

Grade. Standard. Grade Level Expectation. Evidence Outcome (NGSS Standard Code)

Standard 3: Earth and Space Science

HS.3.1: All stars, including the sun, undergo stellar evolution, and the study of stars' light spectra and brightness is used to identify compositional elements of stars, their movements, and their distances from Earth.

HS.3.1.a: Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation. (HS-ESS1-1)

HS.3.1.b: Construct an explanation of the Big Bang Theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe. (HS-ESS1-2)

HS.3.2: Explanations of and predictions about the motions of orbiting objects are described by the laws of physics.

HS.3.2.a: Use mathematical or computational representations to predict the motion of orbiting objects in the solar System. (HS-ESS1-4)

HS.3.3: The rock record resulting from tectonic and other geoscience processes as well as objects from the solar system can provide evidence of Earth's early history and the relative ages of major geologic formations.

HS.3.3.a: Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks. (HS-ESS1-5)

HS.3.4: Earth's systems, being dynamic and interacting, cause feedback effects that can increase or decrease the original changes, and these effects occur on different time scales, from sudden (e.g., volcanic ash clouds) to intermediate (ice ages) to very long-term tectonic cycles.

HS.3.4.a: Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems. (HS-ESS2-2)

HS.3.4.c: Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection. (HS-ESS2-3)

HS.3.4.d: Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate. (HS-ESS2-4)

HS.3.6: The planet's dynamics are greatly influenced by water's unique chemical and physical properties.

HS.3.6.a: Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes. (HS-ESS2-5)

HS.3.7: The role of radiation from the sun and its interactions with the atmosphere, ocean, and land are the foundation for the global climate system. Global climate models are used to predict future changes, including changes influenced by human behavior and natural factors.

HS.3.7.c: Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere. (HS-ESS2-6)

HS.3.7.d: Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth. (HS-ESS2-7)

HS.3.9: Resource availability has guided the development of human society and use of natural resources has associated costs, risks, and benefits.

HS.3.9.a: Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity. (HS-ESS3-1)

HS.3.9.b: Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios. (HS-ESS3-2)

HS.3.12: Global climate models used to predict future climate change continue to improve our understanding of the impact of human activities on the global climate system.

HS.3.12.a: Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth's systems. (HS-ESS3-5)

HS.3.12.b: Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity. (HS-ESS3-6)