

# GY111 Earth Materials

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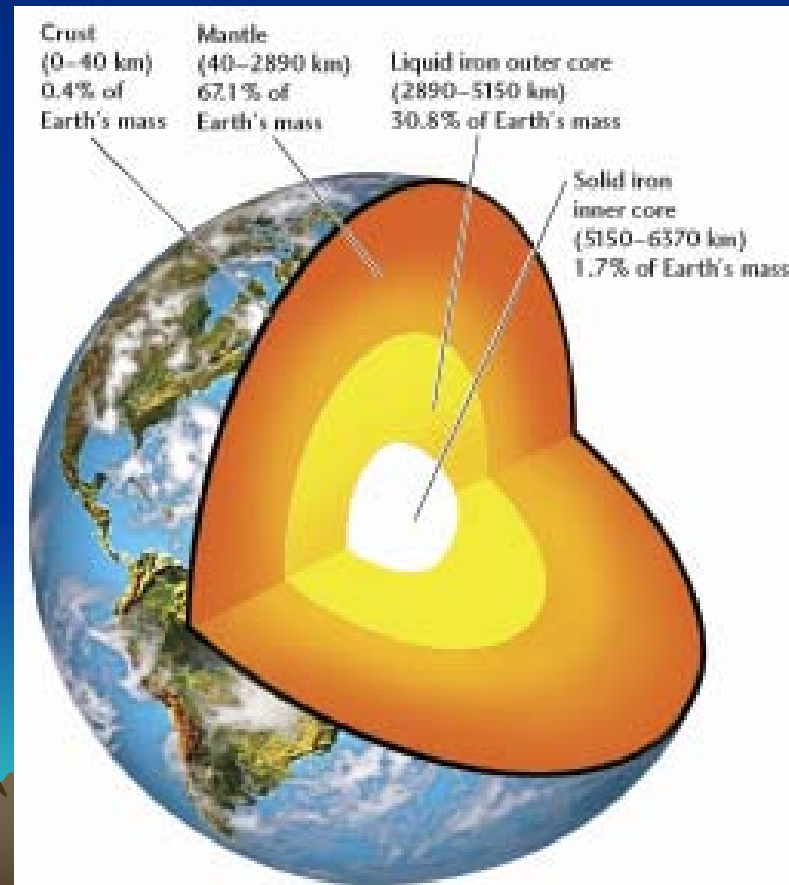
# Scientific Method

- Hypothesis
  - An idea about how the natural world works
- Theory
  - A model for how the natural world works that is supported by a large body of evidence and the majority of the scientific community
- Law
  - A model for how the natural world works that can be expressed in mathematical terms

