

Investigating Earth Systems Correlation to Colorado

Grades 5 - 8 Earth Science Related Standards

Correlation key:

"XX" **In-depth Coverage** = In-depth coverage of the concept in student edition.

"X" **Coverage** = Coverage in student edition and/or teacher edition supports the development of the concept.

Climate & Weather	Dynamic Planet	Energy Resources	Fossils	Materials and Minerals	Oceans	Rocks and Landforms	Soil	Water as a Resource
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Standard 1: Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

Identifying and evaluating alternative explanations and procedures.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Using examples to demonstrate that scientific ideas are used to explain previous observations and to predict future events (for example, plate tectonics and future earthquake activity).	XX	XX	XX	XX	XX	XX	XX	XX	XX
Asking questions and stating hypotheses that lead to different types of scientific investigations (for example, experimentation, collecting specimens, constructing models, researching scientific literature).	XX	XX	XX	XX	XX	XX	XX	XX	XX
Creating a written plan for an investigation.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Using appropriate tools, technologies, and measurement units to gather and organize data.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Interpreting and evaluating data in order to formulate conclusions.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Communicating results of their investigations in appropriate ways (for example, written reports, graphic displays, oral presentations).	XX	XX	XX	XX	XX	XX	XX	XX	XX
Using metric units in measuring, calculating, and reporting results.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Explaining that scientific investigations sometimes result in unexpected findings that lead to new questions and more investigations.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Giving examples of how collaboration can be useful in solving scientific problems and sharing findings.	XX	XX	XX	XX	XX	XX	XX	XX	XX

STANDARD 3: Life Science: Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment. (Focus: Biology--Anatomy, Physiology, Botany, Zoology,

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3. 1 Students know and understand the characteristics of living things, the diversity of life, and how living things interact with each other and with their environment.									
• constructing and using classification systems based on the structure of organisms;				X					
• describing the importance of plant and animal adaptations, including local examples;				XX		XX			
• creating and interpreting food chains and food webs;				X		X			
• explaining the interaction and interdependence of nonliving and living components within ecosystems; and					X	X			
• describing how an environment's ability to provide food, water, space, and essential nutrients determines carrying capacity.						X			
3. 2 Students know and understand interrelationships of matter and energy in living systems.									
• describing the basic processes of photosynthesis and respiration and their importance to life (for example, set up a terrarium or aquarium and make changes such as blocking out light);			XX						
• comparing and contrasting food webs within and between different ecosystems (for example, grasslands, tundra, marine) and predicting the consequences of disrupting one of the organisms in a food web;						X			
• describing ways (for example, digestion, transport of nutrients by circulatory system) that multicellular organisms get food and other matter to their cells;									
• explaining the recycling of materials by determining a pathway of a substance that is important for life (for example, trace water through an ecosystem); and	X					X			XX
• describing the role of organisms in the decomposition and recycling of dead organisms (for example, bacteria's role in the decomposition and recycling of matter from a dead animal).									
3. 4 Students know and understand how organisms change over time in terms of biological evolution and genetics.									
• describing the purpose of body cell division and sex cell division;									

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• describing the role of chromosomes and genes in heredity (for example, genes control traits, while chromosomes are made up of many genes); and									
• describing evidence that reveals changes or constancy in groups of organisms over geologic time.				XX		X			

Standard 4: Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography).

4.1 Students know and understand the composition of Earth, its history, and the natural processes that shape it. As students in grades 5-8 extend their knowledge, what they know and are able to do includes

Explaining how minerals, rocks, and soils form.		X			XX		XX	XX	
Explaining how fossils are formed and used as evidence to indicate that life has changed through time.				XX			X		
Modeling natural processes that shape Earth's surface (for example, weathering, erosion, mountain building, volcanic activity).	XX	XX				X	XX	XX	
Explaining the distribution and causes of natural events (for example, earthquakes, volcanoes, landslides).		XX				X	XX		

4.2 Students know and understand the general characteristics of the atmosphere and fundamental processes of weather. As students in grades 5-8 extend their knowledge, what they know and are able to do includes

Describing the basic composition, properties, and structure of the atmosphere (for example, the range and distribution of temperature and pressure in the troposphere and stratosphere).	XX								
Observing, measuring, and recording changes in weather conditions (for example, humidity, temperature, air pressure, cloud types, wind, precipitation).	XX								
Explaining how atmospheric circulation is driven by solar heating (for example, the transfer of energy by radiation, convection, conduction).	XX								
Describing large-scale and local weather systems (for example, fronts, air masses, storms).	XX								

4.3 Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment. As students in grades 5-8 extend their knowledge, what they know and are able to do includes

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Investigating and comparing the properties and behavior of water in its solid, liquid, and gaseous states.	X								XX
Describing the distribution and circulation of the world's water through oceans, glaciers, rivers, groundwater, and atmosphere.	XX					XX			XX
Describing the composition and physical characteristics of oceans (for example, currents, waves, features of the ocean floor, salinity).						XX			

4.4 Students know the structure of the solar system, composition and interactions of objects in the universe, and how space is explored.

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

Describing the basic components, composition, size, and theories of origin of the solar system.									
Explaining the effects of relative motion and positions of the Sun, Earth, and Moon (for example, seasons, eclipses, moon phases, tides).									
Comparing Earth to other planets (for example, size, composition, relative distance from the Sun).									
Identifying technology needed to explore space (for example, telescopes, spectrosopes, spacecraft, life support systems).									

STANDARD 5: Students know and understand interrelationships among science, technology, and human activity and how they can affect the world.

As students in grades 5-8 extend their knowledge, what they know and are able to do includes

• investigating and describing the extent of human uses of renewable and non-renewable resources (for example, forests, fossil fuels);			XX		XX				XX
• describing advantages and disadvantages that might accompany the introduction of a new technology (for example, mountain bikes, cellular telephones, pagers);	X	X	XX	X	XX	X	X	X	X
• describing how the use of technology can help solve an individual or community problem (for example, using catalytic converters on automobiles to help reduce air pollution); and	X	X	XX	X	XX	X	X	X	X
• describing how people use science and technology in their professions.	X	X	X	X	X	X	X	X	X

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STANDARD 6: Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines. As students in grades 5-8 extend their knowledge, what they know and are able to do includes									
<ul style="list-style-type: none"> explaining why a controlled experiment must have comparable results when repeated; 	XX	XX	XX	XX	XX	XX	XX	XX	XX
<ul style="list-style-type: none"> giving examples of how scientific knowledge changes as new knowledge is acquired and previous ideas are modified (for example, through space exploration); 	I\	X	X	X	X	X	X	X	X
<ul style="list-style-type: none"> describing contributions to the advancement of science made by people in different cultures and at different times in history; 	X	X	X	X	X	X	X	X	X
<ul style="list-style-type: none"> identifying, comparing, and predicting variables and conditions related to change (for example, climate, population, motion); 	XX	XX	XX	XX	XX	XX	XX	XX	XX
<ul style="list-style-type: none"> identifying and illustrating natural cycles within systems (for example, water, planetary motion, geological changes, climate); and 	XX	XX	X	X	X	XX	XX	X	XX
<ul style="list-style-type: none"> using a model to predict change (for example, computer simulation, video sequence, stream table). 	XX	XX	X	X	X	X	XX	X	X