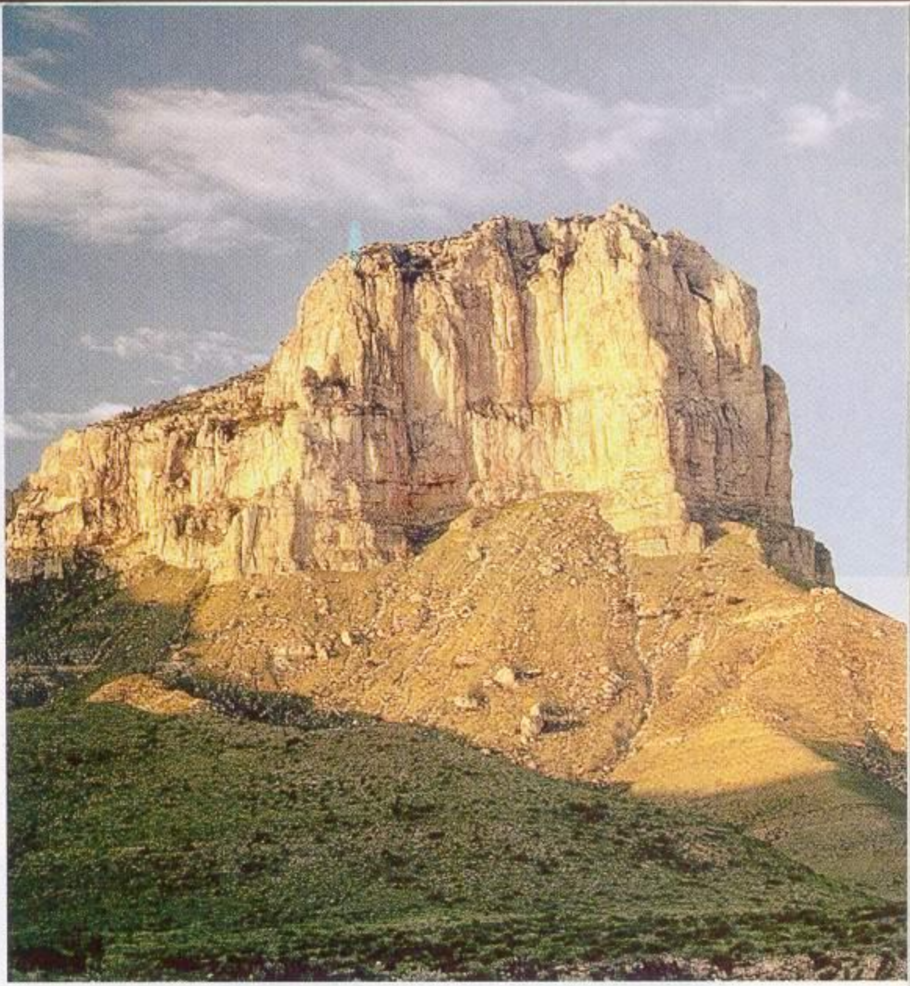


Figure 1. *Shadowed image of a Digital Elevation Model of the Eastern Mediterranean showing main tectonic features of the region. Large arrows represent relative plate motions within the Eurasian reference (Reilinger et al., 1997). Bright grey tones represent the Taurus belt divided in: 1, Western Taurides; (2), Central Taurides; and (3), Eastern Taurides. Rectangle = study area. DSFZ = Dead Sea fault zone; EAF = East Anatolian Fault; EF = Ecemis fault; Ma = Manavgat: KF = Kirkkavak fault; NAF = North Anatolian Fault; TGF = Tuz Gölü fault.*

JEOLOJİ NEYLE UĞRAŞIR



A.



B.

