

GLOSSARY

Ablation- The process of being removed. Snow ablation usually refers to removal by melting

Absolute Humidity- The density of water vapor. It is the mass of the water vapor divided by the volume that it occupies.

Accretion- Growth of precipitation particles by collision of ice crystals with supercooled liquid droplets which freeze on impact

Accessory Clouds- Clouds that are dependent on a larger cloud system for development and continuance. Accessory clouds associated with the thunderstorm include roll, shelf, mammatus, and wall clouds.

Acid Rain- Cloud or rain droplets containing pollutants, such as oxides of sulfur and nitrogen, to make them acidic (e.g. pH < 5.6).

Additive data- A group of coded remarks in a weather observation that includes pressure tendency, amount of precipitation, and maximum/minimum temperature during specified periods of time.

Adiabatic- changes in temperature caused by the expansion (cooling) or compression (warming) of a body of air as it rises or descends in the atmosphere.

Adiabatic Process- The change of temperature of air without transferring heat. In an adiabatic process compression results in warming, and expansion results in cooling.

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

Advection Fog- a type of fog that results from the advection of moist air over a cold surface and the cooling of the air to its dew point that follows; this type of fog is most common in coastal regions.

Advisory- Advisories are issued for weather situations that cause significant inconveniences but do not meet warning criteria and, if caution is not exercised, could lead to life-threatening situations. Advisories are issued for significant events that are occurring, are imminent, or have a very high probability of occurrence.

Aerosol- Particles of matter, solid or liquid, larger than a molecule but small enough to remain suspended in the atmosphere (up to 100 μ m diameter). Natural origins include salt particles from sea spray and clay particles as a result of weathering of rocks. Aerosols can also originate as a result of man's activities and in this case are often

considered pollutants.

Aerovane- Aerovanes are commonly used at many weather stations and airports to measure both wind direction and speed. They are similar to wind vanes and cup anemometers except have three-bladed propellers attached to the end of the vane.

AGL- above ground level.

Air- the mixture of gases that make-up the earth's atmosphere.

Air density - Mass of air per unit volume.

Air Mass- An extensive body of the atmosphere whose physical properties, particularly temperature and humidity, exhibit only small and continuous differences in the horizontal. It may extend over an area of several million square kilometres and over a depth of several kilometres.

Air-mass Thunderstorm- Generally, a thunderstorm not associated with a front or other type of synoptic-scale forcing mechanism. Air mass thunderstorms typically are associated with warm, humid air in the summer months; they develop during the afternoon in response to insolation, and dissipate rather quickly after sunset.

Air Parcel- An imaginary small body of air that is used to explain the behavior of air. A parcel is large enough to contain a very great number of molecules, but small enough so that the properties assigned to it are approximately uniform throughout.

Air Pollution- The existence in the air of substances in concentrations that are determined unacceptable. Contaminants in the air we breathe come mainly from manufacturing industries, electric power plants, automobiles, buses, and trucks.

Air Pressure- (atmospheric pressure) air pressure is the force exerted on a surface by the weight of the air above it. The internationally recognized unit for measuring this pressure is the kilopascal.

Airstream- A significant body of air flowing in the same general circulation.

Albedo- The percentage of light reflected by an object.

Altimeter- An active instrument (see active system) used to measure the altitude of an object above a fixed level.

Altimeter setting- That pressure value to which an aircraft altimeter scale is set so that it will indicate the altitude above mean sea-level of an aircraft on the ground at the location for which the value was determined.

Altitude- Height expressed as the distance above a reference point, which is normally sea level or ground level.

Alto cumulus- Mid-altitude clouds with a cumuliform shape.

Altostratus- Mid-altitude clouds with a flat sheet-like shape.

Anabatic- wind flowing up an incline, such as up a hillside; upslope wind.

Anafront- A front at which the warm is ascending the frontal surface up to high altitudes.

Anemometer- An instrument that measures wind speed.

Aneroid barometer- An instrument built around a metal structure that bends with changing air pressure. These changes are recorded on a pointer that moves back and forth across a printed scale.

Angular Momentum- the energy of motion of a spinning body or mass of air or water.

Angular Velocity- the rate at which a spinning body rotates.

Anomaly- The deviation of (usually) temperature or precipitation in a given region over a specified period from the normal value for the same region.

Anticyclone- A large body of air in which the atmospheric pressure is higher than the pressure in the surrounding air. The winds blow clockwise around an anticyclone in the Northern Hemisphere.

Anticyclonic- describes the movement of air around a high pressure, and rotation about the local vertical opposite the earth's rotation. This is clockwise in the Northern Hemisphere.

Anvil Cloud- The flat, spreading top of a Cb (cumulonimbus), often shaped like an anvil. Thunderstorm anvils may spread hundreds of miles downwind from the thunderstorm itself, and sometimes may spread upwind (see back-sheared anvil).

Anvil Crawler - A lightning discharge occurring within the anvil of a thunderstorm, characterized by one or more channels that appear to crawl along the underside of the anvil. They typically appear during the weakening or dissipating stage of the parent thunderstorm, or during an active MCS.

Anvil Dome - A large overshooting top or penetrating top.

Anvil Rollover - A circular or semicircular lip of clouds along the underside of the

upwind part of a back-sheared anvil, indicating rapid expansion of the anvil. See cumuliform anvil, knuckles, mushroom.

Anvil Zits - Frequent (often continuous or nearly continuous), localized lightning discharges occurring from within a thunderstorm anvil.

Arctic Air- a mass of very cold, dry air that usually originates over the Arctic Ocean north of Canada and Alaska.

Arctic High- a very cold high pressure that originates over the Arctic Ocean.

Arcus- A low, horizontal cloud formation associated with the leading edge of thunderstorm outflow (i.e., the gust front). Roll clouds and shelf clouds both are types of arcus clouds.

Aridity- A general term used to describe areas suffering from lack of rain or drought. More specifically, a condition in which evaporation exceeds precipitation.

ASOS- Automated Surface Observing System. This system observes sky conditions, temperature and dewpoint, wind direction and speed, and barometric pressure, and precipitation.

Atmosphere- The mass of air surrounding the earth and bound to it more or less permanently by the earth's gravitational attraction. The earth's atmosphere is mainly nitrogen and hydrogen.

Atmospheric Greenhouse Effect (The Greenhouse Effect) - The warming of an atmosphere by its absorbing and emitting infrared radiation while allowing short wave radiation to pass on through. The gases mainly responsible for the earth's atmospheric greenhouse effect are water vapour and carbon dioxide.

Atmospheric Pressure- (also called air pressure or barometric pressure) The pressure asserted by the mass of the column of air directly above any specific point.

Atmospheric Stability- An indication of how easily a parcel of air is lifted. If the air is very stable it is difficult to make the parcel rise. If the air is very unstable the parcel may rise on its own once started.

Aurora Borealis- Also known as the northern lights - The luminous, radiant emission from the upper atmosphere over middle and high latitudes, and centered around the earth's magnetic poles. These silent fireworks are often seen on clear winter nights in a variety of shapes and colors.

Automated Weather Station (AWS) - An unmanned station with various sensors that measure weather elements such as temperature/wind/pressure and transmit these readings for use by

meteorologists.

AWOS - Automated Weather Observing System

Avalanche- a large mass of rapidly moving snow down a steep mountain slope.

Back Door Cold Front- A front that moves east to west in direction rather than the normal west to east movement. For instance, one that enters Southern New England from the Gulf of Maine.

Back-building Thunderstorm- A thunderstorm in which new development takes place on the upwind side (usually the west or southwest side), such that the storm seems to remain stationary or propagate in a backward direction.

Back-sheared Anvil- A thunderstorm anvil which spreads upwind, against the flow aloft. A back-sheared anvil often implies a very strong updraft and a high severe weather potential.

Backing Wind- Wind which shifts in a counterclockwise direction with time at a given location (e.g. from southerly to southeasterly), or change direction in a counterclockwise sense with height (e.g. westerly at the surface but becoming more southerly aloft). Backing winds with height are indicative of cold air advection (CAA). The opposite of veering winds.

Ball lightning- A relatively rarely seen form of lightning, generally consisting of an orange or reddish ball of the order of a few cm to 30 cm in diameter and of moderate luminosity, which may move up to 1 m/s horizontally with a lifetime of a second or two.

Barber Pole- A thunderstorm updraft with a visual appearance including cloud striations that are curved in a manner similar to the stripes of a barber pole. The structure typically is most pronounced on the leading edge of the updraft, while drier air from the rear flank downdraft often erodes the clouds on the trailing side of the updraft.

Baroclinic Zone- A region in which a temperature gradient exists on a constant pressure surface. Baroclinic zones are favored areas for strengthening and weakening systems.

Barogram- The graphic record of pressure produced by a barograph.

Barograph- An instrument that provides a continuous record of atmospheric pressure.

Barometer- An instrument for measuring atmospheric pressure.

Barometric pressure- The actual pressure value indicated by a pressure sensor.

Barometric Tendency- The amount and direction of change in barometer readings over a three-hour period.

Barotropic System- A weather system in which temperature and pressure surfaces are coincident, i.e., temperature is uniform (no temperature gradient) on a constant pressure surface. Barotropic systems are characterized by a lack of wind shear, and thus are generally unfavorable areas for severe thunderstorm development.

Bear's Cage- A region of storm-scale rotation, in a thunderstorm, which is wrapped in heavy precipitation. This area often coincides with a radar hook echo and/or mesocyclone, especially one associated with an HP storm. The term reflects the danger involved in observing such an area visually, which must be done at close range in low visibility.

Beaufort Scale- A scale that indicates the wind speed using the effect wind has on certain familiar objects.

Beaver('s) Tail- A particular type of inflow band with a relatively broad, flat appearance suggestive of a beaver's tail. It is attached to a supercell's general updraft and is oriented roughly parallel to the pseudo-warm front, i.e., usually east to west or southeast to northwest.

Black Ice- thin, new ice that forms on fresh water or dew covered surfaces; it is common on roadways during the fall and early winter and appears "black" because of its transparency.

Blizzard- Includes winter storm conditions of sustained winds or frequent gusts of 35 mph or more that cause major blowing and drifting of snow, reducing visibility to less than one-quarter mile for 3 or more hours. Extremely cold temperatures often are associated with dangerous blizzard conditions.

Blizzard warning- Issued when blizzard conditions are expected or are occurring.

Blocking High- A high pressure area (anticyclone), often aloft, that remains nearly stationary or moves slowly compared to west-to-east motion. It blocks the movement eastward movement of low pressure areas (cyclones) at its latitude..

Blowing Dust- dust that is raised by the wind to moderate heights above the ground to a degree that horizontal visibility decreases to less than seven miles. Visibilities of 1/8 mile or less over a widespread area are criteria for a Blowing Dust Advisory.

Blowing Sand- Sand particles picked up from the surface of the earth by the wind to moderate heights above the ground, reducing the reported horizontal visibility to less than 7 statute miles.

Blowing Snow- Wind driven snow that reduces visibility to six miles or less causing significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground picked up by the wind.

Blowing spray- Water droplets torn by the wind from a body of water, generally from the crests of waves, and carried up into the air in such quantities that they reduce the reported horizontal visibility to less than 7 statute miles.

Blustery- Descriptive term for gusty winds that accompany cold weather.

Bomb Cyclone- An extratropical area of low pressure in which the central pressure drops at least 24 millibars in 24 hours.

Boundary Layer- In general, a layer of air adjacent to a bounding surface. Specifically, the term most often refers to the planetary boundary layer, which is the layer within which the effects of friction are significant. For the earth, this layer is considered to be roughly the lowest one or two kilometers of the atmosphere.

