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Weather Basics

Folklore Weather Forecasting

Before modern scientific weather forecasting, people whose lives and livelihoods depended on the weather (such as shepherds and fishermen), relied on weather lore to foretell the weather.

These beliefs were passed down from generation to generation and have become part of our different cultures. Lots of weather proverbs are nothing more than familiar rhymes but a few of these sayings do actually have some scientific basis.



1. Also without professional weather forecast farmers' had to choose the right time for haymaking in the past.
Source: Dorfmuseum Schönwalde

Part 1: Sun, Moon, rainbows...

Short range forecasting using the Sun, the Moon, rainbows, clouds and the sky

Several weather lores are drawn from observations of natural phenomena such as the colour of the sky, the rings around the Moon and the behaviour of animals.

In the past, farmers watched cloud movements and the colour of the sky to know when to sow and when to reap. Sailors noted changes in wind direction and watched wave motions for signs of a change in the weather.

It isn't possible to predict the long term weather using these sayings but those, which predict the next day's weather, often have some real hope of success.



Some of the old weather related sayings about the Sun, the Moon, rainbows and clouds are given below.



1. Dawn in the Alps.
Source: www.edenpics.com

Sky - "Red Sky at night, shepherds delight. Red sky in the morning, shepherds warning."

When the western sky is especially clear there is often a red sunset. As the Sun sets, the rays shine through more and more of the lower atmosphere. This contains dust, salt, smoke and other aerosol pollutants. These aerosol particles scatter some of the shorter wavelengths of light into space (the violets and the blues) leaving only the longer wavelengths (the reds and oranges). If an area of high pressure is present, aerosols are trapped close to the ground. More aerosols makes the sunset even redder than usual and gives the "red sky at night". The weather associated with high pressure conditions is stable and dry.

In the mid-latitudes of the northern hemisphere, weather systems most often approach from the west. Since high pressure generally brings fair weather, this type of red sky at sunset indicates that clear weather is approaching, which would "delight" a shepherd (or a sailor). If the sky is red in the morning (again because of aerosol scattering), the high pressure region has most likely already passed and an area of low pressure may follow. Low pressure usually brings clouds, rain or storms and so red skies in the morning warn shepherds (or sailors) of bad weather to come.

Halo - "Halo around the sun or moon, rain or snow soon."

In many cases this is true. The halo around the Sun or the Moon is a layer of cirrus clouds made up of ice crystals. These ice crystals act as tiny prisms, forming a white or sometimes coloured halo around the Sun or Moon. These clouds typically indicate an approaching warm front associated with a following low pressure system. Rain or snow do not always follow, but there is a higher probability after a halo is seen. The brighter the circle, the greater the probability.



2. Halo around the Sun.
© Mats Mattsson <http://home.swipnet.se/matasm> shown with permission.



Moon - "If the moon's face is red, of water she speaks."

This saying of the Zuni Indians is very accurate. The red colour forms as dust is pushed ahead of a weather front. These fronts bring moisture to the area.

3. source:
<http://24.77.76.160/index.html>





Moon - "Clear moon, frost soon."

On clear nights the surface of the Earth cools rapidly. Without a "blanket" of clouds, the heat lost from the surface of the Earth is simply radiated into space. If the temperature is low enough on these clear nights and there is no wind, frost can form.

4. source:
<http://24.77.76.160/index.html>

Rainbow - "Rainbow in the morning gives you fair warning."

In the morning, when the Sun is in the east, the shower and its rainbow are in the west. As the weather in the mid-latitudes of the northern hemisphere moves mostly from west to east, rainbows in the morning to the west indicate approaching rain, while a rainbow at sunset indicates that the rain is leaving and fair weather is on the way.



5. source:
<http://24.77.76.160/index.html>

Stars - "When the stars begin to huddle, the Earth will soon become a puddle."

As the amount of cloud in the night sky increases, whole areas of stars are hidden and the stars that are still visible seem to huddle together. Increasing cloud means that the chance of rain also increases.



Clouds – "The higher the clouds, the better the weather".

High clouds indicate both dry air and high atmospheric pressure. These conditions are both present when the weather is fair.

Smoke – "When smoke descends, good weather ends".

The instability of the atmospheric pressure before a storm and the humidity prevents chimney or bonfire smoke from rising quickly. The smoke tends to curl downwards in the face of a storm wind.

6. source: freestockphotos.com

Part 2: Plants and animals

Short range forecasting using plant and animal behaviour

Can animals and plants help predict the weather or other natural events? There's tradition that says they do – and, in some cases, scientists agree!



Dogs and cats seem to know when a tornado or earthquake is imminent. Birds roost early and feed extensively before rain or snow showers and pigs and squirrels gather more debris to insulate themselves from cold weather.

Plants and certain fungi can accurately forecast wet and dry weather. Chickweed, dandelions, bindweeds, wild indigo, clovers and tulips all fold their petals up prior to rain. Rainstar, a type of fungus, opens up prior to rain and closes in dry weather. Mushrooms grow well when the weather is moist as do mosses and seaweeds. In fact, seaweeds exposed on the rocks at low tide seem to swell and rejuvenate in the high humidity conditions seen before wet weather.



1. Dandelion flowers

source:
<http://www.flowersandfauna.com/dandelionphotos.htm>

Some of the very old weather sayings related to plants and animals are given below along with short explanations why some of them actually work.



Cat - "If cats lick themselves, fair weather comes."

