

## Climate and Weather Terms Glossary page 1 of 12

TERM	DEFINITION
<b>A</b>	
<b>Absolute humidity</b>	The mass of water vapor in a given volume of air. It represents the density of water vapor in the air.
<b>Absolute zero</b>	A temperature of -273°C, -460°F, or 0°K. Theoretically, there is no molecular motion at this temperature.
<b>Absorptivity</b>	The efficiency of radiation absorption.
<b>Acclimatization</b>	The gradual adjustment of the body to new climatic or other environmental conditions, for example, the adjustment to low levels of oxygen at high altitudes.
<b>Accretion</b>	The growth of a precipitation particle by the collision of an ice crystal or snowflake with a supercooled liquid droplet that freezes upon impact.
<b>Actual evapotranspiration</b>	The rate of water lost from vegetation and soil, ordinarily at a slower rate than the potential rate.
<b>Actual vapor pressure</b>	See vapor pressure.
<b>Adiabatic process</b>	A process that takes place without a transfer of heat between the system (such as an air parcel) and its surroundings.
<b>Advection</b>	The horizontal transfer of any atmospheric property by the wind.
<b>Advection fog</b>	Occurs when warm, moist air moves over a cold surface and the air cools to below its dew point.
<b>Aerovane</b>	A device that resembles a wind vane with a propeller at one end.
<b>Air density</b>	Mass per unit volume of air; about 1.275 kg per cubic meter at 0°C and 1000 millibars.
<b>Air mass</b>	A large expanse of air having similar temperature and humidity at any given height.
<b>Air pressure</b>	The cumulative force exerted on any surface by the molecules composing air.
<b>Albedo</b>	The percent of radiation returning from a surface compared to that which strikes it.
<b>Altimeter</b>	An instrument that indicates the altitude of an object above a fixed level. Pressure altimeters use an aneroid barometer with a scale graduated in altitude instead of pressure.
<b>Alto cumulus</b>	A middle cloud, usually white or gray. Often occurs in layers or patches with wavy, rounded masses or rolls.
<b>Alto cumulus castellanus</b>	An alto cumulus showing vertical development, individual cloud elements have towerlike tops, often in the shape of tiny castles.
<b>Alto cumulus lenticularis</b>	A lens-shaped alto cumulus cloud; a mountain-wave cloud generated by the disturbance of horizontal airflow caused by a prominent mountain range.
<b>Altostratus</b>	A middle cloud composed of gray or bluish sheets or layers of uniform appearance. In the thinner regions, the sun or moon usually appears dimly visible.
<b>Ambient air</b>	The air surrounding a cloud,
<b>Ambient temperature</b>	Temperature
<b>Anemometer</b>	An instrument designed to measure wind speed.
<b>Aneroid barometer</b>	An instrument designed to measure atmospheric pressure. It contains no liquid.
<b>Annual range of temperature</b>	The difference between the warmest and coldest months at any given location.
<b>Anomalies</b>	Departures of temperature, precipitation, or other weather elements from long-term averages.
<b>Arctic air</b>	A very cold and dry air mass that forms primarily in winter and the northern interior of North America.
<b>Atmospheric window</b>	A region of the electromagnetic spectrum from 8 to 12 $\mu\text{m}$ where the atmosphere is transparent to radiation.
<b>Autumnal equinox</b>	The equinox at which the sun approaches the Southern Hemisphere and passes directly over the equator. Occurs around September 23.
<b>B</b>	
<b>Barograph</b>	A recording instrument that provides a continuous trace of air pressure variation with time.
<b>Barometer</b>	An instrument that measures atmospheric pressure. The two most common barometers are the mercury barometer and the aneroid barometer.
<b>Beaufort scale</b>	A