Bow echo- A radar echo which is linear but bent outward in a bow shape. Damaging straight-line winds often occur near the "crest" or center of a bow echo. Areas of circulation also can develop at either end of a bow echo, which sometimes can lead to tornado formation - especially in the left (usually northern) end, where the circulation exhibits cyclonic rotation.

Box (or Watch Box) - A severe thunderstorm or tornado watch.

Breezy- Wind in the range of 15 mph to 25 mph with mild or warm temperatures.

Brisk- Wind in the range of 15 to 25 mph when the temperature is cold.

Broken Clouds- Clouds which cover between 5/8ths and 7/8ths of the sky.

Buoyancy- That property of an object that enables it to float on the surface of a liquid, or as in the case with air parcels, to ascend and remain freely suspended in the atmosphere.

Bubble High- A mesoscale area of high pressure, typically associated with cooler air from the rainy downdraft area of a thunderstorm or a complex of thunderstorms. A gust front or outflow boundary separates a bubble high from the surrounding air.

Bulk Richardson Number (or BRN)- A non-dimensional number relating vertical stability and vertical shear (generally, stability divided by shear). High values indicate unstable and/or weakly-sheared environments; low values indicate weak instability and/or strong vertical shear. Generally, values in the range of around 50 to 100 suggest environmental conditions favorable for supercell development.

Bust- An inaccurate forecast, usually a situation in which significant weather is expected, but does not occur.

BWER - Bounded Weak Echo Region. (Also known as a vault.) Radar signature within a thunderstorm characterized by a local minimum in radar reflectivity at low levels which extends upward into, and is surrounded by, higher reflectivities aloft. This feature is associated with a strong updraft and is almost always found in the inflow region of a thunderstorm. It cannot be seen visually.

Calm- the absence of apparent motion in the air.

Cap (or Capping Inversion)- A layer of relatively warm air aloft (usually several thousand feet above the ground) which suppresses or delays the development of thunderstorms. Air parcels rising into this layer become cooler than the surrounding air, which inhibits their ability to rise further. As such, the cap often prevents or delays thunderstorm development even in the presence of extreme instability.

CAPE- Convective Available Potential Energy. A measure of the amount of energy available for convection. CAPE is directly related to the maximum potential vertical speed within an updraft; thus, higher values indicate greater potential for severe weather. Observed values in thunderstorm environments often may exceed 1,000 joules per kilogram (j/kg), and in extreme cases may exceed 5,000 j/kg. However, as with other indices or indicators, there are no threshold values above which severe weather becomes imminent.

Carbon Dioxide (CO₂) - A naturally occurring gas fixed by photosynthesis into organic matter. A by-product of fossil fuel combustion and biomass burning, it is also emitted from land-use changes and other industrial processes. It is the principal anthropogenic greenhouse gas that affects the Earth's radiative balance. It is the reference gas against which other greenhouse gases are measured, thus having a Global Warming Potential of 1.

Carbon Monoxide (CO) - A colourless, odourless, toxic gas that forms during the incomplete combustion of carbon-containing fuels.

Cb- Cumulonimbus cloud

Ceiling- The height of the lowest layer of broken or overcast clouds.

Ceilometer- A device used to evaluate the height of clouds or the vertical visibility into a surface-based obscuration.

Cell- Convection in the form of a single updraft, downdraft, or updraft/downdraft couplet, typically seen as a vertical dome or tower as in a cumulus or towering cumulus cloud. A

typical thunderstorm consists of several cells

Celsius- a temperature scale in which zero is the freezing point of water and one hundred is the boiling point.

Chance- A 30, 40 or 50 percent chance of occurrence of measurable precipitation.

Chinook Wind- A strong downslope wind that causes the air to warm rapidly as a result of compressive heating; called a foehn wind in Europe.

Circulation- The pattern of the movement of air. General circulation is the flow of air of large, semi-permanent weather systems, while secondary circulation is the flow of air of more temporary weather systems.

Cirriform- High altitude ice clouds with a very thin wispy appearance.

Cirrocumulus- Cirrus clouds with vertical development.

Cirrostratus- Cirrus clouds with a flat sheetlike appearance.

Cirrus- High clouds, usually above 18,000 feet, composed of ice crystals and appearing in the form of white, delicate filaments or white or mostly white patches or narrow bands.

Clear- Sky condition of less than 1/10 cloud coverage.

Clear Slot- A local region of clearing skies or reduced cloud cover, indicating an intrusion of drier air; often seen as a bright area with higher cloud bases on the west or southwest side of a wall cloud.

Climate- The prevalent long term weather conditions in a particular area. Climatic elements include precipitation, temperature, humidity, sunshine and wind velocity and phenomena such as fog, frost, and hail storms. . The classical period for averaging these variables is 30 years, as defined by the World Meteorological Organization. Climate cannot be considered a satisfactory indicator of actual conditions since it is based upon a vast number of elements taken as an average.

Climate change- This strictly refers to all forms of climatic inconsistency. But it is often used in a more restricted sense to imply a significant change. Within the media, climate change has been used synonymously with global warming. Scientists, however, use the term in a wider sense to include past climate changes also.

Climate Normals- Averages of temperatures, precipitation, snowfall, etc. made over standard 30 year periods. These normals span across 3 decades and are rederived every 10 years.

Climatology- the scientific study of climate.

Closed Low- A low pressure area with a distinct center of cyclonic circulation which can be completely encircled by one or more isobars or height contour lines. The term usually is used to distinguish a low pressure area aloft from a low-pressure trough. Closed lows aloft typically are partially or completely detached from the main westerly current, and thus move relatively slowly.

Cloud- A visible cluster of tiny water and/or ice particles in the atmosphere.

Cloud Base- For a given cloud or cloud layer, it is the lowest level in the atmosphere where cloud particles are visible.

Cloud Condensation Nuclei- small particles in the air on which water vapor condenses and forms cloud droplets.

Cloud Streets- Rows of cumulus or cumulus-type clouds aligned parallel to the low-level flow. Cloud streets sometimes can be seen from the ground, but are seen best on satellite photographs.

Cloud Tags - Ragged, detached cloud fragments; fractus or scud.

Cloudburst- A sudden, intense rainfall that is normally of short duration.

Cloudy- the state of the sky when 7/10ths or more of the sky is covered by clouds.

Coastal Flood Warning- Issued when there is widespread coastal flooding expected within 12 hours, more than just typical overwash.

Coastal Flooding- The inundation of land areas along the coast caused by sea water above normal tidal actions. This is often caused by prolonged strong onshore flow of wind and/or high astronomical tides.

Coastal Forecast- A forecast of wind, wave and weather conditions between the coastline and 25 miles offshore.

Coastal Waters- include the area from a line approximating the mean high water along the mainland or island as far out as 25 miles including the bays, harbors and sounds.

Cold Advection- (CAA) Transport of cold air into a region by horizontal winds.

Cold Air Damming- Cold air damming occurs when a cold dome of high pressure settles over northeastern New England. The clockwise circulation around the high pressure center brings northeasterly winds to the mid Atlantic region. The northeasterly winds bank cold air against the eastern slopes of the Appalachian Mountains. Warmer air from the west or southwest is lifted above the cold air as it moves instead of warming

the surface.

Cold-air Funnel- A funnel cloud or (rarely) a small, relatively weak tornado that can develop from a small shower or thunderstorm when the air aloft is unusually cold (hence the name). They are much less violent than other types of tornadoes.

Cold Front- A narrow transition zone separating advancing colder air from retreating warmer air. The air behind a cold front is cooler and typically drier than the air it is replacing.

Cold Low- a low pressure system with cold air mass from near the surface to all vertical levels (also called a cold core low).

Cold Pool- A region of relatively cold air, represented on a weather map analysis as a relative minimum in temperature surrounded by closed isotherms. Cold pools aloft represent regions of relatively low stability, while surface-based cold pools are regions of relatively stable air.

Collar Cloud- Frequently used as a synonym for wall cloud, although it actually is a generally circular ring of cloud surrounding the upper portion of a wall cloud.

Comma Cloud- A synoptic scale cloud pattern with a characteristic comma-like shape, often seen on satellite photographs associated with large and intense low-pressure systems.

Condensation- The process by which water vapor becomes a liquid; the opposite of evaporation, which is the conversion of liquid to vapor.

Condensation Nuclei- Small particles in the air around which water vapor condenses.

Conduction- The transfer of heat by molecular action between bodies that are in contact.

Confluence- A pattern of wind flow in which air flows inward toward an axis oriented parallel to the general direction of flow. It is the opposite of diffluence. Confluence is not the same as convergence. Winds often accelerate as they enter a confluent zone, resulting in speed divergence which offsets the (apparent) converging effect of the confluent flow.

Congestus (or Cumulus Congestus)- A large cumulus cloud with great vertical development, usually with a cauliflower-like appearance, but lacking the characteristic anvil shaped top of a Cb.

Continental Air Mass- A dry air mass originating over a large land area.

Contrail- A cloud-like stream formed in cold, clear air behind the engines of an airplane.

Convection- The transfer of heat within the air by its movement. The term is used specifically to describe vertical transport of heat and moisture, especially by updrafts and downdrafts in an unstable atmosphere.

Convective instability – Instability arising in the atmosphere when a column of air exhibits warm, moist, nearly saturated air near the surface and cold, dry air aloft. When the lower part of the layer is lifted and saturation occurs, it becomes unstable.

Convective Outlook- A forecast containing the area(s) of expected thunderstorm occurrence and expected severity over the contiguous United States, issued several times daily by the SPC.

Convective Temperature- The approximate temperature that the air near the ground must warm to in order for surface-based convection to develop, based on analysis of a sounding.

Convergence- An atmospheric condition that exists when the winds cause a horizontal net inflow of air into a specified region. Divergence is the opposite, where winds cause a horizontal net outflow of air from a specified region.

Coordinated Universal Time (UTC)- The time in the zero degree meridian time zone.

Combined Seas- The combined height of swell and wind waves.

Cooling Degree Day- A form of degree day used to estimate the required energy for cooling. One cooling degree day occurs for each degree the daily mean temperature is above 65 degrees Fahrenheit.

Coriolis Force- An apparent force caused by the rotation of the Earth. In the Northern Hemisphere winds are deflected to the right, and in the Southern Hemisphere to the left. In synoptic scale weather systems (hurricanes and large mid-latitude storms), the Coriolis force causes the air to rotate around a low pressure center in a cyclonic direction. The air flowing around a hurricane spins counter-clockwise in the northern hemisphere

Corona- A disk of light surrounding the sun or moon; this is a result of the diffraction of light by small water droplets.

CRS- Console Replacement System. This consists of a computer system and computer voice that is used to automate NOAA Weather Radio.

Cumulonimbus Cloud- A vertically developed cloud, often capped by an anvil shaped

cloud. Also called a thunderstorm cloud, it is frequently accompanied by heavy showers, lightning, thunder, and sometimes hail or gusty winds.

Cumulus Cloud- A cloud in the shape of individual detached domes, with a flat base and a bulging upper portion resembling cauliflower.

Cumulus Congestus- A large cumulus cloud with great vertical development, usually with a cauliflower-like appearance, but lacking the characteristic anvil shaped top of a Cb.

Cut Off Low- An upper level low pressure system that is no longer in the normal west to east upper air flow. Usually a cut-off low will lie to the South of the established upper air flow.

Cyclogenesis- Development or intensification of a low-pressure center

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.

Cyclonic Circulation (or Cyclonic Rotation)- Circulation (or rotation) which is in the same sense as the Earth's rotation, i.e., counterclockwise (in the Northern Hemisphere) as would be seen from above.

