GENEL JEOLOJİ-I
DERS PLANI

1-Jeolojiye özlü bir giriş

1.1- Jeoloji hakkında bazı tarihsel notlar
1.1-1. Katastrofizm
1.1-2. Modern jeolojinin doğuşu
1.2- Jeolojik zaman
1.3- Bilimsel Araştırmanın doğası
1.4- Dünya'nın görünüşü
1.5- Dünya'nın iç yapısı
1.6- Dinamik Dünya
1.7- Bir sistem olarak Dünya: Kayaç çevrimi

2- Madde ve Mineraller
1.1- Mineraller
1.2- Mineralerin yapısı
1.3- Minerallerin fiziksel özellikleri
1.4- Mineral grupları

3- Magmatik kayaçlar
1.1- Magmanın kristallenmesi
  1.1.1- Magmatik dokular
  1.1.2- Magmatik bileşim
  1.1.3- Magmatik kayaçların isimlendirilmesi
1.2- Levha Tektoniği ve magmatik kayaçlar

4- Volkanik ve plütonik etkinlik

1.1- Volkanik patlamaların doğası
1.2- Patlamalarda ortaya çıkan malzeme
1.3- Volkanlar ve volkanik patlamalar
1.4- Diğer volkanik şekiller
1.5- Plutonik magmatik etkinlik
1.6- Volkanlar ve iklim

5- Sedimanter Kayaçlar

1.1- Sedimanter kayaçların türleri
1.2- Kırıntılı sedimanter kayaçlar
1.3- Kimyasal sedimanter kayaçlar
1.4- Sedimanların kayaca dönüşümü
1.5- Sedimanter kayaçların sınıflanması
1.6- Sedimanter ortamlar

6- Metamorfik kayaçlar

1.1- Metamorfizmanın nedenleri
1.2- Metamorfizma kayaçları nasıl değiştirir
1.3- Yaygın metamorfik kayaçlar
1.4- Kontak metamorfik kayaçlar
1.5- Fay zonları boyunca metamorfizma
1.6- Bölgesel metamorfizma
1.7- Metamorfizma ve levka tektoniği

7- Jeolojik zaman

1.1- Göreli taşlandırma
1.2- Kayaç tabakalarının yaşlandırılması
1.3- Radyoaktivite ile mutlak yaşlandırma
1.4- Jeolojik zaman çizelgesi

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)

-Jeoloji bilimine ilişkin tarihsel notlar

*Katastrofizm

-Modern jeolojinin doğuşu

*Uniformitariyanizm

*Hutton

*Lyell

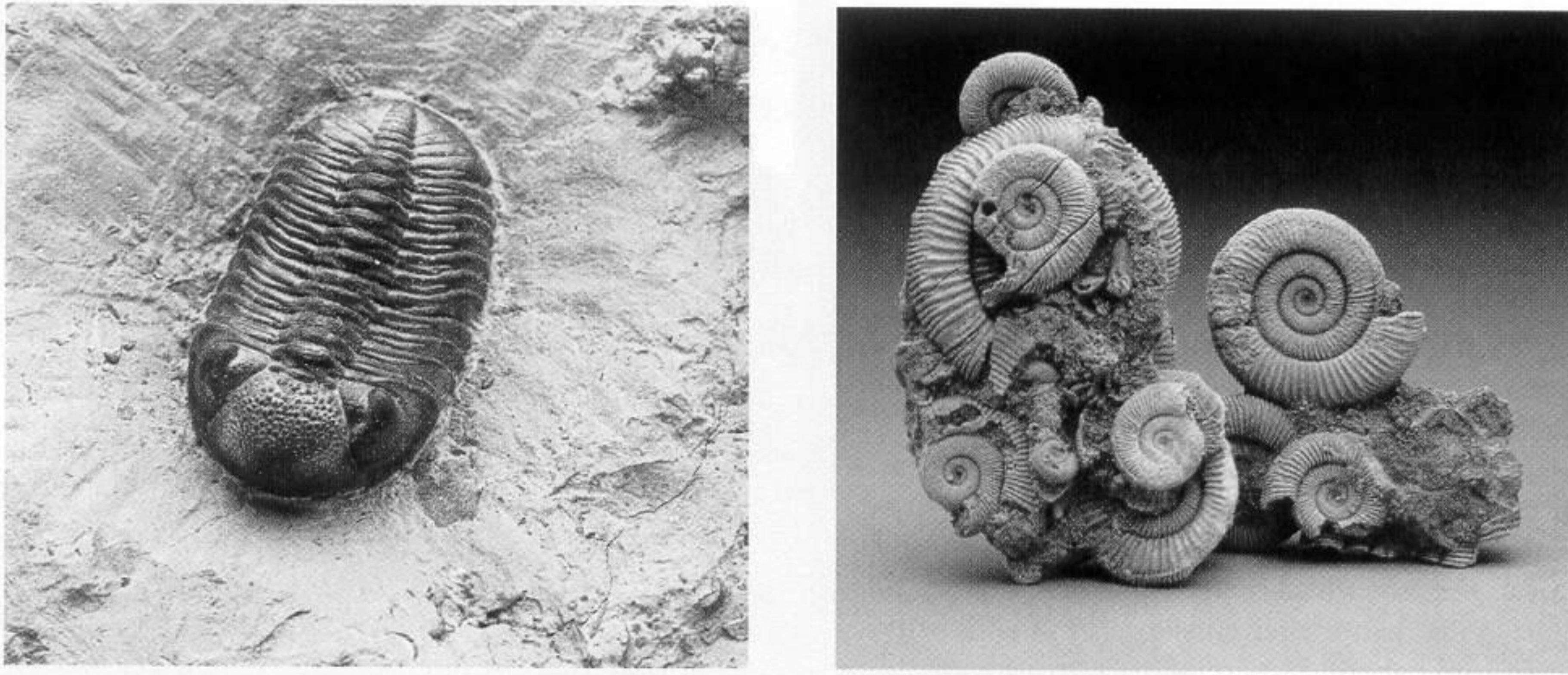
Figure 1.2 James Hutton, the eighteenth-century Scottish geologist who is often called the "father of modern geology." (Photo courtesy of the British Museum)

Figure 1.3 Charles Lyell. Lyell's book, *Principles of Geology*, did much to advance modern geology. (Courtesy of the Institute of Geological Sciences, London)

JEOLOJİK ZAMAN

*Bağıl yaşlandırma

*Mutlak yaşlandırma



A.

B.