## Climate and Weather Terms Glossary page 2 of 12

TERM	DEFINITION
<b>Black body</b>	A hypothetical object that absorbs all of the radiation that strikes it. It also emits radiation at a maximum rate for its given temperature.
<b>Blizzard</b>	A severe weather condition characterized by low temperatures and strong winds (greater than 32 mi/hr) bearing a great amount of snow. When these conditions continue after the falling snow has ended, it is termed a ground blizzard.
<b>Bora</b>	A cold katabatic wind that originates in Yugoslavia and flows onto the coastal plain of the Adriatic Sea.
<b>Bowen ratio</b>	The ratio of energy available for sensible heating to energy available for latent heating.
<b>Boyle's law</b>	When the temperature is held constant, the pressure and density of an ideal gas are directly proportional.
<b>C</b>	
<b>Ceilmeter</b>	An instrument that automatically records cloud height.
<b>Centrifugal force</b>	A
<b>Centripetal force</b>	An
<b>Charles's law</b>	With constant pressure, the temperature of an ideal gas is inversely proportional to the density of the gas.
<b>Chinook</b>	A warm, dry wind on the eastern side of the Rocky Mountains. In the Alps, the wind is called a Foehn.
<b>Cirrocumulus</b>	A high cloud that appears as a white patch of cloud without shadows. It consists of very small elements in the form of grains or ripples.
<b>Cirrostratus</b>	A high cloud appearing as a whitish veil that may totally cover the sky. Often produces halo phenomena.
<b>Cirrus</b>	A high cloud composed of ice crystals in the form of thin, white, featherlike clouds in patches, filaments, or narrow bands.
<b>Climate</b>	The accumulation of daily and seasonal weather events over a long period of time. A description of aggregate weather conditions; the sum of all statistical weather information that helps describe a place or region.
<b>Cloud base</b>	
<b>Cloudburst</b>	Any sudden and heavy rain shower.
<b>Cloud cover</b>	
<b>Cloud deck</b>	The top of a cloud layer, usually viewed from an aircraft.
<b>Cloud seeding</b>	The introduction of artificial substances (usually silver iodide or dry ice) into a cloud for the purpose of either modifying its development or increasing its precipitation.
<b>Coalescence</b>	The merging of cloud droplets into a single larger droplet.
<b>Cold fog</b>	See Supercooled cloud.
<b>Cold front</b>	The
<b>Condensation</b>	Process by which water changes phase from a vapor to a liquid.
<b>Condensation nuclei</b>	Small particles in the atmosphere that serve as the core of tiny condensing cloud droplets. These may be dust, salt, or other material.
<b>Conduction</b>	The transfer of heat by molecular activity from one substance to another, or through a substance. Transfer is always from warmer to colder regions.
<b>Continental air mass</b>	An air mass that forms over land; it is normally relatively dry.
<b>Continental Climate</b>	A climate lacking marine influence and characterized by more extreme temperatures than in marine climates; therefore, it has a relatively high annual temperature range for its latitude.
<b>Continental polar air</b>	Relatively dry air mass that develops over the northern interior of North America; very cold in winter and mild in summer.
<b>Continental tropical air</b>	Warm, dry air mass that forms over the subtropical deserts of the south-western United States.
<b>Contrail (condensation trail)</b>	A cloudlike streamer frequently seen forming behind aircraft flying in clear, cold, humid air.

## Climate and Weather Terms Glossary page 3 of 12

TERM	DEFINITION
<b>Convection</b>	Motions in a fluid that result in the transport and mixing of the fluid's properties. In meteorology, convection usually refers to atmospheric motions that are predominantly vertical, such as rising air currents due to surface heating. The rising of heated surface air and the sinking of cooler air aloft is often called free convection. (Compare with forced convection.)
<b>Convective condensation level (CCL)</b>	The level above the surface marking the base of a cumiform cloud that is forming due to surface heating and rising thermals.
<b>Convergence</b>	An atmospheric condition that exists when the winds cause a horizontal net inflow of air into a specified region.
<b>Cooling degree-day</b>	A form of degree-day used in estimating the amount of energy necessary to reduce the effective temperature of warm air. A cooling degree-day is a day on which the average temperature is one degree above a desired base temperature.
<b>Coriolis</b>	effect
<b>Crepuscular rays</b>	Alternating light and dark bands of light that appear to fan out from the sun's position, usually at twilight.
<b>Cumulonimbus</b>	An exceptionally dense and vertically developed cloud, often with a top in the shape of an anvil. The cloud is frequently accompanied by heavy showers, lightning, thunder, and sometimes hail. It is also known as a thunderstorm cloud.
<b>Cumulus</b>	A cloud in the form of individual, detached domes or towers that are usually dense and well defined. It has a flat base with a bulging upper part that often resembles cauliflower. Cumulus clouds of fair weather are called cumulus humilis. Those that exhibit much vertical growth are called cumulus congestus or towering cumulus.
<b>Cumulus Congestus</b>	An upward building convective cloud with vertical development between that of a cumulus cloud and a cumulonimbus.
<b>Cup anemometer</b>	An instrument used to monitor wind-speed. Wind rotation of cups generates an electric current calibrated in wind speed.
<b>Cutoff high</b>	Anticyclonic
<b>Cutoff low</b>	Cyclonic circulation system that separates from the prevailing westerly airflow and therefore remains stationary.
<b>D</b>	
<b>Daily range of temperature</b>	The difference between the maximum and minimum temperatures for any given day.
<b>Degree days</b>	Computed from each day's mean temperature ( $\text{max} + \text{min} / 2$ ). For each degree that a day's mean temperature is below or above a reference temperature is counted as one degree day.
<b>Density</b>	The ratio of the mass of a substance to the volume occupied by it.
<b>Deposition</b>	A process that occurs in subfreezing air when water vapor changes directly to ice without becoming a liquid first. (Also called sublimation in meteorology.)
<b>Deposition nuclei</b>	Tiny particles in the atmosphere that serve as the core of tiny ice crystals as water vapor changes to the solid form.
<b>Desert</b>	One of two types of dry climate-the driest of the dry climates.
<b>Dew</b>	Water that has condensed onto objects near the ground when their temperatures have fallen below the dew point of the surface air.
<b>Dew point (dew-point temperature)</b>	The temperature to which air must be cooled (at constant pressure and constant water vapor content) for saturation to occur. When the dew point falls below freezing it is called the frost point.
<b>Diffraction</b>	The bending of light around objects, such as cloud and fog droplets, producing fringes of light and dark or colored bands.
<b>Diffuse insolation</b>	Solar radiation that is scattered or reflected by atmospheric components (clouds, for example) to the earth's surface.
<b>Direct insolation</b>	Solar radiation that is transmitted directly through the atmosphere to the earth's surface without interacting with atmospheric components.
<b>Divergence</b>	An atmospheric condition that exists when the winds cause a horizontal net outflow of air from a specific region.
<b>Downbursts</b>	A severe localized downdraft that can be experienced beneath a severe thunderstorm. (Compare Microburst)
<b>Downdraft</b>	Downward moving air, usually within a thunderstorm cell.

