Dictionary of Common Weather Terms

Adiabatic A thermodynamic change of state in a system in which there is no transfer of heat or mass across the boundaries of the system. In this process, compression will result in warming and expansion will result in cooling.

Advection The horizontal transport of air or atmospheric properties. Commonly used with temperatures, i.e., "warm air advection".

Air Mass A large body of air having similar horizontal temperature and moisture characteristics.

Anabatic Wind A wind that is created by air flowing uphill. Valley breezes, produced by local daytime heating, are an example of these winds. The opposite of a katabatic wind.

Anticyclone A large area of high pressure around which the winds blow clockwise in the Northern Hemisphere.

Arctic Front The semipermanent, semicontinuous front between the deep, cold arctic air and the shallower, basically less cold polar air of northern latitudes; generally comparable to the antarctic front of the Southern Hemisphere.

Atmosphere The gaseous or air portion of the physical environment that encircles a planet. In the case of the earth, it is held more or less near the surface by the earth's gravitational attraction. The divisions of the atmosphere include the troposphere, the stratosphere, the mesosphere, the ionosphere, and the exosphere.

Black Body A hypothetical object that absorbs all of the radiation that strikes it. It also emits radiation at a maximum rate for its given temperature.

weather@uniserve.com

Boundary Layer	The lowest layer of the earth's atmosphere, usually between a few meters (at night) up to one kilometer (during day), from the earth's surface, where the wind is influenced by the friction of the earth's surface and the objects on it.
Condensation	The process by which water vapor undergoes a change in state from a gas to a liquid. It is the opposite physical process of evaporation.
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, especially by updrafts and downdrafts in an unstable atmosphere. Convection is not always made visible by clouds. Convection which occurs without cloud formation is called dry convection, while the visible convection processes referred to above are forms of moist convection.
Convergence	Wind movement that results in a horizontal net inflow of air into a particular region. Convergent winds at lower levels are associated with upward motion. Contrast with divergence.
Conveyor Belt	An area in the atmosphere that transports cold or warm air from one place to another usually over distances of at least several hundred kilometers.
Crystallization	Process by which matter becomes crystalline from a gaseous state.
Cyclone	An area of low pressure around which winds blow counterclockwise in the Northern Hemisphere. Also the term used for a hurricane in the Indian Ocean and in the Western Pacific Ocean. (2)An atmospheric closed circulation rotating counter-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
Dew Point	The temperature to which a given air parcel must be cooled at constant pressure and constant water vapor content in order for saturation to occur is called the dewpoint. When this temperature is below 0°C, it is sometimes called the frost point.
Disturbance	This has several applications. It can apply to a low or cyclone that is small in size and influence. It can also apply to an area that is exhibiting signs of cyclonic development. It may also apply to a stage of tropical cyclone development and is known as a tropical disturbance to distinguish it from other synoptic features.

weather@uniserve.com

Divergence	Wind movement that results in a horizontal net outflow of air from a particular region. Divergence at lower levels is associated with a downward movement of air from aloft. Contrast with convergence.
Evaporation	The physical process by which a liquid, such as water is transformed into a gaseous state, such as water vapor. It is the opposite physical process of condensation.
Fog	The visible aggregate of minute water droplets suspended in the atmosphere near the earth's surface. Essentially a cloud whose base is at the earth's surface, limiting visibility.
Freezing Level	The lowest altitude in the atmosphere, over a given location, at which the air temperature is 0°C; the height of the 0°C constant-temperature surface. This simple concept may become slightly complicated by the existence of one or more “above- freezing layers” formed by temperature inversions at altitudes higher than the above-defined freezing level.
Front (warm/cold)	A boundary or transition zone between two air masses of different density, and thus (usually) of different temperature. A moving front is named according to the advancing air mass, e.g., cold front if colder air is advancing.
Frost Point	The temperature to which a given air parcel must be cooled at constant pressure and constant water vapor content in order for saturation to occur is called the dewpoint. When this temperature is below 0°C, it is sometimes called the frost point.
Gap Wind	A strong, low-level wind through either a relatively level channel between two mountain ranges or a gap in a mountain barrier; originally applied to strong (10–20 m s-1) easterly winds through the Strait of Juan de Fuca between the Olympic Mountains of western Washington State and the mountains of Vancouver Island, British Columbia, Canada.
GFA	Graphic Area Forecast: An aviation forecast in chart format normally issued on a routine basis by a designated environmental services centre for a prescribed geographical area.
Hectopascal	A hectopascal is equal to 100 pascals or 1 millibar.

weather@uniserve.com

Ideal Gas A gas for which the potential energy of interaction between molecules is independent of their separation and hence is independent of gas volume. Thus, the internal energy of an ideal gas depends only on its temperature. To a very good approximation, atmospheric gases at normal terrestrial temperatures and pressures are ideal.

