

## METEOROLOGY TERMS AND THEIR SURPRISING MEANINGS AND ORIGINS

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**Abstract:** All scientific fields have specialized words, many of them very arcane to outsiders. Meteorology, as interdisciplinary scientific study of the atmosphere and its phenomena, has its fair share of specialized words. They form a scientific jargon used to refer to different kinds of atmospheric phenomena and to different instruments used to measure their intensity. Many of these terms, referring to various kinds of winds and windstorms, to types of clouds and forms of precipitation, for example, are words that have a long and intricate history which, in many cases, is closely related to certain parts of the world and their specific climates. This paper attempts to put together various examples of “weather words” that have quite surprising meanings and origins and thus give a helping hand to those who are interested in delving into the study of atmospheric phenomena, of weather and climate, and ultimately of our environment.

**Key words:** weather, meteorology, wind, cloud, precipitation

### 1. INTRODUCTION

Let us begin by drawing a distinction between two words that are commonly, yet erroneously, used as synonyms: weather and climate. Weather refers to the condition or state of the atmosphere at a particular place over a short period of time, while climate refers to the weather pattern of a place over a long period of time, long enough to yield meaningful averages. Still, from a lexical point of view, there is a wide range of terms used when referring both to weather and climate, terms related to air temperature and pressure, to wind and to precipitations. Meteorology and climatology are the sciences that study the weather and, respectively, the climate. They will, as a consequence, share a certain number of specialized words to indicate various kinds of **winds and windstorms**, types of **clouds** and forms of **precipitation**, or **instruments**.

### 2. WINDS AND WINDSTORMS

The **Föhn** wind gets its name from the Latin *favonius* (*ventus*) which personified a mild west wind. This kind of wind has many different names in different parts of the world: *Favonio* or *Sirocco* in Italy, *Terral* in Spain, *Vântul Mare* in Romania, *Wuhan* in China, *Puelche* in Chile, and so on. The *Chinook* or the *snow eater* is a warm, dry wind which blows down the eastern slopes of the Rocky Mountains in the United States. The most dramatic temperature rise on record (of 49 degrees in just 2 minutes) occurred because of this wind in Spearfish, SD, in September 1943.

The English word **breeze**, which is generally used to refer to a gentle or light wind, may come from the Spanish word *briza* – cold northeast wind, or from the East Frisian verb *brisen* – to blow fresh and strong.

The term **squall** is used to refer to a sudden increase in the speed of wind, which is usually associated with brief heavy precipitation. The World Meteorological Organization (WMO) established that in order to be classified as a squall, the wind must increase at least 8 m/s and must reach a top speed of at least 11 m/s for at least one minute. The etymology of the word is rather obscure, but it appears to have Nordic origins, probably deriving from an Old Norse word – *skvala*, meaning to squeal, or, in other words, to make a long, high sound.

**Hurricane** comes from *huracan*, a word used by the Carib Indians of the West Indies to refer to a storm. *Huracan* or *hunnaken* was one of the Mayan creator gods, who blew his breath across the chaotic water and brought forth dry land and later wiped out the men of wood with a great storm and flood. In fact, the first record of a hurricane, an Atlantic tropical cyclone, seems to have been made by the Mayan who knew that to prevent storm damages it was advisable to live inland.

A **tornado** is a whirlwind, a violent windy thunderstorm in the tropical Atlantic. The word was originally borrowed from the Spanish words *tronar* and *tornar*. *Tronar*, which comes from the Latin *tonare* means to thunder, whereas *tornar* comes from the Latin *turnare* meaning to turn.

**Tempest** traces back its origin to the Vulgar Latin word *tempest* meaning season, weather, storm, a word stemming from the word *tempus* meaning time.

In contrast with a tornado, which is a twisted wind, a **derecho** is defined as a widespread, long-lived, straight-line windstorm associated with a fast-moving band of severe thunderstorms. A warm-weather phenomenon, derechos occur mostly in summer, and generally exceed hurricane force. The word *derecho* means straight in Spanish. The word *derecho* was first used in the American Meteorological Journal in 1888 by physics professor Gustavus Detlef Hinrichs in a paper describing the phenomenon as a destructive storm, far more destructive than a tornado, whose wind was traveling in a straight line.

**Typhoon** is a word of uncertain origins. It is often suggested to have derived from the Chinese words *tai fung* meaning great wind or the Indian *toofan* meaning big storm, from the Arabic *tufan* meaning big cyclonic storm or the Greek word *typhon* meaning whirlwind and personified as a giant, father of the winds. The Arabic *Al-tufan* occurs several times in the Koran with the meaning of flood or storm, and also to refer to Noah's Flood.