## Climate and Weather Terms Glossary page 4 of 12

TERM	DEFINITION
<b>Drainage basin</b>	A fixed geographical region from which a river and its tributaries drain water.
<b>Drizzle</b>	Small drops between 0.2 and 0.5 mm in diameter that fall slowly and reduce visibility more than light rain.
<b>Drought</b>	A period of abnormally dry weather sufficiently long enough to cause serious effects on agriculture and other activities in the affected area.
<b>Dry adiabatic rate</b>	The rate of change of temperature in a rising or descending unsaturated air parcel.
<b>Dry climate</b>	A climate in which yearly precipitation is not as great as the potential loss of water by evaporation.
<b>Dust devil (or whirlwind)</b>	A small but rapidly rotating wind made visible by the dust, sand, and debris it picks up from the surface. It develops best on clear, dry, hot afternoons.
<b>E</b>	
<b>Eddy</b>	A small volume of air (or any fluid) that behaves differently from the larger flow in which it exists.
<b>Effective emissivity</b>	A correction factor, dependent on the radiational characteristics of the earth-atmosphere system, that permits application of black body radiation laws to the earth-atmosphere system
<b>Emissivity</b>	The fractional amount of radiation emitted by a given object or substance in comparison to the amount emitted by a perfect emitter.
<b>Emittance</b>	
<b>Entrainment</b>	The mixing of environmental air into a preexisting air current or cloud so that the environmental air becomes part of the current or cloud.
<b>Environmental lapse rate</b>	The rate of decrease of temperature with elevation.
<b>Equilibrium vapor pressure</b>	The necessary vapor pressure around liquid water that allows the water to remain in equilibrium with its environment.
<b>Equinox</b>	The time when the sun crosses the plane of the earth's equator occurring about March 21 and September 22.
<b>Evaporation</b>	The process by which a liquid changes into a gas.
<b>Evapotranspiration</b>	
<b>Evaporation fog</b>	Fog produced when sufficient water vapor is added to the air by evaporation. The two common types are steam fog, which forms when cold air moves over warm water, and frontal fog, which forms as warm raindrops evaporate in a cool air mass.
<b>Exosphere</b>	The outermost portion of the atmosphere.
<b>F</b>	
<b>Fall Freeze date</b>	The date of occurrence in the fall of the first minimum at or below a temperature threshold.
<b>Fall streaks</b>	Falling ice crystals that evaporate before reaching the ground.
<b>Foehn</b>	See Chinook.
<b>Fog</b>	A cloud with its base at the earth's surface. It reduces visibility to below 1 km.
<b>Forced convection</b>	On a small scale, a form of mechanical stirring taking place when twisting eddies of air are able to mix.
<b>Free convection</b>	Convection
<b>Freeze</b>	A condition occurring over a widespread area when the surface air temperature remains below freezing for a sufficient time to damage certain agricultural crops. A freeze most often occurs as cold air is advected into a region, causing freezing conditions to exist in a deep layer of surface air. Also called advection frost.
<b>Freeze free season</b>	The number of days between the last spring freeze date and the first fall freeze date.
<b>Freezing rain and freezing drizzle</b>	Rain or drizzle that falls in liquid form and then freezes upon striking a cold object or ground.
<b>Front</b>	The transition zone between two distinct air masses.
<b>Frontal fog</b>	See Evaporation fog.
<b>Frost (also called hoarfrost)</b>	A covering of ice produced by deposition (sublimation) on exposed surfaces when the air temperature falls below the frost point (the dew point is below freezing).
<b>Frost point</b>	See Dew point.

