

**CHAPTER 8**

**GLOSSARY**

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## 8. GLOSSARY

**Adsorption** – The retention of molecules, atoms, or ions on the surface of a solid or liquid.

**Aeolian** – Giving forth or marked by a moaning or sighing sound or musical tone produced by or as if by the wind.

**Aerodynamic Heating** – Heating as a result of motion through air or other gaseous fluids.

**Aeronautical** – Dealing with the operation of aircraft.

**Alluvial** – Relating to, composed of, or found in clay, silt, sand, gravel, or similar detrital material deposited by running water.

**Aquifer** – A water-bearing layer of permeable rock, sand, or gravel.

**Apogee** – Highest point or apex in the suborbital path followed by a launch vehicle before it reverses direction and returns to Earth.

**Attitude Control System** – An arrangement of controlled thrusters attached to space objects, such as optical instruments, to align them accurately on celestial bodies by releasing compressed fluids or gases.

**Azimuth** – Horizontal direction expressed as the angular distance between the direction of a fixed point (as the observer's heading) and the direction of the object.

**Ballistic** – Path of a moving aerial projectile with no on-board propulsion based on gravity and air resistance, *e.g.*, path of a spent rocket after burnout.

**Bioavailability** – The degree and rate at which a substance (as a drug) is absorbed into a living system or is made available at the site of physiological activity.

**Chemiluminescence** – Emission of light as a result of a chemical reaction, without producing heat.

**Cloud Nucleation** – The process by which water droplets are formed in water vapor on the surface of particles, resulting in cloud formation.

**Colluvial** – Relating to, composed of, or found in rock detritus and soil accumulated at the foot of a slope.

**Criteria Pollutant** – Air pollutants regulated by the EPA by developing human health-based and/or environmentally-based criteria (science-based guidelines) for setting permissible levels. (based on <http://www.epa.gov/air/urbanair/>)

**Critical Habitat** – (1) Specific areas within the geographical area occupied by a species at the time it is listed (as endangered or threatened) on which are found those physical or biological features (a) essential to the conservation of the species and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

**Crossrange** – Lateral of a launching site.

**Curie** – A unit of radioactivity equal to  $3.7 \times 10^{10}$  disintegrations per second.

**Diffusion** – Spreading of emitted matter into the atmosphere from a stationary or moving source, determined by physical and chemical properties of the emission and by site specific conditions, such as altitude, wind, and weather.

**Diffusion Model** – A method of calculating parameters of diffusion, such as concentrations of emitted substances, over geographical areas of interest and time, for comparison with allowable exposure limits.

**Dispersion** – Deviation of actual impact range of a spent rocket from the predicted location, usually broken down into downrange and crossrange components.

**Downrange** – Away from a launching site.

**Ecoregion** – A geographical area distinguished from others by a unique combination of land-surface form, climate, vegetation, soils, and fauna. (based on [http://www.fws.gov/wetlands/\\_documents/gNSDI/DescriptionEcoregionsUnitedStates.pdf](http://www.fws.gov/wetlands/_documents/gNSDI/DescriptionEcoregionsUnitedStates.pdf))

**Emission** – Addition to the atmosphere of foreign matter from stationary or moving sources, *e.g.*, rocket exhaust from a sounding rocket in its trajectory, or from a stationary rocket firing.

**Endangered** – Any species that is in danger of extinction throughout all or a significant portion of its range.

**Fallout** – The descent of objects or particles through the atmosphere.

**Forb** – An herb other than grass.

**Glaciofluvial** – Of, relating to, or coming from streams deriving much or all of their water from the melting of a glacier.

**Global Warming** – Theory which states that an increase in carbon dioxide and other gases in the atmosphere results in an additive effect on average global temperatures.

**GPS** – Global positioning system.

**Graminoid** – Of or relating to grasses.

**Greenhouse Effect** – The effect of carbon dioxide and other gases in the atmosphere which act like glass in a greenhouse, trapping some of the solar heat which otherwise would be radiated back to space.

**Inversion** – A departure from the usual decrease or increase of the value of an atmospheric property, most commonly temperature, with altitude.

**Impact Range** – Horizontal distance along the Earth's surface from the launch point of a launch vehicle to the landing point of the payload or a spent rocket. Usually used to denote the maximum horizontal distance traveled by a launch vehicle, i.e., the distance to the landing point of the payload or spent final rocket stage.

**Infrastructure** – The system of public works of a country, state, or region; *also*: the resources (as personnel, buildings, or equipment) required for an activity.

**In Situ** – In the natural or original position or place.

**Ionosphere** – Atmospheric layer from about 80 kilometers to beyond 1,000 kilometers (50 miles to beyond 621 miles).

**Launch Vehicle** – A stacked assembly of one or more cylindrical rockets in series, topped by a cylindrical payload and a nose cone. In the sounding rocket application, the payload consists of scientific instruments either gathering in situ samples or making optical observations of terrestrial (atmospheric), planetary, solar system or galactic targets.

