

Thunderstorms and Tornadoes

EXPLORING THE MYSTERIES OF WEATHER

Tornadoes

These violent, whirling winds are nature's most devastating forces. They vary from a narrow path 100 feet wide to a howling black cloud that can stretch as long as a mile.



Tornadoes are usually small and do not travel far, but the area they cover is destroyed with often death dealing thoroughness. A deafening roar announces a

tornado's approach and everything in its path is generally destroyed completely. Often started by thunderstorms, a tornado begins when a violently rotating column of air under a storm makes contact with the ground – whether you see a funnel or not. Initially, just dust is stirred up, but a column soon takes shape. At its strongest, a tornado usually has a visible funnel and a debris/dirt cloud which holds together in a controlled shape. As it weakens, the funnel shrinks, becomes wobbly, and disappears, leaving only a dusty reminder to disperse slowly in the air.

In the US, several Severe Storm Centers forecast tornadoes year round. In Canada, most tornadoes occur in spring and summer. During this period, the northern hemisphere gradually faces the sun's rays more directly and for a longer time each day. The sun quickly heats surfaces that have been cooler all winter. Warm moist air pushing up from the Gulf of Mexico begins to push rapidly northward where it meets much cooler polar air masses moving south. When these air masses of contrasting temperatures and humidity come in contact, thunderstorms or their more violent offspring, tornadoes, occur.

In operations rooms across the country, technicians have the aid of weather balloons, ground reports and satellite photographs to help them look for potential twisters. Doppler radar is now used to great effect and is able to give a warning up to 30 minutes before a storm hits.

Thunderstorms

As mentioned above, when warm moist air is pushed violently upward in the at-

mosphere, a thundercloud rapidly develops. The movement of the warmer air to colder regions above sets off powerful updraughts in the thundercloud. These air currents release energy, sometimes forcefully, in the form of heavy rain, hail, lightning, strong winds and occasionally tornadoes.

The simplest description is that summer storms act as a giant instrument for distributing the sun's heat. At the equator, the earth receives more energy from the sun than it loses into the atmosphere. At the north and south poles, more energy scatters into the atmosphere than is received from the sun. Without the winds, the tropics would be unbearably hot and the polar regions unbearably cold. These winds that blow in huge revolving belts around the earth convey the excess heat from the equator toward the poles and cold pole air back to the tropics.

In the northern hemisphere, the jet stream, a fast moving belt of wind, flows from east to west between 5-10 miles above the earth in a looping pattern similar to a huge waving ribbon. As it travels around the earth, the stream causes great eddies called high pressure systems that rotate clockwise between its looping waves.

Between the "highs" are low pressure systems that move in the opposite direction. As the highs and lows move across the middle latitudes with the prevailing westerly winds, they bring alternating systems of fair weather and storms.

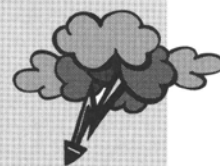
In conclusion, storms have an enormous impact on human lives and property. They do however serve a needed and beneficial function in the overall weather pattern but sometimes are terribly destructive. Environment Canada states June is tornado month, when on average, most tornadoes occur. During a tornado, go to the smallest interior room or stairwell on the lowest floor of the building (the bathroom or basement is often the best choice.) ♦

— summarized by Michael Bladon, sources: "Powers of Nature," National Geographic Society, Washington, DC; Environment Canada

A Rough and Ready User's Guide to the Probability of Precipitation

Probabilities

- 0% No precipitation even though it may be cloudy.
- 10% Dry weather with only one chance in ten of snow or rain falling.
- 20% Dry weather still expected.
- 30% Go ahead with your picnic, boating or ski plans but you may have to take shelter.
- 40% An umbrella is recommended. Make alternate plans for outdoor activities that are susceptible to rain. Not a good day to pave the driveway. Keep your fingers crossed!
- 50% It's even Steven on whether it snows or not. Be prepared for all eventualities.
- 60% Want to water your lawn? The odds are favourable that Mother Nature might give you some help.
- 70% Suggest cancellation of outside events. The chances for dry weather have shrunk to three in ten.
- 80% Wet weather likely. Make appropriate plans.
- 90% The occurrence of precipitation is a near certainty. Venture out if you enjoy walking in the rain or playing in the snow.
- 100% Precipitation is a certainty.



— "Probability of precipitation: improving the weather forecast with the aid of numbers," Environment Canada Atmospheric Environment Service Fact Sheet, 1992