## Climate and Weather Terms Glossary page 5 of 12

TERM	DEFINITION
<b>Frozen dew</b>	The transformation of liquid dew into tiny beads of ice when the air temperature drops below freezing.
<b>Funnel cloud</b>	A rotating conelike cloud that extends down-ward from the base of a thunderstorm. When it reaches the surface it is called a tornado.
<b>G</b>	
<b>Geostrophic</b>	wind
<b>Glaciation</b>	
<b>Glaciated cloud</b>	A cloud or portion of a cloud where only ice crystals exist.
<b>Glaze</b>	A coating of ice on objects formed when supercooled rain freezes on contact. A storm that produces glaze is called an icing storm.
<b>Glory</b>	Colored rings that appear around the shadow of an object.
<b>Graupel</b>	See Snow pellets
<b>Green flash</b>	A small, green color that occasionally appears on the upper part of the sun as it rises or sets.
<b>Ground fog</b>	See Radiation fog.
<b>Growing degree-day</b>	A form of the degree-day used as a guide for crop planting and for estimating crop maturity dates.
<b>Growing season</b>	The number of days between the last spring freeze date and the first fall freeze date.
<b>H</b>	
<b>Haboob</b>	
<b>Hail</b>	Solid precipitation in the form of chunks or balls of ice with diameters greater than 5 mm. The stones fall from cumulonimbus clouds.
<b>Hailstones</b>	Transparent or partially opaque particles of ice that range in size from that of a pea to that of golf balls.
<b>Hair hygrometer</b>	An instrument used to monitor relative humidity by measuring the changes in the length of human hair that accompany humidity variations.
<b>Halos</b>	Rings or arcs that encircle the sun or moon when seen through an ice crystal cloud or a sky filled with falling ice crystals. Halos are produced by refraction of light.
<b>Haze</b>	Fine dry or wet dust or salt particles dispersed through a portion of the atmosphere. Individually these are not visible but cumulatively they will diminish visibility.
<b>Heat</b>	A form of energy transferred between systems by virtue of their temperature differences.
<b>Heat capacity</b>	The
<b>Heat index (HI)</b>	An index that combines air temperature and relative humidity to determine an apparent temperature-how hot it actually feels.
<b>Heat of fusion</b>	Heat released when water changes phase from liquid to solid; 80 calories per gram
<b>Heat of melting</b>	Heat required to change the phase of water from solid to liquid; 80 calories per gram.
<b>Heating degree-day</b>	A form of the degree-day used as an index for fuel consumption. Needed on days when average air temperature falls below 69 °F (18 °C); computed by subtracting the day's average temperature from 65 °F.
<b>Heat lightning</b>	Distant lightning that illuminates the sky but is too far away for its thunder to be heard.
<b>Heiligenschein</b>	
<b>Heterosphere</b>	
<b>High inversion fog</b>	A fog that lifts above the surface but does not completely dissipate because of a strong inversion (usually subsidence) that exists above the fog layer.
<b>Highland</b>	climate
<b>Hoarfrost</b>	Fernlike crystals of ice that form by deposition of water vapor on twigs, tree branches, and other vegetation.
<b>Homosphere</b>	

## Climate and Weather Terms Glossary page 6 of 12

TERM	DEFINITION
<b>Humid continental climate</b>	A relatively severe climate characteristic of broad continents in the middle latitudes between approximately 40 and 50° north latitude.
<b>Humid Subtropical Climate</b>	A climate generally located on the eastern side of a continent and characterized by hot, sultry summers and cool winters.
<b>Hurricane</b>	A severe tropical cyclone having winds in excess of 64 knots (74 mi/hr).
<b>Hydrograph</b>	An instrument that provides a continuous trace of relative humidity with time.
<b>Hygrometer</b>	An instrument designed to measure the air's water vapor content. The sensing part of the instrument can be hair (hair hygrometer), a plate coated with carbon (electrical hygrometer), or an infrared sensor (infrared hygrometer).
<b>Hypothermia</b>	The deterioration in one's mental and physical condition brought on by a rapid lowering of human body temperature.
<b>I</b>	
<b>Ice Cap Climate</b>	A climate that has no monthly means above freezing and supports no vegetative cover except in a few scattered high mountain areas. This climate, with its perpetual ice and snow, is confined largely to the ice sheets of Greenland and Antarctica.
<b>Ice fog</b>	A
<b>Ice nuclei</b>	Particles that act as nuclei for the formation of ice crystals in the atmosphere.
<b>Ice pellets</b>	See Sleet
<b>Indian summer</b>	An unseasonably warm spell with clear skies near the middle of autumn. Usually follows a substantial period of cool weather.
<b>Infrared radiation</b>	Electromagnetic radiation with wavelengths between about 0.7 and 1000 $\mu\text{m}$ .
<b>Insolation</b>	
<b>Intertropical</b>	convergence zone (ITCZ)
<b>Inversion</b>	An increase in air temperature with height.
<b>Ion</b>	An electrically charged atom, molecule, or particle.
<b>Ionosphere</b>	An electrified region of the upper atmosphere where fairly large concentrations of ions and free electrons exist.
<b>Iridescence</b>	Brilliant spots or borders of colors, most often red and green, observed in clouds up to about 30° from the sun.
<b>Isobar</b>	A line connecting points of equal pressure
<b>Isotach</b>	A line connecting points of equal wind speed.
<b>Isotherm</b>	A line connecting points of equal wind temperature.
<b>J</b>	
<b>January thaw</b>	A period of relatively mild weather around January 20 to 23 that occurs primarily in New England; an example of a singularity in the climatic record.
<b>Jet stream</b>	Relatively strong winds concentrated within a narrow band in the atmosphere.
<b>K</b>	
<b>Katabatic</b>	wind
<b>L</b>	
<b>Lake</b>	breeze
<b>Lake-effect snows</b>	Localized snowstorms that form on the downwind side of a lake. Such storms are common in late fall and early winter near the Great Lakes as cold, dry air picks up moisture and warmth from the unfrozen bodies of water.
<b>Land breeze</b>	A coastal breeze that blows from land to sea, usually at night.
<b>Lapse rate</b>	The
<b>Latent heat</b>	The heat that is either released or absorbed by a unit mass of a substance when it undergoes a change of state, such as during evaporation, condensation, or sublimation.

