Climate Literacy 101 Glossary

Term	Definition	Notes
4-rivers index	the Sacramento River and its tributaries (the Feather, Yuba, and American Rivers), together comprising the "Four Rivers Index", represent the primary input into the California State Water Project, operated by the California Department of Water Resources (CDWR)	
adaptation	the range of adjustments of the environment or those taken by individuals, organizations, communities, or other entities to deal with the potential or experienced impacts of climate change	
aerosol	a collection of airborne solid or liquid particles with a typical size between 0.01 and 10 micrometers	
albedo	the fraction of solar radiation reflected by a surface or object	snow surfaces have a high albedo, vegetation covered surfaces and oceans have a low albedo
anemometer	measures wind speed	
anthropogenic	made by people or resulting from human activities	
atmospheric rivers	the water-vapor rich part of the broader warm conveyor belt, that is found in extratropical cyclones ("storms"); they result from the action of winds associated with the storm drawing together moisture into a narrow region just ahead of the cold front where low-level winds can sometimes exceed hurricane strength.	
barometric pressure	force per unit area exerted by an atmospheric column (that is, the entire body of air above the specified area)	
Bulletin 120	DWR publication that provides a forecast of snowmelt runoff	

Climate Literacy 101 Glossary

Term	Definition	Notes
cap and trade	cap and trade is a policy approach for controlling large amounts of emissions from a group of sources; the approach first sets an overall cap, or maximum amount of emissions per compliance period, for all sources under the program; authorizations to emit in the form of emission allowances are then allocated to affected sources, and the total number of allowances cannot exceed the cap	
carbon cycle	all reservoirs (parts) and fluxes of carbon; the reservoirs are the atmosphere, terrestrial biosphere (including freshwater systems), oceans, and sediments (includes fossil fuels)	
carbon dioxide	a naturally occurring gas, and also a byproduct of burning fossil fuels and biomass, as well as land use changes and other industrial processes; it is the principal anthropogenic greenhouse gas that affects Earth's radiative balance	it is the reference gas against which other greenhouse gases are measured and therefore has a Global Warming Potential of 1
carbon dioxide equivalent	the emissions of a gas, by weight, multiplied by its "Global Warming Potential"	
carbon sequestration	the uptake and storage of carbon	example: trees and plants absorb carbon dioxide, then release the oxygen and store the carbon
carbon sink	process that removes more carbon dioxide from the atmosphere than it releases	both the terrestrial biosphere and oceans can act as carbon sinks
Celcius	temperature scale in which 0° is the freezing point of water and 100° is the boiling point of water at sea level. To convert to Fahrenheit, multiply the Celsius by 1.8, then add 32. To convert to Celsius, subtract 32, then divide by 1.8.	

Climate Literacy 101 Glossary

Term	Definition	Notes
chlorofluorocarbons (CFCs)	greenhouse gases covered under the 1987 Montreal Protocol; CFCs drift into the upper atmosphere and can break down the ozone layer	
circulation	the flow, or movement, of a fluid (e.g., water or air) in or through a given area or volume.	
climate	average weather; the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands of years	classical period of time is 3 decades, as defined by the World Meteorological Organization (WMO)
climate model	a quantitative way of representing the interactions of the atmosphere, oceans, land surface, and ice	
climate sensitivity	in IPCC reports, equilibrium climate sensitivity refers to the equilibrium change in global mean surface temperature following a doubling of the atmospheric CO2 concentration	
climate signal	an ocean or atmospheric circulation/temperature pattern that correlates with precipitation patterns elsewhere on the globe	
climatology	the science that deals with the phenomena of climates or climatic conditions.	
convection	generally, transport of heat and moisture by the movement of a fluid; in meteorology, the term is used specifically to describe vertical transport of heat and moisture in the atmosphere, especially by updrafts and downdrafts in an unstable atmosphere	

