South Carolina Science

Earth and Space Science

Earth's Place in the Universe ESS1

1. Develop a model based on evidence to illustrate that energy generated by nuclear fusion within the sun (and other stars) radiates to and influences orbiting planets. E-ESS1-1
2. Construct an explanation of the Big Bang Theory based on evidence to show that the universe is changing over time. E-ESS1-2
3. Construct an explanation using evidence to explain the ways elements are produced over the life cycle of a star. E-ESS1-3
4. Use mathematical or computational representations to predict the motion of orbiting objects in the universe due to gravity. E-ESS1-4
5. 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. E-ESS1-5
6. Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history. E-ESS1-6

Earth's Systems ESS2

1. Use evidence to argue how Earth's internal and external processes operate to form and modify continental and ocean-floor features throughout Earth's history. E-ESS2-1
2. Analyze data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems. E-ESS2-2
3. Develop a model based on evidence of Earth's interior that describes cycling of matter through convection processes. E-ESS2-3
4. Use a model to describe how causes of short and long-term variations in the flow of energy into and out of Earth's systems result in changes to climate. E-ESS2-4
5. Investigate the ways that water (given its unique physical and chemical properties) impacts various Earth systems. E-ESS2-5
6. Develop a quantitative model to describe the cycling of carbon through the hydrosphere, atmosphere, geosphere, and biosphere. E-ESS2-6

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	7 **Communicate scientific information that illustrates how Earth's systems and life on Earth change and influence each other over time.** E-ESS2-7
Earth and Human Activity ESS3	1 **Construct an explanation based on evidence for how the availability of natural resources and occurrence of natural hazards have influenced human activity.** E-ESS3-1
	2 **Evaluate competing design solutions that address the impacts of developing, managing, and using Earth's energy and mineral resources.** E-ESS3-2
	3 **Use computational representation to illustrate the relationships among the management of Earth's resources, the sustainability of human populations, and biodiversity.** E-ESS3-3
	4 **Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.** E-ESS3-4
	5 **Analyze data and the results from global climate models to make an evidence-based forecast of the current rate of regional or global climate change and associated future impacts to Earth's systems.** E-ESS3-5
	6 **Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.** E-ESS3-6
	7 **Create an argument, based on evidence that describes how changes in climate on Earth have affected human activity.** E-ESS3-7