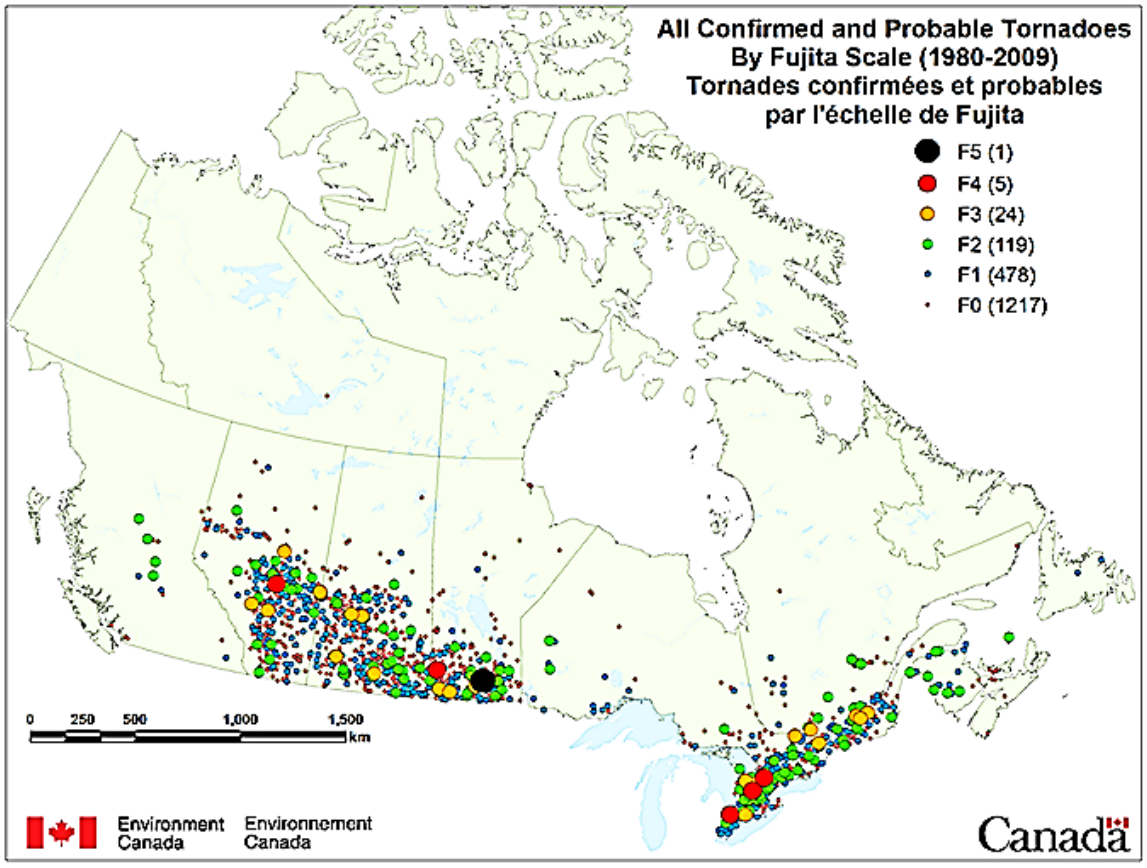
Tornadoes in Canada

Tornadoes are unmistakable rotating columns of high-velocity wind that brings devastation to anything in their path. They are difficult to predict. Sometimes they move quickly and can leave a wide swath of destruction. At other times the tornado is small, touching down sporadically and leaving a haphazard path of damage. In either case they can uproot trees, flip cars and demolish houses. Canada probably gets more tornadoes than any other country with the exception of the United States. Southwestern Ontario and parts of the southern Prairies are most often struck.

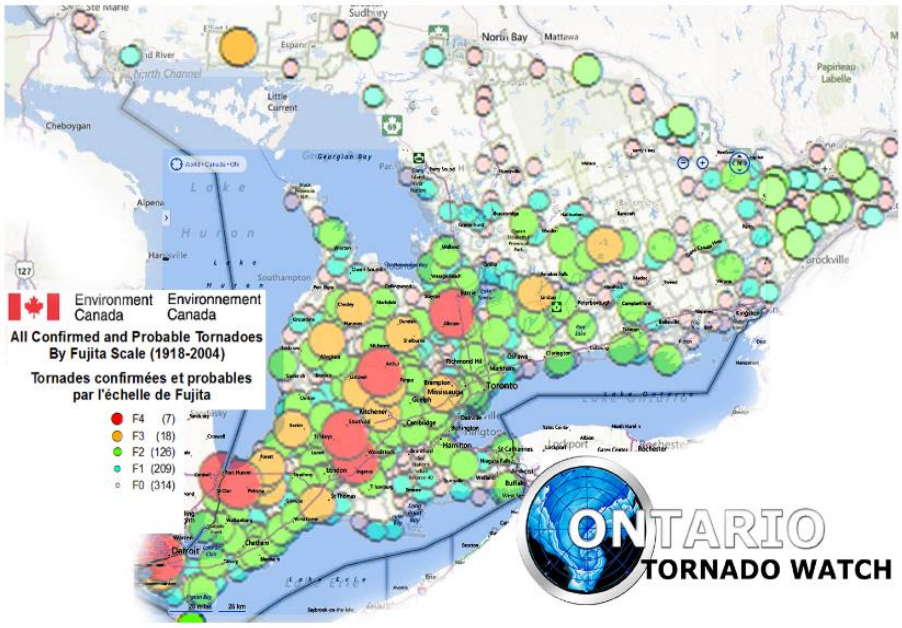
Most tornadoes occur in June and July and although their season extends from April to September, they can occur at any time of year. They frequently develop in mid-afternoon to early evening.