Figure 1.6 Fossils are important tools for the geologist. In addition to being very important in relative dating, fossils can be useful environmental indicators. **A.** Natural cast of a trilobite. This diverse group of marine organisms was prominent during the Paleozoic era. **B.** This extinct coiled cephalopod, like its modern descendants, was a highly developed marine organism.

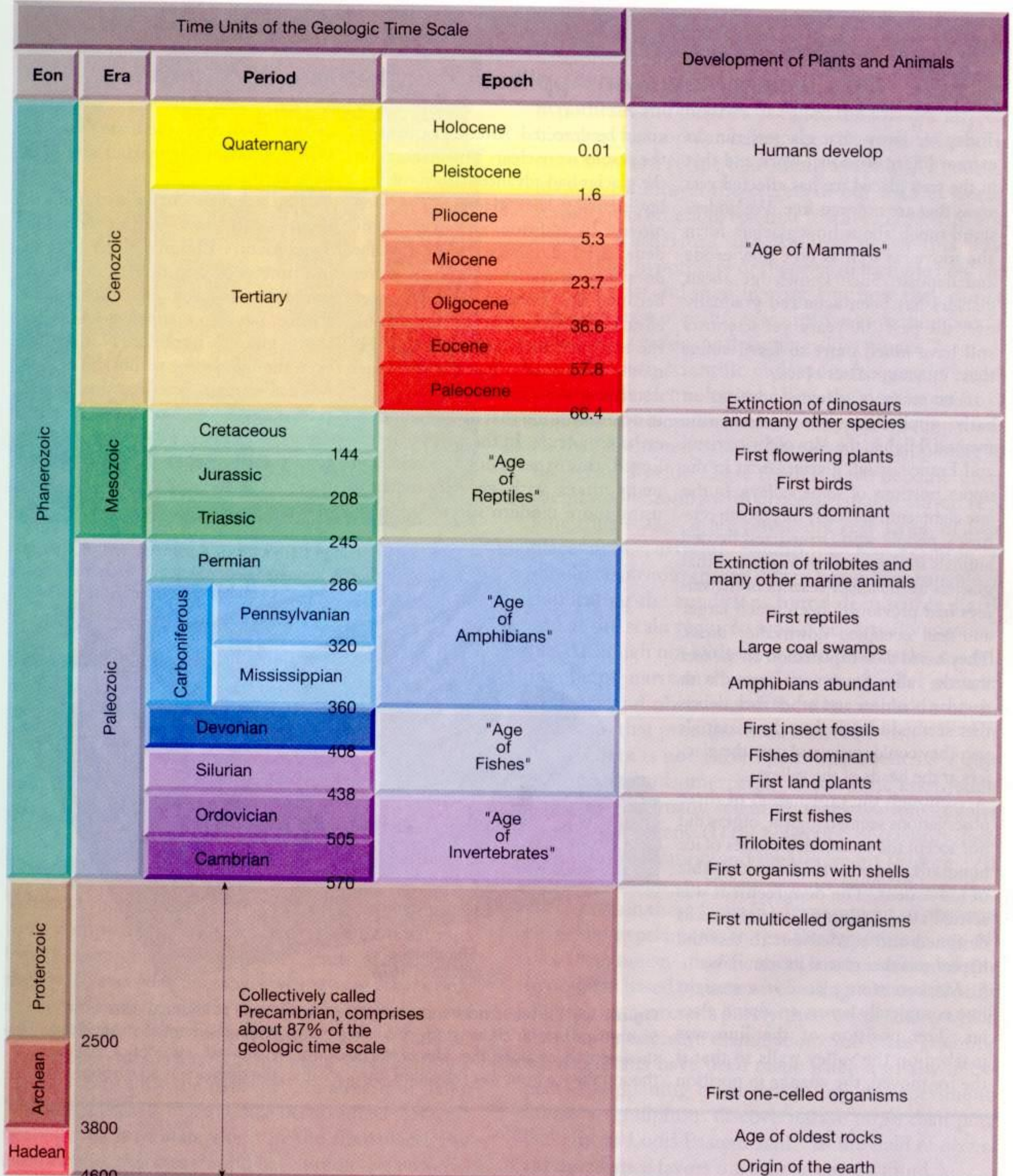


Figure 1.7 The geologic time scale. Numbers on the time scale represent time in millions of years before the present. These dates were added long after the time scale had been established using relative dating techniques. The Precambrian accounts for more than 85 percent of geologic time. (Data from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

BİLİMSEL ARAŞTIRMA

*Hipotez

*Teori

*Bilimsel Yöntemler

Figure 1.8 This scientist is using a mass spectrometer to analyze rare gases for geophysics research. (Photo by Jean Miele/The Stock Market)

