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G

Gusts- A rapid fluctuation of wind speed with variations of 10 knots or more between peaks and lulls.

G/KG

Grams per Kilogram

Gage

In hydrologic terms,
 1) A device for indicating the magnitude or position of a thing in specific units, when such magnitude or position undergoes change, for example: The elevation of a water surface, the velocity of flowing water, the pressure of water, the amount or intensity of precipitation, the depth of snowfall, etc.
 (2) The act or operation of registering or measuring the magnitude or position of a thing when these characteristics are undergoing change.
 (3) The operation, including both field and office work, of measuring the discharge of a stream of water in a waterway.

Gage Datum

A horizontal surface used as a zero point for measurement of stage or gage height. This surface usually is located slightly below the lowest point of the stream bottom such that the gage height is usually slightly greater than the maximum depth of water. Because the gage datum is not an actual physical object, the datum is usually defined by specifying the elevations of permanent reference marks such as bridge abutments and survey monuments, and the gage is set to agree with the reference marks. Gage datum is a local datum that is maintained independently of any national geodetic datum. However, if the elevation of the gage datum relative to the national datum (North American Vertical Datum of 1988 or National Geodetic Vertical Datum of 1929) has been determined, then the gage readings can be converted to elevations above the national datum by adding the elevation of the gage datum to the gage reading.

Gaging Station

In hydrologic terms, a particular site on a watercourse where systematic observations of stage/ and or flow are measured.

Gale

An extratropical low or an area of sustained surface winds of 34 (39 mph) to 47 knots (54 mph).

Gale Warning

A warning of sustained surface winds, or frequent gusts, in the range of 34 knots (39 mph) to 47 knots (54 mph) inclusive, either predicted or occurring, and not directly associated with a tropical cyclone.

Gale Watch

A watch for an increased risk of a gale force wind event for sustained surface winds, or frequent gusts, of 34 knots (39 mph) to 47 knots (54 mph), but its occurrence, location, and/or timing is still uncertain.

Gallery

In hydrologic terms, a passageway within the body of a dam or abutment.

Gamma

A unit of magnetic field intensity equal to 1×10.0^{-5} Gauss; also equal to 1 nanotelsa (nT).

Gamma Ray

A type of electromagnetic radiation with a very short wavelength and high energy level. Generally, emitted during radioactive decay of a substance.

Gap Winds

Strong winds channeled through gaps in the Pacific coastal ranges, blowing out into the Pacific Ocean or into the waterways of the Inside Passage. The winds blow through low passes where major river valleys issue onto the seaways when strong east-west pressure gradients exist between the coast and the inland areas, with low pressure over the ocean.

Gas Laws

- The thermodynamic laws pertaining to perfect gases, including Boyle's law, Charles' law, Dalton's law and the equation of state.
- Gate**
In hydrologic terms, a device in which a leaf or member is moved across the waterway from an external position to control or stop flow. There are many different kinds of gates used on a dam
- Gauss**
The unit of magnetic induction in the cgs (centimeter-gram- second) system
- Gaussian Plume Model**
A computer model used to calculate air pollution concentrations. The model assumes that a pollutant plume is carried downwind from its emission source by a mean wind and that concentrations in the plume can be approximated by assuming that the highest concentrations occur on the horizontal and vertical midlines of the plume, with the distribution about these mid-lines characterized by Gaussian- or bell-shaped concentration profiles.
- Gaussian Puff Model**
A model used to calculate air pollution concentrations. The model assumes that a continuously emitted plume or instantaneous cloud of pollutants can be simulated by the release of a series of puffs that will be carried in a time- and space-varying wind field. The puffs are assumed to have Gaussian or bell-shaped concentration profiles in their vertical and horizontal planes.
- GDR**
On a buoy report, direction, in degrees clockwise from true North, of the GSP, reported at the last hourly 10-minute segment.
- GEMPAK**
General Environmental Meteorological Package (programming language)
- GEN**
General
- General Circulation**
The totality of large-scale organized motion for the entire global atmosphere.
- General Circulation Models**
(GCMs) - These computer simulations reproduce the Earth's weather patterns and can be used to predict change in the weather and climate.
- General Wind**
Land management agency term for winds produced by synoptic-scale pressure systems on which smaller-scale or local convective winds are superimposed.
- Geohydrology**
In hydrologic terms, the branch of hydrology relating to subsurface, or subterranean waters.
- Geomagnetic Elements**
In solar-terrestrial terms, the components of the geomagnetic field at the surface of the earth. In SESC use, the northward and eastward components are often called the H and D components, where the D component is expressed in gammas and is derived from D (the declination angle) using the small angle approximation.
- Geomagnetic Field**
The magnetic field observed in and around the earth. The intensity of the magnetic field at the earth's surface is approximately 0.32 gauss at the equator and 0.62 gauss at the north pole
- Geomagnetic Storm**
In solar-terrestrial terms, a worldwide disturbance of the earth's magnetic field, distinct from regular diurnal variations.
Minor Geomagnetic Storm: A storm for which the Ap index was greater than 29 and less than 50.
Major Geomagnetic Storm: A storm for which the Ap index was greater than 49 and less than 100.
Severe Geomagnetic Storm: A storm for which the Ap index was 100 or more.
Initial Phase: Of a geomagnetic storm, that period when there may be an increase of the middle-latitude horizontal intensity (H).
Main Phase: Of a geomagnetic storm, that period when the horizontal magnetic field at middle latitudes is generally decreasing.
Recovery Phase: Of a geomagnetic storm, that period when the depressed northward field component returns to normal levels.
- Geophysical Events**
In solar-terrestrial terms, flares (Importance two or larger) with Centimetric Outbursts (maximum of the flux higher than the Quiet Sun flux, duration longer 10 minutes) and/or strong SID. Sometimes these flares are followed by Geomagnetic Storms or small PCA. (Class M Flares)
- Geophysics**
In hydrologic terms, the study of the physical characteristics and properties of the earth; including geodesy, seismology, meteorology, oceanography, atmospheric electricity,

