Glossary of Fire Weather Terms

CUMULUS BUILDUPS

Clouds which develop vertically due to unstable air. Characterized by their cauliflower-like or tower-like appearance of moderately large size (Stage 2 or better).

DEEPENING

A decrease in the central pressure of a surface low pressure system. The storm is intensifying.

DRY THUNDERSTORMS

Generally a high-based thunderstorm when lightning is observed, but little if any precipitation reaches the ground. Most of the rain produced by the thunderstorm evaporates into relatively dry air beneath the storm cell. May also be referred to as "dry lightning".

FILLING

The opposite of deepening. A general increase in the central pressure of a low pressure system.

FIRE WEATHER WATCH

Fire Weather watches are issued to alert land management agencies of the possible development of weather conditions - when coupled with critically dry or volatile fuel conditions - that may contribute to potentially dangerous wildfire conditions. A Fire Weather watch will be issued when the fire weather forecaster is reasonably confident that a Red Flag event will occur within the next 24 to 72 hours.

FORECAST PERIODS

Today.....Sunrise to sunset

This afternoon.....noon till 6 p.m.

This evening.....6 p.m. till sunset

Tonight.....sunset till sunrise

Tomorrow.....sunrise to sunset of the following day

FRONTS

The boundary area between two different air masses, usually where temperature, humidity, wind, and pressure change most rapidly with time and distance. In a cold front, colder air replaces existing warmer air. Normally, cold fronts produce more violent weather than warm fronts, especially with regards to winds.

HIGH PRESSURE RIDGE

A large area of clockwise circulating air generally characterized by broad scale subsidence or sinking air. The subsiding air is responsible for warm, dry conditions and a general lack of cloudiness.

HAINES INDEX

A Lower Atmospheric Stability Index used to forecast the potential for large fire growth and/or erratic fire behavior. The Haines Index focusses on dry, unstable air, whereas most conventional atmospheric stability indices key on moist, unstable air.

HEAT LOW

See Thermal Trough

HUMIDITY RECOVERY

The change in relative humidity over a given period of time; generally between late evening and sunrise. The moisture change in the fine fuels during this period is directly related to the amount of humidity recovery.

INVERSIONS

A condition in which temperature increases with height through a layer of the atmosphere. Vertical motion is restricted in this very stable air mass. Inversions are common during late night and early morning hours - especially in mountainous terrain - during the summer on clear nights. This type of inversion usually dissipates with daytime heating. Inversions aloft caused by large scale subsidence may persist for several days.

LOW PRESSURE

A large area of rising air through a relatively deep layer of the atmosphere. As the air rises, it cools and condenses water vapor into clouds and precipitation.

MARINE PUSH

A replacement of the current air mass with air from off the ocean. Temperatures are much cooler and relative humidities much higher.

MIXING HEIGHTS

A term used in smoke management forecasts. It represents the top of the layer through which relatively vigorous mixing will take place. This is the height at which smoke loses its buoyancy and stops rising. It will then move off with the prevailing wind direction at that level.

LALs

(**L**)ightning (**A**)ctivity (**L**)evels numbered 1 through 6.

LAL 1 - No thunderstorms.

LAL 2 - Few building cumulus with isolated thunderstorms.

LAL 3 - Much building cumulus with scattered thunderstorms. Light to moderate rain.

LAL 4 - Thunderstorms common. Moderate to heavy rain reaching the ground.

LAL 5 - Numerous thunderstorms. Moderate to heavy rain reaching the ground.

LAL 6 - Dry lightning (same as LAL 3 but without the rain).

PRECIPITATION DURATION

Brief.....of short duration**.**

Occasional.....occurring at irregular intervals**.**

Intermittent.....occurring at periodic intervals**.**

Frequent.....occurring quite often at close intervals.

PRECIPITATION INTENSITY

Very Light.....less than .01 of an inch per hour.

Light.....less than .10 of an inch per hour.

Moderate.....**.**10 to .30 of an inch per hour.

Heavy.....greater than .30 inch per hour.

PRESSURE GRADIENTS

The change in value of atmospheric pressure per unit distance. The greater the change in pressure per unit distance, the stronger the pressure gradient, and the stronger the wind.

POPs

(**P**)robability (**o**)f (**P**)recipitation.

Slight Chance .....10-20% chance

Chance .....30-40% chance

Good chance .....50% chance

Likely .....60-70% chance

No remark .....80% or greater

RED FLAG WARNING

Highlight statement used in the fire weather forecast to alert land management agencies of the onset , or possible onset, of critical weather and fuel moisture conditions which could lead to rapid or dramatic increase in wildfire activity. This could be due to strong winds, dry lightning, dry cold fronts, etc.

