

APPENDIX G GLOSSARY

-A-

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

Adiabatic chart. A graphical representation of the quantitative relationships between the thermodynamically active constituents of the atmosphere. Generally arranged such that graph area is proportional to energy. See Skew-T diagram.

Accuracy. The extent to which a measurement of a quantity agrees with its true value.

ADWS. Automated Digital Weather Switch, the DoD weather communications system.

AFCCC. U.S. Air Force Combat Climatology Center.

AFGWC. Air Force Global Weather Center.

AFOS. Automation of Field Operations and Services.

AGL. Above ground level.

Air mass. A wide-spread body of air that is approximately homogeneous in horizontal extent, particularly with reference to vertical temperature and moisture distribution.

Altitude. The vertical distance of a level, a point, or an object considered as a point, measured from a reference point, usually taken to be mean sea-level.

Amplitude. The magnitude of the displacement of a wave from a mean value.

Aneroid. Literally, "not wet," containing no liquid; applied to a kind of barometer which contains no liquid, an aneroid barometer.

Anomalous. Not encompassed by rules governing the majority of cases; distinguished from abnormal by implying a difference of kind rather than a difference merely of degree.

Assimilating forecast. The numerical, computer-generated forecast of the principal meteorological variables used as the basis for objectively incorporating the updated, current observations.

ATCT. Air Traffic Control Tower.

AQC. Administrative quality control; applied once a report has reached a processing or archiving center.

AWN. Automated Weather Net. The meteorological communications system of the Department of Defense.

Azimuth (azimuth angle). The length of the arc of the horizon (in degrees) intercepted between a given point and an adopted reference direction, usually true north, and measured clockwise from the reference direction.

-B-

Baselining. Meteorological jargon; a term for the initial, preflight preparation and calibration of a radiosonde.

BUFR. Binary Universal Form for the Representation of data, a self-defining binary code for geophysical data.

-C-

CBS. WMO Commission for Basic Systems.

CLIMAT. A series of messages containing climate-related data sent over the GTS by WMO members.

Climatology. The scientific study of climate.

-D-

Dew point temperature. The temperature to which a given parcel of air must be cooled at constant pressure and constant water-vapor content in order for saturation to occur. In this handbook, the dew point temperature is defined with respect to liquid water.

Dew point depression. The difference between the ambient air temperature and the dew point temperature.

DoD. Department of Defense.

DoE. Department of Energy.

Dropsonde (dropwindsonde). (Also called parachute radiosonde.) A radiosonde which is dropped by parachute from an aircraft for the purpose of obtaining soundings of the atmosphere below.

Dry-adiabatic lapse rate. The decrease of temperature with height in a completely mixed, dry, atmosphere having no external energy sources. Quantitatively equal to $9.77^{\circ}\text{C}/\text{km}$.

-E-

ECMWF. European Center for Medium-range Weather Forecasting.

Elevation. The vertical distance of a point or level affixed to the surface of the earth, measured from mean sea-level.

Elevation angle. The angle between the local horizon and an object in the sky, measured positively from the horizon upwards.

-F-

FAR. Federal Aviation Regulation(s).

FNMOG. US Navy Fleet Numerical Meteorology and Oceanography Center.

FNMOD. US Navy Fleet Numerical Meteorology and Oceanography Detachment

-G-

GDL. Greatest departure from linearity; used to locate additional levels in a radiosonde report.

Geopotential. A measure of potential energy, given by the integral with height (altitude) of the local acceleration of gravity. See Appendix D.

Geopotential height. The height of a given point relative to sea-level, obtained by dividing the geopotential by a constant. See Appendix D.

Gpm. Geopotential meter (See D.2).

Global Data Processing System (GDPS). The coordinated global system of meteorological centers and arrangements for the processing, storage, and retrieval of meteorological information within the framework of the World Weather Watch.

Global Observing System (GOS). The coordinated systems of methods and facilities for making meteorological and other environmental observations on a global scale within the framework of the World Weather Watch.

Global Positioning System (GPS). The satellite-based location system.

Global Telecommunications System (GTS). The coordinated global system of telecommunication facilities and arrangements for the rapid collection, exchange, and distribution of observational and processed information within the framework of the World Weather Watch.

Gravity wave. A form of atmospheric wave motion in which the principal restoring force is that of gravity.

-H-

HectoPascal (hPa). A unit of pressure (SI) equivalent to 100 Pascals. One hectoPascal is numerically equal to one millibar.

Height. 1) The vertical distance of a level, point, or object considered as a point, measured from a specific datum. 2) The vertical dimension of an object.

Hygristor. A humidity sensor used in radiosonde equipment.

Hygrometer. An instrument which measures the water vapor content of the atmosphere.

Hygrothermograph. A recording instrument combining, on one record, the variation of atmospheric temperature and humidity content as a function of time. The most common hygrothermograph is a hair hygograph combined with a thermograph.

