3-5 NGSS addressing Water, Climate, & Ecosystems

If you are looking for the overall story on what is expected to be covered in each grade level, you can check the PDF and look for the specific science ideas for Kindergarten, First and Second grade to get the specifics of the DCI as well as how they interconnect with the crosscutting disciplinary ideas, scientific and engineering practices as well as how it relates to the common core standards and math.
http://www.nextgenscience.org/search-standards?keys=&tid_4%5B%5D=All&tid_1%5B%5D=All&tid_2%5B%5D=All&tid%5B%5D=102

Key for the following section:

We have identified the different **Disciplinary Core Ideas (DCI)** that address topics related to Water, Climate, and Ecosystems. We identify the specific DCI in either **Earth and Space Science (ESS)** or **Life Science (LS).** We included a link to the evidence statement described by NGSS so we are aware of the expected outcomes from each DCI. A brief description of the idea is included in the text but more specific details regarding the Science and Engineering Practices, DCIs and Crosscutting Concepts. DCIs with a * **indicates the connection with engineering practices**.

3rd grade

3-LS1-1	**Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.** [Clarification Statement: Changes organisms go through during their life form a pattern.] [*Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.*]	http://www.nextgenscience.org/pe/3-ls1-1-molecules-organisms-structures-and-processes
3-LS2-1	**Construct an argument that some animals form groups that help members survive.**	http://www.nextgenscience.org/pe/3-ls2-1-ecosystems-interactions-energy-and-dynamics
3-LS3-2	**Use evidence to support the explanation that traits can be influenced by the environment.** [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]	http://www.nextgenscience.org/pe/3-ls3-2-heredity-inheritance-and-variation-traits
3-LS4-3	**Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.** [Clarification Statement: Examples of evidence could include needs and characteristics of the	http://www.nextgenscience.org/pe/3-ls4-3-biological-evolution-unity-and-diversity

	organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]	
3-LS4-4	**Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.*** [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [*Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change*.]	http://www.nextgenscience.org/pe/3-ls4-4-biological-evolution-unity-and-diversity
3-ESS2-1	**Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.** [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.] [*Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change*.]	http://www.nextgenscience.org/pe/3-ess2-1-earths-systems
3-ESS2-2	**Obtain and combine information to describe climates in different regions of the world**	http://www.nextgenscience.org/pe/3-ess2-2-earths-systems
3-ESS3-1	**Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.*** [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]	http://www.nextgenscience.org/pe/3-ess3-1-earth-and-human-activity
3-PS2-4	**Define a simple design problem that can be solved by applying scientific ideas about magnets.*** [Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.]	http://www.nextgenscience.org/pe/3-ps2-4-motion-and-stability-forces-and-interactions

4th grade

4-PS3-2	**Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.** [*Assessment Boundary: Assessment does not include quantitative measurements of energy.*]	http://www.nextgenscience.org/pe/4-ps3-2-energy
4-PS3-1	**Use evidence to construct an explanation relating the speed of an object to the energy of that object.** [*Assessment Boundary: Assessment does not include quantitative measures of changes in the speed of an object or on any precise or quantitative definition of energy.*	http://www.nextgenscience.org/pe/4-ps3-1-energy
4-PS3-4	**Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*** [Clarification Statement: Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat. Examples of constraints could include the materials, cost, or time to design the device.] [*Assessment Boundary: Devices should be limited to those that convert motion energy to electric energy or use stored energy to cause motion or produce light or sound.*]	http://www.nextgenscience.org/pe/4-ps3-4-energy
4-PS4-1	**Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.** [Clarification Statement: Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves.] [*Assessment Boundary: Assessment does not include interference effects, electromagnetic waves, non-periodic waves, or quantitative models of amplitude and wavelength.*]	http://www.nextgenscience.org/pe/4-ps4-1-waves-and-their-applications-technologies-information-transfer
4-PS4-3	**Generate and compare multiple solutions that use patterns to transfer information.*** [Clarification Statement: Examples of solutions could include drums sending coded information through sound waves, using a grid of 1's and 0's representing black and white to send information about a picture, and using Morse code to send text.]	http://www.nextgenscience.org/pe/4-ps4-3-waves-and-their-applications-technologies-information-transfer
4-LS1-1	**Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.** [Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.] [*Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems.*]	http://www.nextgenscience.org/pe/4-ls1-1-molecules-organisms-structures-and-processes

4-ESS2-1	**Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.** [Clarification Statement: Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.] [*Assessment Boundary: Assessment is limited to a single form of weathering or erosion.*]	http://www.nextgenscience.org/pe/4-ess2-1-earths-systems
4-ESS2-2	**Analyze and interpret data from maps to describe patterns of Earth's features.** [Clarification Statement: Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.]	http://www.nextgenscience.org/pe/4-ess2-2-earths-systems
4-ESS3-1	**Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.** [Clarification Statement: Examples of renewable energy resources could include wind energy, water behind dams, and sunlight; non-renewable energy resources are fossil fuels and fissile materials. Examples of environmental effects could include loss of habitat due to dams, loss of habitat due to surface mining, and air pollution from burning of fossil fuels.]	http://www.nextgenscience.org/pe/4-ess3-1-earth-and-human-activity
4-ESS3-2	**Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*** [Clarification Statement: Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity.] [*Assessment Boundary: Assessment is limited to earthquakes, floods, tsunamis, and volcanic eruptions.*]	http://www.nextgenscience.org/pe/4-ess3-2-earth-and-human-activity

5th grade

5-PS1-1	**Develop a model to describe that matter is made of particles too small to be seen.** [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [*Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.*]	http://www.nextgenscience.org/pe/5-ps1-1-matter-and-its-interactions
5-PS1-4	**Conduct an investigation to determine whether the mixing of two or more substances results in new substances.**	http://www.nextgenscience.org/pe/5-ps1-4-matter-and-its-interactions
5-PS3-1	**Use models to describe that energy in animals' food (used for body repair, growth, and motion and to maintain body warmth) was once energy from the sun.** [Clarification Statement: Examples of models could include diagrams, and flow charts.]	https://www.nextgenscience.org/pe/5-ps3-1-energy
5-LS1-1	**Support an argument that plants get the materials they need for growth chiefly from air and water.** [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]	http://www.nextgenscience.org/pe/5-ls1-1-molecules-organisms-structures-and-processes
5-LS2-1	**Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.**[Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]	http://www.nextgenscience.org/pe/5-ls2-1-ecosystems-interactions-energy-and-dynamics
5-ESS1-2	**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.** [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [*Assessment Boundary: Assessment does not include causes of seasons.*]	http://www.nextgenscience.org/pe/5-ess1-2-earths-place-universe

5-ESS2-2	**Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.** [*Assessment Boundary: Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps, and does not include the atmosphere.*]	http://www.nextgenscience.org/pe/5-ess2-2-earths-systems
5-ESS3-1	**Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.**	http://www.nextgenscience.org/pe/5-ess3-1-earth-and-human-activity