Infrared Radiation The long wave, electromagnetic radiation of radiant heat emitted by all hot objects. On the electromagnetic spectrum, it can be found between microwave radiation and visible light. Water vapor, ozone, and carbon dioxide are capable of absorbing or transmitting infrared radiation. May be referred to as IR.

Instability The tendency for air parcels to accelerate when they are displaced from their original position; especially, the tendency to accelerate upward after being lifted. Instability is a prerequisite for severe weather

Inversion A departure from the usual increase or decrease of an atmospheric property with altitude. It usually refers to an increase in temperature with increasing altitude, which is a departure from the usual decrease of temperature with height.

Isobar A graphic line connecting points of equal pressure on weather charts.

Isotherm A graphic line connecting points of equal temperature on weather charts.

Jet Stream Strong winds concentrated within a narrow band in the atmosphere. The jet stream often "steers" surface features such as front and low pressure systems.

Katabatic wind Downward flowing wind: A wind that is created by air flowing downhill. When this air is warm, it may be called a foehn wind, and regionally it may be known as a Chinook or Santa Ana. When this air is cold or cool, it is called a drainage wind, and regionally it may be known as a mountain breeze or glacier wind. The opposite of an anabatic wind.

Knots A nautical unit of speed equal to the velocity at which one nautical mile is traveled in one hour. Used primarily by marine interests and in weather observations. A knot is equivalent to 1.151 statute miles per hour or 1.852 kilometers per hour.

weather@uniserve.com

Lapse Rate	The change of an atmospheric variable, usually temperature, with height. A steep lapse rate implies a rapid decrease in temperature with height and is a sign of instability.
Latent Heat	The energy released or absorbed during a change of state.
Meso Scale	Size scale referring to weather systems smaller than synoptic-scale systems but larger than storm-scale systems. Horizontal dimensions generally range from around 50 miles to several hundred miles.
Metar	Acronym for METeorological Aerodrome Report. It is the primary observation code used in the world to satisfy requirements for reporting surface meteorological data. Minimum reporting requirements includes wind, visibility, runway visual range, present weather, sky condition, temperature, dew point, and altimeter setting.
Millibar	The standard unit of measurement for atmospheric pressure used by the National Weather Service. One millibar is equivalent to 100 newtons per square meter. Standard surface pressure is 1,013.2 millibars.
Norwegian Cyclone Model	The original description of the structure and life cycle of a midlatitude low-pressure system, first proposed during World War I by researchers at the Norwegian School of Meteorology at Bergen.
Occlusion	A meteorological term for the "front" (that is, junction between masses of warm and cold air) which remains after a cold front has met a warm front and the latter has been forced upwards.
Orographic Lifting	Lifting of air caused by its passage up and over mountains or other sloping terrain.
Outflow	A current exiting through a strait or passage. In British Columbia traditionally a flow of cool or cold arctic air from the interior through mountain passes towards the pacific ocean.

weather@uniserve.com

Pascal

The SI derived unit of pressure. One pascal (Pa) is equal to 1 newton m-2. The kilopascal (kPa) is the preferred unit for atmospheric pressure, but the more familiar millibar (mb) is the unit of pressure generally used by meteorologists, by international agreement; 1 mb = 1 hPa (hectopascal).

Pineapple Express

Colloquial Weather Term: The Pineapple Express is a Pacific Ocean subtropical jet stream that brings warm moist air from Hawaii (where pineapples are grown) to the U.S. West Coast states of California, Oregon, and Washington, as well as the Canadian province of British Columbia.

Pressure

The pressure exerted by the weight of the atmosphere at a given point. Its measurement can be expressed in several ways. One is in hectopascals and another millibars.

Ridge

An elongated area of relatively high atmospheric pressure; the opposite of trough.

Satellite Image

Images taken by a weather satellite that reveal information, such as the flow of water vapor, the movement of frontal system, and the development of a tropical system. Looping individual images aids meteorologists in forecasting. One way a picture can be taken is as a visible shot, that is best during times of visible light (daylight). Another way is as an IR (infrared) shot, that reveals cloud temperatures and can be used day or night.

