= Snow =

Snow is precipitation in the form of flakes of crystalline water ice that falls from clouds .
Since snow is composed of small ice particles , it is a granular material . It has an open and therefore soft , white , and fluffy structure , unless subjected to external pressure . Snowflakes come in a variety of sizes and shapes . Types that fall in the form of a ball due to melting and refreezing , rather than a flake , are hail , ice pellets or snow grains .
The process of precipitating snow is called snowfall . Snowfall tends to form within regions of upward movement of air around a type of low @-@ pressure system known as an extratropical cyclone . Snow can fall poleward of these systems ' associated warm fronts and within their comma head precipitation patterns (called such due to the comma @-@ like shape of the cloud and precipitation pattern around the poleward and west sides of extratropical cyclones) . Where relatively warm water bodies are present , for example because of water evaporation from lakes , lake @-@ effect snowfall becomes a concern downwind of the warm lakes within the cold cyclonic flow around the backside of extratropical cyclones . Lake @-@ effect snowfall can be heavy locally . Thundersnow is possible within a cyclone 's comma head and within lake effect precipitation bands . In mountainous areas , heavy snow is possible where upslope flow is maximized within windward sides of the terrain at elevation , if the atmosphere is cold enough . Snowfall amount and its related liquid equivalent precipitation amount are measured using a variety of different rain gauges .

= = Forms = =

Once on the ground , snow can be categorized as powdery when light and fluffy , fresh when recent but heavier , granular when it begins the cycle of melting and refreezing , and eventually ice once it comes down , after multiple melting and refreezing cycles , into a dense mass called snow pack . When powdery , snow moves with the wind from the location where it originally landed , forming deposits called snowdrifts that may have a depth of several meters . After attaching itself to hillsides , blown snow can evolve into a snow slab ? an avalanche hazard on steep slopes . The existence of a snowpack keeps temperatures lower than they would be otherwise , as the whiteness of the snow reflects most sunlight , and any absorbed heat goes into melting the snow rather than increasing its temperature . The water equivalent of snowfall is measured to monitor how much liquid is available to flood rivers from meltwater that will occur during the following spring . Snow cover can protect crops from extreme cold . If snowfall stays on the ground for a series of years uninterrupted , the snowpack develops into a mass of ice called glacier . Fresh snow absorbs sound , lowering ambient noise over a landscape because the trapped air between snowflakes attenuates vibration . These acoustic qualities quickly minimize and reverse , once a layer of freezing rain falls on top of snow cover . Walking across snowfall produces a squeaking sound at low temperatures .
The energy balance of the snowpack itself is dictated by several heat exchange processes . The snowpack absorbs solar shortwave radiation that is partially blocked by cloud cover and reflected by snow surface . A long @-@ wave heat exchange takes place between the snowpack and its surrounding environment that includes overlying air mass , tree cover and clouds . Heat exchange takes place by convection between the snowpack and the overlaying air mass , and it is governed by the temperature gradient and wind speed . Moisture exchange between the snowpack and the overlying air mass is accompanied by latent heat transfer that is influenced by vapor pressure gradient and air wind . Rain on snow can add significant amounts of thermal energy to the snowpack . A generally insignificant heat exchange takes place by conduction between the snowpack and the ground . The small temperature change from before to after a snowfall is a result of the heat transfer between the snowpack and the air . As snow degrades , its surface can develop characteristic ablation textures such as suncups or penitentes .
The term snow storm can describe a heavy snowfall , while a blizzard involves snow and wind , obscuring visibility . Snow shower is a term for an intermittent snowfall , while flurry is used for very light , brief snowfalls . Snow can fall more than a meter at a time during a single storm in flat areas , and meters at a time in rugged terrain , such as mountains . When snow falls in significant quantities

, travel by foot , car , airplane and other means becomes severely restricted , but other methods of mobility become possible , such as the use of snowmobiles , snowshoes and skis . When heavy snow occurs early in the fall (or , on rarer occasions , late in the spring) , significant damage can occur to trees still in leaf . Areas with significant snow each year can store the winter snow within an ice house , which can be used to cool structures during the following summer . A variation on snow has been observed on Venus , though composed of metallic compounds and occurring at a substantially higher temperature .

