*Geoblox Book Correlations to NGSS Middle School Disciplinary Core Ideas**

DCI	DCI Title	Disciplinary Core Ideas	Geoblox Books
PS2.B	Types of Interactions	● Gravitational forces are always attractive. There is a gravitational force between any two masses, but it is very small except when one or both of the objects have large mass—e.g., Earth and the sun. (MS-PS2-4) ● Forces that act at a distance (electric, magnetic, and gravitational) can be explained by fields that extend through space and can be mapped by their effect on a test object (a charged object, or a ball, respectively). (MS-PS2-5)	● Oceanography ● Katrina ● Astronomy
PS4.A	Wave Properties	● A simple wave has a repeating pattern with a specific wavelength, frequency, and amplitude. (MS-PS4-1)	● Oceanography ● Katrina
LS1.A	Structure and Function	● All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1) ● Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2) ● In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-3)	● Botany
LS1.B	Growth and Development of Organisms	● Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. (MS-LS1-4)	● Botany
LS1.C	Organization for Matter and Energy Flow in Organisms	● Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. (MS-LS1-6)	● Botany
LS4.A	Evidence of Common Ancestry and Diversity	● The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. (MS-LS4-1) ● Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record, enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. (MS-LS4-2)	● Historical Geology
LS4.B	Natural Selection	● Natural selection leads to the predominance of certain traits in a population, and the suppression of others. (MS-LS4-4)	● Historical Geology

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LS4.C	Adaptation	● Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6)	● Historical Geology
ESS1.A	The Universe and Its Stars	● Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models. (MS-ESS1-1) ● Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe. (MS-ESS1-2)	● Astronomy
ESS1.A	The Universe and Its Stars	● Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models. (MS-ESS1-1)	● Oceanography ● Katrina
ESS1.B	Earth and the Solar System	● The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (MS-ESS1-2),(MSESS1-3) ● This model of the solar system can explain eclipses of the sun and the moon. Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are a result of that tilt and are caused by the differential intensity of sunlight on different areas of Earth across the year. (MS-ESS1-1)	● Astronomy
ESS1.B	Earth and the Solar System	● The solar system appears to have formed from a disk of dust and gas, drawn together by gravity. (MS-ESS1-2)	● Historical Geology
ESS1.C	The History of Planet Earth	● The geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. (MS-ESS1-4)	● Historical Geology ● Grand Canyon
ESS1.C	The History of Planet Earth	● Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches. (HS.ESS1.C GBE) (secondary to MS-ESS2-3)	● Plate Tectonics

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ESS2.A	Earth's Materials and Systems	● All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. (MS-ESS2-1) ● The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. (MS-ESS2-2)	● Plate Tectonics ● Physical Geology ● Topographic Landforms ● More Topographic Landforms ● Volcano ● Groundwater ● Grand Canyon
ESS2.B	Plate Tectonics and Large-Scale System Interactions	● Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart. (MS-ESS2-3)	● Plate Tectonics ● Guadalupe Mountains
ESS2.C	The Roles of Water in Earth's Surface Processes	● Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land. (MS-ESS2-4)	● Groundwater ● Oceanography ● Katrina ● Topographic Landforms ● More Topographic Landforms ● Grand Canyon
ESS2.C	The Roles of Water in Earth's Surface Processes	● The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns. (MSESS2- 5)	● Groundwater ● Oceanography ● Katrina
ESS2.C	The Roles of Water in Earth's Surface Processes	● Global movements of water and its changes in form are propelled by sunlight and gravity. (MS-ESS2-4)	● Groundwater ● Oceanography ● Grand Canyon
ESS2.C	The Roles of Water in Earth's Surface Processes	● Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents. (MS-ESS2-6)	● Oceanography
ESS2.C	The Roles of Water in Earth's Surface Processes	● Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations. (MS-ESS2-2)	● Groundwater ● Oceanography ● Environmental Degradation ● Topographic Landforms ● More Topographic Landforms

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ESS2.D	Weather and Climate	● Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns. (MS-ESS2-6) ● The ocean exerts a major influence on weather and climate by absorbing energy from the sun, releasing it over time, and globally redistributing it through ocean currents. (MS-ESS2-6)	● Oceanography ● Environmental Degradation ● Katrina
ESS3.A	Natural Resources	● Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes. (MS-ESS3-1)	● Physical Geology ● Oceanography ● Environmental Degradation ● Katrina ● Petroleum Game
ESS3.B	Natural Hazards	● Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events. (MS-ESS3-2)	● Plate Tectonics ● Physical Geology ● Katrina
ESS3.C	Human Impacts on Earth Systems	● Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3) ● Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MSESS3- 3),(MS-ESS3-4)	● Environmental Degradation ● Katrina ● Petroleum Game
ESS3.D	Global Climate Change	● Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities. (MS-ESS3-5)	● Environmental Degradation