



• Elementary Science

2015

**ELEMENTARY SCIENCE STANDARDS
IN SEVENTH-DAY ADVENTIST SCHOOLS**

OFFICE OF EDUCATION | North American Division Seventh-day Adventist Church

ADVENTIST EDUCATION STANDARDS

Standards, what learners should know (content) and be able to do (skills), serve as the framework for curriculum development. Standards in NAD Seventh-day Adventist schools reflect the Adventist worldview across the K-12 curricula as well as the integration of national and provincial/state standards. The Adventist worldview accepts the Bible as the standard by which everything else is measured. Four key concepts emerge from a biblical worldview that can be used as a lens for curriculum development, as well as informing the essential questions and big ideas of any content area: Creation (What is God's intention?), Fall (How has God's purpose been distorted?), Redemption (How does God help us to respond?), and Re-creation (How can we be restored in the image of God?).

— THE CORE OF ADVENTIST EDUCATION CURRICULUM

SCIENCE AND ENGINEERING PRACTICES

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

— NEXT GENERATION SCIENCE STANDARDS

STANDARDS CODING

The standards have been coded so that educators can easily refer to them in their curriculum, instruction, and assessment practices. The coding system that precedes each standard begins with the content area abbreviation in letters; all are identified with S—Science (**S.K-2.LS.1**). The second part of the code refers to the grade level (**S.K-2.LS.1**). The third part of the code refers to the particular science domain (**S.K-2.LS.1**), with LS standing for Life Sciences. The fourth part of the code refers to a particular skill within the science domain (**S.K-2.LS.1**). The coding system that follows each standard is the Next Generation Science Standards (NGSS) that aligns with the NAD standard. Where no NGSS is noted, there is no corresponding NGSS.

PERFORMANCE-BASED STANDARDS

The science standards are performance-based outcomes (what students should be able to do) rather than content-based outcomes (what students should know). The content standards are implied within the context of the performance standards.

CREDITS

The following resources were referenced in developing Science Standards for Seventh-day Adventist Schools: a sampling of state standards, NAD Curriculum Guide for Science, Next Generation Science Standards (NGSS), National Health Education Standards (NHES), and the Core of Adventist Education Curriculum.