BİR SİSTEM OLARAK DÜNYA

*Hidrosfer

*Atmosfer

*Biyosfer

*Katı dünya

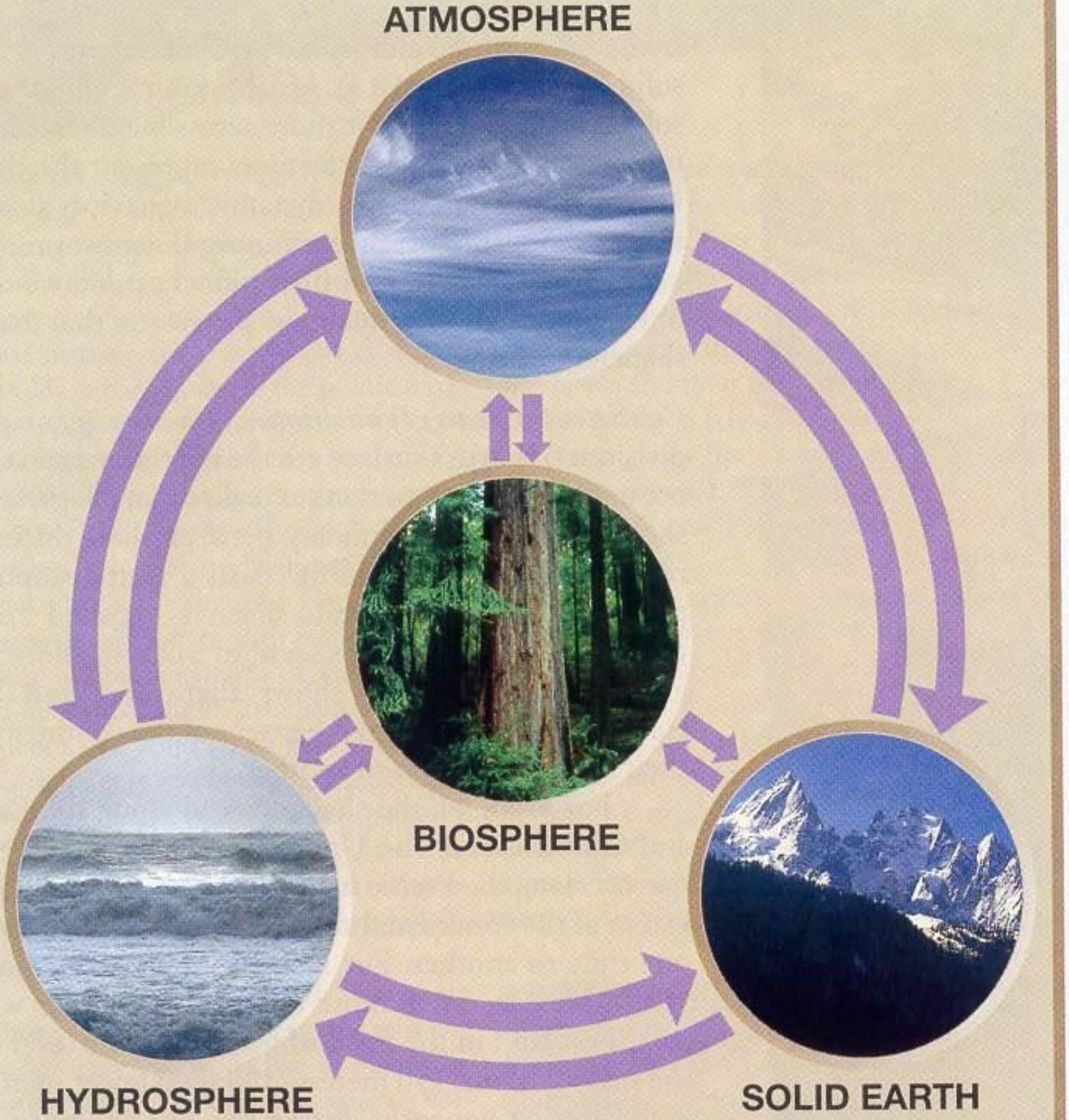


diagram illustrates the dynamic nature of Earth. The planet's four "spheres" constantly and vigorously interact with each other to produce a highly complex system. For more on Earth as a system, see Box 1.3.

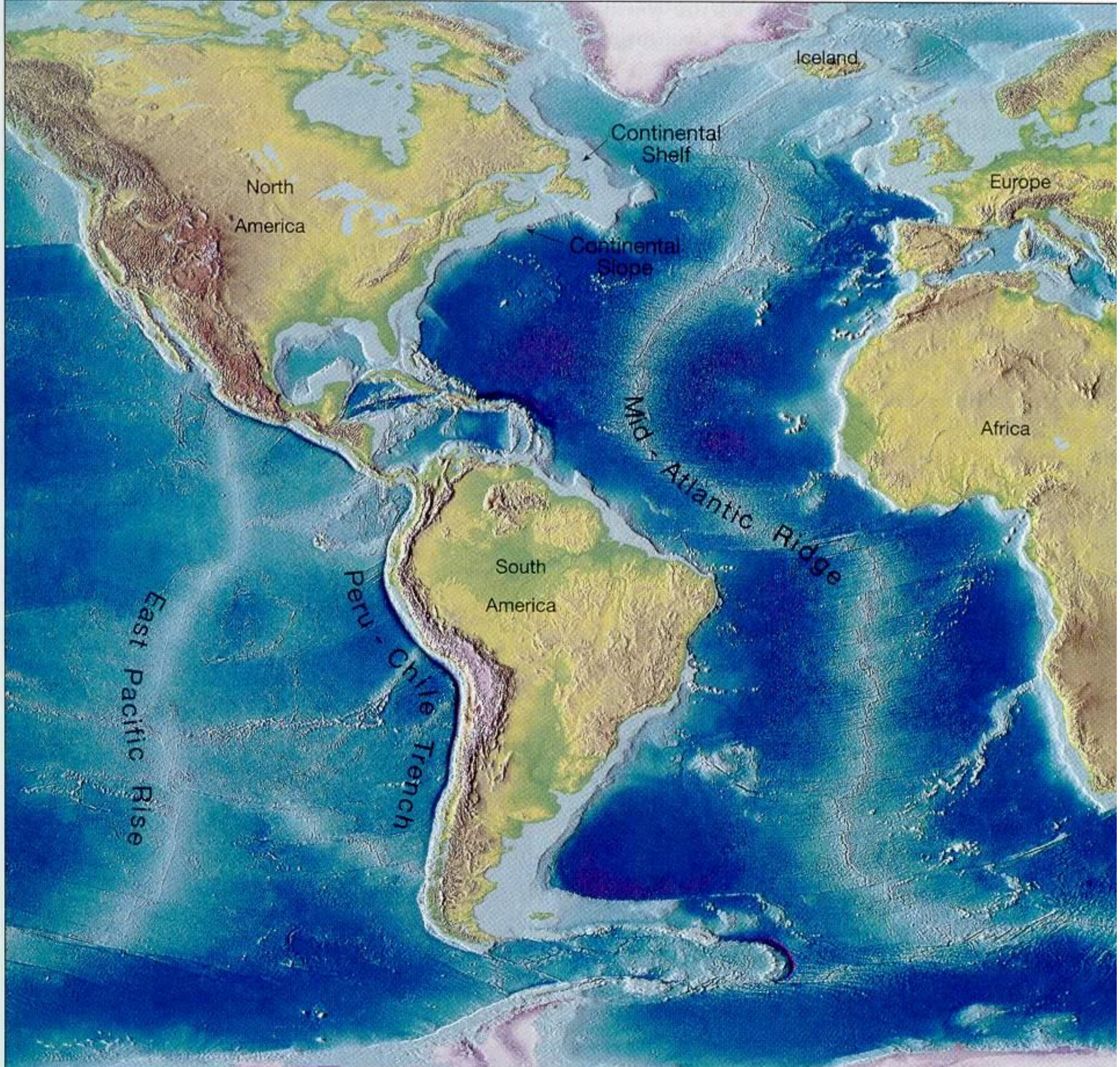


Figure 1.13 Major physical features of the continents and ocean basins. The diversity of features on the ocean floor is as varied as on the continents.

