

# ***The Geology of Planet Earth***



# ***The Science of Geology***

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- **Geology - the science that pursues an understanding of planet Earth**
  - **Physical geology** - examines materials and processes that operate on the Earth
  - **Historical geology** - seeks an understanding of the origin and development of the Earth

# ***The Science of Geology***

- **Geology, people, and the environment**
  - **Many important relationships exist between people and the natural environment**
  - **Problems and issues addressed by geology include**
    - **Natural hazards, resources, world population growth, and environmental issues**

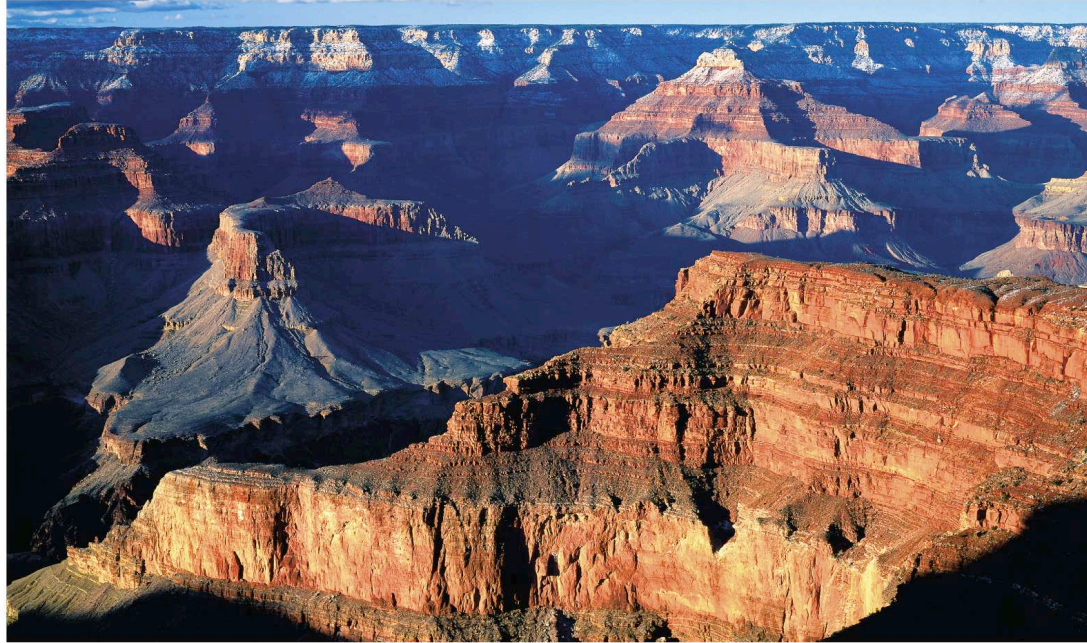


# Geology vs Religion??

- Origin of Fossils- da Vince, 1480
- Origin of Rocks- Hutton, 1780's
- Age of Earth
- Origin of Earth



# ***The Science of Geology***

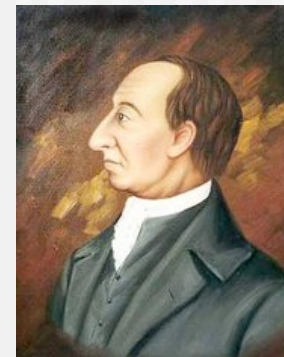


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## ■ **Some historical notes about geology**

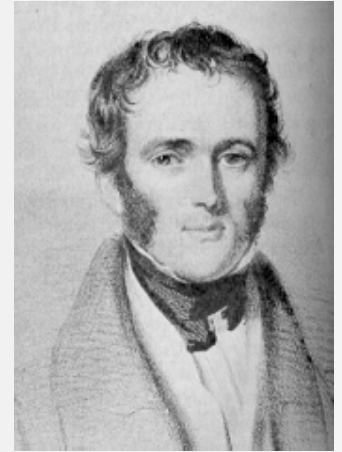
- **The Age of the Earth: focus of study for centuries**
- **Bishop James Ussher--1654, 4004 B.C.**
- **Catastrophism -- Cuvier, 1769-1832**
- **Uniformitarianism -- Hutton, 1726-1797**