Dart Leader- In lightning, the leader which, after the first stroke, initiates each succeeding stroke of a composite flash of lightning.

Debris Cloud- A rotating "cloud" of dust or debris, near or on the ground, often appearing beneath a condensation funnel and surrounding the base of a tornado.

Decouple- The tendency for the surface wind to become much lighter than wind above it at night when the surface temperature cools.

Degree Day- a measure of the departure of the daily mean temperature from the normal daily temperature; heating and cooling Degree Days are the departure of the daily mean temperature from sixty-five degrees Fahrenheit.

Dendrite- hexagonal ice crystals with complex and often fernlike branches.

Dense Fog- a fog in which the visibility is less than one-quarter mile.

Dense Fog Advisory- Issued when fog is expected to reduce visibility to 1/4 mile or less over a widespread area for at least 3 hours.

Density Of Air- The mass of air divided by its volume. The air's density depends on its temperature, its pressure and how much water vapor is in the air.

Density Altitude- The pressure altitude corrected for temperature deviations from the standard atmosphere. It is used by pilots when setting aircraft performance.

Depression- a region of low atmospheric pressure that is usually accompanied by low clouds and precipitation.

Depth Hoar- Large (one to several millimeters in diameter), cohesionless, coarse, faceted snow crystals which result from the presence of strong temperature gradients within the snowpack

Derechoe- A widespread and usually fast-moving windstorm associated with convection. Derechoes include any family of downburst clusters produced by an extratropical MCS, and can produce damaging straight-line winds over areas hundreds of miles long and more than 100 miles across.

Dew- Moisture from water vapor in the air that has condensed on objects near the ground, whose temperatures have fallen below the dewpoint temperature.

Dew Point- The temperature to which the air must be cooled for water vapor to condense and form fog or clouds.

Diamond Dust- A fall of non-branched (snow crystals are branched) ice crystals in the form of needles, columns, or plates. (same as ice crystals)

Differential Motion- Cloud motion that appears to differ relative to other nearby cloud elements, e.g. clouds moving from left to right relative to other clouds in the foreground or background. Cloud rotation is one example of differential motion, but not all differential motion indicates rotation. For example, horizontal wind shear along a gust front may result in differential cloud motion without the presence of rotation.

Diffraction - The apparent bending of light and radiation of other wavelengths around the edges of an object. This causes bright and dark bands to appear because of the wave nature of the radiation.

Difluence (or Diffluence)- A pattern of wind flow in which air moves outward (in a "fan-out" pattern) away from a central axis that is oriented parallel to the general direction of the flow. It is the opposite of confluence.

Dirty ridge- Most of the time, upper-level ridges bring fairly clear weather as the storms are steered around the ridge. Sometimes, however, strong storms undercut the ridge and create precipitation. Ridges that experience this undercutting by storms are known as dirty ridges because of the unusual precipitation.

Disturbance- a disruption of the atmosphere that usually refers to a low pressure area, cool air

and inclement weather.

Diurnal- Daily; related to actions which are completed in the course of a calendar day, and which typically recur every calendar day (e.g., diurnal temperature rises during the day, and falls at night).

Divergence- – Net outward mass flow into a layer of the atmosphere. It is the opposite of convergence.

Doldrums- the regions on either side of the equator where air pressure is low and winds are light.

Doppler Radar- A type of weather radar that determines whether atmospheric motion is toward or away from the radar. It determines the intensity of rainfall and uses the Doppler effect to measure the velocity of droplets in the atmosphere.

Downburst- A strong downdraft resulting in an outward burst of damaging winds on or near the ground. Downburst winds can produce damage similar to a strong tornado.

Downdraft- A column of generally cool air that rapidly sinks to the ground, usually accompanied by precipitation as in a shower or thunderstorm. .

Downslope wind- Air that descends an elevated plain and consequently warms and dries. Occurs when prevailing wind direction is from the same direction as the elevated terrain and often produces fair weather conditions.

Downstream- In the same direction as a stream or other flow, or toward the direction in which the flow is moving.

Drifting snow- Uneven distribution of snowfall caused by strong surface winds. Drifting snow does not reduce visibility.

Dry Adiabatic- A line of constant potential temperature on a thermodynamic chart.

Dry Line- A boundary separating moist and dry air masses, and an important factor in severe weather frequency in the Great Plains.

Dry-line Bulge- A bulge in the dry line, representing the area where dry air is advancing most strongly at lower levels

Drizzle- Small, slowly falling water droplets, with diameters between .2 and .5 millimeters.

Drought- - Period of abnormally dry weather sufficiently prolonged for the lack of precipitation to cause a serious hydrological (water cycle) imbalance. This can cause such problems as crop damage and water-supply shortage.

Dry Punch- A surge of drier air; normally a synoptic-scale or mesoscale process. A dry punch at the surface results in a dry line bulge.

Dry Slot- A zone of dry (and relatively cloud-free) air which wraps east- or northeastward into

the southern and eastern parts of a synoptic scale or mesoscale low pressure system. A dry slot generally is seen best on satellite photographs.

Dryline- A boundary which separates warm, dry air from warm, moist air. The differences in the two air masses may be significant. The dry line is usually a boundary of instability along which thunderstorms form.

Dust Devil- A small, rapidly rotating wind that is made visible by the dust, dirt or debris it picks up. Also called a whirlwind. Dust devils usually develop during hot, sunny days over dry and dusty or sandy areas.

Dust Storm- An area where high surface winds have picked up loose dust, reducing visibility to less than one-half mile.

Dust Plume- A non-rotating "cloud" of dust raised by straight-line winds. Often seen in a microburst or behind a gust front.

Dust Whirl- A rotating column of air rendered visible by dust.

Dynamics- Generally, any forces that produce motion or affect change. In operational meteorology, dynamics usually refer specifically to those forces that produce vertical motion in the atmosphere.

Easterly Wave- A wavelike disturbance in the tropical easterly winds that usually moves from east to west. Such waves can grow into tropical depressions.

ECMF- European Center for Meteorology Forecast model.

Eddy- A small volume of air that behaves differently from the predominant flow of the layer in which it exists, seemingly having a life of its own. An example of such would be a tornado, which has its own distinct rotation, but is different than the large-scale flow of air surrounding the thunderstorm in which the tornado is born.

El Niño - A major warming of the equatorial waters in the eastern Pacific Ocean. **Niño** events usually occur every 3 to 7 years, and are related to shifts in global weather patterns. (Spanish for the "Christ Child", named this because it often begins around Christmas.)

Enhanced greenhouse effect- The natural greenhouse effect has been enhanced by man's emissions of greenhouse gases. Increased concentrations of carbon dioxide, methane and nitrous oxide trap more infra-red radiation, so heating up the atmosphere.

Enhanced Wording- An option used by the SPC in tornado and severe thunderstorm watches when the potential for strong/violent tornadoes, or unusually widespread damaging straight-line winds, is high.

Entrance Region- The region upstream from a wind speed maximum in a jet stream

(jet max), in which air is approaching (entering) the region of maximum winds, and therefore is accelerating. This acceleration results in a vertical circulation that creates divergence in the upper-level winds in the right half of the entrance region (as would be viewed looking along the direction of flow). This divergence results in upward motion of air in the right rear quadrant (or right entrance region) of the jet max. Severe weather potential sometimes increases in this area as a result.

ENSO- El Nino-Southern Oscillation.

Equilibrium Level (or EL)- On a sounding, the level above the level of free convection (LFC) at which the temperature of a rising air parcel again equals the temperature of the environment.

ETA- "Eta" (from Greek) model generated every 12 hours by NCEP

Evaporation- the process of a liquid changing into a vapor or gas.

Excessive Heat Warning- Issued within 12 hours of the onset of the following conditions: heat index of at least 105 degrees Fahrenheit for more than 3 hours per day for 2 consecutive days or heat index more than 115 degrees Fahrenheit for any period of time.

Excessive Heat Watch- Issued for the potential of the following conditions within 12 to 36 hours: heat index of at least 105 degrees Fahrenheit for more than 3 hours per day for 2 consecutive days or heat index more than 115 degrees Fahrenheit for any period of time.

Exit Region- The region downstream from a wind speed maximum in a jet stream (jet max), in which air is moving away from the region of maximum winds, and therefore is decelerating. This deceleration results in divergence in the upper-level winds in the left half of the exit region (as would be viewed looking along the direction of flow). This divergence results in upward motion of air in the left front quadrant (or left exit region) of the jet max. Severe weather potential sometimes increases in this area as a result.

Extended Outlook- a basic forecast of general weather conditions three to five days in the future.

Extratropical cyclone- A storm that forms outside the tropics, sometimes as a tropical storm or hurricane changes. See table below for differences between extratropical and tropical cyclones.

Eye- The low pressure center of a tropical cyclone. Winds are normally calm and sometimes the sky clears.

Eye wall- The ring of thunderstorms that surrounds a storm's eye. The heaviest rain, strongest winds and worst turbulence are normally in the eye wall.

Fahrenheit- the standard scale used to measure temperature in the United States; in which the freezing point of water is thirty-two degrees and the boiling point is two hundred and twelve degrees.

Fair- describes weather in which there is less than 4/10ths of opaque cloud cover, no precipitation, and there is no extreme visibility, wind or temperature conditions.

Fall Wind- a strong, cold, downslope wind.

Feeder Bands- Lines or bands of low-level clouds that move (feed) into the updraft region of a thunderstorm, usually from the east through south (i.e., parallel to the inflow). This term also is used in tropical meteorology to describe spiral-shaped bands of convection surrounding, and moving toward, the center of a tropical cyclone.

Fetch- The area in which ocean waves are generated by the wind. Also refers to the length of the fetch area, measured in the direction of the wind.

Few- A cloud layer that covers between 1/8th and 2/8ths of the sky.

Flanking Line- A line of cumulus connected to and extending outward from the most active portion of a parent cumulonimbus, usually found on the southwest side of the storm. The cloud line has roughly a stair step appearance with the taller clouds adjacent to the parent cumulonimbus. It is most frequently associated with strong or severe thunderstorms.

Flash Flood- A flood that occurs within a few hours (usually less than six) of heavy or excessive rainfall.

Flood- a condition that occurs when water overflows the natural or artificial confines of a stream or river; the water also may accumulate by drainage over low-lying areas.

Flood Crest- The highest stage or flow occurring in a flood.

Flood Warning- Issued when there is expected inundation of a normally dry area near a stream, other water course; or unusually severe ponding of water.

Flood Stage- The stage at which water overflowing the banks of a river, stream or body of water begins to cause damage.

Flurries- Light snow falling for short durations. No accumulation or just a light dusting is all that is expected.

Foehn- A warm dry wind on the lee side of a mountain range. The heating and drying are due to adiabatic compression as the wind descend downslope.

Fog- Water that has condensed close to ground level, producing a cloud of very small

droplets that reduces visibility to less than one km (three thousand and three hundred feet).

Fogbow- A rainbow that has a white band that appears in fog, and is fringed with red on the outside and blue on the inside.

Forecast- A forecast provides a description of the most significant weather conditions expected during the current and following days. The exact content depends upon the intended user, such as the Public or Marine forecast audiences.

Fractus- Ragged, detached cloud fragments

Freeze- Occurs when the surface air temperature is expected to be 32 degrees Fahrenheit or below over a widespread area for a significant period of time.

Freeze Warning- Issued during the growing season when surface temperatures are expected to drop below freezing over a large area for an extended period of time, regardless if frost develops or not.

Freezing- The change in a substance from a liquid to a solid state.

Freezing Drizzle- Drizzle that falls in liquid form and then freezes upon impact with the ground or an item with a temperature of 32 degrees Fahrenheit or less, possibly producing a thin coating of ice. Even in small amounts, freezing drizzle may cause traveling problems.