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2015 ELEMENTARY SCIENCE — EARTH AND SPACE SCIENCES

GRADE	TOPICS	STANDARDS (NGSS ALIGNMENT)	BY DESIGN CHAPTER CORRELATION	INQUIRY ACTIVITIES
		<p>Essential Question: How do the structure and physical phenomena of Earth and space provide evidence of God as Designer, Creator, and Sustainer of the universe?</p> <p>Big Idea: The structure and processes of Earth and space are organized and governed by natural laws that give evidence of God as Designer, Creator, and Sustainer.</p>	<p>Bold = included content</p> <p><i>Italic =</i> related content</p>	<p>TE = TEACHER EDITION SE = STUDENT EDITION SJ = STUDENT JOURNAL TT = TRY THIS LA = LESSON ACTIVITY EAL = EXPLORE-A-LAB MS = MATH IN SCIENCE ATBD = ACTIVITY TO BE DEVELOPED</p>
K-2	Earth's Systems	S.K-2.ES.1 Use and share observations of local weather conditions to describe patterns over time. (K-ESS2-1)	Level 1 – Ch. 7.1, 7.2 Level 2 – Ch. 7.1, 7.2	Level 1 – Charting Weather SE 193/SJ 8; Weather Differences TE 93/SJ 10, EAL 196; Seasons and Plant Growth SE 209/SJ 16, EAL 216 Level 2 – Weather Watch SE 259/SJ 34; Observing Weather Maps TE 263/SJ 38, EAL 265; Length of Days SE 277/SJ 44; Daylight Variations TE 277/SJ 46, EAL 280
		S.K-2.ES.2 Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. (K-ESS2-2)	Level 1 – Ch. 3.1 Level 2 – Ch. 2.1	Level 1 – Staying Warm in the Cold SE 219/ SJ 20; Keeping Warm TE 219/SJ 22; Clothing and Climate TE 222/SJ 24, EAL 224 Level 2 – ATBD
		S.K-2.ES.3 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. (2-ESS2-1)	Level 2 – Ch. 6.3, Ch. 7.2	Level 2 – Water Changes Land SE 235/SJ 16; Rocks and Water Changing the Land TE 235/ SJ 18
		S.K-2.ES.4 Develop a model to represent the shapes and kinds of land and bodies of water in an area. (2-ESS2-2)	Level 1 – Ch. 8.2 Level 2 – Ch. 6.1, 6.3	Level 1 – ATBD Level 2 – Land on a Map SE 213/SJ 8; Salt Dough Maps TE 213/SJ 10
		S.K-2.ES.5 Obtain information to identify where water is found on Earth and that it can be solid or liquid. (2-ESS2-3)	Level 1 – Ch. 7.2 Level 2 – Ch. 6.1, 7.2	Level 1 – Watch Water Disappear SE 201/ SJ 12, EAL 206 Level 2 – Land on a Map SE 213/SJ 18; Salt Dough Maps TE 213/SJ 10; How Clouds Form SE 269/SJ 40; Rain in a Plastic Bag TE 268/SJ 42, EAL 279
	Earth and Human Activity	S.K-2.ES.6 Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live. (K-ESS3-2)	Level 1 – Ch. 3.1, 3.2, 3.3 Level 2 – Ch. 1.1, 1.4, Ch. 2.2, 2.3	Level 1 – Animals in Trees SE 67/SJ 42; Homes for Animals TE 67/SJ 44; Feeding Crickets SE 75/ SJ 46; Cricket Menus TE 75/SJ 48; Plant Starters SE 83/SJ 52 Level 2 – Feeding Birds TE 13/SJ 8; Water Me SE 17/SJ 10; Too Much Water TE 17/SJ 12; EAL 24, EAL 38; Build a Nest SE 47/SJ 26; Best Nests TE 47/SJ 28, EAL 51; Animal Homes SE 73/SJ 26; Animals Dining Out TE 73/SJ 38, EAL 75; Links in a Chain SE 82/SJ 40; Many Food Chains TE 82/SJ 42; Effects of Pollution SE 91/SJ 44; Water Pollution TE 91/SJ 46, EAL 100
		S.K-2.ES.7 Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. (K-ESS3-2)	Level 1 – Ch. 7.1 Level 2 – Ch. 7.1	Level 1 – Charting the Weather SE 193/SJ 8; Weather Differences TE 193/SJ 10, EAL 196 Level 2 – Weather Watch SE 259/SJ 34; Make a Weather Instrument TE 259/SJ 36; Observing Weather Maps TE 263/SJ 38
		S.K-2.ES.8 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment. (K-ESS3-3)	Level 1 – Ch. 3.3 Level 2 – Ch. 2.3	Level 1 – Reuse Me TE 83/SJ 54 Level 2 – Effects of Pollution SE 91/SJ 144; Water Pollution TE 91/SJ 146; Oil Spill Clean Up TE 97/SJ 48, EAL 100
	Earth's Place in the Universe	S.K-2.ES.9 Use observations of the sun, moon, and stars to describe patterns (e.g., sun and moon appear to track across the sky, stars visible at night) that can be predicted. (1-ESS1-1)	Level 1 – Ch. 8.1 Level 2 – Ch. 8.1, 8.2, 8.3	Level 1 – Making a Star Pattern SE 231/SJ 28; Viewing a Star Pattern TE 231/SJ 30 Level 2 – Orbit Me SE 289/SJ 52; Orbit Models TE 289/SJ 52; Make a Constellation SE 299/ SJ 54; More Constellations TE 299/SJ 56, EAL 300; Star Gazing TE 301/SJ 58; Far, Far Away SE 304/SJ 60; Help from Binoculars TE 305/SJ 62
		S.K-2.ES.10 Make observations at different times of year to relate the amount of daylight to the time of year. (1-ESS1-2)	Level 1 – Ch. 7.3 Level 2 – Ch. 7.3	Level 1 – Seasons and Plant Growth SE 209/ SJ 16, EAL 216 Level 2 – Length of Days SE 277/SJ 44; Daylight Variations TE 277/SJ 46, EAL 280
		S.K-2.ES.11 Use information from several sources to provide evidence that Earth events (e.g., volcanic explosions, earthquakes, rock erosion) can occur quickly or slowly. (2-ESS1-1)	Level 2 – Ch. 6.3	Level 2 – Water Changes Land SE 237/SJ 16; Rocks and Water Changing the Land TE 237/ SJ 18; Model of the Genesis Flood TE 239/ SJ 20, EAL 243