= = Cause = =

Extratropical cyclones can bring cold and dangerous conditions with heavy rain and snow with winds exceeding 119 km / h (74 mph) , (sometimes referred to as windstorms in Europe) . The band of precipitation that is associated with their warm front is often extensive , forced by weak upward vertical motion of air over the frontal boundary , which condenses as it cools off and produces precipitation within an elongated band , which is wide and stratiform , meaning falling out of nimbostratus clouds . When moist air tries to dislodge an arctic air mass , overrunning snow can result within the poleward side of the elongated precipitation band . In the Northern Hemisphere , poleward is towards the North Pole , or north . Within the Southern Hemisphere , poleward is towards the South Pole , or south .

Within the cold sector , poleward and west of the cyclone center , small scale or mesoscale bands of heavy snow can occur within a cyclone 's comma head pattern . The cyclone 's comma head pattern is a comma @-@ shaped area of clouds and precipitation found around mature extratropical cyclones . These snow bands typically have a width of 20 to 50 miles (32 to 80 kilometers) . These bands in the comma head are associated with areas of frontogenesis , or zones of strengthening temperature contrast .

Southwest of extratropical cyclones , curved cyclonic flow bringing cold air across the relatively warm water bodies can lead to narrow lake @-@ effect snow bands . Those bands bring strong localized snowfall , which can be understood as follows : Large water bodies such as lakes efficiently store heat that results in significant temperature differences (larger than 13 ° C [23 ° F]) between the water surface and the air above . Because of this temperature difference , warmth and moisture are transported upward , condensing into vertically oriented clouds (see satellite picture) that produce snow showers . The temperature decrease with height and cloud depth are directly affected by both the water temperature and the large @-@ scale environment . The stronger the temperature decrease with height , the deeper the clouds get , and the greater the precipitation rate becomes .

In mountainous areas , heavy snowfall accumulates when air is forced to ascend the mountains and squeeze out precipitation along their windward slopes , which in cold conditions , falls in the form of snow . Because of the ruggedness of terrain , forecasting the location of heavy snowfall remains a significant challenge .

= = Snowflakes = =

Snow crystals form when tiny supercooled cloud droplets (about 10 ?m in diameter) freeze . These droplets are able to remain liquid at temperatures lower than ? 18 ° C (0 ° F) , because to freeze , a few molecules in the droplet need to get together by chance to form an arrangement similar to that in an ice lattice . Then the droplet freezes around this " nucleus " . Experiments show that this " homogeneous " nucleation of cloud droplets only occurs at temperatures lower than ? 35 ° C (? 31 ° F) . In warmer clouds an aerosol particle or " ice nucleus " must be present in (or in contact with) the droplet to act as a nucleus . Ice nuclei are very rare compared to that cloud condensation nuclei on which liquid droplets form . Clays , desert dust and biological particles may be effective , although to what extent is unclear . Artificial nuclei include particles of silver iodide and dry ice , and these are used to stimulate precipitation in cloud seeding .

Once a droplet has frozen , it grows in the supersaturated environment ? one where air is saturated

with respect to ice when the temperature is below the freezing point . The droplet then grows by diffusion of water molecules in the air (vapor) onto the ice crystal surface where they are collected . Because water droplets are so much more numerous than the ice crystals due to their sheer abundance , the crystals are able to grow to hundreds of micrometers or millimeters in size at the expense of the water droplets by a process known as the Wegner @-@ Bergeron @-@ Findeison process . The corresponding depletion of water vapor causes the ice crystals to grow at the droplets ' expense . These large crystals are an efficient source of precipitation , since they fall through the atmosphere due to their mass , and may collide and stick together in clusters , or aggregates . These aggregates are snowflakes , and are usually the type of ice particle that falls to the ground . Guinness World Records list the world 's largest snowflakes as those of January 1887 at Fort Keogh , Montana ; allegedly one measured 38 cm (15 in) wide . Although the ice is clear , scattering of light by the crystal facets and hollows / imperfections mean that the crystals often appear white in color due to diffuse reflection of the whole spectrum of light by the small ice particles .