Freezing fog- A suspension of numerous minute ice crystals in the air, or water droplets at temperatures below 0 Celsius, based at the Earth's surface, which reduces horizontal visibility; also called ice fog.

Freezing Level- The altitude in the atmosphere where the temperature drops to 32F.

Freezing Nuclei- Particles suspended in the air around which ice crystals form.

Freezing Rain- Rain that freezes on objects such as trees, cars and roads, forming a coating or glaze of ice. Temperatures at higher levels are warm enough for rain to form, but surface temperatures are below 32 degrees Fahrenheit, causing the rain to freeze on impact.

Freshet- the annual spring rise of streams in cold climates as a result of snow melt; freshet also refers to a flood caused by rain or melting snow.

Frog Storm- the first bad weather in spring after a warm period.

Front- The boundary or transition zone between two different air masses. The basic frontal types are cold fronts, warm fronts and occluded fronts.

Frost- The formation of thin ice crystals on the ground or other surfaces. Frost develops when the temperature of the exposed surface falls below 32 degrees Fahrenheit and water vapor is deposited as a solid.

Frost Advisory- Issued during the growing season when widespread frost formation is expected over an extensive area. Surface temperatures are usually in the mid 30s Fahrenheit.

Frost Point- When the temperature to which air must be cooled to in order to be saturated is below freezing.

Frozen Dew- When liquid dew changes into tiny beads of ice. The change occurs after dew formation and then the temperature falls below freezing.

Fujita Scale- System developed by Dr. Theodore Fujita to classify tornadoes based on wind damage. Scale is from F0 for weakest to F5 for strongest tornadoes.

Fujiwhara effect- The Fujiwhara effect describes the rotation of two storms around each other.

Funnel Cloud- A rotating, cone-shaped column of air extending downward from the base of a thunderstorm but not touching the ground. When it reaches the ground it is called a tornado.

Gale- Sustained wind speeds from 34 to 47 knots (39 to 54 mph).

Gale Warning- A marine weather warning for gale force winds from a non tropical system.

Geostationary Satellite- A satellite positioned over the equator that rotates at the same rate as the earth, remaining over the same spot.

Glaciation- The transformation of cloud particles from water droplets to ice crystals. Thus, a cumulonimbus cloud is said to have a "glaciated" upper portion.

Glaze- a layer or coating of ice that is generally smooth and clear, and forms on exposed objects by the freezing of liquid raindrops.

Global warming-A theory that increased concentrations of greenhouse gases are causing an elevation in the Earth's surface temperature.

Gradient- The time rate or spatial rate of change of an atmospheric property.

Graupel- Small pellets of ice created when supercooled water droplets coat, or rime, a snowflake. The pellets are cloudy or white, not clear like sleet, and often are mistaken

for hail.

Gravity Wave- A wave disturbance in which buoyancy acts as the restoring force on parcels displaced from hydrostatic equilibrium. Waves on the ocean are examples of gravity waves.

Greenhouse Effect- The warming of the atmosphere by the trapping of longwave radiation (heat) being radiated to space. The gases most responsible for this effect are water vapor and carbon dioxide.

Ground Fog- Shallow fog (less than twenty feet deep) produced over the land by the cooling of the lower atmosphere as it comes in contact with the ground. Also known as radiation fog.

Growing Degree Day- A form of degree day to estimate the approximate dates when a crop will be ready to harvest. one growing degree day occurs when the daily mean temperature is one degree above the minimum temperature required for the growth of that specific crop.

Growing Season- The period of time between the last killing frost of spring and the first killing frost of autumn.

Gust- A brief sudden increase in wind speed. Generally the duration is less than 20 seconds and the fluctuation greater than 10 mph.

Gust Front- The leading edge of the downdraft from a thunderstorm. A gust front may precede the thunderstorm by several minutes and have winds that can easily exceed 80 mph.

Gustnado (or Gustinado)- Gust front tornado. A small tornado, usually weak and short-lived, that occurs along the gust front of a thunderstorm. Often it is visible only as a debris cloud or dust whirl near the ground.

Hail- Precipitation in the form of balls or irregular lumps of ice produced by liquid precipitation, freezing and being coated by layers of ice as it is lifted and cooled in strong updrafts of thunderstorms..

Halo- A ring or arc that encircles the sun or moon. Halos are caused by the refraction of light through the ice crystals in cirrus clouds.

Hard Freeze- freeze where vegetation is killed and the ground surface is frozen solid.

Harmattan- a hot, dry, and dusty northeasterly or easterly wind that occurs in West Africa north of the equator and is caused by the outflow of air from subtropical high pressure areas.

Haze- Fine dust or salt particles in the air that reduce visibility.

Heat Advisory- Issued within 12 hours of the onset of the following conditions: heat index of at least 105 degrees but less than 115 degrees for less than 3 hours per day. Nighttime lows remain above 80 degrees for 2 consecutive days.

Heat Balance- The equilibrium existing between the radiation received and emitted by a planetary system.

Heat Index- An index that combines air temperature and humidity to give an apparent temperature (how hot it feels).

Heat Island- A dome of elevated temperatures over an urban area caused by the heat absorbed by structures and pavement.

Heat Lightning- Lightning that can be seen, but is too far away for the thunder to be heard.

Heavy Surf- the result of large waves breaking on or near the shore resulting from swells or produced by a distant storm.

Helicity- A property of a moving fluid which represents the potential for helical flow (i.e. flow which follows the pattern of a corkscrew) to evolve. Helicity is proportional to the strength of the flow, the amount of vertical wind shear, and the amount of turning in the flow (i.e. vorticity).

High- An area of high pressure, usually accompanied by anticyclonic and outward wind flow. Also known as an anticyclone.

High Risk (of severe thunderstorms)- Severe weather is expected to affect more than 10 percent of the area.

High Wind Warning- Issued when sustained winds from 40 to 73 mph are expected for at least 1 hour; or any wind gusts are expected to reach 58 mph or more.

High Wind Watch- Issued when conditions are favorable for the development of high winds over all of or part of the forecast area but the occurrence is still uncertain. The criteria of a high wind watch are listed under the high wind warning and should include the area affected, the reason for the watch and the potential impact of the winds.

Hodograph- A plot representing the vertical distribution of horizontal winds, using polar coordinates. A hodograph is obtained by plotting the end points of the wind vectors at various altitudes, and connecting these points in order of increasing height.

Hook Echo- A radar pattern sometimes observed in the southwest quadrant of a tornadic thunderstorm. Appearing like a fishhook turned in toward the east, the hook

echo is precipitation aloft around the periphery of a rotating column of air 2-10 miles in diameter.

Horse Latitudes- Subtropical regions where anticyclones produce settled weather.

Hot Spot- Typically large areas of pavement, these "hot spots" are heated much quicker by the sun than surrounding grasses and forests. As a result, air rises upwards from the relatively hot surface of the pavement, reaches its condensation level, condenses, and forms a cloud above the "hot spot".

Humidity- The amount of water vapor in the atmosphere.

Hurricane- A severe tropical cyclone with sustained winds over 74 mph (64 knots). Normally applied to such storms in the Atlantic Basin and the Pacific Ocean east of the International Date Line.

Hurricane Warning- Warning issued when sustained winds of 74 mph (64 knots) or more are expected within 24 hours. This implies a dangerous storm surge.

Hydrology- The study of the waters of the earth with relation to the effects of precipitation and evaporation upon the water in streams, rivers, lakes, and its effect on land surfaces.

Hydrologic Cycle- The composite picture of the interchange of water substance between the earth, the atmosphere and the seas which includes the change of state and vertical and horizontal transport.

Hydrosphere- The totality of water encompassing the Earth, comprising all the bodies of water, ice, and water vapor in the atmosphere.

Hygrometer- An instrument used to measure humidity.

Indefinite ceiling- The ceiling classification applied when the reported ceiling value represents the vertical visibility upward into surface-based obscuration.

Inflow Bands (or Feeder Bands) - Bands of low clouds, arranged parallel to the low-level winds and moving into or toward a thunderstorm.

Inflow Jets - Local jets of air near the ground flowing inward toward the base of a tornado.

Inflow Notch - A radar signature characterized by an indentation in the reflectivity pattern on the inflow side of the storm. The indentation often is V-shaped, but this term should not be confused with V-notch. Supercell thunderstorms often exhibit inflow notches, usually in the right quadrant of a classic supercell, but sometimes in the eastern part of an HP storm or in the rear part of a storm (rear inflow notch).

Inflow Stinger - A beaver tail cloud with a stinger-like shape.

Infra-Red Radiation- Electromagnetic radiation of lower frequencies and longer wavelengths than visible light (greater than 0.7 microns (\diamond m)). Solar ultra-violet radiation is absorbed by the Earth's surface and re-emitted as infra-red radiation.

Indian Summer- An unseasonably warm period near the middle of autumn, usually following a substantial period of cool weather.

Insolation- Incoming solar radiation. Solar heating; sunshine.

Instability- A state of the atmosphere in which convection takes place spontaneously, leading to cloud formation and precipitation.

Intertropical Convergence Zone (ITCZ)- The region where the northeasterly and southeasterly trade winds converge, forming an often continuous band of clouds or thunderstorms near the equator.

Inversion- An increase in temperature with height. The reverse of the normal cooling with height in the atmosphere. Temperature inversions trap atmospheric pollutants in the lower troposphere, resulting in higher concentrations of pollutants at ground levels than would usually be experienced.

Ionosphere- Also known as the thermosphere. A layer in the atmosphere above the mesosphere extending from about 80km above the Earth's surface. It can be considered a distinct layer due to a rise in air temperature with increasing height. Atmospheric densities here are very low.

Iridescence- Brilliant patches of green or pink sometimes seen near the edges of high- or medium-level clouds.

Isentropic Lift- Lifting of air that is traveling along an upward-sloping isentropic surface. Situations involving isentropic lift often are characterized by widespread stratiform clouds and precipitation.

Isentropic Surface- A two-dimensional surface containing points of equal potential temperature.

Isobar- A line of equal barometric pressure on a weather map.

Isodrosotherm- A line of equal dew point temperature.

Isohyet- A line of equal precipitation amounts.

Isopleth- General term for a line of equal value of some quantity. Isobars, isotherms, etc. all are examples of isopleths.

Isotach - A line of equal wind speed.

Isotherm- A line of equal temperature on a weather map.

Jet streak- A local wind speed maximum within a jet stream.

Jet Stream- Strong winds concentrated within a narrow band in the upper atmosphere. It normally refers to horizontal, high-altitude winds. The jet stream often "steers" surface features such as front and low pressure systems.

Katabatic- Wind blowing down an incline, such as down a hillside; downslope wind.

Katafront- A front (usually a cold front) at which the warm air descends the frontal surface.

Kelvin Temperature Scale- A temperature scale in which 0 degrees is the point at which all molecular motion ceases (absolute zero).

Killing Frost- Frost severe enough to end the growing season. This usually occurs at temperatures below 28F.

Kilopascal - The internationally recognized unit for measuring atmospheric pressure. It is equal to 10 millibars.

Knot- A measure of speed. It is one nautical mile per hour (1.15 mph). A nautical mile is one minute of one degree of latitude.

Knuckles- Lumpy protrusions on the edges, and sometimes the underside, of a thunderstorm anvil. They usually appear on the upwind side of a back-sheared anvil, and indicate rapid expansion of the anvil due to the presence of a very strong updraft. They are not mammatus clouds.

Lake effect- The effect of a lake (usually a large one) in modifying the weather near the shore and down wind. It is often refers to the enhanced rain or snow that falls downwind from the lake. This effect can also result in enhanced snowfall along the east coast of New England in winter.