Figure 6.10 A. This modern coral reef is at Bora Bora in French Polynesia. (Photo by Nancy Sefton/Photo Researchers)
B. El Capitan Peak, a massive limestone cliff in Guadalupe Mountains National Park, Texas. The rocks here are an exposed portion of a large reef that formed during the Permian period. (Photo by Steve Elmore/The Stock Market)

JEOLOJİ'NİN KURAMSAL BOYUTU: Yer tarihinin araştırılması

Figure 10.15 Braided stream choked with sediment near the edge of a melting glacier. (Photo by Bradford Washburn)

FIGURE 4.10 Skeletons of calcareous foraminifera (smooth globular objects), siliceous radiolaria (delicate meshed objects), and siliceous rod-shaped sponge spicules from a deep-sea ooze, photographed by scanning electron microscope. The fossils are from a sediment core collected in the western Indian Ocean.

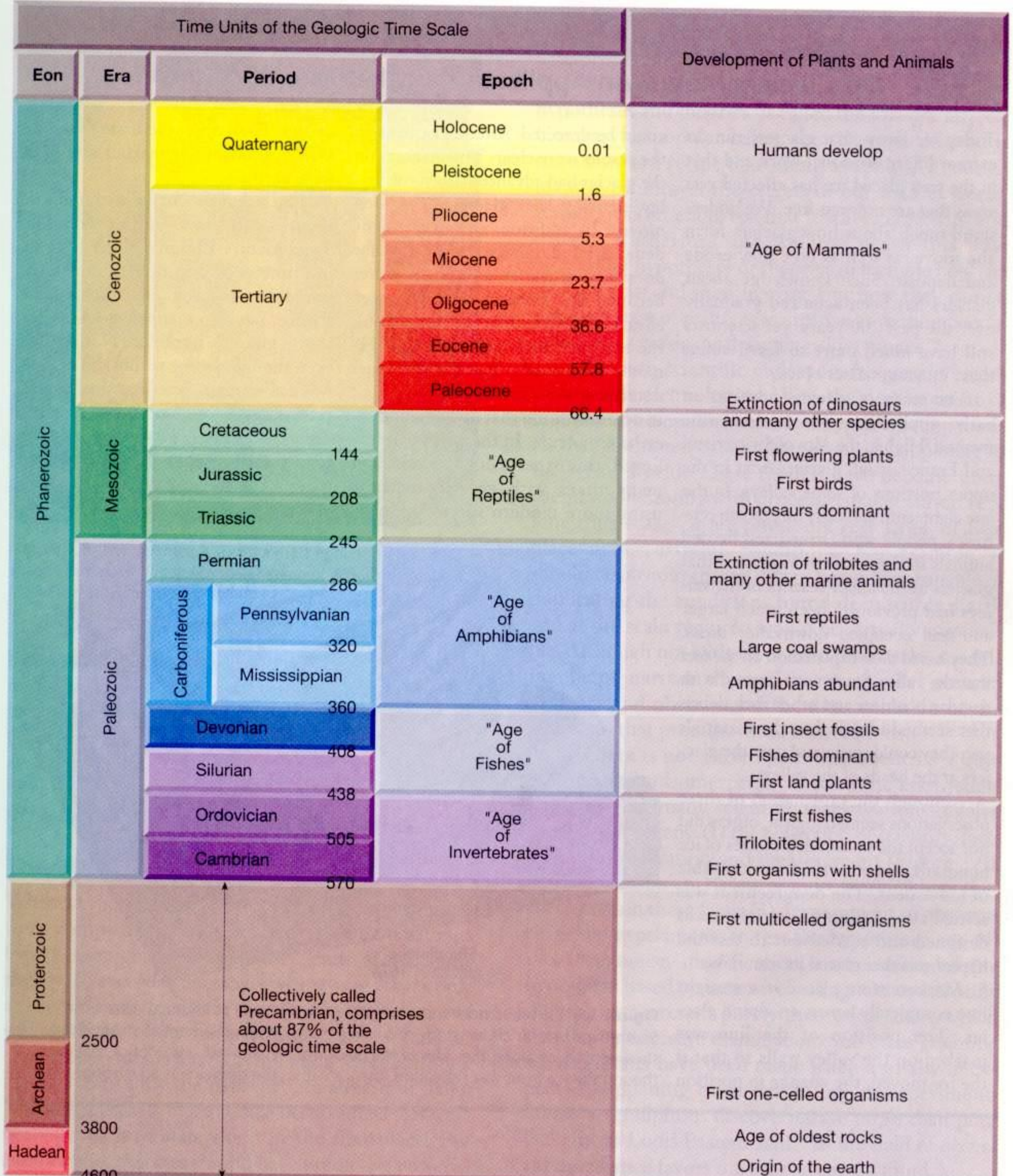
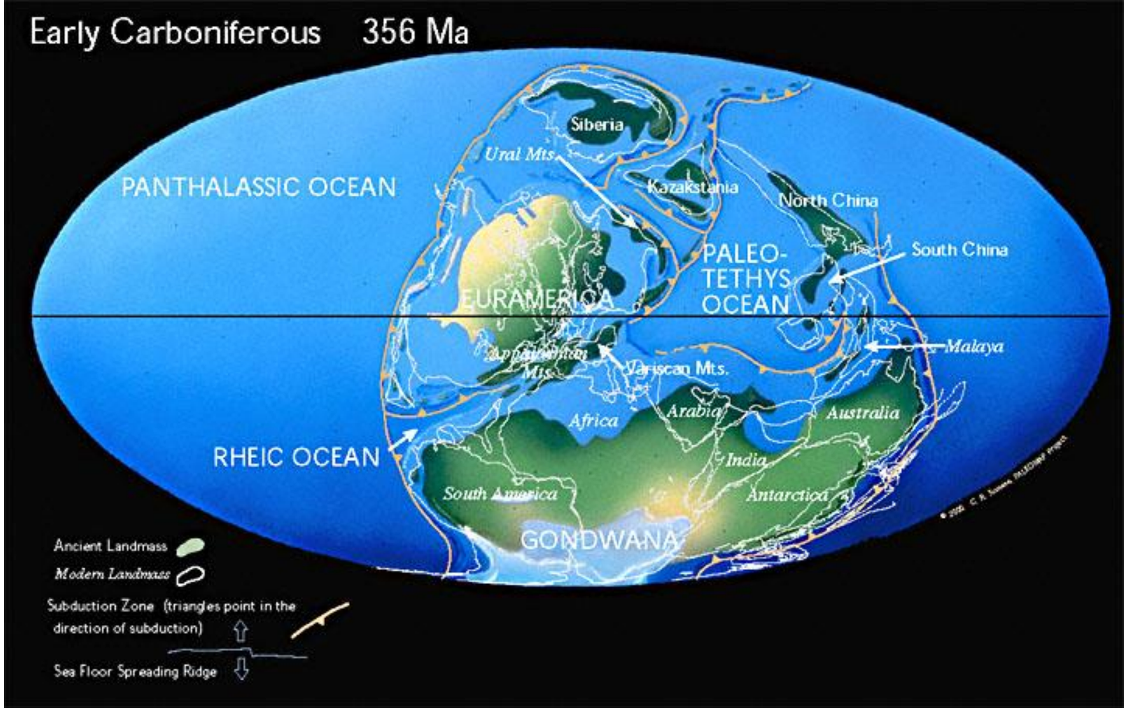
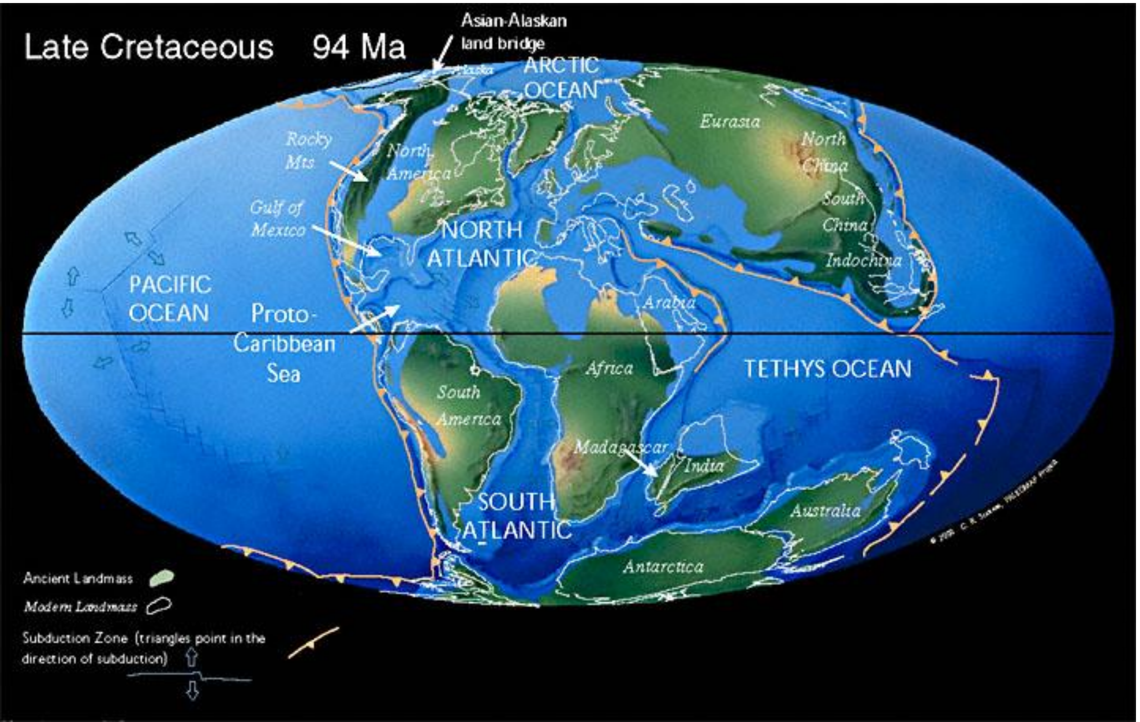