Climate Literacy 101 Glossary

Term	Definition	Notes
ecosystem services	resources and processes that are supplied by natural ecosystems; at the UN 2004 Millenium Ecosystem Assessment, services were grouped into four broad categories: provisioning (production of food and water), regulating (control of climate and disease), supporting (nutrient cycles and crop pollination), cultural (spiritual and recreational benefits)	
El Niño - Southern Oscillation (ENSO)	a coupled atmospheric-ocean phenomenon involving a warm water current that periodically flows along the coast of Ecuador and Peru, associated with a fluctuation of the intertropical surface pressure pattern and circulation in the Indian and Pacific Oceans	the event has great impacts on the wind, sea surface temperature, and precipitation patterns in the tropical Pacific and climatic effects throughout the Pacific region
evapotranspiration	the combined process of evaporation from the Earth's surface and transpiration from vegetation	
Fahrenheit	relating or conforming to a thermometric scale on which under standard atmospheric pressure the boiling point of water is at 212 degrees above the zero of the scale, the freezing point is at 32 degrees above zero; to convert to Fahrenheit, multiply the Celsius by 1.8, then add 32; to convert to Celsius, subtract 32, then divide by 1.8.	
feedback mechanisms	factors which increase or amplify (positive feedback) or decrease (negative feedback) the rate of a process	example of positive feedback is the ice-albedo feedback

Climate Literacy 101 Glossary

Term	Definition	Notes
forcing mechanism	a process that alters the energy balance of the climate system, i.e. changes in the relative balance between incoming solar radiation and outgoing infrafred radiation from Earth	such mechanisms include changes in solar irradiance, volcanic eruptions, and enhancement of the natural greenhouse effect by emissions of greenhouse gases
front (weather)	the boundary between air masses	
global change	changes in the global environment (including alterations in climate, land productivity, oceans or other water resources, atmospheric chemistry and ecological systems) that may alter the capacity of the Earth to sustain life	
Global Climate Model (Global Circulation Model)	a computer model of the basic dynamics and physics of the components of the global climate system (including the atmosphere and oceans) and their interactions which can be used to simulate climate variability and change	
global warming	the increase in the average temperature of Earth's near-surface air and oceans since the mid-20th century and its projected continuation	global warming can occur from a variety of causes, both natural and human-induced
Global Warming Potential	the cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas	

Term	Definition	Notes
greenhouse effect	the heating of the surface of a planet or moon due to the presence of an atmosphere containing gases that absorb and emit infrared radiation; greenhouse gases trap heat within the surface-trophosphere system	
greenhouse gas	any gas that absorbs infrared radiation in the atmosphere	includes, but is not limited to: water vapor, carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, ozone, hydrochlorofluorocarbons, hydrocluorocarbons, perfluorocarbons, and sulfer hexafluoride
hydrologic cycle	the process of evaporation, vertical and horizontal transport of vapor, condensation, precipitation, and the flow of water from continents to oceans; it is a major factor in determining climate through its influence on surface vegetation, the clouds, snow and ice, and soil moisture	
hydrologic region	the United States is divided and sub-divided into successively smaller hydrologic units with the first and largest being regions; this first level of classification divides the Nation into 21 major geographic areas, or regions; these geographic areas contain either the drainage area of a major river or the combined drainage areas of a series of rivers	
hydrologic water year	the 12-month period October 1, for any given year through September 30, of the following year; the water year is designated by the calendar year in which it ends and which includes 9 of the 12 months; thus, the year ending September 30, 1999 is called the "1999" water year	

Climate Literacy 101 Glossary

Term	Definition	Notes
infrared radiation	radiation emitted by the Earth's surface, the atmosphere and the clouds; aka terrestrial or long-wave radiation	
insolation	incoming solar radiation; sunshine.	
Intergovernmental Panel on Climate Change (IPCC)	established jointly by the United Nations Environment Programme and the World Meteorological Organization in 1988; the purpose is to assess information in the scientific and technical literature related to all significant components of the issue of climate change	draws upon hundreds of the world's expert scientists as authors and thousands as expert reviewers
jet stream	relatively strong winds concentrated in a narrow stream in the atmosphere, normally referring to horizontal, high-altitude winds.	a jet stream at low levels is known as a low-level jet.
Kyoto 6	refers to the six main greenhouse gases that are regulated under the Kyoto Protocol agreement (CO2, CH4, N2O, HFC, PFC, SF6)	
La Niña	a periodic cooling of surface ocean waters in the eastern tropical Pacific along with a shift in convection in the western Pacific further west than the climatological average; these conditions affect weather patterns around the world	
latitude	the location north or south in reference to the equator, which is designated at zero (0) degrees; lines of latitude are parallel to the equator and circle the globe; the North and South poles are at 90 degrees North and South latitude.	