A **haboob** is a type of intense dust storm carried on an atmospheric gravity current which occurs regularly in arid regions throughout the world – the Sahara Desert, the Arabian Peninsula, North Africa, or Central Australia. The word is Arabic and means blasting or drafting and was first used to describe such a phenomenon in Sudan. In some cases of haboobs, sand and debris can reach several kilometers into the sky and leave up to one foot of sand in their path. The term haboob is not commonly used in the arid regions of the United States where the event occurs – Arizona, New Mexico, Texas. Instead, they are called dust storms or sandstorms.

**Supercell** is a surprising name for a thunderstorm, a rotating one, characterized by the presence of a deep, persistently rotating updraft or mesocyclone. While many ordinary thunderstorms (squall line, single-cell, multi-cell) are similar in appearance, supercells are distinguishable by their large-scale rotation.

A **dust devil** is a strong, well-formed, and relatively long-lived whirlwind, comparable to tornadoes (both phenomena involve a vertically oriented rotating column of air), but rarely coming close to their intensity. This phenomenon is known under various names around the world: dancing devil in southwestern US, sand auger or dust whirl in Death Valley, California, *willy-willy* or *whirly-whirly* in Australia, *djin* (genie or devil) in Saudi Arabia, Kuwait, Kazakhstan or Jordan, *fasset el'afreet* (ghost's wind) in Egypt, *Gerd Baad* (round wind) in Iran, *ngoma cia aka* (women's demon) in Kenya. The Navajo refer to it as *chindi* (ghosts or spirits of dead Navajo). We notice that in many parts of the world the name of this kind of whirlwind comes either from its rotational movement or from reference to spirits, ghosts, or demons. Somehow related to whirlwinds, there is also a phenomenon called **gustnado**. A gustnado is a short-lived, low-level rotating cloud that forms in severe thunderstorms. Its name is a portmanteau of “gust front tornado”.

A **snow devil**, also known as **ice devil**, **winter waterspout**, **snowspout** or **icespout**, is a rare phenomenon. Only six known pictures of this event exist to date, four of which were taken in Ontario, Canada. It is a waterspout forming under the base of a snow squall (also known as a whiteout). A waterspout is an intense funnel-shaped columnar vortex that occurs over a body of water, connected to a cumuliform cloud.

The term **vortex** stems from the Latin verb *vertere* meaning to turn. This verb gave the word *vertex* and later *vortex*, the latter being used to describe an eddy of water, wind or flame, a whirlwind or a whirlpool.

### 3. CLOUDS

Clouds are visible masses of liquid droplets or frozen crystals made of water or various chemicals suspended in the atmosphere. They form when the air becomes saturated, which occurs when the air cools or when water vapor is added to the air.

Clouds are classified into a system that uses Latin words to describe their appearance as seen by an observer on the ground. For this, four Latin roots are used: **cirrus**, meaning curl of hair, **cumulus**, meaning heap, **nimbus** (meaning rain), and **stratus**, meaning layer.

Clouds are also identified by the height of the cloud base. And for this, two prefixes are used: **cirr-** as in cirrus, for clouds located at high levels (above 6,000 meters), **alto-** as in altostratus, for clouds located at middle levels (between 2,000 and 6,000 meters).

**Cirrocumulus** clouds typically appear as large, white patches or tuft, without a grey shadow. The patches or cloudlets are often organized in a pattern resembling the markings on an adult king mackerel, thus their colloquial name **mackerel clouds**. A mackerel sky, also known as buttermilk sky is an indicator of moisture and instability.

**Cirrostratus** clouds are sheet-like high-level clouds composed of ice crystals. They are relatively transparent and we can easily see the sun or the moon through them. Actually, sometimes the only indication of their presence is given by a halo around the sun or the moon given by the refraction of light by the cloud's ice crystals.

**Nimbostratus** clouds are dark, low-level clouds (below 2,000 meters) accompanied by light to moderately falling precipitation.

**Cumulonimbus** clouds reach high into the atmosphere and are associated with powerful thunderstorms known as supercells. These clouds can produce thunder and lightning, heavy winds and rains. Associated with cumulonimbus and supercells are clouds known as **Mammatus (Mamma, Mammatocumulus)** – bulbous, pillow-like or pouch-like cloud formations extending from beneath the anvil of a thunderstorm. They are impressive near sunset or shortly after sunrise when they are lit from one side or below.

**Cirrus** clouds are characterized by thin, wispy strands, like curling locks of hair. A **mare's tail** is a type of **cirrus** cloud formation – long, narrow, with a flowing appearance. It often indicates high winds in the upper troposphere.

There are several types of clouds that develop, under different shapes, on top or beneath other larger cloud formations called **parent clouds**. They are known as **accessory clouds**: arcus clouds, pileus, mammatus, and others.