- terrestrial magnetism, and tidal phenomena.
- Geopotential Height**
The height above sea level of a pressure level. For example, if a station reports that the 500 mb height at its location is 5600 m, it means that the level of the atmosphere over that station at which the atmospheric pressure is 500 mb is 5600 meters above sea level. This is an estimated height based on temperature and pressure data.
- Geostationary Satellite**
A satellite that rotates at the same rate as the earth, remaining over the same spot above the equator.
- Geostrophic Wind**
A wind that is affected by coriolis force, blows parallel to isobars and whose strength is related to the pressure gradient (i.e., spacing of the isobars).
- Geosynchronous**
Term applied to any equatorial satellite with an orbital velocity equal to the rotational velocity of the earth. The net effect is that the satellite is virtually motionless with respect to an observer on the ground
- GF**
Ground Fog- Fog produced over the land by the cooling of the lower atmosphere as it comes in contact with the ground. Also known as radiation fog, and in parts of California as tule fog.
- GFS**
(Global Forecast System) One of the operational forecast models run at NCEP. The GFS is run four times daily, with forecast output out to 384 hours.
- GIS**
Geographic Information System. A computer-based graphics program that allows the superposition of plan-maps of thematic elements, such as roads, rivers, land use patterns, and the like to aid in local or regional planning activities.
- Glaciation**
The transformation of cloud particles from water drops to ice crystals. Thus, a cumulonimbus cloud is said to have a "glaciated" upper portion.
- Glacier**
In hydrologic terms, bodies of land ice that consist of recrystallized snow accumulated on the surface of the ground, and that move slowly downslope.
- Glacier Dammed Lake**
In hydrologic terms, the lake formed when a glacier flows across the mouth of an adjoining valley and forms an ice dam.
- Glacier Wind**
A shallow downslope wind above the surface of a glacier, caused by the temperature difference between the air in contact with the glacier and the free air at the same altitude. The glacier wind does not reverse diurnally like slope and along-valley wind systems.
- Glaze**
Ice formed by freezing precipitation covering the ground or exposed objects.
- GLF**
(Open Lakes Forecast) - A National Weather Service marine forecast product for the U.S. waters within a Great Lake not including the waters covered by an existing Nearshore Waters Forecast (NSH). When the seasonal Nearshore forecast is not issued, the Open Lake forecast includes a forecast of nearshore waters.
- Global Forecast System**
(GFS)- One of the operational forecast models run at NCEP. The GFS is run four times daily, with forecast output out to 384 hours.
- Global Temperature Change**
The net result of four primary factors including the greenhouse effect, changes in incoming solar radiation, altered patterns of ocean circulations, and changes in continental position, topography and/or vegetation. Three feedback mechanisms which affect global temperature change include cloud height and amount, snow and ice distribution, and atmospheric water vapor levels.
- Global Warming**
An overall increase in world temperatures which may be caused by additional heat being trapped by greenhouse gases.
- Glory**
An optical effect characterized by concentric rings of color (red outermost and violet innermost) surrounding the shadow of an observer's head when the shadow is cast onto a cloud deck below the observer's elevation (see Brocken specter).
- GLS**
(Great Lakes Storm Summary) A National Weather Service forecast product providing updated information whenever a storm warning is in effect on any of the Great Lakes.
- GMDSS**
(Global Maritime Distress and Safety System)- The Global Maritime Distress and Safety System (GMDSS) is intended to provide more effective and efficient emergency and