## Climate and Weather Terms Glossary page 7 of 12

TERM	DEFINITION
<b>Lenticular cloud</b>	A cloud in the shape of a lens.
<b>Lightning</b>	A visible electrical discharge produced by thunderstorms.
<b>Longwave</b>	radiation
<b>M</b>	
<b>Magnetosphere</b>	The region around the earth in which the earth's magnetic field plays a dominant part in controlling the physical processes that take place.
<b>Mammatus clouds</b>	Clouds that look like pouches hanging from the underside of a cloud.
<b>Marine climate</b>	A climate dominated by the ocean, because of the moderating effect of water, sites having this climate are considered relatively mild.
<b>Maritime air mass</b>	An air mass that originates over the ocean.
<b>Maritime polar air</b>	Cool, humid air mass that forms over the cold ocean waters of the North Pacific and North Atlantic.
<b>Maritime tropical air</b>	Warm, humid air mass that forms over tropical and subtropical oceans.
<b>Mean annual temperature</b>	The average temperature at any given location for the entire year.
<b>Mesoscale</b>	The scale of meteorological phenomena that ranges in size from a few km to about 100 km. It includes local winds, thunderstorms, and tornadoes.
<b>Mesosphere</b>	The atmospheric layer between the stratosphere and the thermosphere. Located at an average elevation between 50 and 80 km above the earth's surface.
<b>Meteorology</b>	The study of the atmosphere and atmospheric phenomena as well as the atmosphere's interaction with the earth's surface, oceans, and life in general.
<b>Microburst</b>	A strong localized downdraft less than 4 km wide that occurs beneath severe thunderstorms. A strong downdraft greater than 4 km across is called a downburst.
<b>Microclimate</b>	The climate structure of the air space near the surface of the earth.
<b>Microscale</b>	The smallest scale of atmospheric motions.
<b>Millibar (mb)</b>	A unit for expressing atmospheric pressure. Sea level pressure is normally close to 1013 mb.
<b>Mirage</b>	A refraction phenomenon that makes an object appear to be displaced from its true position. When an object appears higher than it actually is, it is called a superior image. When an object appears lower than it actually is, it is an inferior mirage.
<b>Mist</b>	Very thin fog in which visibility is greater than 1.0 km (0.62 mi).
<b>Mistral</b>	A katabatic wind that flows from the Alps down the Rhone River Valley of France to the Mediterranean coast.
<b>Mixing ratio</b>	The ratio of the mass of water vapor in a given volume of air to the mass of dry air.
<b>Moist adiabatic rate</b>	The rate of change of temperature in a rising or descending saturated air parcel. The rate of cooling or warming varies but a common value of 6°C per 1000 m (3.3°F per 1000 ft) is used.
<b>Molecular viscosity</b>	The small-scale internal fluid friction that is due to the random motion of the molecules within a smooth-flowing fluid, such as air.
<b>Mountain and valley breeze</b>	A local wind system of a mountain valley that blows downhill (mountain breeze) at night and uphill (valley breeze) during the day.
<b>N</b>	
<b>Nacreous clouds</b>	Clouds of unknown composition that have a soft, pearly luster and that form at altitudes about 25 to 30 km above the earth's surface. They are also called mother-of-pearl clouds.
<b>Nimbostratus</b>	A dark, gray cloud characterized by more or less continuously falling precipitation. It is not accompanied by lightning, thunder, or hail.
<b>Noctilucent clouds</b>	Wavy, thin, bluish-white clouds that are best seen at twilight in polar latitudes. They form at altitudes about 80 to 90 km above the surface.
<b>Nocturnal inversion</b>	See Radiation inversion.
<b>O</b>	