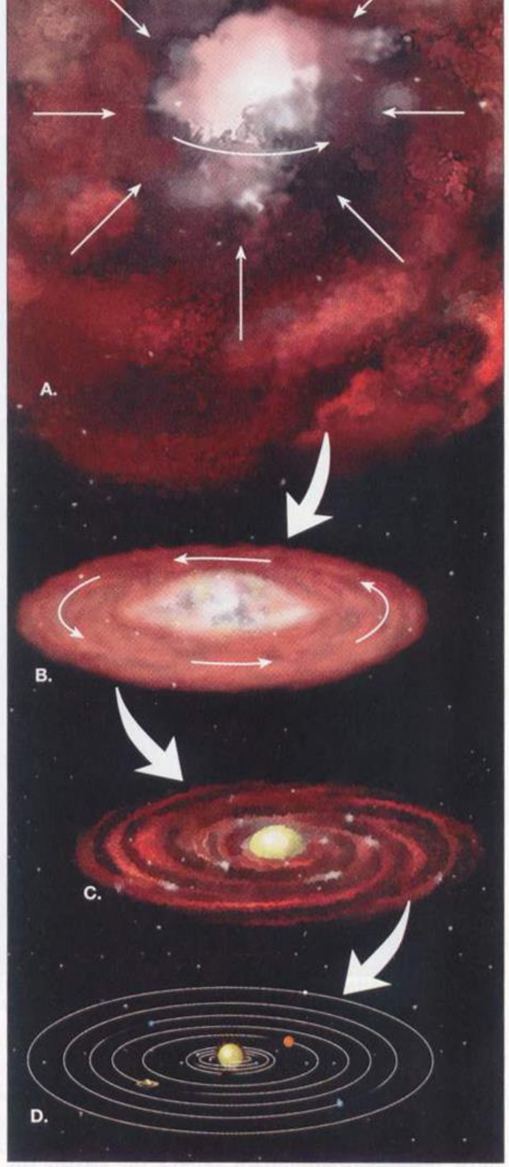


Figure 1.14 Nebular hypothesis. **A.** A huge rotating cloud of dust and gases (nebula) begins to contract. **B.** Most of the material is gravitationally swept toward the center, producing the Sun. However, owing to rotational motion some dust and gases remain orbiting the central body as a flattened disk. **C.** The planets begin to acrete from the material that is orbiting within the flattened disk. **D.** In time most of the remaining debris was either collected into the nine planets and their moons or swept out into space by the solar wind.

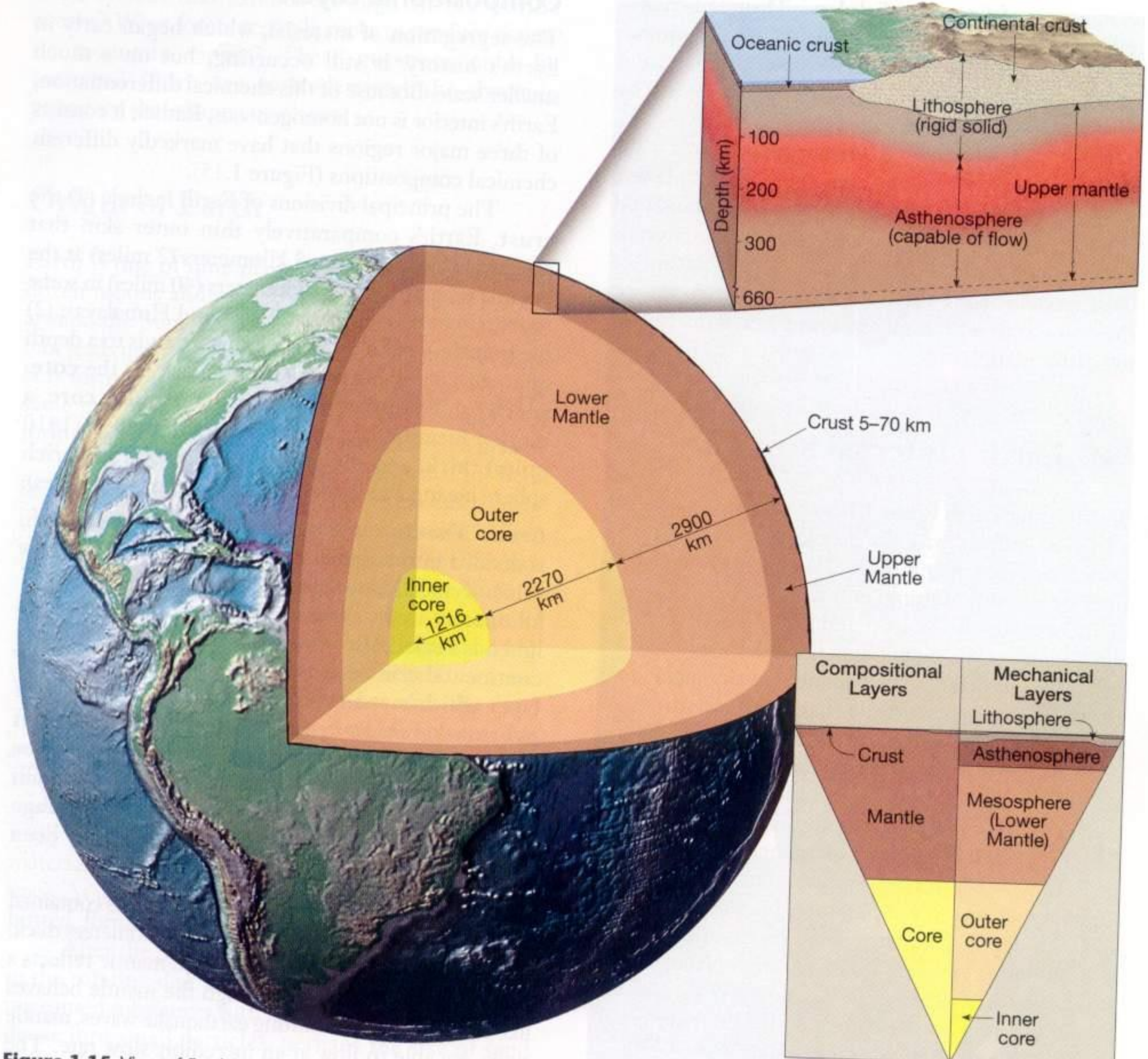


Figure 1.15 View of Earth's layered structure. **A.** The inner core, outer core, and mantle are drawn to scale, but the thickness of the crust is exaggerated by about five times. **B.** A blowup of Earth's outer shell. It shows the two types of crust (oceanic, continental), the rigid lithosphere, and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

Yerin Yapisi

Kabuk:

