Glossary

Atmospheric Pressure – The pressure exerted by the atmosphere at a given point. Its measurement can be expressed in several ways, including millibars and inches of mercury (Hg). Average sea level pressure is 1013.25 millibars or 29.92 inches of mercury. A drop in atmospheric pressure usually indicates the approach of a storm, such as a hurricane.

Barometric Pressure – The pressure exerted by the atmosphere at a given point (as measured by a barometer). It can be measured in millibars or inches of mercury, among others. Watching a barometer for a drop in atmospheric pressure helps forecasters determine when a hurricane is approaching.

Cold Wake: caused by mixing of colder water below warmer oceanic mixed layer through upwelling; the phenomenon of ocean cooling in the wake of a tropical cyclone passing.

Convection: In weather processes, there is circulation of fluid (air) that serves to equalize temperatures. An example is air flow between ocean and land during day and during night. Hurricanes use warm ocean waters for convection, often allowing for an increase in strength. Warmer water allows for an increase in storm strength.

Convergence: The net flow of a fluid into a given region. In a cyclone, it refers to wind movement resulting in horizontal inflow of air toward a low pressure center. Wind movement that results in a horizontal inflow of air into a particular region, such as toward the low pressure center of a hurricane. Convergent winds at lower levels are cause upward motion. In a hurricane, convergent air rises and fuels storm strength by carrying warm air upward through the storm.

Coriolis Effect – A force per unit mass that arises solely from the earth's rotation, acting to deflect fluid parcels that are in motion. The Coriolis Effect is dependent on the latitude and the speed of the moving object. The Coriolis Effect is stronger at higher latitudes and is equal to zero at the equator. Hurricanes can't cross the equator because a steadily decreasing Coriolis Effect will stop the storm from spinning. In the Northern Hemisphere, Coriolis' deflecting force causes air and water to deflect to the right of its path, while in the Southern Hemisphere they are deflected to the left of their path. This is the effect that causes a hurricane to rotate counter-clockwise (or have cyclonic motion.) Ocean currents in the Northern Hemisphere such as the Gulf Stream are deflected to the right as well.

Eddy: a circular movement of water usually formed where currents pass obstructions, or between two adjacent currents flowing in opposite directions, or along the edge of a permanent current.

Eye – The center of a tropical storm or hurricane, with a roughly circular area of light winds and rain-free skies. An eye will usually develop when the maximum sustained wind speeds exceed 78 mph. It can range in size from 5 miles to 60 miles in diameter, but the average size is 20 miles. When the eye begins to shrink in size, the storm is

usually intensifying. Highly organized storms have a smaller eye which indicates greater intensity.

Fetch – The area over which the wind blows steadily. The greater the fetch, the greater the wave height. In a hurricane, fetch, wind speed, and wind direction associated with the storm will determine the storm surge as the storm moves landward.

Front - A front is defined as the transition zone or boundary between two air masses of different density. Fronts extend not only in the horizontal direction, but in the vertical as well. Therefore, when referring to the frontal surface (or frontal zone), we referring to both the horizontal and vertical components of the front.

Gale: On the Beaufort Wind Scale, defined as winds with speeds from 28 to 55 knots (32-63 mph). Gale force winds are often associated with the outer portion hurricanes.

Hurricane: A tropical cyclone in which maximum sustained surface wind is 74 mph (64 knots or greater in the North Atlantic Ocean, Caribbean Sea, Gulf of Mexico, and in the eastern North Pacific Ocean. (Tropical cyclones are known as typhoons in the western Pacific and cyclones in the Indian Ocean.)

Isopycnals: a line drawn on a map connecting all points having the same density, as of water or air

Latent heat: The energy released or absorbed during a change of state, for example, in changing from a liquid to a gas. In a hurricane, latent heat comes from warm ocean water that is turned to steam providing energy to the storm. This is one ingredient needed to form & strengthen a hurricane.

Low Pressure System: An area of a relative pressure minimum that has converging winds and rotates in the same direction as the earth. This is counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere. Also known as a cyclone.

Mixed layer: the surface later of water, seasonally varying in thickness, that is at almost uniform temperature owing to agitation by waves and wind

Salinity freshening: the gradual decrease in salinity in an ocean basin; an indirect but potentially sensitive indicator for detecting changes in precipitation, evaporation, river runoff and ice melt.

Storm Surge: An abnormal rise of the sea along a shore as the result, primarily, of the winds of a storm.

Thunderstorm: Produced by a cumulonimbus cloud, it is a microscale event of relatively short duration characterized by thunder, lightning, gusty surface winds, turbulence, precipitation (including hail in larger systems), moderate to extreme up and downdrafts, and under the most severe conditions, tornadoes.

Tornado: A violently rotating column of air in contact with and extending between a

convective cloud and the surface of the earth. It is the most destructive of all storm-scale atmospheric phenomena. They can occur anywhere in the world given the right conditions, but are most frequent in the United States in an area bounded by the Rockies on the west and the Appalachians in the east. Waterspouts are tornadoes that form over water.

Tropical Cyclone: A warm- core low pressure system which develops over tropical, and sometimes subtropical, waters and has an organized circulation. Depending on sustained surface winds, the system is classified as a (1) tropical disturbance, (2) a tropical depression, (3) a tropical storm, or (4) a hurricane or typhoon.

Tropical Depression: A tropical cyclone in which the maximum sustained surface winds are 38 miles per hour (33 knots) or less. Characteristically having one or more closed isobars, it may form slowly from a tropical disturbance or an easterly wave which has continued to organize.
This is two stages before hurricane.

Tropical Disturbance – A moving area of thunderstorms in the Tropics that maintains its identity for 24 hours or more. A common phenomenon in the tropics.

Tropical Storm: A tropical cyclone in which the maximum sustained surface winds are from 39 miles per hour (34 knots) to 73 miles per hour (63 knots). Once a tropical wave has become a tropical storm, it is given a name to identify and track it. This is one stage before hurricane.

Tropical Waters: Ocean waters within 23 degrees latitude of the equator. In the western Atlantic, these waters are warm year-round. When a hurricane is moving through these waters, it is considered a tropical cyclone.

Wind Shear: The rate of change of wind speed or direction with distance. Vertical wind shear is the rate of change of the wind with respect to altitude. Horizontal wind shear is the rate of change on a horizontal plane. In a hurricane, vertical wind shear can cause significant weakening of the system.