Environment Canada warns the public about tornadoes but because they are hard to predict and can move at up to 70 km/hour, a tornado can strike without warning. Typically, a tornado is preceded by a severe thunderstorm and is associated with black skies, strong winds, lightning, thunder and heavy rain or hail. Sometimes the sky will turn an unusual green colour and the wind will sound like a freight train.

There is protection from a tornado. Most deaths and injury occur when buildings collapse or when people are struck by flying debris, especially glass. So it is best to get quickly into a well-supported basement area. If this is not possible, a room with strong walls will do (such as a bathroom or under a stairwell). If you are outside, crouch or lie down in a ditch. Houses collapse most often because of improper anchoring of walls to foundations and roofs to walls. Mobile homes and cottages are the most susceptible to damage, because they are generally not anchored and are constructed to lower standards.

The worst Canadian tornado, by death toll, occurred at Regina on June 30, 1912. When an F-4 cut a five-block-wide swath through the city -- 28 people died, 200 were injured and 2,500 left homeless. About 500 buildings were destroyed. Other devastating Canadian tornadoes include the Edmonton tornado of July 31, 1987 which killed 27 people and injured 300.



Because most tornadoes spin counter-clockwise, moving along an east to northeast path, the winds on the south side of the tornado are stronger. Vortices inside a main tornado can follow a looping trail, rather than a straight line. They do not always stay on the ground but skip along destroying one house and leaving neighbours untouched.

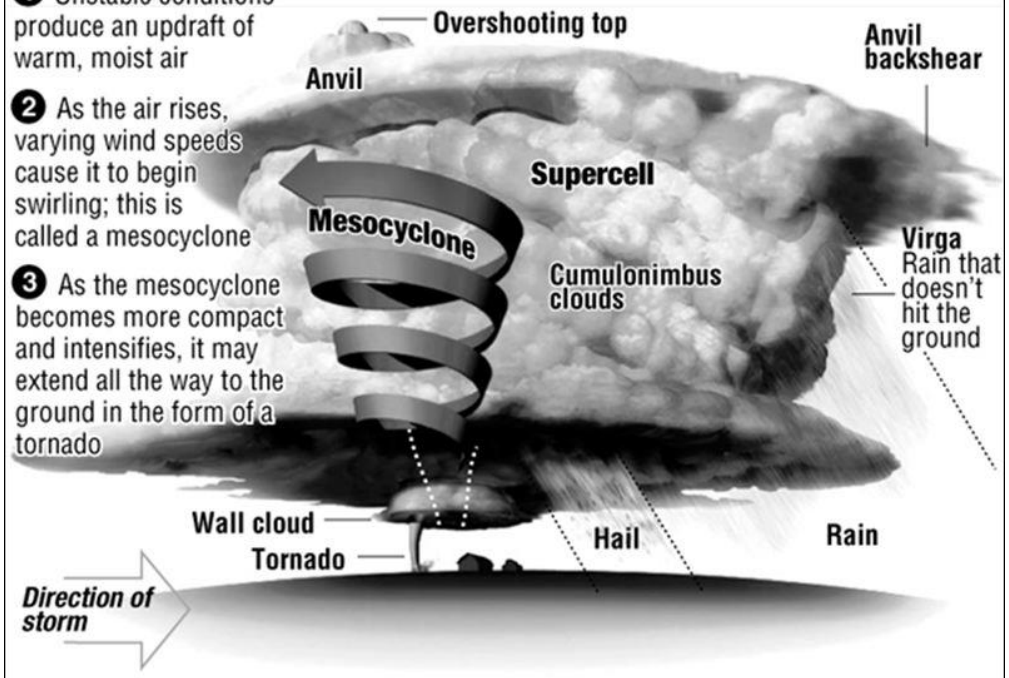
Tornadoes are graded for intensity on the "Fujita scale" (named after the noted tornado research scientist, Ted Fujita), from F-0 to F-5. Canada has never had an F-5 tornado. Of Canadian tornadoes, 45 percent are F-0, 29 percent are F-1, 21 percent are F-2, four percent are F-3 and just one percent are F-4. An average F-0 tornado track is about 40 metres wide and 1.7 kilometres long. An average F-4 track is about 400 metres wide and 36 kilometres long.