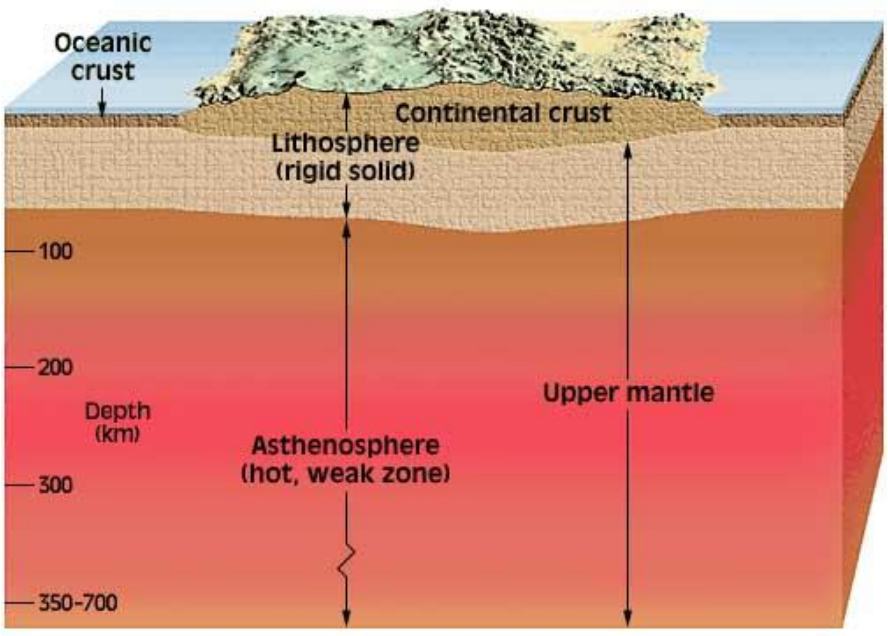
Okyanusal Kabuk

Ince: 10 km

Uniform stratigrafi

= ofiyolit serisi:

- Sedimentler
- Pillow (Yastik) basaltlar
- Levha dayklari
- Massif Gabro
- ultramafik (mantle)



Kitasal Kabuk

Daha Kalin: 20-90 km   ortalama ~35 km

Oldukca degisken bilesimde

- Ortalama ~ granodiyorit

Yerin Ic Yapisi

Manto:

Peridotit (ultramafik)

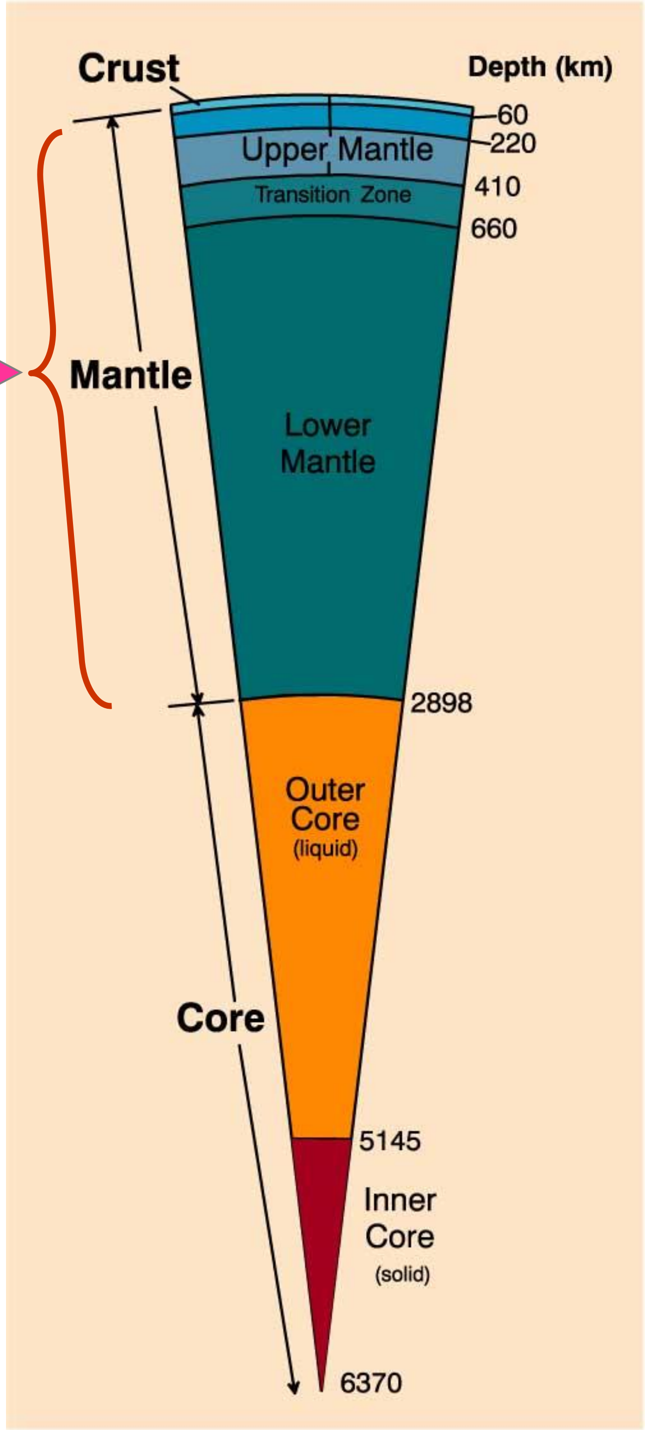
Ust kesim 410 km ye kadar (olivine → spinel)

- Dusuk hiz katmani 60-220 km

Gecis zonu hiz ani olarak yukseldikce

- 660 spinel → perovskite-gecisi
  - $Si^{IV} \rightarrow Si^{VI}$

Alt manto daha yavas hiz yukselimiyle karakteristik



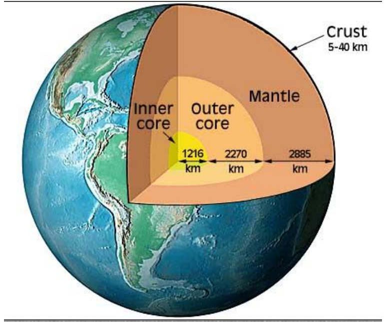


Figure 1-2. Major subdivisions of the Earth. Winter (2001) An Introduction to Igneous and Metamorphic Petrology. Prentice Hall.

