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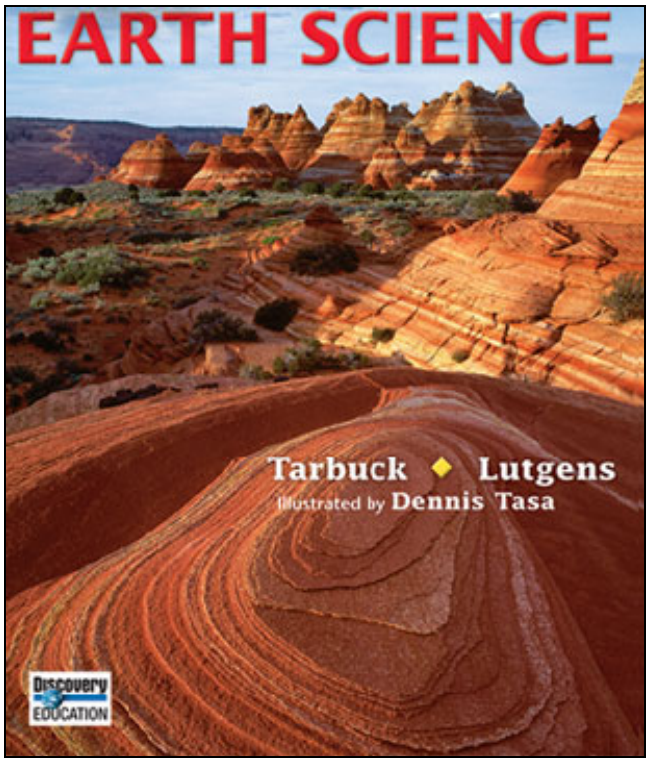

To the

Next Generation Science Standards
Earth and Space Science

#Prepared by Savvas Learning Company, formerly Pearson K12 Learning

NGSS Earth and Space Science Performance Expectations	Earth Science
(HS.SS) Space Systems	
(HS-ESS1-1) 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.	**SE/TE:** Nuclear Fusion, 689 Star Birth, 707-709 Figure 10, 709 Burnout and Death, 710-712 Active Art, Lives of Stars, 709 Figure 11, Stellar Evolution, 710 **TE ONLY:** Build Science Skills: Use Analogies, 707 Build Science Skills: Use Analogies, 712 Reteach, 714
(HS-ESS1-2) 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.	**SE/TE:** The Big Bang, 720-721 Supporting Evidence, 720 25.3 Assessment, 721 Standardized Test Prep, 727
(HS-ESS1-3) Communicate scientific ideas about the way stars, over their life cycle, produce elements.	**SE/TE:** Main Sequence Stage, 708 Red Giant Stage, 709 Nucleosynthesis, 712 **TE ONLY:** Integrate Chemistry, 711
(HS-ESS1-4) Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.	**SE/TE:** Birth of Modern Astronomy, 617-621 Johannes Kepler, 618 Table 1, Period of Revolution and Solar Distances of Planets 22.1 Assessment, 621 Inquiry: Modeling Synodic and Sidereal Months, 636-637
(HS.HE) History of Earth	

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(HS-ESS1-5) 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.	**SE/TE:** Visual Summary, Figure 5, 282-283 Convergent Boundary Mountains, 320-322 Inquiry Lab: Rates of Mountain Building, 323 11.3 Assessment, 325 Earth & Its Systems, 326-327 **TE ONLY:** Teacher Demo, Observing Plate Movement, 284
(HS-ESS1-6) 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.	**SE/TE:** Formation of Earth, 4-5 Discovering Earth's Composition Uniformitarianism, 336 Relative Dating, 337-340 Correlation, 340-341 12.1 Assessment, 341 Inquiry – What are Fossils? 363 Inquiry-Modeling the Geologic Time Scale, 386-387 **TE ONLY:** Before You Teach Earth's History, 362C-362D
(HS-ESS2-1) Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.	**SE/TE:** Earth's Major Spheres, 7-9 Earth's Changing Surface, 9-10 Layers Defined by Composition, 233-234 Layers Defined by Physical Properties, 234-235 Uniformitarianism, 336 Relative Dating, 337-340 12.1 Assessment, 341
(HS.ES) Earth's Systems	
(HS-ESS2-2) Analyze geoscience data to make	**SE/TE:**

