

Basic Rock Climbing Class

Southwest Outdoor Club

Tempe, Arizona

WEATHER

How to Read It and How to Prepare for It

Weather is notoriously difficult to predict with any degree of precision, even for the trained meteorologist. So thumb through a book on weather forecasting, read the tips in these pages, but most of all, go prepared.

When it's fair, the weather demands little more of us than to enjoy it. But when it's foul and, more importantly, before it turns that way, weather demands our utmost attention. Dealing with inclement weather can be a minor nuisance or an epic struggle. If you go prepared for anything it might throw at you, you have already won that struggle.

Going Prepared

The first step in preparedness is knowledge. Talk with someone who knows the area and can give you advice based on firsthand experience. If possible, take that person with you. Know the topography, the altitude and the weather patterns of the area you are visiting. Call the National Weather Service for specific information on the area. Contact the agency responsible for the area, whether it is the Forest Service, BLM, or Parks Service. Watch the Weather Channel for major weather patterns.

The next step is choosing the appropriate clothing. Do you need protection from heat or cold? Is it likely to be raining, or snowing, or blowing? Will you be working up a sweat, and if so, for the entire time or only in short spurts? Are you likely to encounter any weather that, requires specialized gear?

Especially for planned overnight trips, but even on planned day trips, consider your shelter with the weather in mind. If you have to stay out, do you have protection from cold and wet? The same goes for food and water. Always carry an extra day's worth for unplanned bivouaca caused by bad weather.

The final step in preparedness is awareness during your activity. Don't get so caught up in what you're doing that you fail to notice that this morning's wispy clouds have turned to dark towers of impending doom. Pay attention to the wind, the temperature, and the sky, and you'll be surprised to find out how much you already know about weather forecasting.

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Rhyme or Reason: Guessing the Weather

Everyone has heard the old saying, "Red sky at morning, sailors take warning. Red sky at night, sailors delight." Refreshingly, there's much truth in that one. What follows is a drastically simplified version of weather science, together with some of the more reliable everyday indicators we can use to guess what the skies will throw at us next.

Clouds, wind and temperature changes are the primary weather indicators that can be perceived without instruments, Barometric pressure can best be monitored with a barometer or altimeter, but can also be guessed at using some of the indicators discussed later.

Clouds usually indicate the movement of a front, which is the boundary between a dominant and a receding mass of cold or warm air. A warm front is predicted by cirrus clouds followed by altostratus, then by nimbostratus. A cold front is predicted by altostratus, then cumulonimbus or nimbostratus. The movement of any front usually is indicated by a falling barometer (steadily for a warm front, increasingly rapid for a cold front) and usually results in precipitation.

Wind is caused by the motion of air around centers of high and low barometric pressure, and by the rotation of the earth. Wind speeds are low near the center of pressure systems, and higher where the pressure is changing rapidly. The movement of wind across the skin causes a perceived drop in temperature; this effect is called wind chill. Very roughly, the perceived temperature drops 5 degrees for every 5mph of wind speed.

Temperature changes are caused by the movement of warm and cold fronts, and by changes in barometric pressure as air moves through different elevations (this is called adiabatic cooling and warming). In general, rising barometric pressure makes fair weather, and falling barometric pressure makes foul (though not necessarily cold) weather.

The weather will be **fair** when:

- Wind is from the west or northwest
- Pressure is steady or rising slowly
- Fair weather cumulus clouds are common
- Early morning fog burns off by noon
- There is frost or dew early in the morning

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The weather threatens to **rain** or **snow** when:

- Pressure falls

- Cumulus clouds develop vertical columns or anvils

- There is a halo around the sun or moon

- Cirrus clouds thicken and the cloud cover drops

- The sky darkens

- South wind increases in speed

- The wind shifts in a counterclockwise direction (e.g., from north to west or south)

The weather will **clear** when:

- Pressure rises quickly

- South wind shifts to west

- The cloud ceiling lifts

The temperature will be **cold** when:

- It is a clear night

- Pressure rises

Finally, some tried and true backwoods weather forecasting, tips:

- The bubbles in coffee will form near the center of the cup if weather bodes fair and clings to the sides if the weather bodes foul. Use a cup with vertical walls and strong brewed coffee (no instant),

- Mosquitoes swarm 12 hours before a storm and disappear 1 hour before.

- Bees stick close to a hive when the weather is about to turn for the worse.

- Hair that turns curly or frizzy is a harbinger of wet weather.

- Tints of green, yellow, dark red or grayish-blue in the sky indicate precipitation.

- Cattle and other grazing animals herd together at lower elevations when bad weather approaches.

- Campfire smoke that hangs low indicated low pressure and possible rain. smoke that rises in a vertical column indicates high pressure and fair weather.

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Dealing with Specifies

The adverse effects of weather on outdoors people fall into five categories; heat, cold, sun, wet and lightning.

Heat

Heat can get you through heat syncope (fainting), heat cramps, heat exhaustion and stroke. Prevention includes the following:

- Shade the head and back of the neck to minimize solar heat gain.

- Drink plenty Of fluids before and during your activity. Your urine should stay clear or pale yellow.

- Make sure your diet contains plenty of salt.

- Wear loose fitting, light colored clothes.

- Exercise cautiously in conditions of high heat and humidity.

- Be alert for signs of heat illness, dark urine, dizziness, headaches and fatigue,

- Acclimatize. Exercise 2 hours per day in the heat for 10 to 14 days.

Cold

The dangers of cold include frostbite and hypothermia. Prevention is entirely dependant upon clothing - to insulate and trap body heat and to protect against wind and wet - and upon shelter.

- Use the clothing layering system to prevent heat loss

- Put on a hat, Your head is an efficient heat radiator

- When station ary, sit on an insulating pad, not on the cold ground

- Keep your clothes dry

- Eat and drink adequately

Sun

Unprotected skin, can receive first and even second degree burns from the sun. Don't forget about your eyes! Also, remember to protect against the sun all year round.

- Apply sunscreen 30 minutes before going out and reapply it often. Use SPF 15 or higher

- Apply sun block to your lips, nose, ears and other sensitive areas,

- Wear a hat with a brim

- Wear sunglasses even on cloudy days.

- Minimize sun exposure between 10am and 3pm

- Wear long-sleeve shirts and pants

Wet

Unless the temperature is cold, wet is more of a nuisance than a danger. But it is an incredible nuisance. Use the layering system and always be prepared with adequate clothing and shelter for wet weather.

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Lightning

According to the National Outdoor Leadership School, lightning injures 1,000 people in the US each year. Of those, approximately 1 out of 3 die. These are small numbers compared to the other outdoor related injuries and deaths, but numbers which are almost wholly preventable. The two rules regarding lightning are:

- Lightning usually strikes the tallest object in the area
- Water conducts electricity

With the preceding in mind:

- Don't stand under the tallest object in the area. Choose a large group of trees.
- Don't stay at or near the top of peaks or ridges. Move down as quickly as is safely possible.
- Don't hide in shallow caves or under ledges or stand at the entrance of cave
- Don't stand near a body of water where you will be the tallest object,
- Get out of water and off wet ground. Don't swim
- Get away from objects that conduct electricity: tent poles, ice axes, pack frames
- Squat down with your feet facing downhill. Keep your hands off the ground,
- If you have something dry and non-conducting (foam pad, rope, day pack), squat on it
- A group of people should spread out, not huddle