- safety communications and disseminate Maritime Safety Information (MSI) to all ships on the world's oceans regardless of location or atmospheric conditions. MSI includes navigational warnings, meteorological warnings and forecasts, and other urgent safety related information. GMDSS goals are defined in the International Convention for The Safety Of Life At Sea (SOLAS). The National Weather Service participates directly in the GMDSS by preparing meteorological forecasts and warnings for broadcast via NAVTEX and SafetyNET.
- GMN**
On a buoy report, the minute of the hour that the GSP occurred, reported at the last hourly 10-minute segment.
- GMT**
Greenwich Mean Time (now known as Universal Coordinated Time)
- GND**
Ground
- GNRL**
General
- GOES**
Geostationary Operational Environmental Satellite- Satellites orbiting at 22,370 miles above the Equator with the same rotational velocity as the Earth; therefore, the satellite remains over the same location on the Earth 24 hours a day. Besides sending back satellite pictures to earth, it also relays the DCPs river and rainfall data back to the ground
- GoMoos**
Gulf Of Maine Ocean Observing System
- GPS**
An acronym for Global Positioning System. A network of satellites which provide extremely accurate position and time information. Useful in remote locations or for moving platforms.
- GRAD**
Gradient- A rate of change with respect to distance of a variable quantity, as temperature or pressure, in the direction of maximum change.
- Gradient**
(abbrev. GRAD) A rate of change with respect to distance of a variable quantity, as temperature or pressure, in the direction of maximum change.
- Gradient High Winds**
These high winds usually cover a large area and are due to synoptic-scale, extra-tropical low pressure systems.
- Gradual Commencement**
In solar-terrestrial terms, the commencement of a geomagnetic storm that has no well-defined onset
- Granulation**
In solar-terrestrial terms, the cellular structure of the photosphere visible at high spatial resolution.
- Graupel**
Same as snow pellets or small hail.
- Gravity Dam**
In hydrologic terms, a concrete structure proportioned so that its own weight provides the major resistance to the forces exerted on it.
- Gravity Wave**
A wave created by the action of gravity on density variations in the stratified atmosphere. A generic classification for lee waves, mountains waves, and many other waves that form in the atmosphere.
- Graybody**
A hypothetical "body" that absorbs some constant fraction of all electromagnetic radiation incident upon it.
- GRDL**
Gradual
- Great Circle Track**
A great-circle track is the shortest distance between two points on a sphere, and when viewed on a 2-dimensional map the track will appear curved. Swell waves travel along routes that mark out great circles.
- Great Lakes Faxback**
Dissemination systems housed at Weather Forecast Office (WFO) Cleveland by which Great Lakes customers request and receive hard copies of selected marine products.
- Great Lakes Freeze-Up/Break-Up Outlook**
(FBO) - A National Weather Service product to keep mariners informed of the projected freeze-up date or break-up date of ice on the Great Lakes.
- Great Lakes Marine Forecast (MAFOR)**
A National Weather Service coded summary appended to each of the Great Lakes Open Lakes forecasts.

Great Lakes Storm Summary

(GLS) - A National Weather Service forecast product providing updated information whenever a storm warning is in effect on any of the Great Lakes.

Great Lakes Weather Broadcast

(LAWEB) - A National Weather Service product containing an observation summary prepared to provide Great Lakes mariners with a listing of weather observations along or on the Lakes.

Green Line

The green line is one of the strongest (and first-recognized) visible coronal lines. It identifies moderate temperature regions of the CORONA.

Greenhouse Effect

Atmospheric heating caused by solar radiation being readily transmitted inward through the earth's atmosphere but longwave radiation less readily transmitted outward, due to absorption by certain gases in the atmosphere.

Greenhouse Gases

The gases that absorb terrestrial radiation and contribute to the greenhouse effect; the main greenhouse gasses are water vapor, methane, carbon dioxide, and ozone.

GRIB

(Gridded Binary Format) - A format used for meteorological data. Typically used in the past for computer generated model data but will be used increasingly in the future for forecaster generated data.

Grids

1) Squared off areas across the terrain used to define forecast areas. Often 5x5 or 2.5x2.5 kilometer in size. 2) Digital forecast databases for meteorological elements, including temperature, wind direction, wind speed and others. Computer programs read these databases to create worded and graphical forecast products used by the public and others.