Figure 1.7 The geologic time scale. Numbers on the time scale represent time in millions of years before the present. These dates were added long after the time scale had been established using relative dating techniques. The Precambrian accounts for more than 85 percent of geologic time. (Data from Geological Society of America)


Early Carboniferous 356 Ma
PANTHALASSIC OCEAN
Siberia
Ural Mts.
Kazakstania
North China
South China
PALEO-
TETHYS
OCEAN
EURAMERICA
Malaya
Appalachian Mts.
Variscan Mts.
Arabia
Africa
Australia
RHEIC OCEAN
India
South America
Antarctica
GONDWANA
Ancient Landmass
Modern Landmass
Subduction Zone (triangles point in the direction of subduction)
Sea Floor Spreading Ridge


Late Cretaceous 94 Ma
Asian-Alaskan land bridge
ARCTIC OCEAN
Eurasia
Rocky Mts.
North America
North China
South China
Gulf of Mexico
NORTH ATLANTIC
Indochina
PACIFIC OCEAN
Proto-Caribbean Sea
Arabia
Africa
TETHYS OCEAN
South America
Madagascar
India
SOUTH ATLANTIC
Australia
Antarctica
Ancient Landmass
Modern Landmass
Subduction Zone (triangles point in the direction of subduction)

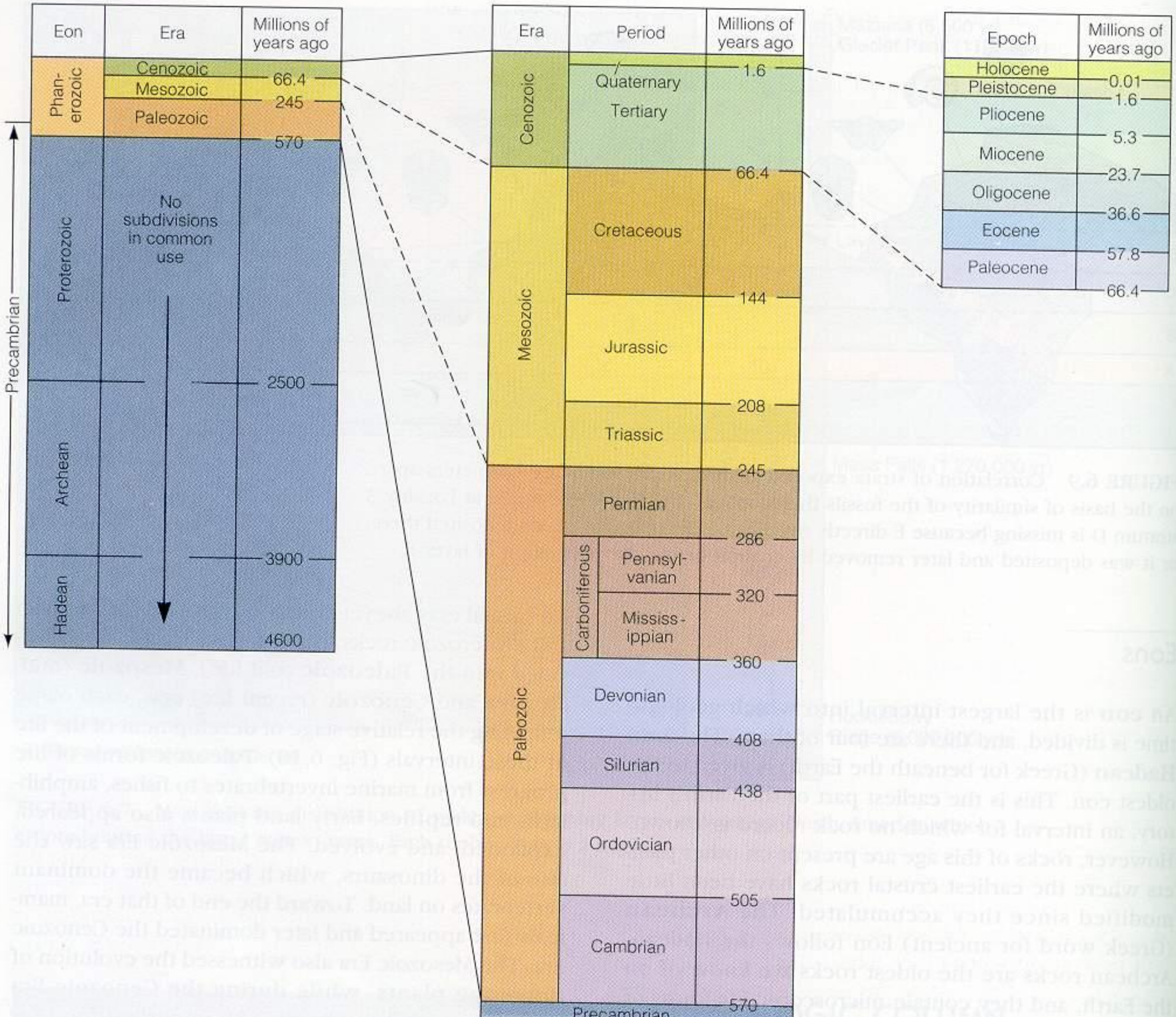


FIGURE 6.10 The geologic time scale. Absolute ages obtained from radiometric dates. Note that the Pennsylvanian and Mississippian Periods are equivalent to the Carboniferous Period of Europe. The time boundary between the Archean and Hadean is uncertain as no rocks of the Hadean Eon are known on the Earth. Hadean rocks are known to exist on other planets in the solar system.

Figure 1.18 The August 20, 1997, eruption of Soufriere Hills volcano on the Caribbean island of Montserrat. This i