Laminar- Smooth, non-turbulent. Often used to describe cloud formations which appear to be shaped by a smooth flow of air traveling in parallel layers or sheets.

La Nina- A cooling of the equatorial waters in the Pacific Ocean.

Land Breeze- A wind that blows from the land towards a body of water. Also known as an offshore breeze. It occurs when the land is cooler than the water.

Landspout- A tornado that does not arise from organized storm-scale rotation and therefore is not associated with a wall cloud (visually) or a mesocyclone (on radar). Landspouts typically are observed beneath Cbs or towering cumulus clouds (often as no more than a dust whirl), and essentially are the land-based equivalents of waterspouts.

Lapse Rate- The change in temperature with altitude in the atmosphere.

Latent Heat- The heat energy that must be absorbed when a substance changes from solid to liquid and liquid to gas, and which is released when a gas condenses and a liquid solidifies.

Layer- An array of clouds and/or obscurations whose bases are at approximately the same level.

Left Front Quadrant (or Left Exit Region)- The area downstream from and to the left of an upper-level jet max (as would be viewed looking along the direction of flow). Upward motion and severe thunderstorm potential sometimes are increased in this area relative to the wind speed maximum.

Left Mover- A thunderstorm which moves to the left relative to the steering winds, and to other nearby thunderstorms; often the northern part of a splitting storm.

Leeward- Situated away from the wind; downwind - opposite of windward

Lenticular Clouds- A cloud that generally has the form of a smooth lens. They usually appear in formation as the result of orographic origin. Viewed from the ground, the clouds appear stationary as the air rushes through them.

Lifted Index (or LI)- A common measure of atmospheric instability. Its value is obtained by computing the temperature that air near the ground would have if it were lifted to some higher level (around 18,000 feet, usually) and comparing that temperature to the actual temperature at that level. Negative values indicate instability - the more negative, the more unstable the air is, and if thunderstorms develop they are more likely to be stronger.

Lifting- The forcing of air in a vertical direction by an upslope in terrain or by the movement of a denser air mass.

Lifting Condensation Level - The level in the atmosphere where a lifted air parcel reaches its saturation point, and as a result, the water vapor within condenses into water droplets.

Lightning- Any form of visible electrical discharges produced by thunderstorms.

Likely- In probability of precipitation statements, the equivalent of a 60 or 70 percent chance.

Loaded Gun (Sounding)- A sounding characterized by extreme instability but containing a cap, such that explosive thunderstorm development can be expected if the cap can be weakened or the air below it heated sufficiently to overcome it.

Longwave Trough- A trough in the prevailing westerly flow aloft which is characterized by large length and (usually) long duration. Generally, there are no more than about five longwave troughs around the Northern Hemisphere at any given time. Their position and intensity govern general weather patterns (e.g., hot/cold, wet/dry) over periods of days, weeks, or months.

Low- An area of low pressure, usually accompanied by cyclonic and inward wind flow. Also known as a cyclone.

Low-level Jet- A region of relatively strong winds in the lower part of the atmosphere.

Macroburst- Large downburst with a 2.5 mile or greater outflow diameter and damaging winds lasting 5 to 20 minutes.

Mamma Clouds- Also called mammatus, these clouds appear as hanging, rounded protuberances or pouches on the under-surface of a cloud. With thunderstorms, mammatus are seen on the underside of the anvil. These clouds do not produce tornadoes, funnels, hail, or any other type of severe weather, although they often accompany severe thunderstorms.

Maritime Air Mass- An air mass that forms over water. It is usually humid, and may be cold or warm.

Maximum Temperature- The highest temperature during a specified time period.

Mean Sea Level (MSL)- The average height of the sea surface, based upon hourly observation of the tide height on the open coast or in adjacent waters that have free access to the sea.

Mean Temperature- The average of a series of temperatures taken over a period of time, such as a day or a month.

Medium Range- In forecasting, (generally) three to seven days in advance.

Mercury Barometer- An instrument that measures barometric pressure by measuring the level of mercury in a column.

Meridional flow- A type of atmospheric circulation pattern in which the north and south component of motion is unusually pronounced. Opposite of zonal flow.

Mesocyclone- A storm-scale region of rotation, typically around 2-6 miles in diameter and often found in the right rear flank of a supercell (or often on the eastern, or front, flank of an HP storm). The circulation of a mesocyclone covers an area much larger than the tornado that may develop within it.

Mesohigh- A mesoscale high pressure area, usually associated with MCSs or their remnants.

Mesolow (or Sub-synoptic Low) - A mesoscale low-pressure center. Severe weather potential often increases in the area near and just ahead of a mesolow.

Mesonet- A regional network of observing stations (usually surface stations) designed to diagnose mesoscale weather features and their associated processes.

Mesoscale- Size scale referring to weather systems smaller than synoptic-scale systems but larger than single storm clouds. Horizontal dimensions generally range from around 50 miles to several hundred miles. Squall lines are an example of mesoscale weather systems.

Mesoscale Convective Complex (MCC)- A large mesoscale convective system, generally round or oval-shaped, which normally reaches peak intensity at night. The formal definition includes specific minimum criteria for size, duration, and eccentricity (i.e., "roundness"), based on the cloud shield as seen on infrared satellite photographs:

Mesoscale Convective System (MCS)- A complex of thunderstorms which becomes organized on a scale larger than the individual thunderstorms, and normally persists for several hours or more. MCSs may be round or linear in shape, and include systems such as tropical cyclones, squall lines, and MCCs (among others). MCS often is used to describe a cluster of thunderstorms that does not satisfy the size, shape, or duration criteria of an MCC.

Mesosphere- A layer of the atmosphere separated by the ionosphere above and the stratosphere below extending from about 50km-80km above the Earth's surface. The air temperature in mesosphere decreases with height.

META- The mesoscale ETA model. A mathematical model of the atmosphere run on a computer that makes forecasts out to 30 hours.

Metamorphism- Changes in the structure and texture of snow grains which results from variations in temperature, migration of liquid water and water vapor, and pressure within the snow cover

METAR- A weather observation near ground level. It may include date and time, wind, visibility, weather and obstructions to vision, sky condition, temperature and dew point, sea level pressure, precipitation amount and other data used for aircraft operations.

Meteorologist - A person who studies meteorology. Some examples include research meteorologist, climatologist, operational meteorologist, TV meteorologist.

Meteorology- The study of the physics, chemistry, and dynamics of the atmosphere and the direct effects of the atmosphere upon the Earth's surface, the oceans, and life in general.

Microburst- A strong localized downdraft from a thunderstorm with peak gusts lasting 2 to 5 minutes.

Microclimate- A local climate that differs from the main climate around it.

Mid-Latitudes- The areas in the northern and southern hemispheres between the tropics and the Arctic and Antarctic circles.

Millibar- A metric unit of atmospheric pressure. 1 mb = 100 Pa (pascal). Normal surface pressure is approximately 1013 millibars.

Minimum Temperature- The lowest temperature during a specified time period.

Mist- Consists of microscopic water droplets suspended in the air which produce a thin grayish veil over the landscape. It reduces visibility to a lesser extent than fog.

Mixing- Air movements (usually vertical) that make the properties of the air with a parcel homogeneous. It may result in a lapse rate approaching the moist or dry adiabatic rate.

Model- A mathematical representation of a process, system, or object developed to understand its behavior or to make predictions. The representation always involves certain simplifications and assumptions.

Moderate Risk (of severe thunderstorms)- Severe thunderstorms are expected to affect between 5 and 10 percent of the area.

Moisture Advection- Transport of moisture by horizontal winds.

Moisture Convergence- A measure of the degree to which moist air is converging into a given area, taking into account the effect of converging winds and moisture advection. Areas of persistent moisture convergence are favored regions for thunderstorm development, if other factors (e.g., instability) are favorable.

Monsoon- A persistent seasonal wind, often responsible for seasonal precipitation

regime. It is most commonly used to describe meteorological changes in southern and eastern Asia.

Mountain Breeze- System of winds that blow downhill during the night.

Morning Glory - An elongated cloud band, visually similar to a roll cloud, usually appearing in the morning hours, when the atmosphere is relatively stable. Morning glories result from perturbations related to gravitational waves in a stable boundary layer.

MOS- Model Output Statistics.

MRF- Medium Range Forecast model generated every 12 hours by NCEP.

MSL- Mean sea level.

MSLP- Mean sea level pressure.

Muggy- Colloquially descriptive of warm and especially humid weather.

Multicell Cluster Thunderstorm- A thunderstorm consisting of two or more cells, of which most or all are often visible at a given time as distinct domes or towers in various stages of development.

Multivortex Tornado- A tornado in which two or more condensation funnels or debris clouds are present at the same time, often rotating about a common center or about each other. Multiple-vortex tornadoes can be especially damaging.

Mushroom - A thunderstorm with a well-defined anvil rollover, and thus having a visual appearance resembling a mushroom.

NCDC: National Climatic Data Center. Located in Asheville, North Carolina, the agency that archives climatic and forecast data from the National Weather Service.

NCEP: National Centers for Environmental Prediction. Central computer and communications facility of the National Weather Service; located in Washington, DC.

Negative Tilt Trough- An upper level system which is tilted to the west with increasing latitude (i.e., with an axis from southeast to northwest). A negative-tilt trough often is a sign of a developing or intensifying system.

NEXRAD: NEXt Generation RADar. A NWS network of about 140 Doppler radars operating nationwide.

NGM: Nested Grid Model generated every 12 hours by NCEP.

NHC: National Hurricane Center. The office of the National Weather Service in Miami that is responsible for tracking and forecasting tropical cyclones.

NOAA- National Oceanic and Atmospheric Administration. A branch of the U.S. Department of Commerce, NOAA is the parent organization of the National Weather Service.

Nocturnal Related to nighttime, or occurring at night.

Nor'easter- A low-pressure disturbance forming along the South Atlantic coast and moving northeast along the Middle Atlantic and New England coasts to the Atlantic Provinces of Canada. It usually causes strong northeast winds with rain or snow. Also called a Northeaster or Coastal Storm.

Normal- The long-term average value of a meteorological element for a certain area. For example, "temperatures are normal for this time of year" Usually averaged over 30 years.

Northern Lights- Also known as the aurora borealis. The luminous, radiant emission from the upper atmosphere over middle and high latitudes, and centered around the earth's magnetic poles. These silent fireworks are often seen on clear winter nights in a variety of shapes and colors.

Nowcast- A short-term weather forecast, generally out to six hours or less.

Nucleus- a particle of any nature upon which molecules of water or ice accumulate.

Numerical Weather prediction (NWP) – Forecasting the weather based upon the solutions of mathematical equations by high-speed computers.

Obscuration- Any phenomenon in the atmosphere, other than precipitation, that reduces the horizontal visibility in the atmosphere.

Occluded Front- A complex frontal system that occurs when a cold front overtakes a warm front. Also known as an occlusion.

Offshore Breeze- A wind that blows from the land towards a body of water. Also known as a land breeze.

Offshore Forecast- A marine weather forecast for the waters between 60 and 250 miles off the coast.

Omega- A term used to describe vertical motion in the atmosphere. The "omega equation" used in numerical weather models is composed of two terms, the "differential vorticity advection" term and the "thickness advection" term. Put more simply, omega is determined by the amount of spin (or large scale rotation) and warm (or cold) advection

present in the atmosphere. On a weather forecast chart, high values of omega (or a strong omega field) relate to upward vertical motion in the atmosphere. If this upward vertical motion is strong enough and in a sufficiently moist airmass, precipitation results.

Onshore Breeze- A wind that blows from a body of water towards the land. Also known as a seabreeze.