Term	Definition	Notes
longitude	the location east or west in reference to the Prime Meridian, which is designated as zero (0) degrees longitude; the distance between lines of longitude are greater at the equator and smaller at the higher latitudes, intersecting at the earth's North and South Poles; time zones are correlated to longitude.	
low carbon fuel standard	a low carbon fuel standard (LCFS) for transportation fuels is a policy to encourage the utilization of low carbon fuels (measured on a full life–cycle basis) to reduce greenhouse gas (GHG) emissions from the transportation sector	
mitigation	the reduction of heat-trapping GHG emissions into the atmosphere, usually by either reducing their sources or increasing their sinks	
negative neutral	one of four El Niño Southern Oscillation States (El Niño, positive neutral, negative neutral, La Niña) that relate to the sea surface temperature anomaly in the eastern tropical Pacific Ocean	
numerical weather prediction	a computer forecast or prediction based on equations governing the motions and the forces affecting motion of fluids; the equations are based, or initialized, on specified weather or climate conditions at a certain place and time	
orographic	the study of the physical geography of mountains and mountain ranges	

Climate Literacy 101 Glossary

Term	Definition	Notes
ozone layer	an atmospheric layer that contains a high proportion of oxygen that exists as ozone; it acts as a filtering mechanism against incoming ultraviolet radiation; it is located between the troposphere and the stratosphere, around 9.5 to 12.5 miles (15 to 20 kilometers) above the earth's surface	
Pacific Decadal Oscillation	the Pacific Decadal Oscillation (PDO) is a climate phenomenon that occurs primarily in the North Pacific Ocean; the “oscillation” happens between warm phases (positive values) and cool phases (negative values) that last anywhere from 10 to 40 years; the phases are associated with changes in sea surface temperatures (SST).	while the causes of the PDO are still unknown, the primary effects seem to be changes in northeast Pacific marine ecosystems and a changing jet stream path
peak discharge	in hydrologic terms, the rate of discharge of a volume of water passing a given location	
precipitation	any form of water, such as rain, snow, sleet, or hail, that falls to the earth's surface	
proxy	climate proxies are preserved physical characteristics of the past that enable scientists to reconstruct the climatic conditions that prevailed during much of the Earth's history.	
radiative forcing	loosely defined as the change in net irradiance at the atmospheric boundary between the troposphere and the stratosphere; positive forcing tends to warm the system, while negative forcing tends to cool it	
rainflood	high water event that is generated by rainfall rather than snowmelt	

Climate Literacy 101 Glossary

Term	Definition	Notes
rainshadow	an area having relatively little precipitation due to the effect of a topographic barrier, especially a mountain range, that causes the prevailing winds to lose their moisture on the windward side, causing the leeward side to be dry.	
Renewable Portfolio Standard	a Renewable Portfolio Standard (RPS) provides states with a mechanism to increase renewable energy generation using a cost-effective, market-based approach that is administratively efficient; an RPS requires electric utilities and other retail electric providers to supply a specified minimum amount of customer load with electricity from eligible renewable energy sources; the goal of an RPS is to stimulate market and technology development so that, ultimately, renewable energy will be economically competitive with conventional forms of electric power	states create RPS programs because of the energy, environmental, and economic benefits of renewable energy and sometimes other clean energy approaches, such as energy efficiency and combined heat and power (CHP)
resilience	property of an ecosystem which characterizes ecosystem behavior in relation to a perturbation; the "capacity of an ecosystem to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a completely differenct set of processes; a resilient ecosystem can withstand shocks and rebuild itself when necessary"	resilience is conferred in human and ecological systems by adaptive capacity
runoff	the portion of precipitation on land that ultimately reaches streams often with dissolved or suspended material	
satellite altimetry	altimetry is a technique for measuring height; satellite altimetry measures the time taken by a radar pulse to travel from the satellite antenna to the surface and back to the satellite receiver; combined with precise satellite location data, altimetry measurements yield sea-surface heights	

