

TORNADOES

JANET SUMNER:

Tornadoes can cause massive destruction – think ***Wizard of Oz*** or ***Twister***. But they don't really bother us here in the UK do they?

Well actually...they do!

VOXPOP (Woman):

"It sounded like something was sort of coming toward the house."

VOXPOP (Man):

"It was unbelievable. We got a lawnmower through the front of one of the cars."

JANET SUMNER:

But why do tornadoes occur and what's really happening when a tornado forms? Tornadoes are violent whirlwinds, and they form from thunderstorm clouds - cumulonimbus. Tornadoes begin as a rotation within the cloud, which becomes organised and concentrated into a small cyclone. As the storm intensifies, moist air from near the surface is moved upwards around the vortex, the updraft draws in low-level air from several kilometres in all directions. As the moisture in that air condenses, that delivers energy to the system.

That all sounds very complicated but we can see how this works by creating a mini tornado right here in the garage! We're going to use water rather than air... because it's easier to see a tornado forming in water, and it's more manageable... but the physical processes are exactly the same.

I've got two bottles. And I'm going to fill one of them with coloured water. I can connect the two bottles together using a piece of pipe,

that's our ground level if you like. And then when I turn them over, that's the equivalent of adding energy to the system.

In tornadoes the "twisting" effect is set off by complex processes occurring in the storm clouds and in the larger wind environment. We don't have any of those natural forces working in our miniature bottle world, so I'm going to have to add some artificial spin.

The existence of the tornado is revealed at ground level by this water whirl which becomes a funnel extending down from the cloud in the centre of the rotating vortex. It's when the cloud funnel reaches the ground it officially becomes a tornado and that's when it's most powerful and causes the most damage.

I'm going to try this experiment again but I'm adding some glitter to the system and we'll slow the footage down, so that we can see the power of our mini tornado even more clearly. So here we go...add my artificial spin...there goes the funnel cloud and you can see how it's swirling all those glitter particles around.

If you do this experiment yourself, try adding different kinds of particles and then you can observe how the shape, size and weight of the particles influences how they behave in the tornado. And don't forget to post your results online and join in with the discussion.