Orographic- Related to, or caused by, physical geography (such as mountains or sloping terrain).

Orographic Lift- The lifting of air as it passes over terrain features such hills or mountains. This can create orographic clouds and/or precipitation.

Orphan Anvil- An anvil from a dissipated thunderstorm, below which no other clouds remain.

Outflow- Air that flows outward from a thunderstorm.

Outflow Boundary- A storm-scale or mesoscale boundary separating thunderstorm-cooled air (outflow) from the surrounding air; similar in effect to a cold front, with passage marked by a wind shift and usually a drop in temperature.

Outflow Winds- Winds that blow down fjords and inlets from the land to the sea.

Overcast- Sky condition when greater than 9/10 of the sky is covered by clouds.

Overrunning- A condition that exists when a relatively warm air mass moves up and over a colder and denser air mass on the surface. The result is usually low clouds, fog and steady, light precipitation.

Overshooting Top (or Penetrating Top)- A dome-like protrusion above a thunderstorm anvil, representing a very strong updraft and hence a higher potential for severe weather with that storm.

Ozone- A form of oxygen in which the molecule is made of 3 atoms instead of the usual two. Ozone is usually found in the stratosphere, and responsible for filtering out much of the sun's ultraviolet radiation. It is also a primary component of smog.

Ozone Hole- A thinning of the ozone layer over Antarctica, which occurs each spring.

Patches- Used with fog to denote random occurrence over relatively small areas.

Pendant Echo- Radar signature generally similar to a hook echo, except that the hook shape is not as well defined.

Permafrost- A soil layer below the surface of tundra regions that remains frozen

permanently.

Polar Air- A mass of very cold, very dry air that forms in polar regions.

Polar front- The semi-permanent, semi-continuous front that encircles the northern hemisphere separating air masses of tropical and polar origin.

Polar Stratospheric Clouds (PSCs)- High altitude clouds that form in the stratosphere above Antarctica during the Southern Hemisphere winter. Their presence seems to initiate the ozone loss experienced during the ensuing Southern Hemisphere spring.

Polar vortex- A circumpolar wind circulation which isolates the Antarctic continent during the cold Southern Hemisphere winter, heightening ozone depletion.

Pollutant- Strictly too much of any substance in the wrong place or at the wrong time is a pollutant. More specifically, atmospheric pollution may be defined as the presence of substances in the atmosphere, resulting from man-made activities or from natural processes, causing adverse effects to man and the environment.

Polycrystal- A snowflake composed of many individual ice crystals.

POP- Probability of Precipitation. Probability forecasts are subjective estimates of the chances of encountering measurable precipitation at some time during the forecast period.

Popcorn Convection- Clouds, showers and thundershowers that form on a scattered basis with little or no apparent organization, usually during the afternoon in response to diurnal heating.

Positive Area- The area on a sounding representing the layer in which a lifted parcel would be warmer than the environment; thus, the area between the environmental temperature profile and the path of the lifted parcel.

Positive-tilt Trough- An upper level system which is tilted to the east with increasing latitude (i.e., from southwest to northeast). A positive-tilt trough often is a sign of a weakening weather system, and generally is less likely to result in severe weather than a negative-tilt trough if all other factors are equal.

Potential Temperature- The temperature a parcel of dry air would have if brought adiabatically (i.e., without transfer of heat or mass) to a standard pressure level of 1000 mb.

Precipitation- Any form of water, either liquid or solid (rain or snow), that falls from the clouds and reaches the ground.

Precipitation Shaft- A visible column of rain and/or hail falling from a cloud base. When viewed against a light background, heavy precipitation appears very dark gray, sometimes with a turquoise tinge. This turquoise tinge has been commonly attributed to hail, but its actual cause is unknown.

Pressure- The force exerted by the interaction of the atmosphere and gravity. Also known as atmospheric pressure.

Pressure Change- The net difference between pressure readings at the beginning and ending of a specified interval of time.

Pressure Falling Rapidly- A decrease in station pressure at a rate of 0.06 inch of mercury or more per hour which totals 0.02 inch or more.

Pressure Gradient- The rate of decrease of pressure with distance at a fixed level.

Pressure Gradient Force- Force acting on air that causes it to move from areas of higher pressure to areas of lower pressure.

Pressure Rising Rapidly- An increase in station pressure at a rate of 0.06 inch of mercury or more per hour which totals 0.02 inch or more.

Pressure Tendency. The character and amount of atmospheric pressure change during a specified period of time, usually the 3-hour period preceding an observation.

Pressure Unsteady- A pressure that fluctuates by 0.03 inch of mercury or more from the mean pressure during the period of measurement.

Prevailing Westerlies- Winds in the middle latitudes (approximately 30 degrees to 60 degrees) that generally blow from west to east.

Prevailing Wind- The direction from which the wind blows most frequently in any location.

Profiler- An instrument designed to measure horizontal winds directly above its location, and thus measure the vertical wind profile. Profilers operate on the same principles as Doppler radar.

Psychrometer- An instrument used for measuring the water vapor content of the atmosphere. It consists of two thermometers, one of which is an ordinary glass thermometer, while the other has its bulb covered with a jacket of clean muslin which is saturated with distilled water prior to use.

Pulse Storm- A thunderstorm within which a brief period (pulse) of strong updraft occurs, during and immediately after which the storm produces a short episode of severe weather. These storms generally are not tornado producers, but often produce

large hail and/or damaging winds. See overshooting top, cyclic storm.

PVA - Positive Vorticity Advection. Advection of higher values of vorticity into an area, which often is associated with upward motion (lifting) of the air. PVA typically is found in advance of disturbances aloft (i.e., shortwaves), and is a property which often enhances the potential precipitation.

Radar- An instrument used to detect precipitation by measuring the strength of the electromagnetic signal reflected back. (RADAR= Radio Detection and Ranging)

Radiation- Energy emitted in the form of electromagnetic waves. Radiation has differing characteristics depending upon the wavelength. Radiation from the Sun has a short wavelength (ultra-violet) while energy re-radiated from the Earth's surface and the atmosphere has a long wavelength (infra-red).

Radiation Fog- Fog produced over the land by the cooling of the lower atmosphere as it comes in contact with the ground. Also known as ground fog.

Radiational Cooling- Cooling process of the Earth's surface and adjacent air, which occurs when infrared (heat) energy radiates from the surface of the Earth upward through the atmosphere into space. Air near the surface transfers its thermal energy to the nearby ground through conduction, so that radiative cooling lowers the temperature of both the surface and the lowest part of the atmosphere.

Radiosonde- An instrument attached to a weather balloon that transmits pressure, humidity, temperature and winds as it ascends to the upper atmosphere.

Rain- Liquid water droplets that fall from the atmosphere, having diameters greater than drizzle (0.5 mm).

Rain Foot- A horizontal bulging near the surface in a precipitation shaft, forming a foot-shaped prominence. It is a visual indication of a wet microburst.

Rain-Free Base- A horizontal, dark cumulonimbus base that has no visible precipitation beneath it. This structure usually marks the location of the thunderstorm updraft. Tornadoes most commonly develop (1) from wall clouds that are attached to the rain-free base, or (2) from the rain-free base itself. This is particularly true when the rain-free base is observed to the south or southwest of the precipitation shaft.

Rain Gauge- An instrument used to measure rainfall amounts.

Rain Shadow- The region on the lee side of a mountain or mountain range where the precipitation is noticeably less than on the windward side.

Rainbow- Optical phenomena when light is refracted and reflected by moisture in the air into concentric arcs of color. Raindrops act like prisms, breaking the light into the colors of a rainbow, with red on the outer, and blue on the inner edge.

Rankine Temperature Scale- A temperature scale with the degree of the Fahrenheit temperature scale and the zero point of the Kelvin temperature scale.

Rawinsonde- A balloon that is tracked by radar to measure wind speeds and wind directions in the atmosphere.

Reflectivity- Radar term referring to the ability of a radar target to return energy; used to estimate precipitation intensity and rainfall rates.

Refraction- The bending of light as it passes through areas of different density, such as from air through ice crystals.

Relative Humidity- The amount of water vapor in the air, compared to the amount the air could hold if it was totally saturated. (Expressed as a percentage).

Retrogression (or Retrograde Motion)- Movement of a weather system in a direction opposite to that of the basic flow in which it is embedded, usually referring to a closed low or a longwave trough which moves westward.

Return Flow- South winds on the back (west) side of an eastward-moving surface high pressure system. Return flow over the central and eastern United States typically results in a return of moist air from the Gulf of Mexico (or the Atlantic Ocean).

Ridge- An elongated area of high pressure in the atmosphere. Opposite of a trough.

Right Entrance Region (or Right Rear Quadrant)- The area upstream from and to the right of an upper-level jet max (as would be viewed looking along the direction of flow). Upward motion and severe thunderstorm potential sometimes are increased in this area relative to the wind speed maximum.

Right Mover- A thunderstorm that moves appreciably to the right relative to the main steering winds and to other nearby thunderstorms. Right movers typically are associated with a high potential for severe weather. (Supercells often are right movers.)

Rime- Tiny balls of ice that form when tiny drops of water (usually not precipitation) freeze on contact with the surface.

River Flood Warning- Issued when main stem rivers (such as the Merrimack, Charles, Connecticut, etc) are expected to reach a level above flood stage.

Roll Cloud- A relatively rare, low-level horizontal, tube-shaped accessory cloud completely detached from the cumulonimbus base. When present, it is located along

the gust front and most frequently observed on the leading edge of a line of thunderstorms. The roll cloud will appear to be slowly "rolling" about its horizontal axis. Roll clouds are not and do not produce tornadoes.

Rope (or Rope Funnel) - A narrow, often contorted condensation funnel usually associated with the decaying stage of a tornado.

Rope Cloud - In satellite meteorology, a narrow, rope-like band of clouds sometimes seen on satellite images along a front or other boundary.

Rope Stage - The dissipating stage of a tornado, characterized by thinning and shrinking of the condensation funnel into a rope (or rope funnel). Damage still is possible during this stage.

Rossby Waves- Long waves that form in air or water that flows almost parallel to the equator, which results from the effect of the earth's rotation.

Rotor Cloud. A turbulent cloud formation found in the lee of some large mountain barriers. The air in the cloud rotates around an axis parallel to the mountain range.

RUC- Rapid Update Cycle, a numerical model run at NCEP that focuses on short-term (up to 12 h) forecasts and small-scale (mesoscale) weather features. Forecasts are prepared every 3 hours for the contiguous United States.

Runway Visual Range (RVR)- An instrumentally-derived value, based on standard calibrations, that represents the horizontal distance a pilot may see down the runway from the approach end.

Saffir-Simpson Hurricane Damage Potential Scale- A scale that measures hurricane intensity, developed by Herbert Saffir and Robert Simpson.

St. Elmo's Fire- A luminous, and often audible, electric discharge that is intermediate in nature between a spark discharge and a point discharge (with its diffuse, quiescent, and non-luminous character). It occurs from objects, especially pointed ones, when the electric field strength near their surfaces attains a value near 100,000 volts per m. Aircraft flying through active electrical storms often develop corona discharge streamers from antennas and propellers, and even from the entire fuselage and wing structure. It is seen also, during stormy weather, emanating from the yards and masts of ships at sea.

Sandstorm- Particles of sand carried aloft by a strong wind. The sand particles are mostly confined to the lowest ten feet, and rarely rise more than fifty feet above the ground.

Satellite Photo- A photograph of the earth taken by weather satellites that shows areas of cloud.

Saturation- A condition of the atmosphere in which a certain volume of air holds the maximum water vapor it can hold at a specific temperature.