During fair weather, when the relative humidity is low, electrostatic charges (static electricity) can build up on a cat as it touches other objects. Cat fur loses electrons easily, so cats become positively charged. Many cats don't like to be stroked when the air humidity is low as sufficient electrical charge can build up and cause small sparks which irritate the cat. When a cat licks itself, the moisture makes its fur more conductive so the charge can "leak" off.

2. source: <http://www.thepetprofessor.com/>

Crickets - Crickets are accurate thermometers; they chirp faster when warm and slower when cold.

This saying is extremely accurate. Count the cricket's chirps for fourteen seconds, then add forty. This is the temperature (in Fahrenheit) of wherever the cricket is.



3. Cricket

source:
<http://hortipm.tamu.edu/pestprofiles/other/cricket/cricket.html>





Flies – Flies bite more before it rains.

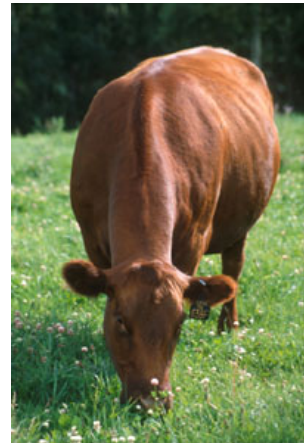
This rule does not always apply. However, insects do settle on objects more during moist weather as they find it more difficult to fly. High temperatures cause us humans to sweat more and this makes us a more appetising target to a fly. These two reasons, plus an increased release of body odour when atmospheric pressure decreases means that flies and insects are more bothersome just before it rains than at any other time.

4. source: <http://free-stock-photos.com/>

Cow - A cow with its tail to the west, makes weather the best; A cow with its tail to the east, makes weather the least.

This New England saying from the USA has much truth in it. The natural instinct of animals is to graze with their tails into the wind. If a predator tries to attack from behind, the wind blows their scent to the animal in danger. In the northern hemisphere, east winds often bring rain and west winds often bring fair weather so the grazing animal's tail becomes a weather sign.

5. source: <http://www.thepetprofessor.com/>



Sea gull - "Sea gull, sea gull, sit on the sand; It's a sign of a rain when you are at hand."

Generally speaking, birds will roost more during low pressure conditions than during high pressure. Before a hurricane, large flocks of birds are seen roosting. Perhaps the lowering of air pressure or the decrease in the density of the air makes flying harder. Less natural air updrafts may also lead to the birds "resting it out."

6. source: <http://www.edenpics.com/>

Leaves - When leaves show their backs, it will rain.

When trees grow, their leaves make a pattern which depends on the prevailing wind. So when a storm wind blows (which is naturally in the opposite direction to the prevailing wind), the leaves are ruffled backwards and show their light undersides.



7. source: <http://www.freefoto.com/index.jsp>





Pimpernel - "Pimpernel, pimpernel, tell me true. Whether the weather be fine or no. No heart can think, no tongue can tell. The virtues of the pimpernel."

When the atmosphere reaches about 80% humidity, the bog pimpernel closes. So in other words, the scarlet pimpernel open when it's sunny, and closes when rain is due.

8. Scarlet pimpernel

source: Cornell University, Department of Plant Pathology, Ithaca, NY 14863

<http://vegetablemdonline.ppath.cornell.edu/>

Part 3: Long range forecasting

Most of the natural forecasting methods only work over a very short time period. Long range proverbs also exist, but most of them have no meteorological basis. Some of them are more accurate than others but all of them are controversial.

To find universally acceptable long range weather proverbs is very difficult. They tend to vary from country to country and strongly depend on the climatic conditions in the region.



February 2nd

One of the few widely used long range weather proverbs relates to February 2nd, Candlemas Day.

According to an old English song:

1. Hedgehog



*"If Candlemas be fair and bright,
Come, Winter, have another flight;
If Candlemas brings clouds and rain,
Go Winter, and come not again."*



2. Brown bear

The Romans brought this proverb to the Germans during their conquest of the northern countries. The Germans adopted it and concluded that if the Sun made an appearance on Candlemas Day, a hedgehog would cast a shadow. If this happened, six more weeks of bad weather would result, and they called this time the "Second Winter."

In several countries people believed that animals came out on the 2nd of February to judge the quality of the weather.



3. Groundhog

In Hungary, for example, the shadow of a brown bear is observed. In the United States Groundhog Day is a very popular tradition.

*"If the groundhog sees his shadow
we will have six more weeks of winter."*

The groundhog's seasonal forecasting accuracy is low and its predictions of winter are only correct 39% of the time!

Summer Rain Signs

Another generally believed weather rhyme is connected to summer rains.

*"If on the eighth of June it rain
That foretells a wet harvest, men sayen"*

In France the weather on the feast of Saint Medard (June 8th) is said to determine whether the next few weeks will be wet or dry. If it rains, the rain will continue for four or five weeks, or recur at haying time. Rain on the 8th June in Norway and Hungary will lead to forty days of rain. In Flanders the day is July 6th, the feast of Saint Godelive. In Germany it is the 27th June, which is known as Seven Sleepers Day.



"If it rains on Seven Sleepers Day, the rain will stay seven weeks more."

If it rains in England on St. Swithin's Day, the 15th of July, the proverb says that it will rain for forty days and if it is dry then there will be fine weather for the next forty days. The proverb goes back to the Elizabethan times.

*"St Swithin's Day, if it does rain
Full forty days, it will remain
St Swithin's Day, if it be fair
For forty days, t'will rain no more."*

These summer-rain weather proverbs are quite accurate and work more or less in about 70% of cases.