Yerin Ic Yapisi

Cekirdek:

Fe-Ni metallik bilesim

Dis cekirdek sivi

- S-dalgalarini iletmez

Ic cekirdek kati

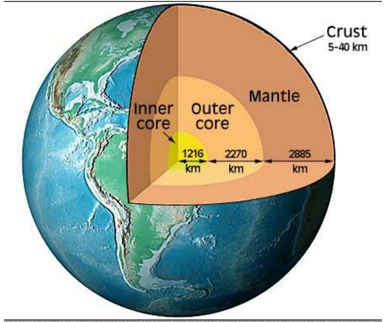
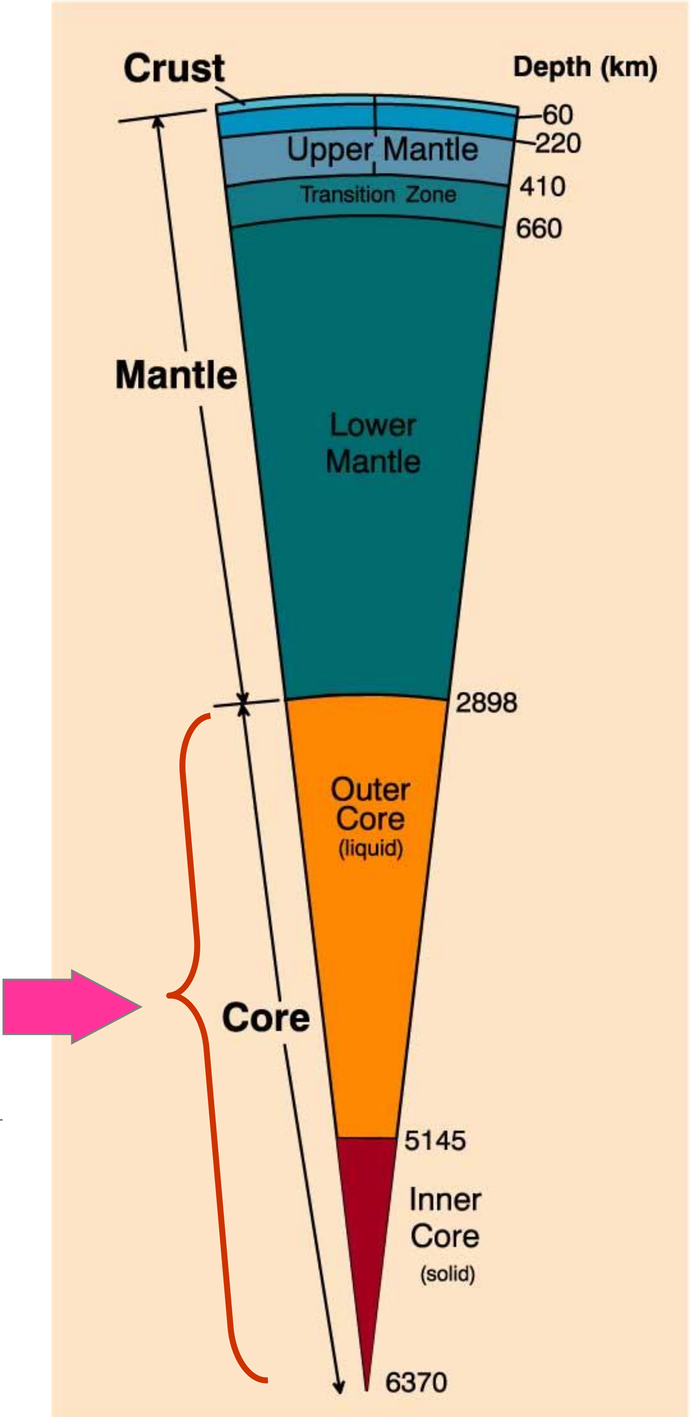


Figure 1-2. Major subdivisions of the Earth. Winter (2001) An Introduction to Igneous and Metamorphic Petrology. Prentice Hall.