The shape of the snowflake is determined broadly by the temperature and humidity at which it is formed . The most common snow particles are visibly irregular . Planar crystals (thin and flat) grow in air between 0 ° C (32 ° F) and ? 3 ° C (27 ° F) . Between ? 3 ° C (27 ° F) and ? 8 ° C (18 ° F) , the crystals will form needles or hollow columns or prisms (long thin pencil @-@ like shapes) . From ? 8 ° C (18 ° F) to ? 22 ° C (? 8 ° F) the shape reverts to plate @-@ like , often with branched or dendritic features . At temperatures below ? 22 ° C (? 8 ° F) , the crystal development becomes column @-@ like , although many more complex growth patterns also form such as side @-@ planes , bullet @-@ rosettes and also planar types depending on the conditions and ice nuclei . If a crystal has started forming in a column growth regime , at around ? 5 ° C (23 ° F) , and then falls into the warmer plate @-@ like regime , then plate or dendritic crystals sprout at the end of the column , producing so called " capped columns " .

A snowflake consists of roughly 1019 water molecules , which are added to its core at different rates and in different patterns , depending on the changing temperature and humidity within the atmosphere that the snowflake falls through on its way to the ground . As a result , it is extremely difficult to encounter two identical snowflakes . Initial attempts to find identical snowflakes by photographing thousands their images under a microscope from 1885 onward by Wilson Alwyn Bentley found the wide variety of snowflakes we know about today . It is more likely that two snowflakes could become virtually identical if their environments were similar enough . Matching snow crystals were discovered in Wisconsin in 1988 . The crystals were not flakes in the usual sense but rather hollow hexagonal prisms .

= = Types = =

Types of snow can be designated by the shape of the flakes , the rate of accumulation , and the way the snow collects on the ground . Types that fall in the form of a ball due to melting and refreezing cycles , rather than a flake , are known as graupel , with ice pellets and snow pellets as types of graupel associated with wintry precipitation . Once on the ground , snow can be categorized as powdery when fluffy , granular when it begins the cycle of melting and refreezing , and eventually ice once it packs down into a dense drift after multiple melting and refreezing cycles . When powdery , snow drifts with the wind from the location where it originally fell , forming deposits with a depth of several meters in isolated locations . Snow fences are constructed in order to help control snow drifting in the vicinity of roads , to improve highway safety . After attaching to hillsides , blown snow can evolve into a snow slab , which is an avalanche hazard on steep slopes . A frozen equivalent of dew known as hoar frost forms on a snow pack when winds are light and there is ample low @-@ level moisture over the snow pack .

Snowfall 's intensity is determined by visibility . When the visibility is over 1 kilometer (0 @.@ 62 mi) , snow is considered light . Moderate snow describes snowfall with visibility restrictions between 0 @.@ 5 and 1 km . Heavy snowfall describes conditions when visibility is less than 0 @.@ 5 km . Steady snows of significant intensity are often referred to as " snowstorms " . When snow is of variable intensity and short duration , it is described as a " snow shower " . The term snow flurry is

used to describe the lightest form of a snow shower .
A blizzard is a weather condition involving snow and has varying definitions in different parts of the world . In the United States , a blizzard occurs when two conditions are met for a period of three hours or more : A sustained wind or frequent gusts to 35 miles per hour (56 km / h) , and sufficient snow in the air to reduce visibility to less than 0 @.@ 4 kilometers (0 @.@ 25 mi) . In Canada and the United Kingdom , the criteria are similar . While heavy snowfall often occurs during blizzard conditions , falling snow is not a requirement , as blowing snow can create a ground blizzard .

= = Colours = =

While snow in its pure form is white in colour , different colours can be caused by several factors including algae and air pollution . In numerous cases , yellow , black , red (or pink) , blue , brown and orange snow has been reported .

= = = Yellow = = =

Yellow snow is commonly known as , and indeed often the result of , animal urine marks .
However , it can also occur as a result of pollen or pine in the snow , certain air pollutants or sunlight hitting the snow . It may already be yellow as it falls from the sky when sand particles , other cloud seeds or industrial waste is present in the air .
In some of these cases , yellow snow may cause health hazards .

= = Density = =

Snow remains on the ground until it melts or sublimates . Sublimation of snow directly into water vapor is most likely to occur on a dry and windy day such as when a strong downslope wind , such as a Chinook wind , exists .
Once the snow is on the ground , it will settle under its own weight (largely due to differential evaporation) until its density is approximately 30 % of water . Increases in density above this initial compression occur primarily by melting and refreezing , caused by temperatures above freezing or by direct solar radiation . In colder climates , snow lies on the ground all winter . By late spring , snow densities typically reach a maximum of 50 % of water . When the snow does not all melt in the summer it evolves into firn , where individual granules become more spherical in nature , evolving into a glacier as the ice flows downhill .