NGSS Earth and Space Science Performance Expectations	Earth Science
the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.	Mechanical Weathering, 126-128 Soil Erosion, 140-142 Triggers of Mass Movements, 144-145 Types of Mass Movements, 145-147 Wells 173-174 Figure 17 & Figure 18, 174-175 **TE ONLY:** Teacher Demo, Motion Accelerates Erosion, 111
(HS-ESS2-3) Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.	**SE/TE:** The Rock Cycle, 67-68 Visual Summary, 68 What Causes Plate Motions? 270 Plate Motion Mechanisms, 271 Figure 2.3, Whole Mantle Convection, 271 **TE Only:** Build Science Skills, Use models, 270
(HS-ESS2-5) Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.	**SE/TE:** Inquiry – Try It!, 125 Mechanical Weathering, 126-128
(HS-ESS2-6) Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.	**SE/TE:** Earth & Its Systems, The Carbon Cycle, 85
(HS-ESS2-7) Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.	**SE/TE:** Types of Fossils, 342-343 The Fossil Record, 344-346 Inquiry-Fossil Occurrence and the Age of Rocks, 356-357

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(HS.WC) Weather and Climate	
(HS-ESS2-4) Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.	**SE/TE:** Energy Transfer as Heat, 483-485 Figure 9-Energy Transfer as Heat, 483 What Happens to Solar Radiation? 486-487 Inquiry – Heating Land and Water, 496-497
(HS-ESS3-5) 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 systems.	**SE/TE:** Natural Processes That Change Climate, 600-601 Human Impact on Climate, 602-603 Inquiry-Human Impact of Climate and Weather, 606-607
(HS.HI) Human Impacts	
(HS-ESS3-1) 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.	**SE/TE:** Protecting Resources, 113-116 Assessment 4.4, 117 Earth and Its Resources, 117 Earth Quake Hazards, 228-232 Tsunamis, 230 Assessment 8.3, 232 Tornado Warnings, 574 How Earth Works, 578-579 Critical Thinking, 584 Concepts in Action, 584 **TE ONLY:** Integrate Social Studies, 574
(HS-ESS3-2) Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.	**SE/TE:** For supporting content, please see: Try It!, 93 Inquiry Exploration Lab: Finding Products That Best Conserve Resources, 118-119
(HS-ESS3-3) Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.	**SE/TE:** For supporting content, please see: Inquiry, Apply It, 106 Figure 19, 111 **TE ONLY:** Earth Science Refresher, 92C-92D Map It!, 95 Teacher Demo, 95

NGSS Earth and Space Science Performance Expectations	Earth Science
(HS-ESS3-4) Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.	**SE/TE:** For supporting content, please see: Earth and Its Resources, 117 Inquiry Exploration Lab: Finding Products That Best Conserve Resources, 118-119
(HS-ESS3-6) Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.	**SE/TE:** How Earth Works, 494-495 Figure 15, Changes in CO2 Levels **TE ONLY:** Use Visuals Inquiry Exploration Lab, 606-607
(HS.ED) Engineering Design	
(HS-ETS1-1) Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.	**SE/TE:** Inquiry Exploration Lab, 606-607
(HS-ETS1-2) Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.	**SE/TE:** Inquiry Exploration Lab, 606-607
(HS-ETS1-3) Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.	**SE/TE:** Tar Sands and Oil Shale, 97-98 Alternative Energy Solutions, 102-107 Reading Checkpoint, 103 Assessment 4.2, 107
(HS-ETS1-4) Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.	**SE/TE:** For supporting content, please see: The Inquiry Exploration Lab, 605-606