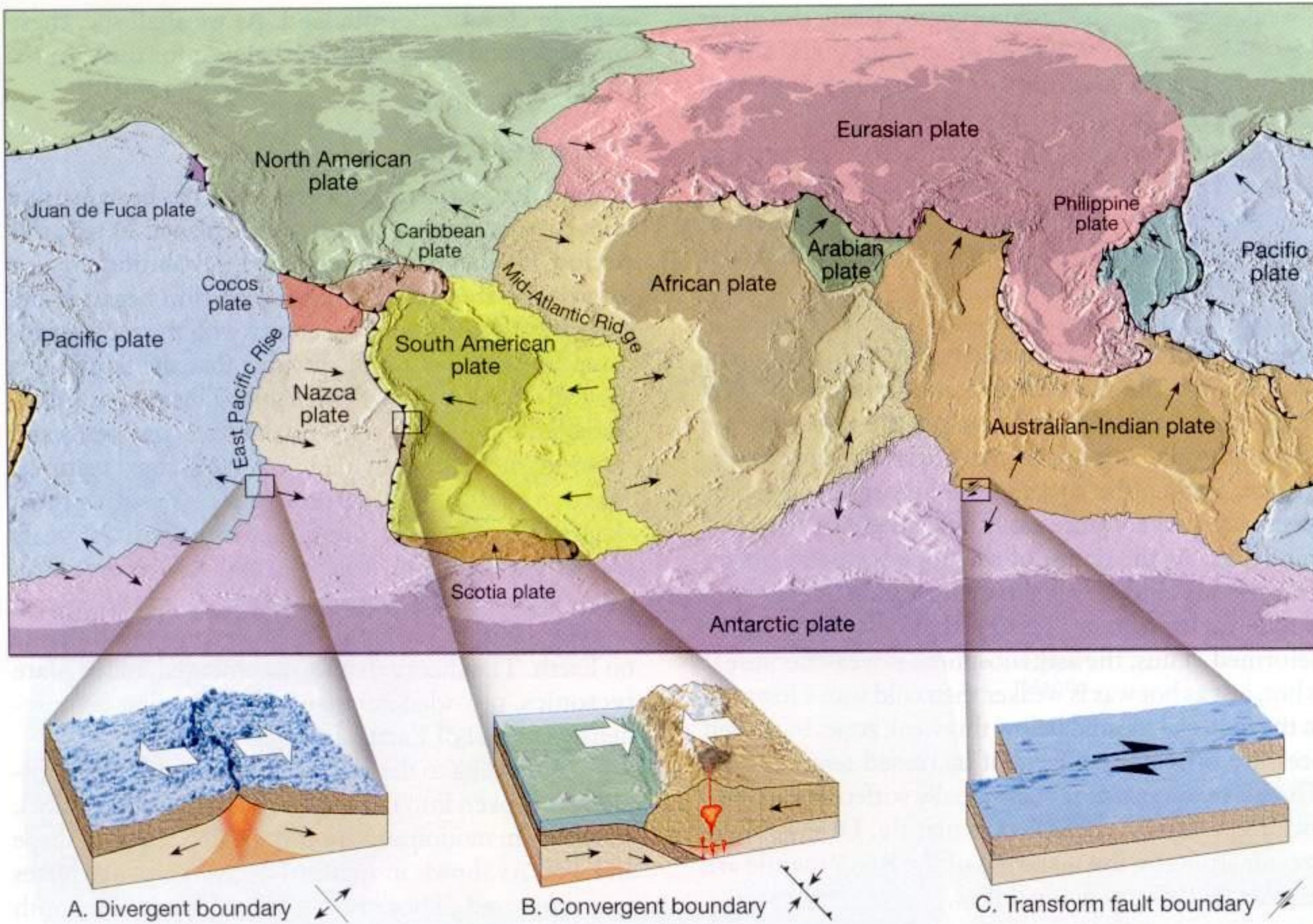


Figure 1.16 Mosaic of rigid plates that constitute Earth's outer shell. (After W. B. Hamilton, U.S. Geological Survey)

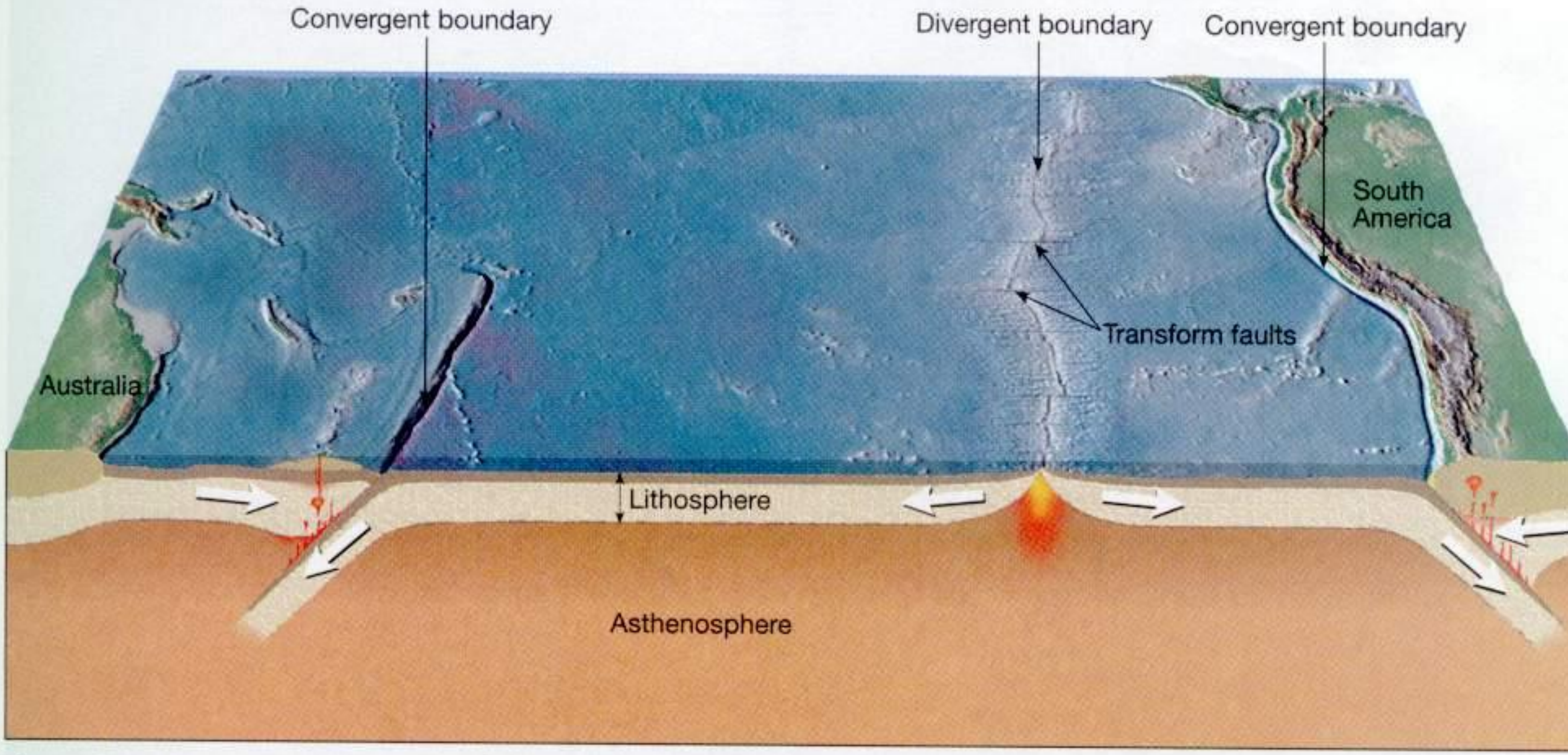


Figure 1.17 View of Earth showing the relationship between divergent and convergent plate boundaries.

