Tornadoes are a very localised atmospheric phenomenon that is intense but does not last long. The term tornado comes from two Spanish words: ‘tornada’ (storm) and ‘tornar’ (turn). They are formed by winds turning at great speed around a centre of low pressure, thus forming a vortex; the wind spirals towards the middle.

Characteristics

Structure of the vortex: a funnel cloud called a ‘tuba’
Cloud formation associated: Cumulonimbus which can grow up to 15km high and wide
Distance covered: from a few hundred metres to 300 km
Speed: 30 to 50 km/h
Lifespan: from a few minutes to several hours
Max speed of rising winds: over 500km/h
Spin direction: clockwise in the southern hemisphere, anti-clockwise in the northern hemisphere

Tornado classification and damage

<table>
<thead>
<tr>
<th>Scale</th>
<th>Damage Effects</th>
<th>Wind speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>F0</td>
<td>Light damage</td>
<td>65-110 km/h</td>
</tr>
<tr>
<td>F1</td>
<td>Moderate damage</td>
<td>120-170 km/h</td>
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<tr>
<td>F2</td>
<td>Considerable damage</td>
<td>180-250 km/h</td>
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<tr>
<td>F3</td>
<td>Severe damage</td>
<td>260-330 km/h</td>
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<tr>
<td>F4</td>
<td>Extreme damage</td>
<td>340-410 km/h</td>
</tr>
<tr>
<td>F5</td>
<td>Incredible damage</td>
<td>420-510 km/h</td>
</tr>
</tbody>
</table>

Visible damage:
- TV aerials twisted, small branches snapped off trees, caravans displaced
- caravans overturned, branches broken off, damage to gutters, siding and sheds
- walls of homes destroyed, trees uprooted and carried away
- well built homes destroyed, large objects throw around, trees uprooted and carried away
- well-constructed homes and buildings swept away, trees uprooted and thrown around, large projectiles thrown at speed

Experiment: How to create a vortex

Take two plastic water bottles and join together by piercing a hole in the tops as shown in the diagram. The vortex allows an optimal exchange between the water and the air. It can be noted that the water descends much more quickly than under normal circumstances. This principle is of the same nature as that of a tornado when the mass of warm, damp air meets that of a cooler, drier air mass.

Tornadoes in our area?

Yes! The Provence-Alpes-Côte d’Azur region presents a definite risk of tornadoes occurring. The number of tornadoes per km² is above the national average, especially in the coastal areas. On average it is estimated that 1 to 3 tornadoes occur every year in the region and more often than not in the warm season, from May to October.

And on a worldwide scale?

The USA is the country where the most tornadoes occur. Each year between 700 and 1200 are counted, 20 or more of F4 or F5 scale. Between 1980 and 2010, 35,100 tornadoes were observed. The vast majority of those occur in the Eastern half of the country, more particularly in the region of the Great Plains which has been nicknamed Tornado Alley.

Storm Chasers

A storm chaser tracks down a storm likely to provoke a tornado in order to film and take photos of the event. This pursuit allows well-equipped researchers to learn a lot more about this weather phenomenon.

Tornado videos

Making a tornado
All about tornadoes
Closing in on a tornado

Conclusion

A tornado needs certain conditions to be able to form (warm, damp air meeting cooler dry air). This phenomenon which can reach extraordinary dimensions is short-lived and can create minor damage or wreak havoc. Our area is one at risk!

Sitography

A game Genius: The phenomenon of the tornado