**Arcus clouds**, which are low, horizontal cloud formations, can be either **roll clouds** or **shelf clouds**.

A **scarf cloud**, also called a **cap cloud**, is also known as **pileus** (from the Latin word pileus meaning cap). It is small and horizontal and appears above a cumulus or cumulonimbus cloud, giving the parent cloud a characteristic “hoodlike” appearance. Pilei are clouds that change shape rapidly and usually indicate severe weather, meaning that the parent cloud is growing rapidly, has plenty of moisture, and is highly unstable.

A **wall cloud** or pedestal cloud is a large, localized and persistent lowering cloud formation that

develops beneath the base of a cumulonimbus cloud that often forms tornadoes.

**Cloud nine** indicates a state of elation and happiness. One of the several explanations for the origin of this idiom refers to the classifications of clouds as made by the US Weather Bureau in the 1950s. Level nine clouds were the highest cumulonimbus that look like glorious white mountains in the sky.

### 4. PRECIPITATIONS

**Monsoon** is an example of the influence of the Arabic. It comes from the Arabic word *mausim* or *mawsim*, meaning time of year, appropriate season. It is used to describe the yearly appearance of torrential rain, indicating a marked shift in weather. The Dutch have the word *monsson*, and the Portuguese have *monção*.

**Virga** is used to refer to precipitation that falls from a cloud but evaporates before reaching the ground. It is a phenomenon common in the desert and in temperate climates and can create beautiful scenes, especially during a red sunset. When winds push the bottom ends of the virga, it falls at an angle and makes the clouds appear to have commas attached to them. In Latin, virga means twig or branch.

A **gully washer** is defined as a short, heavy rainstorm. Gully means small valley or ravine, ditch or gutter. It is also called a “turd floater”. The verbs to wash and to float are both good indicators for a large quantity of water. The expressions are chiefly used in Midland and Western US.

**Graupel**, also called **soft hail** or **snow pellets**, refers to precipitation that forms when supercooled droplets of water are collected and freeze on a falling snowflake, forming a 2-5 mm ball of rime. Graupel is a German word. The phenomenon is not to be confused with other phenomena such as ice pellets or hailstones. **Ice pellets** or **sleet** are a form of precipitation consisting of small, translucent balls of ice. They are smaller than **hailstones** (irregular lumps of ice that can clump together).

### 5. INSTRUMENTS

The very name of the science of **meteorology** comes from the Greek words *meteoros* meaning aloft, high in the sky and *logia* meaning study. So do the names of many instruments used in meteorology. One Greek word used to build the names of meteorological instruments is *metron* – meter, a verse; that by which anything is measured; measure, length, size, limit, proportion – which became meter or metre.

Thus, **thermometer** (instrument for measuring the temperature using a variety of different principles) contains the word *thermo* meaning heat. The word **barometer** (instrument used for measuring air pressure, invented by Robert Boyle) contains the word *baros* meaning weight. In early 17<sup>th</sup> century Italy, there were many scientists independently working on vacuum and air pressure principles. However, it was a young scientist by the name of Evangelista Torricelli who first detailed his experiments related to what was later to become the barometer. Pressure readings made by means of a barometer are recorded using a **barograph**. An **anemometer** (instrument used for measuring the velocity or the pressure of the wind) contains *anemos* meaning wind. The first anemometer was invented as far back as the 15<sup>th</sup> century by Leone Battista Alberti, and later reinvented by an Englishman by the name of Robert Hooke.

A **hygrometer** (instrument used for measuring the moisture in the environment) contains the word *hygros* meaning wet, moist, fluid. A **hair hygrometer**, as the name suggests, is a device that uses human or animal hair under tension, whose length changes with humidity. Other examples include: the **actinometer** used for solar radiation measurements, the **psychrometer**, for relative humidity measurements, the **evaporimeter**, also known as **atmometer**, used to measure the evaporation rate.

Another weather related instrument is the **weather vane** or **wind vane**, a movable device attached to an elevated object such as a roof for showing the direction of the wind. Very often they are in the shape of

roosters, hence the name **weathercock**. The word *vane* comes from the Old English word *fane* meaning flag. A rather similar device is called a **wind sock**.

## **6. CONCLUSIONS**

The examples mentioned in this paper help us conclude that the language of meteorology is a very complex and surprising one. It covers a large array of atmospheric phenomena which are not the same all over the world. The weather peculiarities of various regions of our planet have led to a rich vocabulary in this field. Those working with this vocabulary must know both the meaning of the words they use and their origins in order to fully understand the phenomenon it describes and its implications and consequences.

Latin and Greek have had a heavy influence on the meteorological jargon, but other languages have had their share, too.

As our world is ever changing, so will the climate in different parts of the planet. And so, many “weather words” will disappear as new ones will be adopted to describe new phenomena and new climatic conditions.

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