-I-

ICAO. International Civil Aeronautical Organization; the international body governing the operation of commercial aircraft.

Interpolated (interpolation). The estimation of unknown intermediate values from known discrete values of a dependent variable.

Ionosphere. The atmospheric shell characterized by a high ion density. Its base is at about 70 or 80 km and it extends to an indefinite height.

Isobaric. Of equal or constant pressure, with respect to either space or time.

Isotherm. A line of equal or constant temperature.

-J-

Jet stream. The term applied to a more-or-less spatially continuous maxima of wind speed located in the upper troposphere, usually at the tropopause.

-L-

Lapse rate. The decrease of temperature with height, considered positive when temperature decreases with height.

Linear. Confined to first-degree algebraic terms in the dependent variables.

LORAN. Long Range Navigation (System); the U.S. operated off-shore navigation system.

-M-

Mandatory significant level. A set of WMO-defined pressure values for which the values of temperature, humidity, and wind are reported.

Mesoscale. A generic term for describing the spatial extent of a meteorological phenomenon, generally encompassing the range 100 to 1000 km.

Metadata. Information about data or a data set; usually, but not restricted to, details of access, quality, ownership, and history.

MHz or megaHertz. The SI unit of radio frequency, expressed in cycles/sec.

Meteorological Aids Service. A radio communication service used for meteorological and hydrological observations and investigations.

Meteorological Bulletin. An electronic, coded message comprising meteorological information and a header required for identification and transmission purposes.

Millibar (mb). A pressure unit of 1000 dynes per cm, convenient for reporting atmospheric pressure. Not an SI unit (see hectoPascal).

Moist adiabatic process. A quasi-adiabatic thermodynamic process which assumes that the latent heat of condensation is entirely used to maintain the liquid water at the same temperature as the (surrounding) dry air.

-N-

NASA. The National Aeronautics and Space Administration.

National analysis centers. The complex of organizational units within NOAA and DoD which make operational use of rawinsonde data. They include the National Centers for Environmental Prediction of NOAA; the Air Force Global Weather Center; and the Navy's Fleet Numerical Meteorological and Oceanography Center.

National Meteorological Center (NMC). Any center responsible for carrying out a nation's meteorological functions, including those of the World Weather Watch.

NAVAID. Navigational aid, implied usage of radio frequency signals.

NCDC. National Climatic Data Center, Asheville, NC.

NCEP. The National Centers for Environmental Prediction and part of the Washington D.C. WMC. The six centers of the National Weather Service which perform the forecast function. All NWS forecasts originate from one of these Centers.

NEC. National Electrical Code.

NFPA. National Fire Protection Association.

NOAA. National Oceanic and Atmospheric Administration.

NOTAM. Notice to Airmen. Issued in the U.S. by the Federal Aviation Administration.

NWS. The National Weather Service, part of NOAA.

NWSTG. National Weather Service Telecommunications Gateway; part of the Washington D.C. WMC, and the Region IV RTH.

-O-

OFCM. Office of the Federal Coordinator for Meteorological Services and Supporting Research.

OIC. Officer-in-charge.

Oktas. Literally, eights. Used to measure cloud cover as a portion of the sky.

OL-A. Operating Location-A of the AFCCC.

Omnidirectional. All directions.

OQC. Operational quality control, applied in real-time or near-real-time.

Orthogonal. Originally, at right angles; later generalized to mean the vanishing of a sum (or integral) of products.

-P-

PCA. Polar cap absorption.

PCM. Pulse code modulation.

Pibal. Meteorological jargon for a Pilot-balloon. Also used to denote the determination of upper winds by the tracking of a free balloon.

Potential temperature. The temperature of a parcel of dry air brought adiabatically from its initial state to 1000hPa (an arbitrary pressure).

Precision. The closeness of agreement between independent measurements of a single quality obtained by applying a stated measurement procedure several times under prescribed conditions.

Pressure-altitude curve. A functional relation, usually in tabular form, between pressure and geopotential height. More correctly termed a pressure-height curve.

-Q-

QC. Quality Control.

-R-

Radio direction-finder. An instrument for determining the direction from which radio waves (RDF) approach a receiver. A device which can "home" or "lock onto" a transmitted radio signal and determine the location of the source.

Radiotheodolite. Same as radio direction-finder.

Radome. A structure, made of material capable of passing radio-frequency signals, used to shelter antennae and other electronic equipment.

Rawinsonde. A type of upper-air observation for determining the wind speed and direction, pressure, temperature, and relative humidity aloft by means of a balloon-borne radiosonde tracked by a radar, a radio direction-finder, or by NAVAID.

RDF. Radio direction-finder.