**“The Present is the Key to the Past”**



# Father of Geology

Charles Lyell 1797-1875



- Wrote "Principles of Geology", 1830
- Processes occur at different speeds and intensities

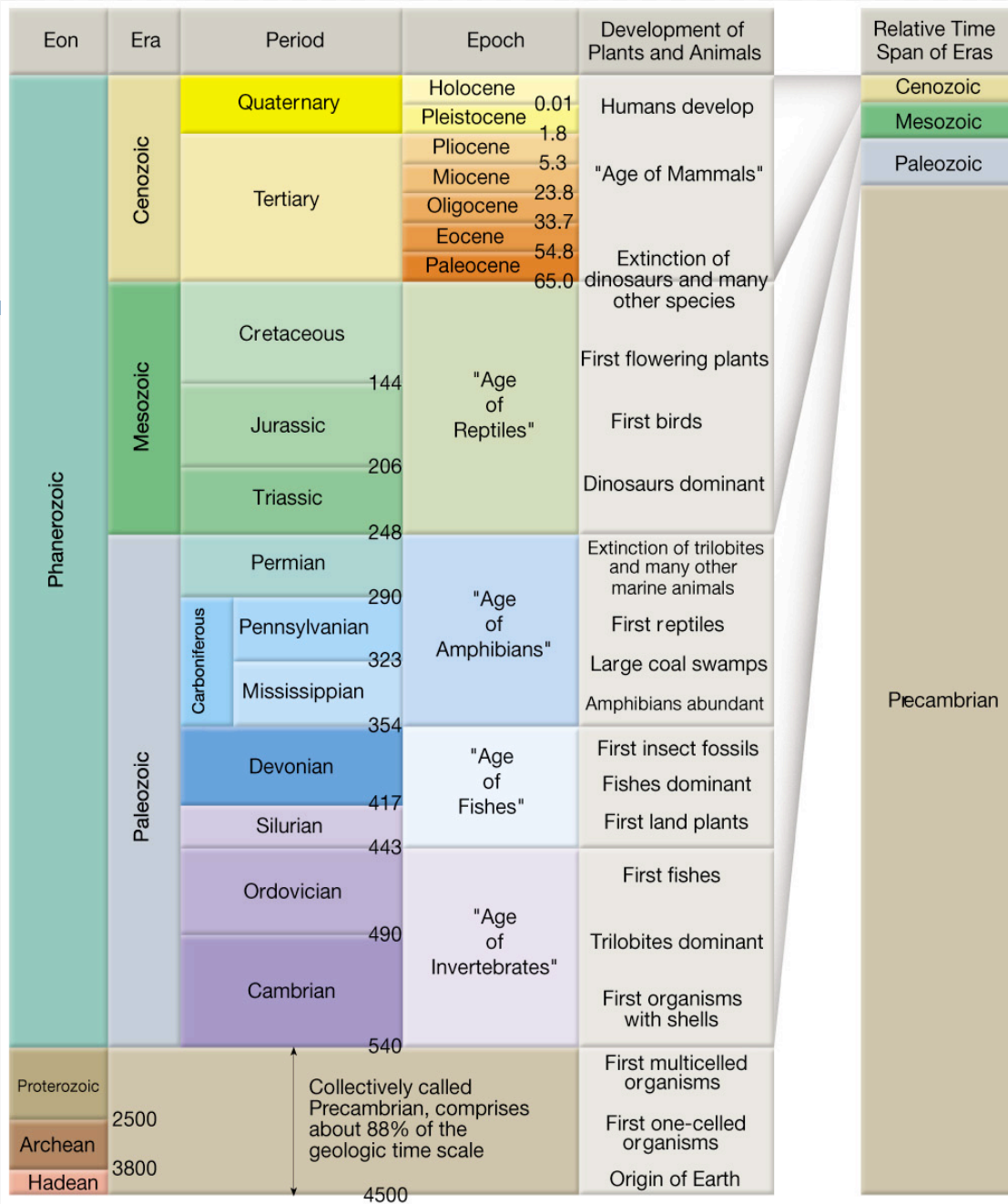


# ***Geologic time***

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- **The magnitude of geologic time**
  - **An appreciation for the magnitude of geologic time is important because many processes are very gradual**





# The geologic time scale

Figure 1.7



# ***The nature of scientific inquiry***

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- **How or why things happen is explained using a**
  - **Hypothesis** – a tentative (or untested) explanation
  - **Theory** – a well-tested and widely accepted view that the scientific community agrees best explains certain observable facts

# ***The nature of scientific inquiry***

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- **Scientific method involves**