Saturation Vapor Pressure (water)- The maximum amount of water vapor necessary to keep moist air in equilibrium with a surface of pure water. This is the maximum water vapor the air can hold for any given combination of temperature and pressure

Scattered- A cloud layer that covers between 3/8ths and 1/2 of the sky.

Scud Clouds- Small, ragged, low cloud fragments that are unattached to a larger cloud base and often seen with and behind cold fronts and thunderstorm gust fronts. Such clouds generally are associated with cool moist air, such as thunderstorm outflow.

Secondary Cold Front- A front that follows a primary cold front and ushers in even colder air.

Sea Breeze- A wind that blows from a sea or ocean towards a land mass. Also known as an onshore breeze. It occurs when the land is warmer than the water.

Sea-level Pressure- The pressure value obtained by the theoretical reduction or increase of barometric pressure to sea-level.

Sensible Heat- The excess radiative energy that has passed from the Earth's surface to the atmosphere through advection, conduction, and convection processes.

Shallow fog- Fog in which the visibility at 6 feet above ground level is 5/8ths of a mile or more.

Shear (Wind Shear)- Variation in wind speed and/or direction over a short distance. Shear usually refers to vertical wind shear, i.e., the change in wind with height, but the term also is used in Doppler radar to describe changes in radial velocity over short horizontal distances.

Shelf Cloud- A low-level horizontal accessory cloud that appears to be wedge-shaped as it approaches. It is usually attached to the thunderstorm base and forms along the gust front. The leading edge of the shelf is often smooth and at times layered or terraced. It is most often seen along the leading edge of an approaching line of thunderstorms, accompanied by gusty straight winds as it passes overhead and followed by precipitation. The underside is concave upward, turbulent, boiling, or wind-torn. Tornadoes rarely occur with the shelf cloud.

Short-Fuse Warning- A warning issued by the NWS for a local weather hazard of relatively short duration. Short-fuse warnings include tornado warnings, severe thunderstorm warnings, and flash flood warnings. Tornado and severe thunderstorm

warnings typically are issued for periods of an hour or less, flash flood warnings typically for three hours or less.

Shortwave (Shortwave Trough)- A disturbance in the mid or upper part of the atmosphere which induces upward motion ahead of it. If other conditions are favorable, the upward motion can contribute to thunderstorm development ahead of a shortwave.

Shortwave Radiation- The radiation received from the sun and emitted in the spectral wavelengths less than 4 microns. It is also called 'solar radiation'.

Shower- Precipitation that is intermittent, both in time, space or intensity.

Sky Condition- The state of the sky in terms of such parameters as sky cover, layers and associated heights, ceiling, and cloud types.

Sky Cover- The amount of the sky which is covered by clouds or obscurations in contact with the surface.

Sleet- Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects. Forms when snow enters a warm layer of air above the surface and melts and then enters a deep layer of sub freezing air near the surface and refreezes.

Sling Psychrometer- A psychrometer in which the wet and dry bulb thermometers are mounted upon a frame connected to a handle. The psychrometer may be whirled by hand in order to provided the necessary ventilation.

Slight Chance- In probability of precipitation statements, usually equivalent to a 20 percent chance.

Smog- Pollution formed by the interaction of pollutants and sunlight (photochemical smog), usually restricting visibility, and occasionally hazardous to health.

Smoke- A suspension in the air of small particles produced by combustion. A transition to haze may occur when smoke particles have traveled great distances (25 to 100 statute miles or more) and when the larger particles have settled out and the remaining particles have become widely scattered through the atmosphere.

Snow- Frozen precipitation composed of ice particles in complex hexagonal patterns. Snow forms in cold clouds by the direct transfer of water vapor to ice.

Solar Energy- The energy produced by the sun.

Sounder- A special kind of radiometer that measures changes in atmospheric temperature with height, as well as the content of various chemical species in the atmosphere at various levels. The High Resolution Infrared Radiation Sounder (HIRS),

found on NOAA polar-orbiting satellites, is a passive instrument. See passive system.

Sounding- A plot of the vertical profile of temperature and dew point (and often winds) above a fixed location (example). Soundings are used extensively in weather forecasting, e.g., to determine instability, locate temperature inversions etc.

Southern Oscillation- A periodic reversal of the pressure pattern across the tropical Pacific Ocean during El Nino events.

Speed Shear- The component of wind shear which is due to a change in wind speed with height, e.g., southwesterly winds of 20 mph at 10,000 feet increasing to 50 mph at 20,000 feet. Speed shear is an important factor in severe weather development, especially in the middle and upper levels of the atmosphere.

Spin-up- A small-scale vortex initiation, such as what may be seen when a gustnado, landspout, or suction vortex forms.

Spray- An ensemble of water droplets torn by the wind from an extensive body of water, generally from the crests of waves, and carried up into the air in such quantities that it reduces the horizontal visibility.

Squall- A strong wind characterized by a sudden onset in which the wind speed increases at least 16 knots and is sustained at 22 knots or more for at least one minute.

Squall Line- Any non-frontal line or narrow band of active thunderstorms. The term is usually used to describe solid or broken lines of strong or severe thunderstorms.

Stability- An indication of how easily a parcel of air is lifted. If the air is very stable it is difficult to make the parcel rise. If the air is very unstable the parcel may rise on its own once started.

Stable Air- Air with little or no tendency to rise, that is usually accompanied by clear dry weather.

Standard Atmosphere- A hypothetical vertical distribution of the atmospheric temperature, pressure, and density, which by international agreement is considered to be representative of the atmosphere for pressure-altimeter calibrations and other purposes (29.92INS or 1013hPa).

Standing Lenticular Cloud- A, more or less, isolated cloud with sharp outlines that is generally in the form of a smooth lens or almond. These clouds often form on the lee side of and generally parallel to mountain ranges. Depending on their height above the surface, they may be reported as stratocumulus standing lenticular cloud (SCSL); altocumulus standing lenticular cloud (ACSL); or cirrocumulus standing lenticular cloud (CCSL).

Statement- Provides the public with information concerning the status of existing warnings.

Station Identifier- A group of four alphabetic characters used to identify a location that makes weather observations.

Station Pressure- The pressure that is read from a barometer but is not adjusted to sea level.

Stationary Front- The boundary between cool and warm air masses in that are not moving.

Stationary wave- Wave (flow pattern with periodicity in time and/or space) that is fixed relative to Earth.

Steam fog- Fog that is formed when water vapor is added to air which is much colder than the vapor's source. This is most common when very cold air drifts across relatively warm water.

Steering Winds (Steering Currents) - A prevailing synoptic scale flow which governs the movement of smaller features embedded within it.

Storm- In marine usage, winds 48 knots (55 mph) or greater.

Storm Surge- A rise of the sea level along the shore that builds up as a storm (usually a hurricane) moves over water. It is a result of the winds of the storm and low atmospheric pressures.

Storm Track- the path that a low pressure area follows.

Storm-relative- Measured relative to a moving thunderstorm, usually referring to winds, wind shear, or helicity.

Storm-scale- Referring to weather systems with sizes on the order of individual thunderstorms. See synoptic scale, mesoscale.

Straight Line Winds- Thunderstorm winds most often found with the gust front. They originate from downdrafts and can cause damage which occurs in a "straight line", as opposed to tornadic wind damage which has circular characteristics.

Stratiform- Having extensive horizontal development, as opposed to the more vertical development characteristic of convection. Stratiform clouds cover large areas but show relatively little vertical development.

Stratocumulus- Low-level clouds, existing in a relatively flat layer but having individual elements. Elements often are arranged in rows, bands, or waves.

Stratosphere-- The layer of atmosphere above the troposphere and below the mesosphere (between 10 km and 50 km) generally characterized by an increase in temperature with height.

Stratus- A flat, low, generally gray cloud layer with a fairly uniform base. Stratus may appear in the form of ragged patches, but otherwise does not exhibit individual cloud elements as do cumulus and stratocumulus clouds.

Striations- Grooves or channels in cloud formations, arranged parallel to the flow of air and therefore depicting the airflow relative to the parent cloud.

Sublimation- The change from ice directly to water vapor or from water vapor to ice without going through the liquid water phase.

Subsidence- Downward moving (sinking) air over a broad area that is associated with warming air and little cloud formation.

Subtropical Jet- The branch of the jet stream that is found in the lower latitudes.

Subtropical storm- A low pressure system that develops in subtropical waters (north of 20 north degrees latitude) and initially has non-tropical features (see table below for a list of tropical features) but does have some element of a tropical cyclone's cloud structure (located close to the center rather than away from the center of circulation).

Suction Vortex (sometimes Suction Spot) - A small but very intense vortex within a tornado circulation. Several suction vortices typically are present in a multiple-vortex tornado. Much of the extreme damage associated with violent tornadoes (F4 and F5 on the Fujita scale) is attributed to suction vortices.

Supercell Thunderstorm- A severe thunderstorm whose updrafts and downdrafts are in near balance allowing the storm to maintain itself for several hours. Supercells often produce large hail and tornadoes.

Supercooled Water- Water that stays in liquid form if undisturbed even though it has been cooled to a temperature below its normal freezing point.

Supersaturation- The condition which occurs in the atmosphere when the relative humidity is greater than 100 percent.

Surface Hoar- The deposition (sublimation) of ice crystals on a surface which occurs when the temperature of the surface is colder than the air above and colder than the frost point of that air.

Surface Pressure- The pressure that is read from a barometer but is not adjusted to sea level.

Surge - Rapid increase or decrease in flow or water level.

Sustained Winds- The wind speed obtained by averaging the observed values over a one minute period.

Synoptic Chart- Chart showing meteorological conditions over a region at a given time; weather map.

Synoptic Scale (Large 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.

TAF- A weather forecast for aircraft operations at an airport.

Tail Cloud- A low tail-shaped cloud extending outward from the northern quadrant of a wall cloud. Motions in the tail cloud are toward the wall cloud with rapid updraft at the junction of tail and wall cloud. This horizontal cloud is not a funnel or tornado.

Tail-end Charlie- The thunderstorm at the southernmost end of a squall line or other line or band of thunderstorms.

Temperate Zone- The area of the globe between the tropics and the polar regions.

Temperature- a measure of the warmth or coldness of an object or substance with reference to a standard value.

Terrestrial Radiation- The total infrared radiation emitted by the Earth.

Thermal- A small rising parcel of warm air produced when the earth's surface is unevenly heated.

Thermodynamics- In general, the relationships between heat and other properties (such as temperature, pressure, density, etc.) In forecast discussions, thermodynamics usually refers to the distribution of temperature and moisture (both vertical and horizontal) as related to the diagnosis of atmospheric instability.

Thermometer- An instrument for measuring temperature.

Theta-e (or Equivalent Potential Temperature) - The temperature a parcel of air would have if a) it was lifted until it became saturated, b) all water vapor was condensed out, and c) it was returned adiabatically (i.e., without transfer of heat or mass) to a pressure of 1000 millibars.

Theta-e Ridge- An axis of relatively high values of theta-e. Severe weather and excessive rainfall often occur near or just upstream from a theta-e ridge.

Thunder- The sound caused by a lightning stroke as it heats the air and causes it to rapidly expand.

Thunderstorm- A storm with lightning and thunder, produced by a cumulonimbus cloud, usually producing gusty winds, heavy rain and sometimes hail.

Tilted Storm or Tilted Updraft- A thunderstorm or cloud tower which is not purely vertical but instead exhibits a slanted or tilted character. It is a sign of vertical wind shear, a favorable condition for severe storm development.

Topography- Generally, the lay-out of the major natural and man-made physical features of the earth's surface. Bridges, highways, trees, rivers and fields are all components that make up this topography.