2015 ELEMENTARY SCIENCE — EARTH AND SPACE SCIENCES CONTINUED

GRADE	TOPICS	STANDARDS (NGSS ALIGNMENT)	BY DESIGN CHAPTER CORRELATION	INQUIRY ACTIVITIES
3-5	Earth's Systems	S.3-5.ES.1 Represent data (e.g., average temperature, precipitation, wind direction) in tables and graphical displays to describe typical weather conditions expected during a particular season. (3-ESS2-1)	Level 3 – Ch. 8.1, 8.2, 8.3 Level 5 – Ch. 8.1, 8.3	Level 3 – Measuring Pressure SE 241/SJ 24; Comparing Results TE 241/SJ 26, TT 248; Temperature Changes SE 249/SJ 28; Other Weather Factors TE 249/SJ 30, EAL 252; Measuring Wind Direction TE 253/SJ 32 Level 5 – Observing Air Pressure SE 243/SJ 8; Pressure in Other Locations TE 243/SJ 10; Cloud Cover and Weather SE 262/SJ 16; Fronts and the Weather TE 262/SJ 18; Build Your Own Anemometer TE 263/SJ 20
		S.3-5.ES.2 Obtain and combine information to describe climates in different regions of the world. (3-ESS2-2)	Level 3 – Ch. 8.2, 8.3 Level 5 – Ch. 8.4	Level 3 – TT 258; Heat It Up SE 259/SJ 34; Hot Colors TE 259/SJ 36, EAL 265, EAL 266 Level 5 – EAL 273, EAL 275
		S.3-5.ES.3 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation (e.g., angle of slope in downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing water, cycles of heating and cooling, volume of water flow). (4-ESS2-1)	Level 4 – Ch. 7.3, 7.4	Level 4 – TT 238; Washing Away Soil SE 239/SJ 16; Mudflow in a Jar TE 245/SJ 20, EAL 247; Ice Age Maximum SE 251/SJ 24; Ice Dam Meltdown TE 251/SJ 26, EAL 254
		S.3-5.ES.4 Analyze and interpret data from maps, including topographic maps, to describe patterns of Earth's features. (4-ESS2-2)	Level 3 – Ch. 7.1 Level 4 – Ch. 7.1	Level 3 – TT 212, ATBD Level 4 – TT 220, LA 225, ATBD
		S.3-5.ES.5 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact (e.g., influence of ocean on ecosystems, landform shape, climate; influence of the atmosphere on landforms and ecosystems; influence of mountain ranges on winds and clouds). (5-ESS2-1)	Level 3 – Ch. 7.1, Ch. 8.2 Level 4 – Ch. 7.1, 7.3	Level 3 – Earth's Land and Water SE 213/SJ 8; Seafloor Mapping TE 213/SJ 10, EAL 217 Level 4 – TT 220, An Egg-Like Earth SE 221/SJ 8; More Earth Models TE 221/SJ 10
		S.3-5.ES.6 Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. (5-ESS2-2)	Level 3 – Ch. 7.1 Level 4 – Ch. 7.1 Level 5 – Ch. 8.2, Ch. 10.1, 10.3	Level 3 – TT 212; Earth's Land and Water SE 213/SJ 8; Salty or Fresh TE 216/SJ 12 Level 4 – ATBD Level 5 – EAL 253; Drinkable Water SE 323/SJ 64; Freshwater Catch TE 323/SJ 66, EAL 327; Water Underground SE 337/SJ 76, EAL 341