Sensible Heat

The heat that can be felt or sensed. The energy input which causes an increase or decrease in temperature as opposed to latent heat.

Sounding

A plot of the vertical profile of temperature and dew point (and often winds) above a fixed location. Soundings are used extensively in severe weather forecasting, e.g., to determine instability, locate temperature inversions, measure the strength of the cap, obtain the convective temperature, etc.

Standard Atmopshere

A standard atmosphere has been defined by the International Civil Aeronautical Organization (ICAO). It assumes a mean sea level temperature of 15°C a standard sea level pressure of 1,013.25 millibars or 29.92 inches of mercury, and a temperature lapse rate of 0.65°C per 100 meters up to 11 kilometers in the atmosphere.

Station Model/Plot

Weather information at a particular point is transmitted and plotted on a surface map at that stations location. The arrangement of the data around the station location is called a station model and is standardized by international agreement.

weather@uniserve.com

Stratosphere	The layer of the atmosphere located between the troposphere and the mesosphere, characterized by a slight temperature increase and absence of clouds. It extends between 11 and 31 miles (17 to 50 kilometers) above the earth's surface. It is the location of the earth's ozone layer.
Sublimation	The process of a solid (ice) changing directly into a gas (water vapor), at the same temperature, without ever going through the liquid state (water). The opposite of crystallization.
Subsidence	Sinking (downward) motion in the atmosphere, usually over a broad area.
Synopsis	A brief outline of a weather scenario, describing main features and their expected development and associated weather over an area of interest.
Synoptic Scale	Size scale referring generally to weather systems with horizontal dimensions of several hundred miles or more. Most high and low pressure areas seen on weather maps are synoptic-scale systems. Compare with mesoscale, storm-scale.
System	Losely used term: A general term for any large-scale or mesoscale disturbance capable of producing upward motion (lift) in the middle or upper parts of the atmosphere. This term sometimes is used interchangeably with impulse or shortwave.
TAF	Terminal Aerodrome Forecast: an international code used for issuing and transmitting weather forecasts for airports.
Temperature	The measure of molecular motion or the degree of heat of a substance. It is measured on an arbitrary scale from absolute zero, where the molecules theoretically stop moving. It is also the degree of hotness or coldness. In surface observations, it refers primarily to the free air or ambient temperature close to the surface of the earth.
Tephigram	a thermodynamic diagram having temperature and potential temperature as perpendicular axes. It displays the measurements obtained by a sounding.

weather@uniserve.com

Thermal Trough	Also known as heat trough, it is an area of low pressure due to the high temperatures caused by intensive heating at the surface. It tends to remain stationary over its source area, with weak cyclonic circulation. There are no fronts associated with it. An example is the low that develops over southwestern United States and northwestern Mexico during the summer months.
Tropopause	The upper boundary of the troposphere, usually characterized by an abrupt change in lapse rate from positive (decreasing temperature with height) to neutral or negative (temperature constant or increasing with height). See sounding.
Troposphere	The lowest layer of the atmosphere located between the earth's surface to approximately 11 miles (17 kilometers) into the atmosphere. Characterized by clouds and weather, temperature generally decreases with increasing altitude.
Trough	An elongated area of relatively low atmospheric pressure, usually not associated with a closed circulation, and thus used to distinguish from a closed low. The opposite of ridge.
Trowal	In Canadian weather terminology, the projection on the earth's surface of a tongue of warm air aloft. See Occlusion
Vapour Pressure	The pressure exerted by the molecules of a given vapor. In meteorology, it is considered as the part of total atmospheric pressure due to the water vapor content. It is independent of other gases or vapors.
Wave	Losely used term: In general, any pattern with some roughly identifiable periodicity in time and/or space. It is also considered as a disturbance that moves through or over the surface of the medium with speed dependent on the properties of the medium. In meteorology, this applies to atmospheric waves, such as long waves and short waves. In oceanography, this applies to waves generated by mechanical means, such as currents, turbidity, and the wind.
Zulu	For practical purposes, the same as Coordinated Universal Time (UTC). The notation formerly used to identify time Greenwich MeanTime. The word "Zulu" is notation in the phonetic alphabet corresponding to the letter "Z" assigned to the time zone on the Greenwich Prime Meridian.

weather@uniserve.com