Regulator (flight-train regulator). A device sometimes incorporated into a radiosonde flight-train to store and pay out gradually the length of line between the parachute and the radiosonde.

Relative humidity. The ratio of the ambient vapor pressure of water to the saturated vapor pressure at the particular temperature. It is usually calculated with respect to liquid water even when the temperature is below the melting point.

RMC. Regional Meteorological Centers of the WMO.

RTH. Regional Telecommunication Hub of the WMO.

-S-

Shock unit. A device sometimes incorporated into the radiosonde flight-train to minimize transient line shock between units of the train.

Significant level. In general, a pressure value in an atmospheric sounding deemed to be of importance in any reconstruction of that sounding with a limited amount of information. Present WMO nomenclature does not use this term - see mandatory significant and additional level.

Skew-T log P diagram. A graphical representation of pressure, temperature, and humidity made in a vertical sounding based upon thermodynamic laws. The coordinates are temperature and the logarithm of pressure, with the temperature isotherms rotated 45 degrees. The graphical representation is such that an area on the diagram is proportional to energy.

Slant range. The distance between a point on the earth's surface and an elevated object, taken to be a geodesic straight line.

Sling psychrometer. Coupled wet and dry-bulb mercury-in-glass thermometers arranged with a handle so that it can be whirled about an observer. Used to measure humidity.

Stability index. A defined, quantitative measure of the potential energy existing in the atmosphere. It is found by determining the temperature a parcel of air, initially at a selected level, would have if brought from its condensation level to the 500hPa surface by a moist adiabatic process, and then subtracting that temperature from the ambient air temperature at 500hPa.

Standard atmosphere (U. S. Standard Atmosphere). A hypothetical vertical distribution of temperature, humidity, and pressure taken to be representative. Used for aircraft altimetry, engineering design, etc. The particular standard atmosphere used is the U. S. S. A., equivalent to the ICAO standard atmosphere (Reference 15).

Station index. A 5-digit identifier for observing stations used in coded messages.

Strata (stratum). Synonymous with layer; here, a vertical portion of the atmosphere sampled by a radiosonde.

Stratosphere. The region of the atmosphere above the tropopause and below, approximately, 50 km in which temperature increases with height.

Superadiabatic lapse rate. An environmental lapse rate greater than the dry-adiabatic lapse rate (which see), such that potential temperature decreases with height.

Synoptic. In general, pertaining to or affording an overall view. In meteorology, this term has become somewhat specialized in referring to the use of meteorological data obtained simultaneously over a wide area for the purpose of presenting a comprehensive and nearly instantaneous picture of the state of the atmosphere.

-T-

Telemetry. The electronic transmission of information from a distant source.

Telemetering (telemeter). The measuring, transmitting, receiving, and indicating apparatus for obtaining the value of a quantity at a distance.

Thermodynamic diagram. A graphical representation of the thermodynamic laws of the atmosphere, generally arranged such that area on the diagram is proportional to energy. See skew-T log P entry as an example.

Thermistor. A device for measuring temperature whose electrical resistance varies markedly and monotonically with varying temperature and which possesses a negative temperature coefficient of resistivity.

TOA. Time-of-arrival.

Transponder. A transmitter-receiver arrangement so designed that the receiver generates a new signal which is then retransmitted. Used to measure linear distance or changes therein.

Tropopause. The boundary between the troposphere and stratosphere, usually characterized by an abrupt change of lapse rate. The change is in the direction of increased atmospheric stability from regions below to the regions above the tropopause.

Troposphere. That portion of the atmosphere from the earth's surface to the tropopause (approximately 8 to 16 km) characterized by a general decrease of temperature with height.

-U-

UL. Underwriters Laboratory.

UTC. Universal Time Coordinated- after the French equivalent.

-V-

Virtual temperature. The temperature that a volume of dry air must have in order to have the same density as an equal volume of moist air at the same pressure. (Since moist air is always less dense than dry air, the virtual temperature is always greater than the moist air temperature.)

-W-

WBAN. Outmoded meteorological jargon for Weather Bureau, Air Force, Navy.

Wet-bulb temperature. The temperature an air parcel would have if cooled adiabatically to saturation at constant pressure by evaporation of water into it, all latent heat being supplied by the parcel.

Wind shear. The variation of the wind vector along any direction, usually vertically.

WMC. World Meteorological Centers (Melbourne, Australia; Moscow, Russia; and Washington, DC, USA).

WMO. World Meteorological Organization. The United Nations body of meteorological agencies and interests.

WMO Region. Areas of the globe defined by the WMO

Region I - Africa
Region II - Asia
Region III - S. America
Region IV - N. America
Region V - S-W Pacific
Region VI - Europe
Antarctica

World Weather Watch (WWW). The world-wide, coordinated, developing system of meteorological facilities and services provided by member countries for the purpose of ensuring that all members obtain the environmental information they require.