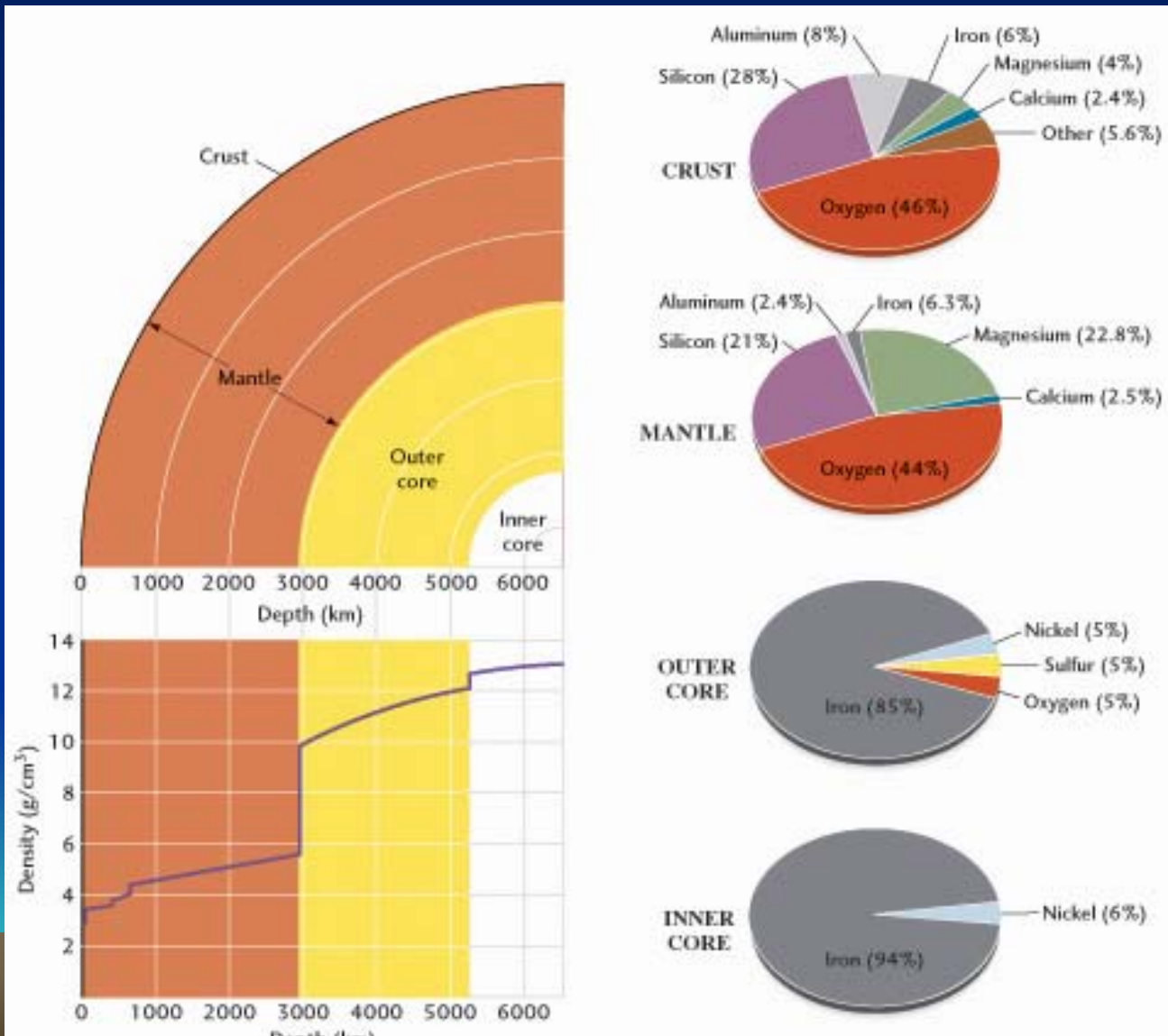


# Earth's Compositional Layering

- Crust: thin silicate material
- Mantle: thick layer of silicate material
- Core: metallic Fe+Ni+S alloy