## Climate and Weather Terms Glossary page 8 of 12

TERM	DEFINITION
<b>Offshore breeze</b>	A breeze that blows from the land out over the water. Opposite of an onshore breeze.
<b>Onshore breeze</b>	A breeze that blows from the water onto the land. Opposite of an offshore breeze.
<b>Orographic uplift</b>	The lifting of air over a topographic barrier. Clouds that form in this lifting process are called orographic clouds.
<b>Orographic precipitation</b>	Rainfall or snowfall from clouds, induced by topographic uplift.
<b>P</b>	
<b>Permafrost</b>	A layer of soil beneath the earth's surface that remains frozen throughout the year.
<b>Photodissociation</b>	The splitting of a molecule by a photon.
<b>Photon</b>	A discrete quantity of energy that can be thought of as a packet of electromagnetic radiation traveling at the speed of light.
<b>Pileus cloud</b>	A smooth cloud in the form of a cap. Occurs above, or is attached to, the top of a cumuliform cloud.
<b>Polar air mass</b>	A cold air mass that forms in a high-latitude source region.
<b>Polar climates</b>	Climates in which the mean temperature of the warmest month is below 10°C; climates that are too cold to support the growth of trees.
<b>Potential energy</b>	The energy that a body possesses by virtue of its position with respect to other bodies in the field of gravity.
<b>Potential evapotranspiration (PE)</b>	The amount of moisture that, if it were available, would be removed from a given land area by evaporation and transpiration.
<b>Potential temperature</b>	The temperature that a parcel of dry air would have if it were brought dry adiabatically from its original position to a pressure of 1000 mb.
<b>Precipitable water vapor</b>	The depth of water that would result if all the vapor in the atmosphere above a location were condensed into liquid water.
<b>Precipitation</b>	Any form of water particles-liquid or solid-that falls from the atmosphere and reaches the ground.
<b>Prevailing wind</b>	The wind direction most frequently observed during a given period.
<b>Probability forecast</b>	A forecast of the probability of occurrence of one or more of a mutually exclusive set of weather conditions.
<b>Psychrometer</b>	An instrument used to measure the water vapor content of the air. It consists of two thermometers (dry bulb and wet bulb). After whirling the instrument, the dew point and relative humidity can be obtained with the aid of tables.
<b>Pyranometer</b>	An instrument that measures the amount of radiation.
<b>Q</b>	
<b>R</b>	
<b>Radar</b>	An instrument useful for remote sensing of meteorological phenomena. It operates by sending radio waves and monitoring those returned by such reflecting objects as raindrops within clouds.
<b>Radiant energy (radiation)</b>	Energy propagated in the form of electromagnetic waves. These waves do not need molecules to propagate them, and in a vacuum they travel at nearly 300,000 km per sec.
<b>Radiation fog</b>	Fog produced over land when radiational cooling reduces the air temperature to or below its dew point. It is also known as ground fog and valley fog.
<b>Radiation inversion</b>	An increase in temperature with height due to radiational cooling of the earth's surface. Also called a nocturnal inversion.
<b>Radiosonde</b>	A balloon-borne instrument that measures and transmits pressure, temperature, and humidity to a ground-based receiving station.
<b>Rain</b>	Precipitation in the form of liquid water drops that have diameters greater than that of drizzle.
<b>Rain gage</b>	A device-usually a cylindrical container-for measuring rain-fall.
<b>Rain Shadow</b>	The region on the leeward side of a mountain where the precipitation is noticeable less than on the windward side.
<b>Rawinsonde</b>	An instrument carried by weather balloons to measure the temperature, humidity, pressure, and winds of the atmosphere.
<b>Reflection</b>	The process whereby a surface turns back a portion of the radiation that strikes it.

## Climate and Weather Terms Glossary page 9 of 12

TERM	DEFINITION
<b>Refraction</b>	The bending of light as it passes from one medium to another
<b>Refractive index</b>	The ratio of the speed of light in a vacuum to its speed in a transparent medium.
<b>Relative humidity</b>	The ratio of the amount of water vapor actually in the air compared to the amount of water vapor the air can hold at the particular temperature and pressure. The ratio of the air's actual vapor pressure to its saturation vapor pressure.
<b>Rime ice</b>	A white, granular deposit of ice formed by the freezing of water drops when they come in contact with an object.
<b>S</b>	
<b>Santa Ana</b>	The local name given a foehn wind in southern California.
<b>Saturation vapor pressure</b>	The maximum amount of water vapor necessary to keep moist air in equilibrium with a surface of pure water or ice. It represents the maximum amount of water vapor that the air can hold at any given temperature and pressure. (See Equilibrium vapor pressure.)
<b>Scattering</b>	The process by which small particles in the atmosphere deflect radiation from its path into different directions.
<b>Scintillation</b>	The apparent twinkling of a star due to its light passing through regions of differing air densities in the atmosphere.
<b>Sea breeze</b>	A coastal local wind that blows from the ocean onto the land. The leading edge of the breeze is termed a sea breeze front.
<b>Sea level pressure</b>	The atmospheric pressure at mean sea level.
<b>Semiarid</b>	See Steppe.
<b>Sensible heat transfer</b>	Movement of heat from one place to another as a consequence of conduction or convection or both.
<b>Sensible temperature</b>	The sensation of temperature that the human body feels in contrast to the actual temperature of the environment as measured with a thermometer.
<b>Shear</b>	See wind shear.
<b>Sheet lightning</b>	A fairly bright lightning flash from distant thunderstorms that illuminates a portion of the cloud.
<b>Shortwave radiation</b>	A term most often used to describe the radiant energy emitted from the sun, in the visible and near ultraviolet wavelengths.
<b>Shower</b>	Intermittent precipitation from a cumuliform cloud, usually of short duration but often heavy.
<b>Sleet</b>	A type of precipitation consisting of transparent pellets of ice 5 mm or less in diameter. Same as ice pellets.
<b>Smog</b>	Originally smog meant a mixture of smoke and fog. Today, smog means air that has restricted visibility due to pollution, or pollution formed in the presence of sunlight-photochemical smog.
<b>Snow</b>	Solid precipitation in the form of minute ice flakes that occur below 0°C.
<b>Snowflake</b>	An aggregate of ice crystals that falls from a cloud
<b>Snow flurries</b>	Light showers of snow that fall intermittently.
<b>Snow grains</b>	Precipitation in the form of very small, opaque grains of ice. The solid equivalent of drizzle.
<b>Snow pellets</b>	White, opaque, approximately round ice particles between 2 and 5 mm in diameter that form in a cloud either from the sticking together of ice crystals or from the process of accretion.
<b>Snow rollers</b>	A cylindrical spiral of snow shaped somewhat like a child's muff and produced by the wind.
<b>Snow squall (shower)</b>	An intermittent heavy shower of snow that greatly reduces visibility.
<b>Solstice</b>	Either of the two times of the year when the sun is the greatest distance from the celestial equator, occurring about June 22 and December 22. See winter solstice and summer solstice.
<b>Southern oscillation</b>	The reversal of surface air pressure at opposite ends of the tropical Pacific Ocean that occur during El Nino events.
<b>Specific heat</b>	The ratio of the heat absorbed (or released) by the unit mass of the system to the corresponding temperature rise (or fall).
<b>Specific humidity</b>	The ratio of the mass of water vapor in a given parcel to the total mass of air in the parcel.