= = = Snow water equivalent = = =

The snow water equivalent is the product of snow depth and the snow bulk density . It is a quantity of type columnar mass density , having units of area density (kg / m2) , though it is usually reported normalized by the volumetric density of liquid water (units kg / m3) , thus being expressed in units of length (e.g. , millimeter or inches) . It corresponds to the depth of a layer of water that would accumulate in an area , if all the snow and ice were melted in that given area . For example , if the snow covering a given area has a water equivalent of 50 centimeters (20 in) , then it will melt into a pool of water 50 centimeters (20 in) deep covering the same area . This is a much more useful measurement to hydrologists than snow depth , as the density of cool freshly fallen snow widely varies . New snow commonly has a density of around 8 % of water . This means that 33 centimeters (13 in) of snow melts down to 2 @.@ 5 centimeters (1 in) of water . Cloud temperatures and physical processes in the cloud affect the shape of individual snow crystals . Highly branched or dendritic crystals tend to have more space between the arms of ice that form the snowflake and this snow will therefore have a lower density , often referred to as " dry " snow . Conditions that create columnar or plate @-@ like crystals will have much less air space within the crystal and will therefore be denser and feel " wetter " .

= = Acoustic properties = =

Newly fallen snow acts as a sound @-@ absorbing material , which minimizes sound over its surface . This is due to the trapped air between the individual crystalline flakes , trapping sound waves and dampening vibrations . Once it is blown around by the wind and exposed to sunshine , snow hardens and its sound @-@ softening quality diminishes . Snow cover as thin as 2 centimeters (0 @.@ 79 in) thick changes the acoustic properties of a landscape . Studies concerning the acoustic properties of snow have revealed that loud sounds , such as from a pistol , can be used to measure snow cover permeability and depth . Within motion pictures , the sound of walking through snow is simulated using cornstarch , salt , or cat litter . When the temperature falls below ? 10 ° C (14 ° F) , snow will squeak when walked upon due to the crushing of the ice crystals within the snow . If covered by a layer of freezing rain , the hardened frozen surface acts to echo sounds , similar to concrete .

From under water , snowfall has a unique sound when compared to other forms of precipitation , and the sound varies little with differences in the snowflakes ' size and shape .

= = Snowfall measurement = =

Snowfall is defined by the U.S. National Weather Service as a being the maximum depth of snow on a snowboard (typically a piece of plywood painted white) observed during a six @-@ hour period . At the end of the six @-@ hour period , all snow is cleared from the measuring surface . For a daily total snowfall , four six @-@ hour snowfall measurements are summed . Snowfall can be very difficult to measure due to melting , compacting , blowing and drifting .

The liquid equivalent of snowfall may be evaluated using a snow gauge or with a standard rain gauge having a diameter of 100 mm (4 in ; plastic) or 200 mm (8 in ; metal) . Rain gauges are adjusted to winter by removing the funnel and inner cylinder and allowing the snow / freezing rain to collect inside the outer cylinder . Antifreeze liquid may be added to melt the snow or ice that falls into the gauge . In both types of gauges once the snowfall / ice is finished accumulating , or as its height in the gauge approaches 300 mm (12 in) , the snow is melted and the water amount recorded .

Another type of gauge used to measure the liquid equivalent of snowfall is the weighing precipitation gauge . The wedge and tipping bucket gauges will have problems with snow measurement . Attempts to compensate for snow / ice by warming the tipping bucket meet with limited success , since snow may sublimate if the gauge is kept much above the freezing temperature . Weighing gauges with antifreeze should do fine with snow , but again , the funnel needs to be removed before the event begins . At some automatic weather stations an ultrasonic snow depth sensor may be used to augment the precipitation gauge .

Spring snow melt is a major source of water supply to areas in temperate zones near mountains that catch and hold winter snow , especially those with a prolonged dry summer . In such places , water equivalent is of great interest to water managers wishing to predict spring runoff and the water supply of cities downstream . Measurements are made manually at marked locations known as snow courses , and remotely using special scales called snow pillows .

When a snow measurement is made , various networks exist across the United States and elsewhere where rainfall measurements can be submitted through the Internet , such as CoCoRAHS or GLOBE . If a network is not available in the area where one lives , the nearest local weather office will likely be interested in the measurement .