F-scale	**Wind speed (km/h)**	**Damage**
F-0	64 - 116	Light
F-1	117 - 180	Moderate
F-2	181 - 253	Considerable
F-3	254 - 331	Severe
F-4	332 - 418	Devastating
F-5	419 - 512	Massive devastation

Source: Public Safety Canada, 2007 (http://www.publicsafety.gc.ca/res/em/nh/to/index-eng.aspx)

TORNADO GENERATION

The severe thunderstorms called supercells provide the ideal spawning ground for tornadoes: Warm, moist air colliding with cool, dry air causes a swirling updraft that spins off tornadoes.



SOURCES: National Oceanic and Atmospheric Administration; Weather Underground; San Francisco State University Department of Geosciences

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Levels of the Enhanced Fujita scale

Grade, damage and windspeeds

Damage: **Incredible**

EF5

Windspeeds: **Greater than 322km/h (200mph)**

Damage: **Devastating**

EF4

Windspeeds: **267-322km/h (166-200mph)**

Damage: **Severe**

EF3

Windspeeds: **218-266km/h (136-165mph)**

Damage: **Considerable**

EF2

Windspeeds: **178-217km/h (111-135mph)**

Damage: **Moderate**

EF1

Windspeeds: **138-177km/h (86-110 mph)**

Damage: **Light**

EF0

Windspeeds: **105-137km/h (65-85mph)**

Source: Fema

Tornado Safety Tips

theweathernetwork.com

Tornado Warnings can happen quite quickly and even catch some people off guard. Here are some best practices to follow should one touch down courtesy of The National Oceanic and Atmospheric Administration.

IN A HOUSE WITH A BASEMENT Avoid windows. Get in the basement and under some kind of sturdy protection (heavy table or work bench), or cover yourself with a mattress or sleeping bag. Know where very heavy objects rest on the floor above (pianos, refrigerators, waterbeds, etc.) and do not go under them. They may fall down through a weakened floor and crush you. Head protection, such as a helmet, can offer some protection also.

IN A HOUSE WITH NO BASEMENT, A DORM, OR AN APARTMENT Avoid windows. Go to the lowest floor, small center room (like a bathroom or closet), under a stairwell, or in an interior hallway with no windows. Crouch as low as possible to the floor, facing down; and cover your head with your hands. A bath tub may offer a shell of partial protection. Even in an interior room, you should cover yourself with some sort of thick padding (mattress, blankets, etc.), to protect against falling debris in case the roof and ceiling fail. A helmet can offer some protection against head injury.

IN AN OFFICE BUILDING, HOSPITAL, NURSING HOME OR SKYSCRAPER Go directly to an enclosed, windowless area in the center of the building -- away from glass and on the lowest floor possible. Then, crouch down and cover your head. Interior stairwells are usually good places to take shelter, and if not crowded, allow you to get to a lower level quickly. Stay off the elevators; you could be trapped in them if the power is lost.

IN A MOBILE HOME Get out! Even if your home is tied down, it is not as safe as an underground shelter or permanent, sturdy building. Go to one of those shelters, or to a nearby permanent structure, using your tornado evacuation plan. Most tornadoes can destroy even tied-down mobile homes; and it is best not to play the low odds that yours will make it. This mobile-home safety video from the State of Missouri may be useful in developing your plan.

AT SCHOOL Follow the drill! Go to the interior hall or room in an orderly way as you are told. Crouch low, head down, and protect the back of your head with your arms. Stay away from windows and large open rooms like gyms and auditoriums.

IN A CAR OR TRUCK Vehicles are extremely risky in a tornado. There is no safe option when caught in a tornado in a car, just slightly less-dangerous ones. If the tornado is visible, far away, and the traffic is light, you may be able to drive out of its path by moving at right angles to the tornado. Seek shelter in a sturdy building, or underground if possible. If you are caught by extreme winds or flying debris, park the car as quickly and safely as possible -- out of the traffic lanes. Stay in the car with the seat belt on. Put your head down below the windows; cover your head with your hands and a blanket, coat, or other cushion if possible. If you can safely get noticeably lower than the level of the roadway, leave your car and lie in that area, covering your head with your hands. Avoid seeking shelter under bridges, which can create deadly traffic hazards while offering little protection against flying debris.

IN THE OPEN OUTDOORS If possible, seek shelter in a sturdy building. If not, lie flat and face-down on low ground, protecting the back of your head with your arms. Get as far away from trees and cars as you can; they may be blown onto you in a tornado.

IN A SHOPPING MALL OR LARGE STORE Do not panic. Watch for others. Move as quickly as possible to an interior bathroom, storage room or other small enclosed area, away from windows.

IN A CHURCH OR THEATER Do not panic. If possible, move quickly but orderly to an interior bathroom or hallway, away from windows. Crouch face-down and protect your head with your arms. If there is no time to do that, get under the seats or pews, protecting your head with your arms or hands.