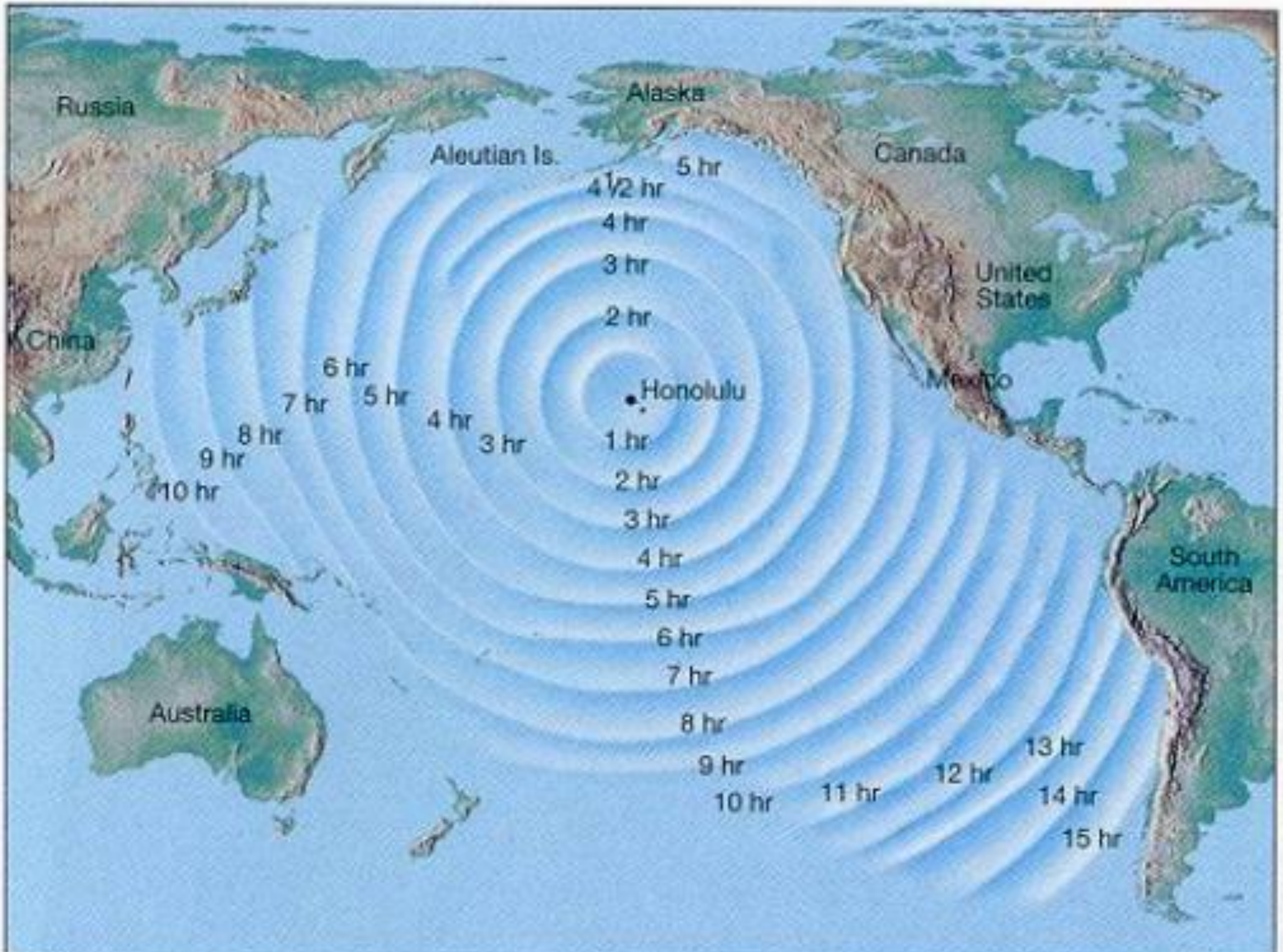
Figure 7.2 Deformed metamorphic rocks exposed in a road cut in the Eastern Highland of Connecticut. (Photo by Phil Dombrowski)

Figure 15.13 Sheep Mountain, a doubly plunging anticline. Note that erosion has cut the flanking sedimentary beds into low ridges that make a "V" pointing in the direction of plunge. (Photo by John S. Shelton)

Figure 15.19 A fault sc
the bottom of this photo
Tom Bean)

Figure 15.18 Faulting caused the vertical displacement of these beds located near Kanab, Utah. Arrows show relative motion of rock units. (Photo by Tom Bean/DRK Photo)

JEOLOJİNİN PRATİK AMAÇLARI: Yeraltı zenginliklerinin araştırılması, doğal afetlerin öngörülmesi, önlenmesi


Russia
Alaska
Aleutian Is.
Canada
5 hr
4 1/2 hr
4 hr
3 hr
United States
2 hr
China
6 hr
Honolulu
Mexico
7 hr
5 hr
4 hr
8 hr
3 hr
1 hr
9 hr
10 hr
2 hr
3 hr
4 hr
South America
5 hr
6 hr
7 hr
Australia
8 hr
13 hr
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12 hr
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10 hr
15 hr