## Climate and Weather Terms Glossary page 10 of 12

TERM	DEFINITION
<b>Spontaneous nucleation (freezing)</b>	The freezing of pure water without the benefit of any nuclei.
<b>Spring freeze date</b>	The date of occurrence in the spring of the last minimum at or below a temperature threshold.
<b>Squall line</b>	Any nonfrontal line or band of active thunderstorms.
<b>Station pressure</b>	The actual air pressure computed at the observing station.
<b>Steam fog</b>	See Evaporation fog.
<b>Steppe</b>	One of the two types of dry climate. A marginal and more humid variant of the desert that separates it from bordering humid climates. Steppe also refers to the short-grass vegetation associated with this semiarid climate.
<b>Storm surge</b>	An abnormal rise of the sea along a shore. Primarily due to the winds of a storm, especially a hurricane.
<b>Stratocumulus</b>	A low cloud, predominantly stratiform with low, lumpy, rounded masses, often with blue sky between them.
<b>Stratopause</b>	The boundary between the stratosphere and the mesosphere.
<b>Stratosphere</b>	The layer of the atmosphere above the troposphere and below the mesosphere (between 10 km and 50 km), generally characterized by an increase in temperature with height.
<b>Stratus</b>	A low, gray cloud layer with a rather uniform base whose precipitation is most commonly drizzle.
<b>Subarctic climate</b>	A climate found north of the humid continental climate and south of the polar climate and characterized by bitterly cold winters and short cool summers. Places within this climatic realm experience the highest annual temperature ranges on earth.
<b>Sublimation</b>	The process whereby ice changes directly into water vapor without melting. In meteorology, sublimation can also mean the transformation of water vapor into ice. (See Deposition.)
<b>Subsidence</b>	The slow sinking of air, usually associated with high-pressure areas.
<b>Subsidence inversion</b>	A temperature inversion produced by the adiabatic warming of a layer of sinking air.
<b>Summer solstice</b>	Approximately June 22 in the Northern Hemisphere when the sun is highest in the sky and directly overhead at latitude 23.5° N, the Tropic of Cancer.
<b>Sundog</b>	A colored luminous spot produced by refraction of light through ice crystals that appears on either side of the sun. Also called parhelion.
<b>Sun pillar</b>	A vertical streak of light extending above (or below) the sun. It is produced by the reflection of sunlight of ice crystals.
<b>Supersaturated air</b>	A condition that occurs in the atmosphere when the relative humidity is greater than 100 percent.
<b>Surface inversion</b>	See Radiation inversion
<b>Synoptic scale</b>	The typical weather map scale that shows features such as high- and low-pressure areas and fronts over a distance spanning a continent. Also called the cyclonic scale.
<b>T</b>	
<b>Taiga</b>	The northern coniferous forest; also a name applied to the subarctic climate.
<b>Temperature</b>	The degree of hotness or coldness of a substance as measured by a thermometer. It is also a measure of the average speed or kinetic energy of the atoms and molecules in a substance.
<b>Temperature inversion</b>	An extremely stable air layer in which temperature increases with altitude, the inverse of the usual temperature profile in the troposphere.
<b>Terminal velocity</b>	The constant speed obtained by a falling object when the upward drag on the object balances the downward force of gravity.
<b>Thermal</b>	A small, rising parcel of warm air produced when the earth's surface is heated unevenly.
<b>Thermograph</b>	A recording instrument that gives a continuous trace of temperature with time.
<b>Thermometer</b>	An instrument used to measure temperature.
<b>Thermosphere</b>	The atmospheric layer above the mesosphere. It extends from 90 km to outer space.
<b>Thunder</b>	The sound due to rapidly expanding gases along the channel of a lightning discharge.

