



Waste Reduction & Recycling

6. Climate is the long-term average of a region's weather and depends on many factors.

- 6.d Students know how computer models are used to predict the effects of the increase in greenhouse gases on climate for the planet as a whole and for specific regions.

7. Biogeochemical Cycles

- 7.a Students know the carbon cycle of photosynthesis and respiration and the nitrogen cycle.
- 7.b Students know the global carbon cycle: the different physical and chemical forms of carbon in the atmosphere, oceans, biomass, fossil fuels, and the movement of carbon among these reservoirs.
- 7.c Students know the movement of matter among reservoirs is driven by Earth's internal and external sources of energy.
- 7.d Students know the relative residence times and flow characteristics of carbon in and out of its different reservoirs.

9. California Geology

- 9.a Students know the resources of major economic importance in California and their relation to California's geology.

Composting

4. Energy enters the Earth system primarily as solar radiation and eventually escapes as heat.

- 4.a Students know the relative amount of incoming solar energy compared with Earth's internal energy and the energy used by society.
- 4.b Students know the fate of incoming solar radiation in terms of reflection, absorption, and photosynthesis.



Stormwater Urban Runoff

5. Heating of Earth's surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents.

- 5.a Students know how differential heating of Earth results in circulation patterns in the atmosphere and oceans that globally distribute the heat.
- 5.b Students know the relationship between the rotation of Earth and the circular motions of ocean currents and air in pressure centers.
- 5.c Students know the origin and effects of temperature inversions.
- 5.d Students know properties of ocean water, such as temperature and salinity, can be used to explain the layered structure of the oceans, the generation of horizontal and vertical ocean currents, and the geographic distribution of marine organisms.

6. Climate

- 6.b Students know the effects on climate of latitude, elevation, topography, and proximity to large bodies of water and cold or warm ocean currents.

9. California Geology

- 9.c Students know the importance of water to society, the origins of California's fresh water, and the relationship between supply and need.



California Science Standards linked with Generation Earth Service Learning Projects: Earth Science

ALL GENERATION EARTH PROJECTS CAN ALSO BE LINKED TO THE GRADES 9 THROUGH 12 INVESTIGATION AND EXPERIMENTATION SCIENCE STANDARDS.

1. Investigation

- 1.a Students will select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data.
- 1.b Students will identify and communicate sources of unavoidable experimental error.
- 1.c Students will identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions.
- 1.d Students will formulate explanations by using logic and evidence.
- 1.e Students will solve scientific problems by using quadratic equations and simple trigonometric, exponential, and logarithmic functions.
- 1.f Students will distinguish between hypothesis and theory as scientific terms.
- 1.g Students will recognize the usefulness and limitations of models and theories as scientific representations of reality.
- 1.h Students will read and interpret topographic and geologic maps.
- 1.i Students will analyze the locations, sequences, or time intervals that are characteristic of natural phenomena (e.g., relative ages of rocks, locations of planets over time, and succession of species in an ecosystem).
- 1.j Students will recognize the issues of statistical variability and the need for controlled tests.
- 1.k Recognize the cumulative nature of scientific evidence.
- 1.l Analyze situations and solve problems that require combining and applying concepts from more than one area of science.
- 1.m Students will investigate a science-based societal issue by researching the literature, analyzing data, and communicating the findings. Examples of issues include irradiation of food, cloning of animals by somatic cell nuclear transfer, choice of energy sources, and land and water use decisions in California.
- 1.n Students will know that when an observation does not agree with an accepted scientific theory, the observation is sometimes mistaken or fraudulent (e. g., the Piltdown Man fossil or unidentified flying objects) and that the theory is sometimes wrong (e.g., the Ptolemaic model of the movement of the Sun, Moon, and planets).