	Earth and Human Activity	S.3-5.ES.7 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard (e.g., barriers to prevent flooding, wind resistant roofs, lightning rods). (3-ESS3-1)	Level 3 – Ch. 8.2 Level 5 – Ch. 8.3	Level 3 – ATBD Level 5 – ATBD
		S.3-5.ES.8 Obtain and combine information to describe that energy and fuels are derived from natural resources (e.g., wind energy, water behind dams, sunlight, fossil fuels, fissile materials) and their uses affect the environment (e.g., loss of habitat due to dams, surface mining, air pollution). (4-ESS3-1)	Level 3 – Ch. 3.4, 3.5 Level 4 – Ch. 3.4, Ch. 8.1, 8.3 Level 5 – Ch. 10.3, 10.4	Level 3 – Water Monitor TE 107/SJ 54; Connecting to Resources SE 113/SJ 56; What's Inside TE 113/SJ 58; Pollution in the Air TE 117/SJ 60, EAL 119, EAL 120 Level 4 – The Game of Life SE 109/SJ 56; Locally Threatened Species TE 109/SJ 58, EAL 112 Level 5 – Modeling Global Warming with a Terrarium SJ 91; ATBD
		S.3-5.ES.9 Generate and compare multiple solutions (e.g., earthquake resistant building, monitoring volcanic activity) to reduce the impacts of natural Earth processes on humans. (4-ESS3-2)	Level 4 – Ch. 7.2, 7.3	Level 4 – Stand Up to Earthquakes SE 228/SJ 4; A Strong Up to Earthquakes TE 228/SJ 14, Mudflow in a Jar TE 245/SJ 20
		S.3-5.ES.10 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. (5-ESS3-1)	Level 3 – Ch. 3.5 Level 4 – Ch. 8.3 Level 5 – Ch. 10.2, 10.3, 10.4	Level 3 – TT 112; Connecting to Resources SE 113; Pollution in the Air TE 117/SJ 60, EAL 119, EAL 120 Level 4 – TT 280; Cookie Mining SE 280/SJ 42; Restoring the Land TE 280/SJ 44, EAL 283 Level 5 – From Land to Ocean SE 332/SJ 68; Pollutants in Water TE 332/SJ 70; Runoff Pollution TE 334/SJ 72; Water Underground SE 337/SJ 76; Polluting Aquifers TE 337/SJ 78, EAL 341; Native vs Non-native SE 344/SJ 80; Green Gardening TE 344/SJ 82, LA 346
	Earth's Place in the Universe	S.3-5.ES.11 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. (4-ESS1-1)	Level 4 – Ch. 7.1, 7.2, 7.4, Ch. 8.2	Level 4 – TT 262; Changing a Rock SE 263/SJ 30; TT 272; Fossil Layers SE 273/SJ 38; Indoor Fossil Dig TE 273/SJ 40, EAL 275
		S.3-5.ES.12 Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth. (5-ESS1-1)	Level 4 – Ch. 9.4	Level 4 – ATBD
		S.3-5.ES.13 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. (5-ESS1-2)	Level 3 – Ch. 8.3, Ch. 9.2, 9.3 Level 4 – Ch. 9.2 Level 5 – Ch. 8.4	Level 3 – EAL 265; TT p280; The Growing and Shrinking Shadow SE 281/SJ 44; Shifting Shadows TE 281/SJ 46, EAL 283; Seasons on Earth TE 284/SJ 48; Now I See It, Now I Don't SE 289/SJ 50, A Lunar Eclipse TE 289/SJ 52 Level 4 – Make a Sundial TE 295/SJ 52; Star Map SJ 64 Level 5 – ATBD