**LIDAR** – Technique for determining the distance to an object by transmitting a laser beam, usually from an airplane, at the object and measuring the time the light takes to return to the transmitter. From *light detection and ranging*.

**Logarithmic Scale** – Scale based on the exponent that indicates the power to which a base number is raised to produce a given number.

**Magnetosphere** – A region of space surrounding a celestial object (as a planet or star) that is dominated by the object's magnetic field so that charged particles are trapped in it.

**Mechanical Forcing** – Creation or delegation of motion or agitation through physical interaction.

**Mesic** – Characterized by, relating to, or requiring a moderate amount of moisture.

**Mesosphere** – Atmospheric layer from about 50 kilometers to about 80 kilometers (31 miles to about 50 miles).

**Meteorological** – Dealing with the Earth’s atmosphere and its phenomena, and especially with weather and weather forecasting.

**Mitigation** – In relation to environmental impacts this includes (1) avoiding the impact altogether by not taking an action; (2) minimizing impacts by limiting an action; (3) rectifying the impact by repairing or restoring the affected environment; (4) reducing or eliminating the impact over time by preservation/maintenance operations during the life of the action; (5) compensating for the impact by replacing or providing substitute resources or environments.

**Noctilucent** – A luminous thin usually colored cloud seen especially at twilight at a height of about 80 kilometers (50 miles).

**Parabolic Trajectory** – An orbit whose overall shape is like a parabola or u-shape.

**Payload** – The load carried by a vehicle exclusive of what is necessary for its operation; *especially*: the load carried by an aircraft or spacecraft consisting of things (as passengers or instruments) necessary to the purpose of the flight.

**Permafrost** – A permanently frozen layer at variable depth below the surface in frigid regions of a planet (as Earth).

**Photochemical Oxidation** – A chemical reaction is influenced or initiated by light, particularly ultraviolet light.

**Programmatic** – Relating to the Sounding Rocket Program as a whole, uninfluenced by the launch site, *e.g.*, upper atmosphere impacts.

**Proxy** – A substitute.

**Pyrophoric Propellant** – A propellant combination of a liquid fuel and a fluid oxidizer (usually air) that will quickly react when brought into contact with one another and achieve ignition temperature.

**Pyrotechnic** – Of or relating to any of various devices comprised of combustible substances.

**Riffle-Pool** – A shallow area, either natural or manmade, causing broken water and allowing for the precipitation of suspended solids.

**Rocket Exhaust** – Products of the combustion or burning of a rocket’s propellant, collectively called the rocket exhaust or exhaust gases, which flow out of the rocket exit nozzle at supersonic speeds into the surrounding atmosphere.

**Site-Specific** – Relating to a particular launch site, *e.g.*, impacts affected by geographical location and local climate, fauna and flora.

**Solid Propellant** – A cured mixture of powdered chemicals, including fuel and oxidizer compounds, and an electrical igniter, formed into cylindrical shape and inserted into the rocket casing. The proportions of the ingredients are selected to provide a given thrust and burning time, but once ignition takes place, the solid propellant combustion cannot be further controlled.

**Sounding Rocket** – A rocket-propelled suborbital launch vehicle equipped with a scientific payload for making observations from the Earth's atmosphere. The propulsion may be by a single rocket for low apogees or by multiple rockets staged in series to attain higher apogees.

**Spent Rocket** – Residual casing or shell of a solid propellant rocket after burnout when the propellant has been exhausted and expelled as exhaust gases; follows a ballistic path to ground.

**Stage** – One of two or more sections of a rocket that have their own fuel and engine.

**Stratosphere** – Atmospheric layer from about 10 kilometers to about 50 kilometers (6 miles to about 31 miles).

**Sub-Orbital** – Being or involving less than one orbit (as of the Earth or Moon); also: intended for suborbital flight.

**Subsistence** – A system or culture of acquiring the minimum (as of food and shelter) necessary to support life from natural resources.

**Talik** – Unfrozen, subsurface dome-like features which occur in arctic regions.

**Telemetry** – Data transmitted by telemetry (over distance).

**Thermodynamic** – Of or relating to the branch of physics that deals with mechanical action or relations of heat.

**Thermokarst** – Land-surface configuration that results from the melting of ground ice in a region underlain by permafrost.

**Tundra** – A level or rolling treeless plain that is characteristic of arctic and subarctic regions, consists of black mucky soil with a permanently frozen subsoil, and has a dominant vegetation of mosses, lichens, herbs, and dwarf shrubs; also: a similar region confined to mountainous areas above timberline.

**Trajectory** – Flight path of typical sounding rocket, from surface launch up to apogee and down to surface landing, along an arc of close to parabolic shape.

**Threatened** – Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

**Troposphere** – Atmospheric layer from surface to about 10 kilometers (6 miles).

**Viewshed** – The natural environment that is visible from one or more viewing points.

**Water-Soluble** – Capable of being dissolved by water.

**Wetlands** – Land or areas, such as tidal flats and swamps, which contain large amounts of soil moisture.