# Earth's Composition

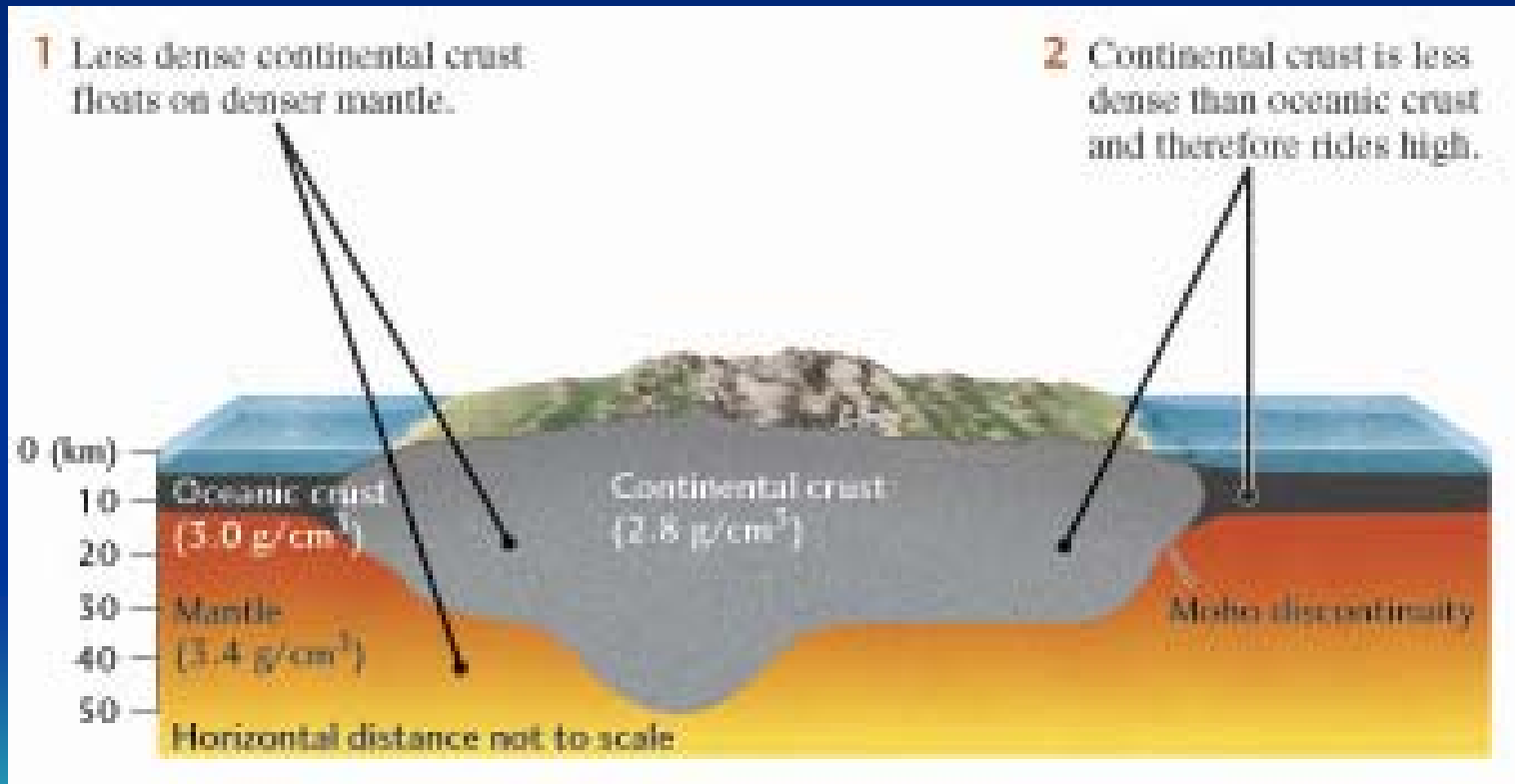


# Earth's Core

- Knowledge of this layer is obtained indirectly from meteorites and geophysical evidence



# Earth's Crust



# Earth's Compositional Layering Summary



# Earth's Mechanical (Seismic) Layering

• Depth

Thick

Layer

70-150km

Lithosphere

Brittle

550km

Asthenosphere

Ductile

700km

2200km

Mesosphere

Brittle

2900km

2200km

Outer core

Liquid (very ductile)

5100km

1300km

Inner core

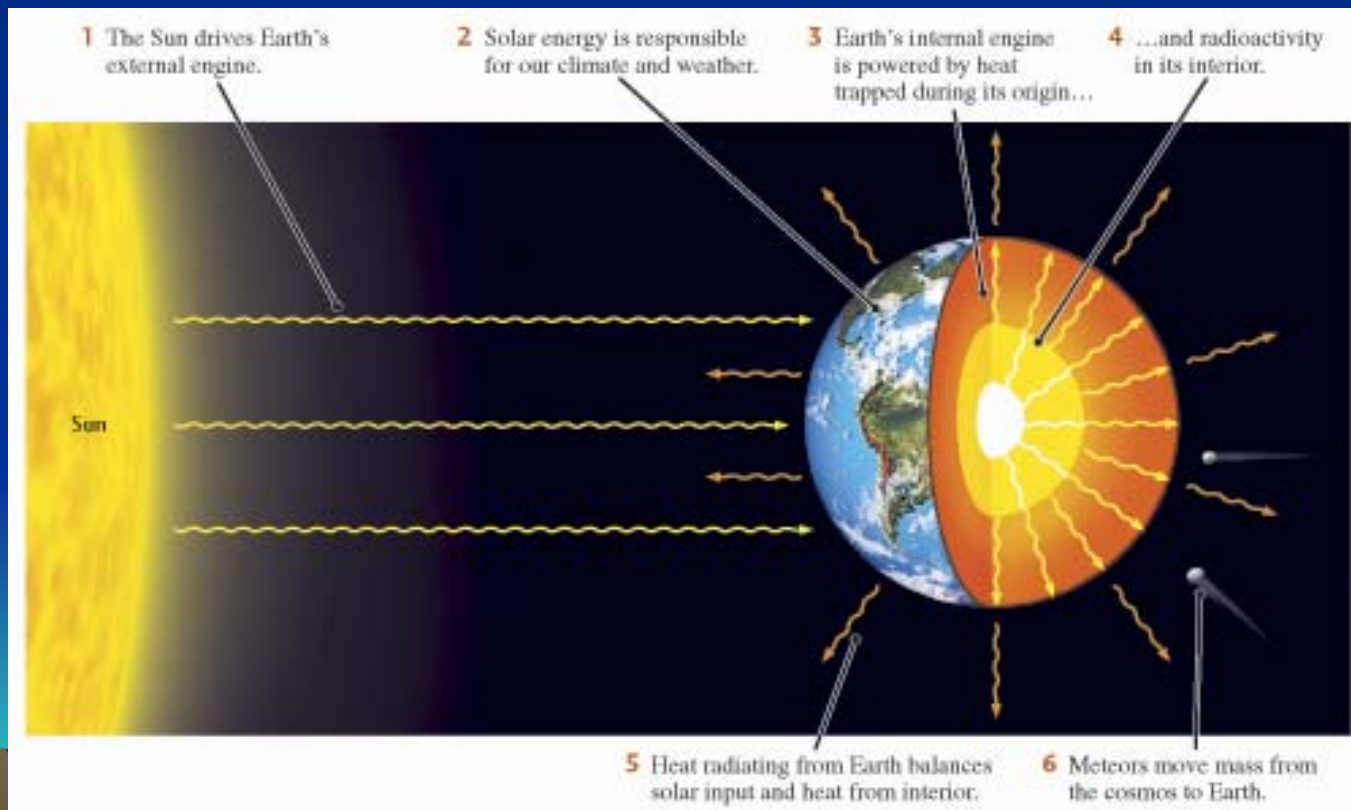
Brittle

6400km



# Earth's Energy

- Source of internal heat energy is radioactive decay



# Geologic Time

