

EARTH SCIENCE	Boardworks High School Earth Science Presentations
Standard ES-2: Students will demonstrate an understanding of the structure and properties of the universe.	
ES-2.1 Summarize the properties of the solar system that support the theory of its formation along with the planets.	Planets of the Solar System Structure of the Solar System
<i>ES-2.2 Identify properties and features of the Moon that make it unique among other moons in the solar system.</i>	–
ES-2.3 Summarize the evidence that supports the big bang theory and the expansion of the universe (including the red shift of light from distant galaxies and the cosmic background radiation).	Doppler Effect Observing the Universe
ES-2.4 Explain the formation of elements that results from nuclear fusion occurring within stars or supernova explosions.	The Life Cycle of Stars Nuclear Fusion
ES-2.5 Classify stars by using the Hertzsprung-Russell diagram.	Properties of Stars
ES-2.6 Compare the information obtained through the use of x-ray, radio, and visual (reflecting and refracting) telescopes.	Observing the Universe Telescopes
ES-2.7 Summarize the life cycles of stars.	The Life Cycle of Stars
ES-2.8 Explain how gravity and motion affect the formation and shapes of galaxies (including the Milky Way).	Gravity and Orbits
ES-2.9 Explain how technology and computer modeling have increased our understanding of the universe.	Observing the Universe
Standard ES-3: Students will demonstrate an understanding of the internal and external dynamics of solid Earth.	
ES-3.1 Summarize theories and evidence of the origin and formation of Earth's systems by using the concepts of gravitational force and heat production.	Planets of the Solar System
ES-3.2 Explain the differentiation of the structure of Earth's layers into a core, mantle, and crust based on the production of internal heat from the decay of isotopes and the role of gravitational energy.	Earth's Structure
ES-3.3 Summarize theory of plate tectonics (including the role of convection currents, the action at plate boundaries, and the scientific evidence for the theory).	Plate Tectonics
ES-3.4 Explain how forces due to plate tectonics cause crustal changes as evidenced in earthquake activity, volcanic eruptions, and mountain building.	Plate Tectonics Earthquake Causes Eathquake Effects Volcanoes
ES-3.5 Analyze surface features of Earth in order to identify geologic processes (including weathering, erosion, deposition, and glaciation) that are likely to have been responsible for their formation.	Erosion, Transportation and Deposition Weathering
ES-3.6 Explain how the dynamic nature of the rock cycle accounts for the interrelationships among igneous, sedimentary, and metamorphic rocks.	Erosion, Transportation and Deposition The Rock Cycle

ES-3.7 Classify minerals and rocks on the basis of their physical and chemical properties and the environment in which they were formed.	Earth's Structure The Rock Cycle Volcanoes
ES-3.8 Summarize the formation of ores and fossil fuels and the impact on the environment that the use of these fuels has had.	Crude Oil Formation of Fossil Fuels Fossil Fuels Greenhouse Gases The Impact of Mining
Standard ES-4: The student will demonstrate an understanding of the dynamics of Earth's atmosphere.	
ES-4.1 Summarize the thermal structures, the gaseous composition, and the location of the layers of Earth's atmosphere.	The Atmosphere
ES-4.2 Summarize the changes in Earth's atmosphere over geologic time (including the importance of photosynthesizing organisms to the atmosphere).	The Atmosphere
ES-4.3 Summarize the cause and effects of convection within Earth's atmosphere.	Conduction and Convection Heat Transfer and Global Interactions
ES-4.4 Attribute global climate patterns to geographic influences (including latitude, topography, elevation, and proximity to water).	Heat Transfer and Global Interactions Precipitation The Rotation of the Earth Weather and Climate
ES-4.5 Explain the relationship between the rotation of Earth and the pattern of wind belts.	Heat Transfer and Global Interactions
ES-4.6 Summarize possible causes of and evidence for past and present global climate changes	Climate Change The Carbon Cycle Evidence for Climate Change Greenhouse Gases
ES-4.7 Summarize the evidence for the likely impact of human activities on the atmosphere (including ozone holes, greenhouse gases, acid rain, and photochemical smog).	Air Pollution Climate Change Greenhouse Gases The Impact of CFCs
ES-4.8 Predict weather conditions and storms (including thunderstorms, hurricanes, and tornados) on the basis of the relationship among the movement of air masses, high and low pressure systems, and frontal boundaries.	Tropical Cyclones
Standard ES-5: The student will demonstrate an understanding of Earth's freshwater and ocean systems.	
surface (including lakes, surface-water drainage basins [watersheds], freshwater wetlands, and groundwater zones).	The Water Cycle
ES-5.2 Illustrate the characteristics of the succession of river systems.	–

ES-5.3 Explain how karst topography develops as a result of groundwater processes.	–
ES-5.4 Compare the physical and chemical properties of seawater and freshwater.	–
ES-5.5 Explain the results of the interaction of the shore with waves and currents.	Coastal Processes Coastal Depositional Landforms Coastal Erosional Landforms
ES-5.6 Summarize the advantages and disadvantages of devices used to control and prevent coastal erosion and flooding.	–
ES-5.7 Explain the effects of the transfer of solar energy and geothermal energy on the oceans of Earth (including the circulation of ocean currents and chemosynthesis).	Heat Transfer and Global Interactions ENSO
ES-5.8 Analyze environments to determine possible sources of water pollution (including industrial waste, agriculture, domestic waste, and transportation devices).	Water Pollution
Standard ES-6: Students will demonstrate an understanding of the dynamic relationship between Earth's conditions over geologic time and the diversity of its organisms.	
ES-6.1 Summarize the conditions of Earth that enable the planet to support life.	–
ES-6.2 Recall the divisions of the geologic time scale and illustrate the changes (in complexity and/or diversity) of organisms that have existed across these time units.	–
ES-6.3 Summarize how fossil evidence reflects the changes in environmental conditions on Earth over time.	–
ES-6.4 Match dating methods (including index fossils, ordering of rock layers, and radiometric dating) with the most appropriate application for estimating geologic time.	Fossil Record Radioactive Dating
ES-6.5 Infer explanations concerning the age of the universe and the age of Earth on the basis of scientific evidence.	Observing the Universe Planets of the Solar System