Term	Definition	Notes
sequestration	opportunities to remove atmospheric CO2, either through biological processes (eg. plants and trees), or geological processes through storage of CO2 in underground reservoirs	
sink	any process, activity or mechanism that results in the net removal of greenhouse gases, aerosols, or precursors of greenhouse gases from the atmosphere	
source	any process or activity that results in the net release of greenhouse gases, aerosols, or precursors of greenhouse gases into the atmosphere	
spatial resolution	spatial resolution is a term that refers to the number of pixels utilized in construction of a digital image; images having higher spatial resolution are composed with a greater number of pixels than those of lower spatial resolution	
stationarity	stationarity regarding quantitative variables is that there is no systematic change in either mean or variance in the time series; if there were such changes an increasing or decreasing trend in the data would be present; but this is somewhat a weak definition since a constant mean over time may result from very different dynamics	
stratosphere	the region of the atmosphere extending from the top of the troposphere to the base of the mesosphere, an important area for monitoring stratospheric ozone	
subtropics	relating to the regions of the Earth bordering on the tropics, just north of the Tropic of Cancer or just south of the Tropic of Capricorn; subtropical regions are the warmest parts of the two temperate zones	

Term	Definition	Notes
sustainability	the capacity to endure; social, environmental and economic sustainability	
terrestrial	of or relating to land as distinct from air or water	
thermal expansion	increase in volume of a material as its temperature is increased, usually expressed as a fractional change in dimensions per unit temperature change; when the material is a solid, thermal expansion is usually described in terms of change in length, height, or thickness; if a crystalline solid has the same structural configuration throughout, the expansion will be uniform in all dimensions; otherwise, there may be different expansion coefficients and the solid will change shape as the temperature increases	
topography	the three-dimensional arrangement of physical attributes (such as shape, height, and depth) of a land surface in a place or region; physical features that make up the topography of an area include mountains, valleys, plains, and bodies of water; human-made features such as roads, railroads, and landfills are also often considered part of a region's topography	
troposhere	the lowest atmospheric layer, about 18 kilometres (11 miles) thick at the equator to about 6 km (4 miles) at the Poles, in which air temperature decreases normally with height at about 6.5°C per km	
ultraviolet radiation (UV)	the energy range just beyond the violet end of the visible spectrum; although UV constitutes only about 5 percent of the total energy emitted from the sun, it is the major energy source for the stratosphere and mesosphere, playing a dominant role in both energy balance and chemical composition	
unimpeded flow	a flow that is not slowed or prevented	

Climate Literacy 101 Glossary

Term	Definition	Notes
urban heat island	the urban heat island effect is a measurable increase in ambient urban air temperatures resulting primarily from the replacement of vegetation with buildings, roads, and other heat-absorbing infrastructure; the heat island effect can result in significant temperature differences between rural and urban areas	
vulnerability	the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes	
weather	the state of the atmosphere with respect to wind, temperature, cloudiness, moisture, pressure, etc.; weather refers to these conditions at a given point in time (e.g., today's high temperature), whereas climate refers to the "average" weather conditions for an area over a long period of time (e.g., the average high temperature for today's date)	
weather front	the transition zone or interface between two air masses of different densities, which usually means different temperatures; for example, the area of convergence between warm, moist air and cool, dry air	
Western Climate Initiative (WCI)	the WCI is a collaboration of independent jurisdictions working together to identify, evaluate, and implement policies to tackle climate change at a regional level; this is a comprehensive effort to reduce greenhouse gas pollution, spur investment in clean-energy technologies that create green jobs and reduce dependence on imported oil	