## Climate and Weather Terms Glossary page 11 of 12

TERM	DEFINITION
<b>Tipping bucket rain gage</b>	A device that accumulates rainfall in increments of 0.01 in. by containers that alternately fill and empty (tip).
<b>Tornado</b>	An intense, rotating column of air that protrudes from a cumulonimbus cloud in the shape of a funnel or a rope and touches the ground. (See Funnel cloud.)
<b>Trade winds</b>	The winds that occupy most of the tropics and blow from the subtropical highs to the equatorial low.
<b>Transpiration</b>	The release of water vapor to the atmosphere by plants.
<b>Tropical air mass</b>	A warm-to-hot air mass that forms in the subtropics.
<b>Tropical depression</b>	A mass of thunderstorms and clouds generally with a cyclonic wind circulation of between 20 and 34 knots
<b>Tropical disturbance</b>	An organized mass of thunderstorms with a slight cyclonic wind circulation of less than 20 knots.
<b>Tropical storm</b>	Organized thunderstorms with a cyclonic wind circulation between 35 and 64 knots.
<b>Tropopause</b>	The boundary between the troposphere and the stratosphere.
<b>Troposphere</b>	The layer of the atmosphere extending from the earth's surface up to the tropopause (about 10 km above the ground).
<b>Tundra Climate</b>	Found almost exclusively in the northern hemisphere or at high altitudes in many mountainous regions. A treeless climatic realm of sedges, grasses, mosses, and lichens that is dominated by a long, bitterly cold winter.
<b>Turbulence</b>	Any irregular or disturbed flow in the atmosphere that produces gusts and eddies.
<b>Twilight</b>	The time immediately before sunrise and after sunset when the sky remain illuminated.
<b>Typhoon</b>	A hurricane that forms in the western Pacific Ocean.
<b>U</b>	
<b>Ultraviolet radiation</b>	Electromagnetic radiation with wave-lengths longer than X-rays but shorter than visible light.
<b>Upslope fog</b>	Fog formed as moist, stable air flows upward over a topographic barrier.
<b>Upslope precipitation</b>	Precipitation that forms due to moist, stable air gradually rising along an elevated plain. Upslope precipitation is common over the western Great Plains, especially east of the Rock Mountains.
<b>Upwelling</b>	The rising of water (usually cold) toward the surface from the deeper regions of a body of water.
<b>Urban heat island</b>	The increased air temperatures in urban areas as contrasted to the cooler surrounding rural areas.
<b>V</b>	
<b>Valley breeze</b>	See Mountain breeze.
<b>Valley fog</b>	See Radiation fog.
<b>Vapor pressure</b>	The pressure exerted by the water vapor molecules in a given volume of air.
<b>Vernal equinox</b>	The equinox at which the sun approaches the Northern Hemisphere and passes directly over the equator. Occurs around March 20.
<b>Virga</b>	Precipitation that falls from a cloud but evaporates before reaching the ground. (See Fall streaks.)
<b>Virtual temperature</b>	An adjustment applied to the real air temperature to account for a reduction in air density due to the presence of water vapor.
<b>Viscosity</b>	The resistance of fluid flow.
<b>Visibility</b>	The greatest distance an observer can see and identify prominent objects.
<b>Visible light</b>	That portion of the electromagnetic spectrum from 0.4 to 0.7 $\mu\text{m}$ wavelengths that is visible.
<b>Vorticity</b>	A measure of the spin of a fluid, usually small air parcels. Absolute vorticity is the combined vorticity due to the earth's rotation and the vorticity due to the air's circulation relative to the earth. Relative vorticity is due to the curving of the air flow and wind shear.
<b>W</b>	
<b>Warm front</b>	The leading edge of a warm air mass.
<b>Water balance</b>	The comparison of actual and potential evapotranspiration with the amount of precipitation, usually on a monthly basis.

## Climate and Weather Terms Glossary page 12 of 12

TERM	DEFINITION
<b>Water budget</b>	Balance sheet for the inputs and outputs of water to and from the various global water reservoirs.
<b>Water equivalent</b>	The depth of water that would result from the melting of a snow sample. Typically about 10 inches of snow will melt to 1 inch of water, producing a water equivalent of 10 to 1.
<b>Weather</b>	The state of the atmosphere in terms of such variables as temperature, cloudiness, precipitation, and radiation.
<b>Weighing bucket rain gage</b>	A device that is calibrated so that the weight of rainfall is recorded directly in terms of rainfall in millimeters or in inches.
<b>Wet-bulb depression</b>	The difference in degrees between the air temperature (dry-bulb temperature) and the wet-bulb temperature.
<b>Wet-bulb temperature</b>	The lowest temperature that can be obtained by evaporating water into the air.
<b>White frost</b>	Ice crystals that form on surfaces instead of dew when the dew point is below freezing.
<b>Wind chill equivalent temperature</b>	A theoretical air temperature at which the heat loss from exposed skin under calm conditions is equivalent to the heat loss at the actual air temperature and under the actual wind speeds.
<b>Wind-chill factor</b>	The cooling effect of any combination of temperature and wind, expressed as the loss of body heat. Also called wind-chill index.
<b>Wind shear</b>	A difference in wind speed or direction between two wind currents in the atmosphere.
<b>Wind Vane</b>	An instrument used to determine wind direction.
<b>Windsock</b>	A large, conical, open bag designed to indicate wind direction and relative speed; usually used at small airports.
<b>Winter solstice</b>	Approximately December 22 in the Northern Hemisphere when the sun is lowest in the sky and directly overhead at latitude 23.5°S, the Tropic of Capricorn.