**WHAT IS WIND SPEED?**

*Wind speed* is the measure of how fast air moves from one place to another. Air moves because of the differences in *air pressure*. Air moves from areas of high pressure to areas of low pressure. On average, wind speeds are higher the further up in the atmosphere you go. One reason is because there is less friction from things like buildings and the ground itself. This is why wind turbines tend to be very tall to capture as much wind as possible!

**HOW IS IT MEASURED?**

There are many different units that can be used for wind speeds. Two are miles per hour (mph) and kilometres per hour (kph), which you may have heard in relation to the speed of a car. Another common way is ‘meters per second’ (m/s). The instrument used to measure wind speed is an *anemometer*. These can be automatic *(pictured left)* or hand-held *(right)*.

**DID YOU KNOW?**

There are many ways of recording wind speed, including putting them into categories using scales. The strength of tornadoes *(pictured left)* is measured using the *Fujita Scale*, and hurricanes *(centre)* using the *Saffir-Simpson Scale*. There is a scale which you can judge wind speed by using what you can see with your own eyes, called the *Beaufort Scale*. Why not look it up and see if you can use it to guess today’s wind speed!

**GLOSSARY**

*Air pressure:* The ‘weight’ of air molecules that press down on the Earth. As air warms it becomes lighter and less dense. This is called ‘low’ pressure and often gives you windy, unsettled weather. ‘High’ pressure tends to give you calm, settled and sunny weather.

*Storm surge:* A rise in sea level due to very low air pressure and strong winds. Storm surges can be very destructive to coastlines that are in their path. One of the most devastating storm surges to hit Europe was in 1953, causing damage and loss of life along the North Sea coastlines of the UK, Belgium and Netherlands.

*Variable wind:* Wind speed and direction can change quickly. There may be a sudden *gust*, which is a burst of high wind speed, for example. When a low-pressure weather system, called a *depression*, passes over you, winds may get faster or slower, and can change direction in a matter of hours even minutes.
CASE STUDY: Cyclone Klaus (January 2009)

Cyclone Klaus, a severe low-pressure system (pictured above as a large swirl of cloud covering entire countries), caused widespread damage across France and Spain, especially in northern Spain. The storm caused twenty-six deaths, as well as damage to public transport and power supplies, with approximately 1.7 million homes in southwest France and tens of thousands of homes in Spain experiencing power cuts. Severe damage to property and major forest damage occurred. The picture to the right shows a road damaged in Basque County in Spain due to the severe wind and rain causing landslides in mountainous areas.

KEY MESSAGES FROM THE DATA

- On average in Western Europe (UK, France, Spain etc), wind speeds are highest in the winter.
- Projections to the year 2100 show very little change in average wind speeds across Europe – a slight drop if at all.
- Wind speed is very variable on a day-to-day and month-to-month basis.

BE DATA SMART

Wind speed is a part of the weather which can change a lot over short spaces and short time periods. It is very variable. Many things can impact the strength of the wind, such as obstructions like trees, buildings and hills can slow wind down. Even one side of the same mountain or hill can have much higher wind speeds if it is facing where the wind is coming from. So, while averages can be a good guide to where to build a wind farm, for example, be extra careful that averages of wind speeds for entire regions or months can hide periods of calm and bluster!

FOR MORE DETAILS AND ACTIVITIES, AND FOR OTHER CASE STUDIES, SEE THE “RESOURCES” SECTION VIA THE MENU.