2015 ELEMENTARY SCIENCE — EARTH AND SPACE SCIENCES CONTINUED

GRADE	TOPICS	STANDARDS (NGSS ALIGNMENT)	BY DESIGN CHAPTER CORRELATION	INQUIRY ACTIVITIES
6-8	Earth's Systems	S.6-8.ES.1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. (MS-ESS2-1)	Level 6 – Ch. 7.2, Ch. 8.1, 8.2, 8.3, Ch. 9.1, 9.2, 9.3 Level 8- Ch. 8.1, 8.2, 8.3, Ch. 10.1	Level 6 – Creating Sedimentary Rock SE 231/SJ 7; Identifying Igneous Rock SE 240/SJ 14, EAL 243, EAL 246; Core Sampling SE 264/SJ 36; Coring Earth TE 264/SJ 38; Model Sea Floor Spreading SE 272/SJ 40; Modeling Sea Floor Features TE 272/SJ 42, EAL 276, EAL 284; Studying Erosion SE 291/SJ 61; Morphing Landscapes SE 294/SJ 62, EAL 295; Water Erosion TE 296/SJ 66, EAL 297; Modeling Sand Dunes SE 309/SJ 74; Beach Dunes TE 309/SJ 76, EAL 311 Level 8 – Currents and Temperature SE 273/SJ 7; Can Crusher SE 278/SJ 8; Pop Out TE 278/ SJ 10, EAL 280, EAL 284; Moving Water SE 287/SJ 12; Factors Affecting Transpiration TE 287/SJ 14, EAL 291; Wind and Evaporation SE 295/ SJ 16; How Humid Is It SE 300/SJ 24; Latitude and Temperature SE 310/SJ 28; A Faulty Candy Bar SE 369/SJ 74; Where Does It Go TE 369/SJ 76
		S.6-8.ES.2 Construct an explanation based on evidence for how geoscience processes (e.g., surface weathering and deposition by movements of water, ice, and wind) have changed Earth's surface at varying time and spatial scales (e.g., slow plate motions, uplift of large mountain ranges, rapid landslides, microscopic geochemical reactions). (MS-ESS2-2)	Level 6 – Ch. 7.2, Ch. 8.1, 8.2, 8.3, Ch. 9.1, 9.2, 9.3 Level 8 – Ch. 10.1	Level 6 – Level 6 – Creating Sedimentary Rock SE 231/SJ 7, EAL 246; Studying Erosion SE 291/SJ 61; Morphing Landscapes SE 294/SJ 62, EAL 295; Water Erosion TE 296/SJ 66, EAL 297; Modeling Sand Dunes SE 309/SJ 74; Beach Dunes TE309/SJ76, EAL 311 Level 8 – Glaciers on the Move SE 365/SJ 73; Faulty Candy Bar SE 369/SJ 74; Where Does It Go TE 369/SJ 76, EAL 370, EAL 373; Radiometric Decay SE 378/ SJ 78; Water Clock TE 378/SJ 80; And Then What Happened TE 383/SJ 82
		S.6-8.ES.3 Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. (MS-ESS2-3)	Level 6 – Ch. 8.1, 8.2, 8.3, Ch. 10.1, 10.2 Level 8 – Ch. 10.1, 10.2	Level 6 – EAL 267; Model Sea Floor Spreading SE 272/SJ 40; Modeling Sea Floor Features TE 272/SJ 42; Plate Boundary Types TE 275/SJ 44, EAL 276, EAL 284; Putting It Together SE 323/SJ 86; Geological Dig Experience TE 323/SJ 88; Stories in Stone TE 344/SJ 90; Who Goes There SE 334/SJ 94; Footprint Depth TE 334/SJ 98; ID the Trilobites SE 343/SJ 100 Level 8 – Where Does It Go TE 369/SJ 76
		S.6-8.ES.4 Develop a model (conceptual or physical) to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. (MS-ESS2-4)	Level 8 – Ch. 8.2, 8.3	Level 8 – EAL 284; Moving Water SE287/ SJ 12, EAL 291; Wind and Evaporation SE 295/SJ 16
		S.6-8.ES.5 Collect data (e.g., weather maps, diagrams, visualizations, laboratory experiments) to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. (MS-ESS2-5)	Level 8 – Ch. 8.1, 8.2, 8.3, 8.4	Level 8 – Currents and Temperature SE 273/SJ 7, EAL 280, EAL 291, EAL 294; Wind and Evaporation SE 295/SJ 16
		S.6-8.ES.6 Develop and use a model (e.g., diagrams, maps and globes, digital representations) to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. (MS-ESS2-6)	Level 7 – Ch. 8.1, Ch. 9.1, 9.2, 9.3 Level 8 – Ch. 8.3, 8.5	Level 7 – Planetary Orbits TE 295/SJ 8; Making a Sun Clock SE 330/SJ 30; Movement of Shadows TE 330/SJ 32; Solar Energy SE 336/SJ 34; Sunlight on Spherical Objects TE 336/SJ 36; The Tides SE 348/SJ 40 Level 8 – Currents and Temperature SE 273/SJ 7, EAL 280, EAL 291, EAL 294; Wind and Evaporation SE 295/SJ 16