= = Records = =

The world record for the highest seasonal total snowfall was measured in the United States at Mount Baker Ski Area , outside of the town Bellingham , Washington during the 1998 ? 1999 season . Mount Baker received 2 @,@ 896 cm (95 @.@ 01 ft) of snow , thus surpassing the previous record holder , Mount Rainier , Washington , which during the 1971 ? 1972 season received 2 @,@ 850 cm (93 @.@ 5 ft) of snow .

The world record for the highest average yearly snowfall is 1 @,@ 764 cm (57 @.@ 87 ft) , measured in Sukayu Onsen , Japan for the period of 1981 ? 2010 .
The North American record for the highest average yearly snowfall is 1 @,@ 630 cm (53 @.@ 5 ft) , measured on Mount Rainier , Washington .
The world record for snow depth is 1 @,@ 182 cm (38 @.@ 78 ft) . It was measured on the slope of Mt . Ibuki in Shiga Prefecture , Japan at altitude of 1 @,@ 200 m (3 @,@ 900 ft) on February 14 , 1927 .
The North American record for snow depth is 1 @,@ 150 cm (37 @.@ 7 ft) . It was measured at Tamarack , California at altitude of 2 @,@ 100 m (7 @,@ 000 ft) in March 1911 .
The world 's snowiest city with a population over one million is Sapporo , Japan , with an average yearly snowfall of 595 cm (19 @.@ 52 ft) .

= = Snow blindness = =

Fresh snow reflects 90 % or more of ultraviolet radiation , which causes snow blindness , also reducing absorption of sunlight by the ground . Snow blindness (also known as ultraviolet keratitis , photokeratitis or niphablepsia) is a painful eye condition , caused by exposure of unprotected eyes to the ultraviolet (UV) rays in bright sunlight reflected from snow or ice . This condition is a problem in polar regions and at high altitudes , as with every 300 meters (980 ft) of elevation (above sea level) , the intensity of UV rays increases by 4 % . Snow 's large reflection of light makes night skies much brighter , since reflected light is directed back up into the sky . However , when there is also cloud cover , light is then reflected back to the ground . This greatly amplifies light emitted from city lights , causing the ' bright night ' effect . A similar brightening effect occurs when no snow is falling and there is a full moon and a large amount of snow .

= = Relation to river flow = =

Many rivers originating in mountainous or high @-@ latitude regions receive a significant portion of their flow from snowmelt . This often makes the river 's flow highly seasonal resulting in periodic flooding during the spring months and at least in dry mountainous regions like the mountain West of the US or most of Iran and Afghanistan , very low flow for the rest of the year . In contrast , if much of the melt is from glaciated or nearly glaciated areas , the melt continues through the warm season , with peak flows occurring in mid to late summer .

= = Effects on human society = =

Substantial snowfall can disrupt public infrastructure and services , slowing human activity even in regions that are accustomed to such weather . Air and ground transport may be greatly inhibited or shut down entirely . Populations living in snow @-@ prone areas have developed various ways to travel across the snow , such as skis , snowshoes , and sleds pulled by horses , dogs , or other animals and later , snowmobiles . Basic utilities such as electricity , telephone lines , and gas supply can also fail . In addition , snow can make roads much harder to travel and vehicles attempting to use them can easily become stuck . Snowfall can have a small negative effect on yearly yield from solar photovoltaic systems .
The combined effects can lead to a " snow day " on which gatherings such as school or work are officially canceled . In areas that normally have very little or no snow , a snow day may occur when there is only light accumulation or even the threat of snowfall , since those areas are unprepared to handle any amount of snow . In some areas , such as some states in the United States , schools are given a yearly quota of snow days (or " calamity days ") . Once the quota is exceeded , the snow days must be made up . In other states , all snow days must be made up . For example , schools may extend the remaining school days later into the afternoon , shorten spring break , or delay the start of summer vacation .
Accumulated snow is removed to make travel easier and safer , and to decrease the long @-@

term impact of a heavy snowfall . This process utilizes shovels , snowplows and snow blowers and is often assisted by sprinkling salt or other chloride @-@ based chemicals , which reduce the melting temperature of snow . In some areas with abundant snowfall , such as Yamagata Prefecture , Japan , people harvest snow and store it surrounded by insulation in ice houses . This allows the snow to be used through the summer for refrigeration and air conditioning , which requires far less electricity than traditional cooling methods .