RESIDUAL MOISTURE

Atmospheric moisture which lingers over an area after the main weather system has departed.

SHOWER TERMINOLOGY

Isolated or few.....Less than 15% areal coverage

Widely scattered.....15-24%areal coverage

Scattered.....25-54% areal coverage

Numerous.....55-74% areal coverage

Widespread.....55-74% areal coverage

No qualifying remark.....75% or greater areal coverage

SKY COVER TERMINOLOGY

Clear...Zero to 1/10th opaque cloud cover.

Mostly sunny...The prevailing condition is sunny but some clouds may be present either over a portion of the area or for a short time over the entire area. 1/10th to 3/10ths cloud cover.

Fair.....Less than 4/10ths of the sky is covered by opaque clouds. No precipitation. No extreme weather.

Partly Cloudy/Partly Sunny...3/10ths to 7/10ths of the sky will be covered by opaque clouds.

Mostly Cloudy/Considerable Cloudiness...Cloudiness will be subject to some variability in amount or location. 7/10th to 10/10ths of the sky will be covered by opaque clouds.

Cloudy...The sky is essentially covered with clouds throughout the forecast period.

Variable Cloudiness/Occasionally Cloudy...An irregular condition in which cloud cover increases or decreases several times during the forecast period.

SMOKE DISPERSAL

Describes the ability of the atmosphere to ventilate smoke. Depends on the stability and winds in the lower layers of the atmosphere, i.e., a combination of mixing heights and transport winds.

SPLIT FLOW

A flow pattern high in the atmosphere characterized by diverging winds. Storms moving along in this type of flow pattern will usually weaken.

STABLE CONDITIONS

A temperature/height relationship that tends to suppress vertical motion. This condition will minimize convective activity, including vertical development of cumulus clouds, which might otherwise lead to shower activity. An inversion is a very stable condition which may trap smoke or fog near the earth's surface. Stable conditions are not favorable for turbulent surface winds or erratic fire behavior.

SUBSIDENCE

Sinking air usually found around high pressure systems. Strong subsidence leads to very warm, dry air aloft, often appearing at high elevations first. It may arrive at day or night. Poor humidity recovery at higher elevations is usually a sign of strong subsidence.

TEMPERATURE RECOVERY

The change in temperature over a given period of time. Generally, the period between late evening and sunrise. Windy or cloudy conditions will tend to produce slow temperature recovery, while clear, calm weather can cause rapid recovery.

THERMAL TROUGH OR HEAT LOW

An area of low pressure caused by very warm, dry air. Heat lows or thermal troughs often build north along the California and Oregon coasts in the summer. Thermal troughs can cause "east winds" in the Washington and Oregon Cascades. If however, a relatively strong disturbance in the upper atmosphere moves across the NW, it will force the thermal trough east of the Cascades. In most cases, a moderate to strong push of marine air will follow, along with strong, gusty, west winds along the east slopes of the Cascades. Gusty winds and thunderstorms can be associated with the passage of a thermal trough.

TRENDS

This term refers to the changes in temperature, relative humidity, wind speed, and fuel moisture between one day and the next. The trends delineated in the daily narrative forecasts are area wide averages for the extreme part of the day. These should not be confused with NFDRS trends for a particular zone at a particular time of the day (1300 LST).

UNSTABLE CONDITIONS

A temperature/height relationship in the atmosphere which favors vertical motion and is usually associated with cumulus clouds and possible shower or thundershower activity. Unstable conditions are favorable for turbulent surface winds and erratic fire behavior. Smoke generally disperses well in an unstable atmosphere.

UPPER LEVEL RIDGE OR UPPER LEVEL TROUGHS

Often referred to as a high or low aloft. They occur in the upper levels of the atmosphere and may or may not be reflected at the surface.

WETTING RAIN

An appreciable amount of continuous rainfall over a broad area. Usually greater than .10 inches.

WINDS

Eye Level.....Wind speed and direction measure at eye level.

Surface Wind (20 ft)..... Air movement measured at 20 feet above the average vegetative cover. Averaged over a 10 minute period. Unless otherwise noted, this is the wind referred to in the general weather forecast.

Mid-Flame..... The wind that acts directly on the flaming fire front at a level one-half the flame height.

Free Air.....The wind speed and direction at a level in the atmosphere free from the effects of friction and terrain.

Drainage..... Normal nighttime airflow directed downslope or downvalley, caused by cooling of the air near the earth's surface. Air sinking toward lower elevations is usually quite gentle (light) in nature.

Transport.....The mean wind speed and direction of all measured winds within the mixed layer.

http://www.wa.gov/dnr/htdocs/rp/WGLOSRY.htm