Tornadic Activity- The occurrence or disappearance of tornadoes, funnel clouds, or waterspouts.

Tornado- A violent rotating column of air, in contact with the ground, pendant from a cumulonimbus cloud. A tornado does not require the visible presence of a funnel cloud. It has a typical width of tens to hundreds of meters and a lifespan of minutes to hours.

Towering Cumulus- A large cumulus cloud with great vertical development, usually with a cauliflower-like appearance, but lacking the characteristic anvil shaped top of a Cb. (Often shortened to "towering cu," and abbreviated TCU.)

Trade Winds- Persistent tropical winds that blow from the subtropical high pressure centers towards the equatorial low. They blow northeasterly in the Northern Hemisphere.

Transverse Bands- Bands of clouds oriented perpendicular to the flow in which they are embedded. They often are seen best on satellite photographs. When observed at high levels (i.e., in cirrus formations), they may indicate severe or extreme turbulence.

Transverse Rolls- Elongated low-level clouds, arranged in parallel bands and aligned parallel to the low-level winds but perpendicular to the mid-level flow.

Triple Point- The intersection point between two boundaries (dry line, outflow boundary, cold front, warm front etc.), often a focus for thunderstorm development.

Tropical Air- An air mass that has warm temperatures and high humidities and develops over tropical or sub-tropical areas.

Tropical Depression- Tropical mass of thunderstorms with a cyclonic wind circulation and winds near the surface between 23 mph and 39 mph.

Tropical Disturbance- An organized mass of thunderstorms in the tropics than lasts for more than 24 hours, has a slight cyclonic circulation, and winds less than 23 mph.

Tropical Storm- An organized low pressure system in the tropics with wind speeds between 38 and 74 mph.

Tropical Wave- A kink or bend in the normally straight flow of surface air in the tropics which forms a low pressure trough, or pressure boundary, and showers and thunderstorms. Can develop into a tropical cyclone.

Tropics- The area of the globe from latitudes 23.5 degrees north to 23.5 degrees south.

Tropopause- The boundary between troposphere and the stratosphere. It is usually characterized by an abrupt change in temperature with height from positive (decreasing temperature with height) to neutral or negative (temperature constant or increasing with height).

Troposphere - The layer of the atmosphere from the earth's surface up to the tropopause, characterized by decreasing temperature with height. It's the layer of the atmosphere where most of the weather occurs.

Trough- An elongated area of relatively low atmospheric pressure surface or aloft. Usually not associated with a closed circulation, and thus used to distinguish from a closed low. The opposite of ridge.

Turbulence- Disrupted flow in the atmosphere that produces gusts and eddies. At times this can be violent and can cause the up and down movement of a plane.

Turkey Tower- A narrow, individual cloud tower that develops and falls apart rapidly.

Typhoon- A hurricane that forms in the Western Pacific Ocean.

Ultraviolet radiation- The energy range just beyond the violet end of the visible spectrum. Although ultraviolet radiation 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.

Unstable Air- Air that rises easily and can form clouds and rain.

Updraft- A small-scale current of rising air. This is often associated with cumulus and cumulonimbus clouds.

Upper Level System- 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.

Upslope Flow- Air that flows toward higher terrain, and hence is forced to rise. The added lift often results in widespread low cloudiness and stratiform precipitation if the air is stable, or an increased chance of thunderstorm development if the air is unstable.

Upstream- Toward the source of the flow, or located in the area from which the flow is coming.

UTC- Coordinated Universal Time. The time in the zero degree meridian time zone.

UVI- Ultraviolet Index

UVV- Upward Vertical Velocity.

Valley Breeze- System of winds that blow uphill during the day.

Vapor Pressure- The pressure exerted by water vapor molecules in a given volume of air

Variable Ceiling- A ceiling of less than 3,000 feet which rapidly increases or decreases in height by established criteria during the period of observation.

Veering Wind- Wind which changes in a clockwise direction with time at a given location (e.g., from southerly to westerly), or which change direction in a clockwise sense with height (e.g., southeasterly at the surface turning to southwesterly aloft). Veering winds with height are indicative of warm air advection (WAA).

Vertical Shear- The rate of change of wind speed or direction, with a given change in height.

Vertically-stacked System- A low-pressure system, usually a closed low or cutoff low, which is not tilted with height, i.e., located similarly at all levels of the atmosphere.

Vicinity- A proximity qualifier used to indicate weather phenomena observed between 5 and 10 statute miles of the usual point of observation but not at the station.

VIL- Vertically-Integrated Liquid water. A property computed by RADAP II and WSR-88D units that takes into account the three-dimensional reflectivity of an echo. The maximum VIL of a storm is useful in determining its potential severity, especially in terms of maximum hail size.

Visibility- The greatest horizontal distance an observer can see and identify a prominent object.

Virtual temperature- The temperature a parcel of air would have if the moisture in it were removed and its specific heat was added to the parcel.

Virga- Precipitation falling from the base of a cloud and evaporating before it reaches the ground.

Volcanic Ash- Fine particles of rock powder that originate from a volcano and that may remain suspended in the atmosphere for long periods.

Vort Max- (Short for vorticity maximum), a center, or maximum, in the vorticity field of an airmass.

Vorticity- A measure of the local rotation in a fluid flow. In weather analysis and forecasting, it usually refers to the vertical component of rotation (i.e., rotation about a vertical axis) and is used most often in reference to synoptic scale or mesoscale weather systems. By convention, positive values indicate cyclonic rotation.

Vortex- An atmospheric feature that tends to rotate. It has vorticity and usually has closed streamlines.

WAA: Warm Air Advection

Walker cell- A zonal circulation of the atmosphere confined to equatorial regions and driven principally by the oceanic temperature gradient. In the Pacific, air flows westward from the colder, eastern area to the warm, western ocean, where it acquires warmth and moisture and subsequently rises. A return flow aloft and subsidence over the eastern ocean complete the cell.

Wall Cloud- A local and often abrupt lowering of a rain-free cumulonimbus base into a low-hanging accessory cloud, from 1 to 4 miles in diameter. The wall cloud is usually situated in the southwest portion of the storm below an intense updraft marked by the main cumulonimbus cloud and associated with a very strong or severe thunderstorm. When seen from several miles away, many wall clouds exhibit rapid upward motion and rotation in the same sense as a tornado, except with considerably lower speed. A rotating wall cloud usually develops before tornadoes or funnel clouds by a time which can range from a few minutes up to possibly an hour.

Warm Advection- Transport of warm air into an area by horizontal winds. Low-level warm advection sometimes is referred to (erroneously) as overrunning.

Warm Front- A narrow transition zone separating advancing warmer air from retreating cooler air. The air behind a warm front is warmer and typically more humid than the air it is replacing.

Warning- Forecast issued when a particular weather or flood hazard is "imminent" or already occurring (e.g., tornado warning, flash flood warning). A warning is used for conditions posing a threat to life or property.

Watch- Forecast issued well in advance to alert the public of the possibility of a particular weather related hazard (e.g. tornado watch, flash flood watch). The occurrence, location and timing may still be uncertain.

Water- a transparent, odorless, tasteless liquid; composed of hydrogen and oxygen.

Water Equivalent- The liquid content of solid precipitation that has accumulated on the ground (snow depth). The accumulation may consist of snow, ice formed by freezing precipitation, freezing liquid precipitation, or ice formed by the refreezing of melted snow.

Water Vapor- Water substance in a gaseous state that comprises one of the most important of all the constituents of the atmosphere.

Waterspout- A rapidly rotating column of air extending from a cumulonimbus cloud with a circulation that reaches the surface of the water, (i.e. a tornado over water).

Wave- In meteorology any pattern identifiable on a weather map that has a cyclic pattern, or, a small cyclonic circulation in the early stages of development that moves along a cold front.

Wave Crest- The highest point in a wave.

Wave Trough- The lowest point in a wave.

Wavelength- Physical distance of one period (wave repeat).

Weather- State of the atmosphere with respect to heat or cold, wetness or dryness, calm or storm, clearness or cloudiness. Also, weather is the meteorological day-to-day variations of the atmosphere and their effects on life and human activity. It includes temperature, pressure, humidity, clouds, wind, precipitation and fog.

Weather Balloon- Large balloon filled with helium or hydrogen that carries a radiosonde (weather instrument) aloft to measure temperature pressure and humidity as the balloon rises through the air. It is attached to a small parachute so that when the balloon inevitably breaks, the radiosonde doesn't hurtle back to earth dangerously quickly.

Weather Synopsis- a description of weather patterns affecting a large area.

Wedge (or Wedge Tornado) - A large tornado with a condensation funnel that is at least as wide (horizontally) at the ground as it is tall (vertically) from the ground to cloud

base.

Whiteout- A condition caused by falling and/or blowing snow that reduces visibility to nothing or zero miles; typically only a few feet. Whiteouts can occur rapidly often blinding motorists and creating chain-reaction crashes involving multiple vehicles. Whiteouts are most frequent during blizzards.

Wind- Air in motion relative to the surface of the earth.

Wind Advisory- Issued for sustained winds 31 to 39 mph for at least 1 hour or any gusts 46 to 57 mph. However, winds of this magnitude occurring over an area that frequently experiences such winds would not require the issuance a wind advisory.

Wind Aloft- The wind speeds and wind directions at various levels in the atmosphere above the area of surface.

Wind Chill- The additional cooling effect resulting from wind blowing on bare skin. The wind chill is based on the rate of heat loss from exposed skin caused by the combined effects of wind and cold. The (equivalent) wind chill temperature is the temperature the body "feels" for a certain combination of wind and air temperature

Wind Chill Factor- The apparent temperature which describes the cooling effect on exposed skin by the combination of temperature and wind, expressed as the loss of body heat. Increased wind speed will accelerate the loss of body heat.

Wind Chill Advisory- Issued when the wind chill index is expected to be between -25F and -39F for at least 3 hours. This is using the wind chill of the sustained wind, not gusts.

Wind Chill Warning- Issued when life-threatening wind chills of -40F or colder are expected for at least 3 hours. This is using the wind chill of the sustained wind, not gusts.

Wind Direction- The direction from which the wind is blowing.

Wind Shear- Variation in wind speed and/or direction over a short distance. Shear usually refers to vertical wind shear, i.e., the change in wind with height, but the term also is used in Doppler radar to describe changes in radial velocity over short horizontal distances.

Wind Speed- The rate at which air is moving horizontally past a given point. It may be a 2-minute average speed (reported as wind speed) or an instantaneous speed (reported as a peak wind speed, or gust).

Wind Vane- An instrument that determines the direction from which a wind is blowing.

Wind Wave- A wave that is caused by the action of wind on the surface of water.

Windward- Upwind, or the direction from which the wind is blowing; the opposite of leeward.

Wiresonde- an atmospheric sounding instrument that is used to obtain temperature and humidity information between ground level and height of a few thousand feet; this instrument is supported by a captive balloon while traveling from the ground level.

World Meteorological Organization (WMO)- A specialized UN agency responsible for the establishment of meteorological stations and networks, and the monitoring of meteorological observations.

Wrapping Gust Front- A gust front which wraps around a mesocyclone, cutting off the inflow of warm moist air to the mesocyclone circulation and resulting in an occluded mesocyclone.

Zigzag Lightning- ordinary lightning of a cloud-to-ground discharge that appears to have a single lightning channel.

Zodiac- the position of the sun throughout a year as it appears to move through successive star groups or constellations.

Zonal Flow (Zonal Wind)- Large-scale atmospheric flow in which the east-west component (i.e., latitudinal) is dominant.

Zone Of Maximum Precipitation- The belt of elevation at which the annual precipitation is greatest in a mountain region.