84

The winds of a tornado are the most violent and destructive ones on Earth.

龙卷风是地球上最猛烈和最具破坏性的风。

Any of you who have seen one knows very well how frightening and powerful they are.

任何看见过龙卷风的人都非常了解他们是多么令人恐惧和强大。

What's interesting about them is that scientists don't actually know exactly why tornadoes occur.

关于它们有意思的是科学家事实上并不确切地知道龙卷风为什么发生。

We do know, however, what happens when tornadoes are formed.

然而，我们的确知道，当龙卷风形成时发生了什么。

As you remember, a front occurs when cool, dry air from the north meets warm, humid air coming from the south, from the Gulf of Mexico, for tornadoes in the United States.

正如你们所记得的，当来自北方的凉爽干燥的空气遇到来自南方，来自墨西哥湾的温暖湿润的空气，会出现一个峰，形成在美国的龙卷风。

Where these air masses meet, a narrow zone of storm clouds develops, and thunderstorms, and sometimes tornadoes, occur.

在这些气团相遇的地方，一个狭窄的暴风雨云团地带形成了，还有雷暴，以及有时会发生龙卷风。

How is this violent weather produced?

这种猛烈的天气是如何产生的？

Well, a mass of warm, humid air rises very rapidly.

好，大量的暖湿空气上升非常快。

As it rises, more warm air rushes in to replace it.

当它上升时，更多的温暖空气冲进来顶替它。

This inrushing air also rises, and in some cases, especially when there is extreme thermal instability, begins to rotate.

这种冲进来的空气同样上升，在某种情况下，尤其当有极度的热不稳定性时，（空气）开始旋转了。

When this happens, the rotating air forms a tornado.

当这事儿发生时，旋转着的空气形成了龙卷风。

Even if you've seen tornadoes only in movies, you know that they can demolish buildings in seconds.

即使你只在电影里见过龙卷风，你（也会）知道它们能短时间内毁坏建筑物。

This is possible because when a tornado passes over a house, it sucks up air from around the house and so the air pressure outside the house drops rapidly.

这是可能的，因为当龙卷风经过一间房屋，它吸走了房子周围的空气，因此房屋外面的气压下降很快。

Inside, pressure remains the same.

在内部，气压保持原来（的水平）

So, air pressure inside is greater than air pressure outside.

所以，内部的气压高过于外部的气压

The result is that the building explodes outward.

结果是建筑物向外爆炸

Next, we'll talk a little bit about how new technological developments are being used to try to predict tornadoes.

接下来，我们将谈一点关于新的技术发展正在被应用于预测龙卷风。