  - **Gathering facts through observations**
  - **Formulation of hypotheses and theories**
- **There is no fixed path that scientists follow that leads to scientific knowledge**



# *Earth as a system*

- **The Earth system is powered by the Sun that drives external processes in the**
  - **Atmosphere, Hydrosphere and at Earth's surface**
- **The Earth system is also powered by Earth's interior**
- **And our Moon...**



A.



B.

# Global Questions

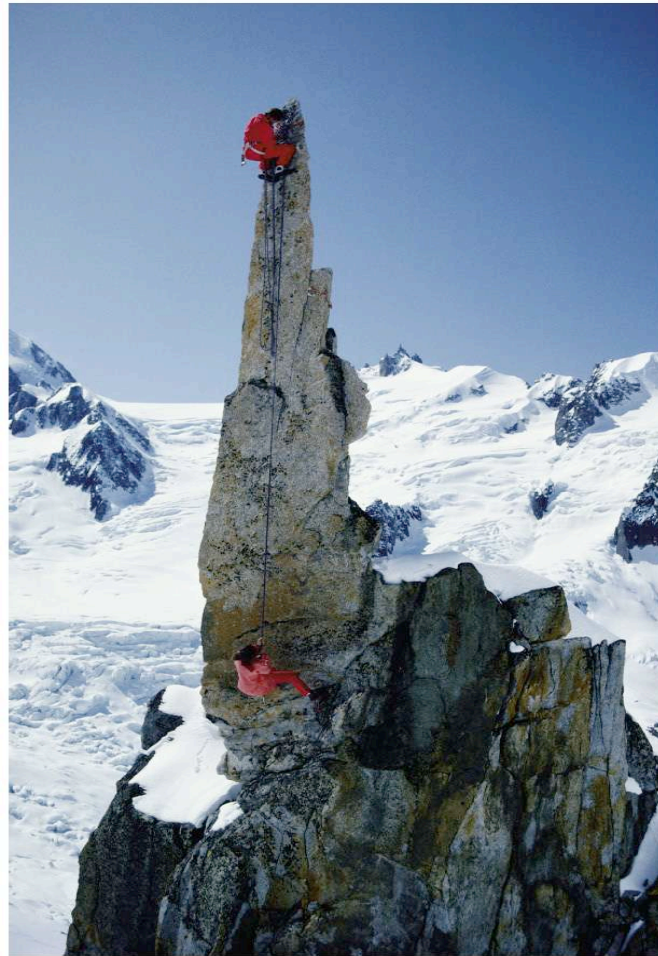
- Just how old is the Earth?
- When is the next Ice Age?
- Why is Mount Everest rising each year?
- Where do giant meteorites come from?
- Is Yellowstone a potential super volcano?
- Will California slide into the ocean?
- What causes devastating earthquakes?
- What is the ultimate fate of Hawaii?
- What causes deadly Tsunamis?



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# Because it's there....

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