BIZIM
BIZIM ECZANE

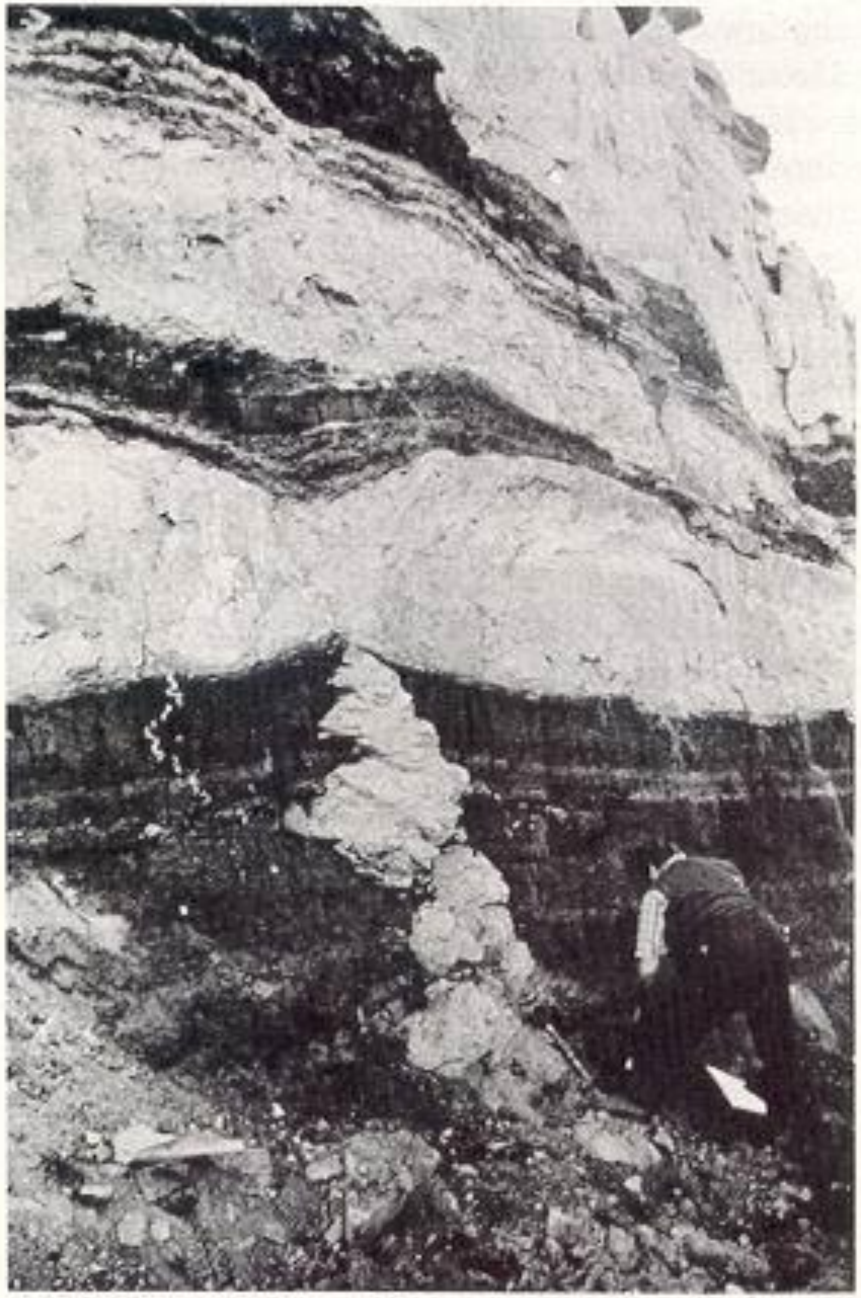

Fig. 5.7 Clastic dykes in a bituminous coal seam, Utah, U.S.A.

“Biz bu toprakları çocuklarımızdan ödünç, atalarımızdan borç olarak aldık”

Bir Kızılderili Atasözü