2015 ELEMENTARY SCIENCE — EARTH AND SPACE SCIENCES CONTINUED

GRADE	TOPICS	STANDARDS (NGSS ALIGNMENT)	BY DESIGN CHAPTER CORRELATION	INQUIRY ACTIVITIES
6-8	Earth and Human Activity	S.6-8.ES.7 Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the results of past and current geoscience processes (e.g., plate tectonics, the Flood). (MS-ESS3-1)	Level 6 – Ch. 7.3, Ch. 8.1, 8.2, 8.3, Ch. 9.3 Level 8 – Ch. 9.3, Ch. 10.1, 10.2, 10.3	Level 6 – ATBD; Mining Desert TE 253/SJ 22; Core Sampling SE 264/SJ 36; Coring the Earth TE 264/SJ 38, EAL 265; Model Sea Floor Spreading SE 272/SJ 40; Plate Boundary Types TE 275/SJ 44, EAL 284 Level 8 – EAL 370; ATBD
		S.6-8.ES.8 Analyze and interpret data (e.g., locations, magnitudes, frequencies) on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. (MS-ESS3-2)	Level 6 – Ch. 8.3, Level 7 – Ch. 8.2, 8.3 Level 8 – Ch. 10.1	Level 6 – Finding the Epicenter SE 280/SJ 48; Recent Epicenters TE 280/SJ 50, EAL 284 Level 7 – ATBD Level 8 – ATBD
		S.6-8.ES.9 Apply scientific principles to design a method for monitoring and minimizing a human impact (e.g., water usage, soil usage, pollution) on the environment. (MS-ESS3-3)	Level 8 – Ch. 9.1, 9.2, 9.3, 9.4	Level 8 – Resource Tally SE 323/SJ 43, EAL 327; Evaluating Biofuels SE 328/SJ 44; Alternative Biofuels TE 323/SJ 46, EAL 334; Fertilizer Contest TE 336/SJ 48; Preventing Hillside Erosion SE 338/SJ 51; Testing Erosion Control TE 338/SJ 54, EAL 348, EAL 352; It's Raining SE 351/SJ 56; Currents and Temperature SE 273/SJ 7, EAL 280, EAL 291, EAL 294; Wind and Evaporation SE 295/SJ 16; It Feels Like a Sauna SE 357/SJ 60
		S.6-8.ES.10 Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. (MS-ESS3-4)	Level 6 – Ch. 7.3 Level 8 – Ch. 8.5, Ch. 9.1, 9.2, 9.3, 9.4	Level 6 – MS 252; Mining Desert TE 253/SJ 22, LA 255 Level 8 – Resource Tally SE 323/SJ 43; It's Raining SE 351/SJ 56; It Feels Like a Sauna SE 357/SJ 60, EAL 334, LA 35
		S.6-8.ES.11 Ask questions to clarify evidence (e.g., tables, graphs, maps of global and regional temperatures, atmospheric levels of gases, rates of human activities) of the factors that have caused the rise in global temperatures over the past century (e.g., fossil fuel combustion, cement production, agricultural activity, change in incoming solar radiation, volcanic activity). (MS-ESS3-5)	Level 6 – Ch. 8.3 Level 8 – Ch. 9.1, 9.2, 9.3, 9.4	Level 6 – EAL 284 Level 8 – EAL 356; It Feels Like a Sauna SE 357/SJ 60; Ash Shade TE 357/SJ 64; ATBD
	Earth's Place in the Universe	S.6-8.ES.12 Develop and use a model (physical, graphical, or conceptual) of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. (MS-ESS1-1)	Level 7 – Ch. 9.1, 9.2, 9.3 Level 8 – Ch. 8.5	Level 7 – Make Your Own Solar Eclipse SE 327/SJ 29; Make a Sun Clock SE 330/SJ 30; Movement of Shadows TE 330/SJ 32; Solar Energy SE 336/SJ 34, EAL 338, EAL 345; Moon Phases and Eclipses TE 345/SJ 38; The Tides SE 349/SJ 40; Extreme Tides TE 345/SJ 42 Level 8 – EAL 311
		S.6-8.ES.13 Develop and use a model (physical or conceptual) to describe the role of gravity in the motions within galaxies and the solar system. (MS-ESS1-2)	Level 7 – Ch. 8.1, 8.2, Ch. 9.1, 9.2, 9.3, Ch. 10.2	Level 7 – Planetary Orbits TE 295/SJ 8; Solar System Distances SE 296/SJ 10; Moon Orbit TE 296/SJ 12, EAL 307
		S.6-8.ES.14 Analyze and interpret data (e.g., statistical information, drawings and photographs, models) to determine scale properties (e.g., size, surface features, orbital radius) of objects in the solar system. (MS-ESS1-3)	Level 7 – Ch. 8.1, 8.2, Ch. 9.3	Level 7 – How Much Do You Weigh SE 291/SJ 7; Planetary Orbits TE 295/SJ 8; Solar System Distances SE 296/SJ 10; Moon Orbit TE 296/SJ 12; Making Dents SE 208/SJ 14
		S.6-8.ES.15 Apply scientific principles to construct an explanation, based on evidence from rock strata, for how the geologic column is used to organize Earth's relative age and geologic history, comparing and contrasting creationist and naturalistic perspectives. (MS-ESS1-4)	Level 6 – Ch. 10.1, 10.2, 10.3 Level 8 – Ch. 1.1, 1.2, Ch. 10.2, 10.3	Level 6 – Putting It Together SE 323/SJ 86; Geological Dig Experience TE 323/SJ 88; Stories in Stone TE 329/SJ 90, LA 329, EAL 330, EAL 331; Who Goes There SE 334/SJ 94; Footprint Depth TE 334/SJ 98, ID the Trilobites SE 343/SJ 100; Recent Extinctions TE 343/SJ 104, EAL 345 Level 8 – EAL 21, EAL 37, EAL 42, EAL 373; And Then What Happened SE 383/SJ 82; Please Stay in Order TE 394/SJ 85