= = = Agriculture = = =

Snowfall can be beneficial to agriculture by serving as a thermal insulator , conserving the heat of the Earth and protecting crops from subfreezing weather . Some agricultural areas depend on an accumulation of snow during winter that will melt gradually in spring , providing water for crop growth . If it melts into water and refreezes upon sensitive crops , such as oranges , the resulting ice will protect the fruit from exposure to lower temperatures .

= = = Recreation = = =

Many winter sports , such as skiing , snowboarding , snowmobiling , and snowshoeing depend upon snow . Where snow is scarce but the temperature is low enough , snow cannons may be used to produce an adequate amount for such sports . Children and adults can play on a sled or ride in a sleigh . Although a person 's footsteps remain a visible lifeline within a snow @-@ covered landscape , snow cover is considered a general danger to hiking since the snow obscures landmarks and makes the landscape itself appear uniform .

One of the recognizable recreational uses of snow is in building snowmen . A snowman is created by making a man shaped figure out of snow ? often using a large , shaped snowball for the body and a smaller snowball for the head which is often decorated with simple household items ? traditionally including a carrot for a nose , and coal for eyes , nose and mouth ; occasionally including old clothes such as a top hat or scarf .

Snow can be used to make snow cones , also known as snowballs , which are usually eaten in the summer months . Flat areas of snow can be used to make snow angels , a popular pastime for children .

Snow can be used to alter the format of outdoor games such as Capture the flag , or for snowball fights . The world 's biggest snowcastle , the SnowCastle of Kemi , is built in Kemi , Finland every winter . Since 1928 Michigan Technological University in Houghton , Michigan has held an annual Winter Carnival in mid @-@ February , during which a large Snow Sculpture Contest takes place between various clubs , fraternities , and organizations in the community and the university . Each year there is a central theme , and prizes are awarded based on creativity . Snowball softball tournaments are held in snowy areas , usually using a bright orange softball for visibility , and burlap sacks filled with snow for the bases .

= = Damage = =

When heavy , wet snow with a snow @-@ water equivalent (SWE) ratio of between 6 : 1 and 12 : 1 (in extreme cases , as heavy as 4 : 1) and a weight in excess of 10 pounds per square foot (~ 40 kg / m2) piles onto trees or electricity lines ? particularly if the trees have full leaves or are not adapted to snow ? significant damage may occur on a scale usually associated with hurricanes . An avalanche can occur upon a sudden thermal or mechanical impact upon snow that has accumulated on a mountain , which causes the snow to rush downhill en masse . Preceding an avalanche is a phenomenon known as an avalanche wind caused by the approaching avalanche itself , which adds to its destructive potential . Large amounts of snow which accumulate on top of man @-@ made structures can lead to structural failure . During snowmelt , acidic precipitation which previously fell into the snow pack is released , which harms marine life .

There is a popular misconception that snow becomes heavier when it starts to melt , so many

people take risks by climbing on roofs to remove snow when the weather starts to get warmer , for fear that the roofs will collapse . In fact , when snow starts to melt , its volume decreases as the ice crystals and meltwater move into the spaces between the crystals , which makes the density of wet , melting snow greater than that of freshly @-@ fallen snow . This makes it feel heavier to shovel , but its mass does not increase . In fact , it decreases when meltwater runs off the roof , so the weight of snow on a roof actually decreases when it starts to melt .

= = Design of structures considering snow load = =

The designs of all structures and buildings use the ground snow load determined by professional engineers and designers . Data on ground snow in the U.S.A. are provided by the American Society of Civil Engineers (ASCE7 @-@ latest edition) for most jurisdictions . This load is typically the governing design factor on roofs and structural elements exposed to the effects of snow in the northern United States . Closer to the Equator , the snow load becomes less important and may or may not be the governing factor .

= = Extraterrestrial snow = =

Very light snow is known to occur at high latitudes on Mars . A " snow " of hydrocarbons is also theorized to occur on Saturn 's moon Titan .

While there is little or no water on Venus , there is a phenomenon which is quite similar to snow . The Magellan probe imaged a highly reflective substance at the tops of Venus 's highest mountain peaks which bore a strong resemblance to terrestrial snow . This substance arguably formed from a similar process to snow , albeit at a far higher temperature . Too volatile to condense on the surface , it rose in gas form to cooler higher elevations , where it then fell as precipitation . The identity of this substance is not known with certainty , but speculation has ranged from elemental tellurium to lead sulfide (galena) .