Ground Blizzard Warning

When blizzard conditions are solely caused by blowing and drifting snow.

Ground Clutter

A pattern of radar echoes from fixed ground targets (buildings, hills, etc.) near the radar. Ground clutter may hide or confuse precipitation echoes near the radar antenna.

Ground Fog

(abbrev. GF) Fog produced over the land by the cooling of the lower atmosphere as it comes in contact with the ground. Also known as radiation fog, and in parts of California as tule fog.

Ground Heat Flux

The flux of heat from the ground to the earth's surface; a component of the surface energy budget.

Ground receive sites

In hydrologic terms, a satellite dish and associated computer which receives signals from the GOES satellite, decodes the information, and transmits it to a another site for further processing. The GOES satellite ground-receive site is located at Wallops Island, VA; and the information is relayed to a mainframe computer at NWSH for processing.

Ground Stroke

The current that propagates along the ground from the point where a direct stroke of lightning hits the ground.

Ground Water

In hydrologic terms, water within the earth that supplies wells and springs; water in the zone of saturation where all openings in rocks and soil are filled, the upper surface of which forms the water table. Also termed Phreatic water.

Ground Water Divide

In hydrologic terms, A line on a water table where on either side of which the water table slopes downward. It is analogous to a drainage divide between two drainage basins on a land surface

Ground Water Flow

In hydrologic terms, streamflow which results from precipitation that infiltrates into the soil and eventually moves through the soil to the stream channel. This is also referred to as baseflow, or dry-weather flow

Ground Water Hydrology

The branch of hydrology that specializes in ground water; its occurrence and movements; its replenishment and depletion; the properties of rocks that control ground water movement and storage; and the methods of investigation and utilization of ground water

Ground Water Outflow

In hydrologic terms, the part of the discharge from a drainage basin that occurs through the ground water. The term "underflow" is often used to describe the ground water outflow that takes place in valley alluvium (instead of the surface channel) and thus is not measure at a gaging station.

Ground Water Overdraft

- Pumpage of ground water in excess of safe yield.
- Ground Water Runoff**
That part of the runoff which has passed into the ground, has become ground water, and has been discharged into a stream channel as spring, or seepage water.
- Grounded ice**
In hydrologic terms, ice that has run aground or is contact with the ground underneath it
- Group Velocity**
The speed at which a particular wave front or swell train advances.
- Grout Curtain**
A barrier produced by injecting grout into a vertical zone, usually narrow (horizontally), and in the foundation to reduce seepage under a dam
- Growing Degree Day**
The number of degrees that the average temperature is above a baseline value. For example, 40 degrees for canning purposes; 45 degree for potatoes; and 50 degrees for sweet corn, snap beans, lima beans, tomatoes, grapes, and field corn. Every degree that the average temperature is above the baseline value becomes a growing degree day. Agricultural related interests use growing degree days to determine planting times.
- Growing Season**
the period of time between the last killing frost of spring and the first killing frost of autumn.
- Growler**
Similar to a bergy bit, but smaller, extending less than 1 meter above the sea surface and occupying an area of 20 square meters or less.
- GRT**
great
- GRTST**
Greatest
- GSP**
On a buoy report, maximum 5-second peak gust during the measurement hour, reported at the last hourly 10-minute segment.
- GST**
On a buoy report, peak 5 or 8 second gust speed (m/s) measured during the eight-minute or two-minute period. The 5 or 8 second period can be determined by payload.
- GSTY**
Gusty
- GTR**
Greater
- Gulf Stream**
Warm water current extending from the Gulf of Mexico and Florida up the U.S. east coast then east northeast to Iceland and Norway.
- Gunge**
Slang for anything in the atmosphere that restricts visibility for storm spotting, such as fog, haze, precipitation (steady rain or drizzle), widespread low clouds (stratus), etc.
- Gust**
(Abbrev. G) - A rapid fluctuation of wind speed with variations of 10 knots or more between peaks and lulls.
- Gust Front**
The leading edge of gusty surface winds from thunderstorm downdrafts; sometimes associated with a shelf cloud or roll cloud. See also gustnado or outflow boundary.
- Gustnado**
(or Gustinado) - A gustnado is a small, whirlwind which forms as an eddy in thunderstorm outflows. They do not connect with any cloud-base rotation and are not tornadoes. Since their origin is associated with cumuliform clouds, gustnadoes will be classified as Thunderstorm Wind events. Like dust devils, some stronger gustnadoes can cause damage.
- Gyres**
Oceanic current systems of planetary scale driven by the global wind system.

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