Ohio Science Standards

Dynamic Earth

This show explores the inner workings behind the one thing standing between us and the wrath of the Sun: the global climate. Students will take a journey from Venus to the depths of the oceans, exploring the biosphere, the atmosphere and Earth's delicate global environment. Dynamic Earth covers these Ohio Education Standards:

High School Standards

Physical Science

STUDY OF MATTER

- ✓ Atoms
- ✓ Bonding and compounds
- ✓ Reactions of matter
    - Chemical reactions
    - Nuclear reactions

ENERGY AND WAVES

- ✓ Waves
    - Radiant energy and the electromagnetic spectrum
- ✓ Thermal energy

FORCES AND MOTION

- ✓ Motion
    - Introduction to one-dimensional vectors
    - Displacement, velocity (constant, average and instantaneous) and acceleration
- ✓ Forces
    - Types of forces (gravity, friction, normal, tension)
    - Field model for forces at a distance
- ✓ Dynamics (how forces affect motion)
    - Objects at rest
    - Objects moving with constant velocity

- Accelerating objects

THE UNIVERSE

- ✓ Stars
  - Formation; stages of evolution
  - Fusion in star

Physics

ENERGY

- ✓ Nuclear energy

ELECTRICITY AND MAGNETISM

- ✓ Magnetic fields and energy
- ✓ Electromagnetic interactions

Environmental Science

EARTH SYSTEMS: INTERCONNECTED SPHERES OF EARTH

- ✓ Biosphere [Carbon cycle is excellently explained]
  - Biodiversity
  - Ecosystems (equilibrium, species interactions, stability)
  - Population dynamics
- ✓ Atmosphere
  - Atmospheric properties and currents
- ✓ Hydrosphere
  - Oceanic currents and patterns (as they relate to climate)
- ✓ Movement of matter and energy through the hydrosphere, lithosphere, atmosphere and biosphere
  - Biogeochemical cycles
  - Ecosystems
  - Climate and weather

GLOBAL ENVIRONMENTAL PROBLEMS AND ISSUES

- ✓ Climate change
- ✓ Species depletion and extinction

EARTH'S RESOURCES

- ✓ Air and air pollution
  - Greenhouse gases

Physical Geology

EARTH'S RESOURCES

- ✓ Air
  - Primary and secondary contaminants, Greenhouse gases

7TH Grade Standards

EARTH AND SPACE SCIENCE (ESS)

Thermal-energy transfers in the ocean and the atmosphere contribute to the formation of currents, which influence global climate patterns.

- The sun is the major source of energy for wind, air and ocean currents and the hydrologic cycle. As thermal energy transfers occur in the atmosphere and ocean, currents form. Large bodies of water can influence weather and climate. The jet stream is an example of an atmospheric current and the Gulf Stream is an example of an oceanic current. Ocean currents are influenced by factors other than thermal energy, such as water density, mineral content (such as salinity), ocean floor topography and Earth's rotation. All of these factors delineate global climate patterns on Earth.

LIFE SCIENCE (LS)

Matter is transferred continuously between one organism to another and between organisms and their physical environments.

- Plants use the energy in light to make sugars out of carbon dioxide and water (photosynthesis). These materials can be used and immediately stored for later use. Organisms that eat plants break down plant structures to produce the materials and energy they need to survive. Then they are consumed by other organisms. Energy can transform from one form to another in living things. Animals get energy from oxidizing food, releasing some of its energy as heat. The total amount of matter and energy remains constant, even though its form and location change.