

**Connecticut Science Grade 9 & Earth Science
Contents Standards Mapping**

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Earth Science	Boardworks High School Earth Science Presentation
Grade 9 - Strand III: Global Interdependence	
D 19. Explain how chemical and physical processes cause carbon to cycle through the major earth reservoirs.	Carbon Cycle
D 20. Explain how solar energy causes water to cycle through the major earth reservoirs.	The Water Cycle
D 21. Explain how internal energy of the Earth causes matter to cycle through the magma and the solid earth.	The Rock Cycle
D 22. Explain how the release of sulfur dioxide (SO ₂) into the atmosphere can form acid rain, and how acid rain affects water sources, organisms and human-made structures.	Air Pollution
D 23. Explain how the accumulation of carbon dioxide (CO ₂) in the atmosphere increases Earth's "greenhouse" effect and may cause climate changes.	Air Pollution Climate Change Fossil Fuels
D 24. Explain how the accumulation of mercury, phosphates and nitrates affects the quality of water and the organisms that live in rivers, lakes and oceans.	Water Pollution
D 25. Explain how land development, transportation options and consumption of resources may affect the environment	Fossil Fuels Human Impact on the Environment The Impact of Mining
<i>D 26. Describe human efforts to reduce the consumption of raw materials and improve air and water quality.</i>	-
High School Earth Science	
Earth's Place in the Universe	
The differences and similarities among the sun, the terrestrial planets and the gas planets may have been established during the formation of the solar system.	Planets of the Solar System
Evidence from Earth and moon rocks indicates that the solar system was formed from a nebular cloud of dust and gas approximately 4.6 billion years ago.	Planets of the Solar System
Evidence from geological studies of Earth and other planets suggests that the early Earth was very different from Earth today.	The Atmosphere
The sun is a typical star and is powered by nuclear reactions, primarily the fusion of hydrogen to form helium.	Nuclear Fusion
<i>Asteroids and meteorites had a significant role in shaping the surface of planets and their moons and in mass extinctions of life on Earth.</i>	-
The solar system is located in an outer edge of the disc-shaped Milky Way galaxy, which spans 100,000 light	Planets of the Solar System
Galaxies are made of billions of stars and comprise most of the visible mass of the universe.	Structure of the Universe
Evidence indicates that all elements with an atomic number greater than that of lithium have been formed by nuclear fusion in stars.	The Life Cycle of Stars
Visual, radio and X-ray telescopes may be used to collect data that reveal those differences in the life cycles of stars.	Telescopes The Life Cycle of Stars

The "big bang" model suggests that the universe has been expanding for 10 to 20 billion years.	Astronomical Distances Doppler Effect
Dynamic Earth Processes	
Features of the ocean floor, as well as the shape and rock composition of the major plates, provide evidence of plate tectonics.	Plate Tectonics
Volcanic eruptions and earthquakes are the result of the movement of matter and energy within the Earth.	Earth's Structure Earthquake Causes Earthquake Effects Plate Tectonics Volcanoes
The properties of rocks and minerals can be explained based on the physical and chemical conditions in which they were formed, including plate tectonic processes.	Plate Tectonics The Rock Cycle
Energy in the Earth System	
The sun is a major source of energy for Earth and other planets	Solar Energy
Some of the solar radiation is reflected back into the atmosphere and some is absorbed by matter and photosynthetic processes.	-
Different atmospheric gases absorb the Earth's thermal radiation.	Greenhouse Gases
The greenhouse effect may cause climatic changes.	Air Pollution Climate Change Evidence for Climate Change Greenhouse Gases
Heating of Earth's surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents.	
Differential heating of Earth results in circulation patterns in the atmosphere and oceans that globally distribute	Heat Transfer and Global Interactions
The rotation of Earth influences the circular motions of ocean currents and air.	Heat Transfer and Global Interactions
Properties of ocean water, such as temperature and salinity, can be used to explain the layered structure of the oceans, the generation of horizontal and vertical ocean currents, and the geographic distribution of marine	Heat Transfer and Global Interactions
The interaction of wind patterns, ocean currents, and the distribution of land masses result in a global pattern of latitudinal bands of rain forests and deserts.	Heat Transfer and Global Interactions Precipitation Weather and Climate
Climate is the long-term average of a region's weather and depends on many factors.	
Weather and climate involve the transfer of energy into and out of the atmosphere.	Weather and Climate
Latitude, elevation, topography, proximity to large bodies of water, and cold or warm ocean currents affect the climate.	Weather and Climate The Rotation of the Earth
Earth's climate has changed over time, corresponding to changes in Earth's geography, atmospheric composition and other factors, such as solar radiation and plate movement.	The Atmosphere Evidence for Climate Change

Biogeochemical Cycles	
The movement of matter among reservoirs is driven by Earth's internal and external sources of energy.	The Carbon Cycle The Nitrogen Cycle The Water Cycle
Carbon cycles through the reservoirs of the atmosphere, lithosphere, hydrosphere and biosphere.	The Carbon Cycle Formation of Fossil Fuels
Structure and Composition of the Atmosphere	
The atmosphere has specific thermal structure and chemical composition.	The Atmosphere
The composition of Earth's atmosphere has evolved over geologic time.	The Atmosphere
The origin of atmospheric oxygen is photosynthetic processes.	The Atmosphere
The ozone layer in the upper atmosphere absorbs ultraviolet radiation. This layer varies both naturally and in response to human activities.	Air Pollution The Impact of Using CFCs