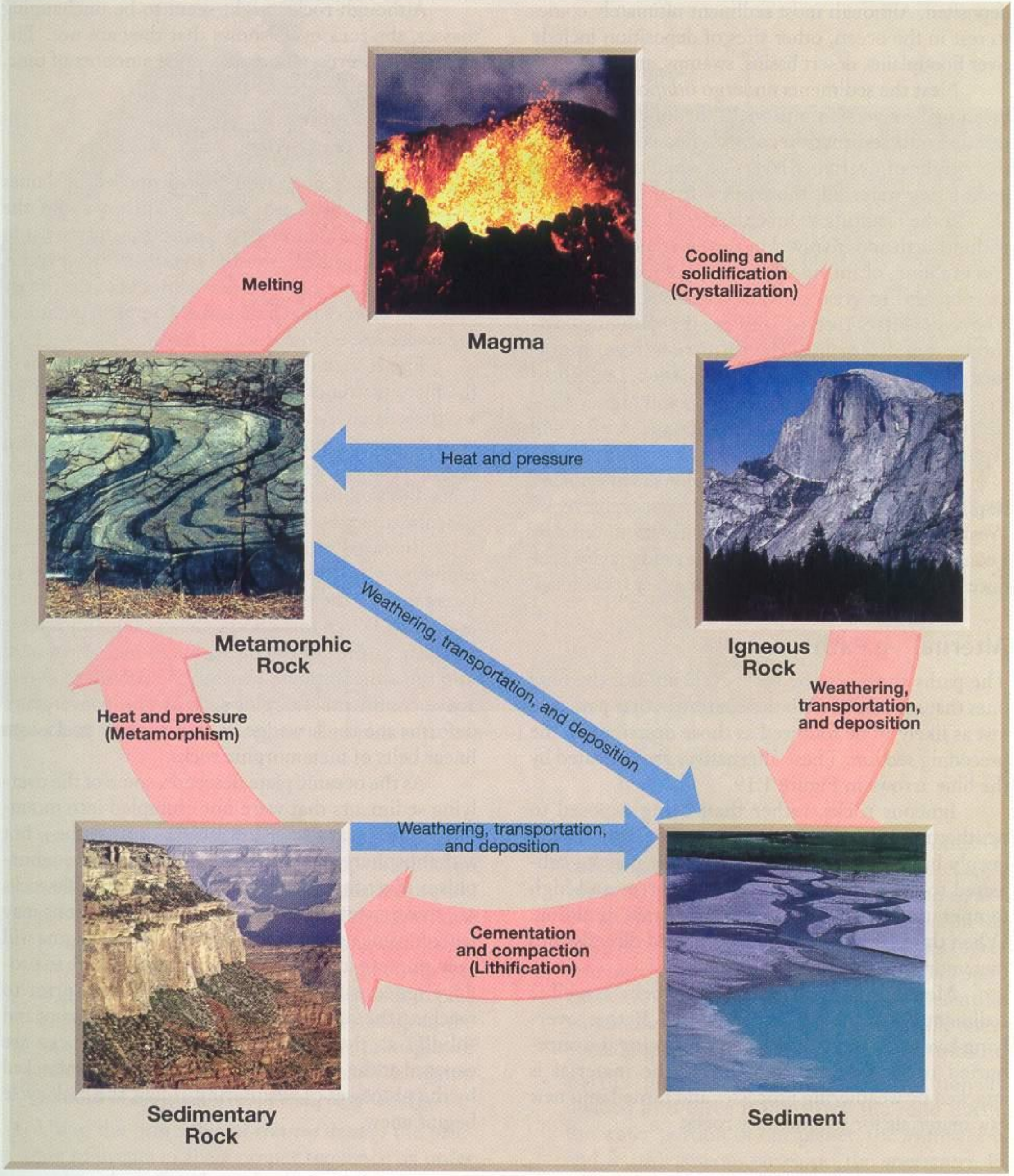


Figure 1.19 The rock cycle. Originally proposed by James Hutton, the rock cycle illustrates the role of the various geologic processes that act to transform one rock type into another. (Photos by J. D. Griggs, U.S.G.S. (**A**); E. J. Tarbuck (**B, C, D**); and Phil Dombrowski (**E**))

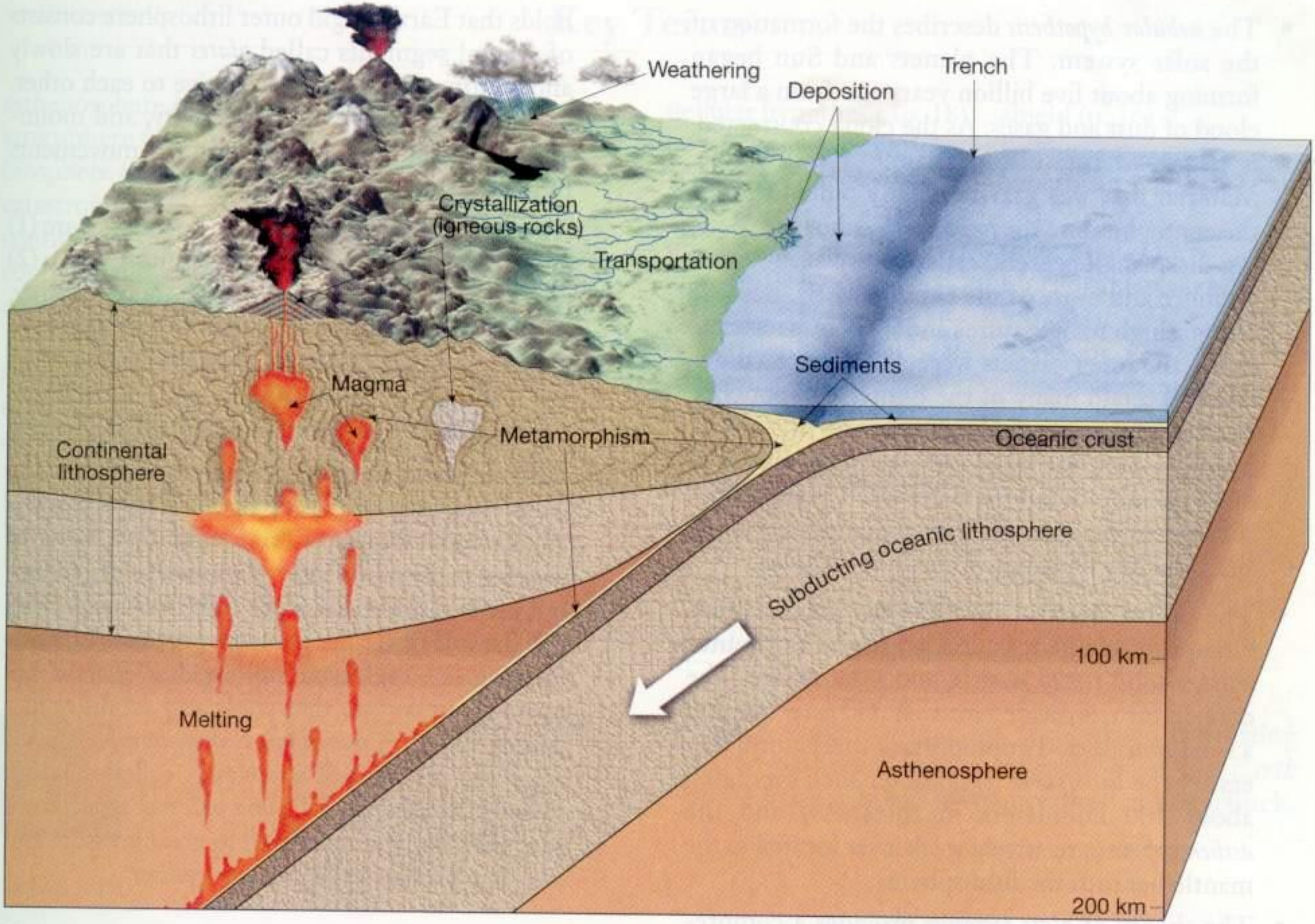


Figure 1.20 The rock cycle as it relates to the plate tectonics model.