

Frequently Asked Questions

Activity 3 – how do winds blow at person height?

General questions

How does the experiment work?

Bubbles are easily transported by the wind. Therefore, by following where bubbles go (the bubble chase activity), and timing how long a bubble takes to travel a specific distance (the bubble race activity) we can get a good measure of the wind direction and wind speed near the ground.

Winds at this level are disrupted by friction from the ground below, and obstacles such as buildings and trees, so they are highly changeable. This is why each activity involves taking an average result from multiple measurements.

What's the point of the activity, why should the public do it?

This activity will provide a useful measure of how local winds are being modified by land use, particularly from urbanisation. Normally we measure wind speed at a height of 10m above the ground which is most useful for understanding the general weather conditions. However the winds we actually feel at person height are significantly different. In this activity we want to get a snapshot of how winds in the places and spaces we actually spend time in, compare with the winds we measure from our usual network of instruments.

Why do we need to know about wind direction and speed at person level?

The winds at these levels are important for many reasons such as the ventilation of buildings or urban spaces, and even how hot or cold we feel. On a cool winters day we would probably prefer to be sheltered from the wind, but on a very hot summers day a breeze would often be welcome.

What has this got to do with climate change?

Climate change will pose many challenges for the UK. This is particularly true for the urban environment. Climate change is very likely to result in our summers becoming warmer with more frequent heatwaves. During these high temperature events, the movement of air through our towns and cities will be really important for helping keep both the indoor and outdoor environment comfortable.

Practical questions:

When I blow bubbles they all go in different directions, how can I follow them or time them?

As soon as you have blown the bubbles focus on a single bubble and follow or time that one. In these conditions it is important to do both activities for at least 10 bubbles in order to estimate the average wind direction and speed.

My bubbles do not travel very far

In some conditions you might find that the bubbles move around so chaotically that they won't travel 10m before hitting the ground, or lifting into the sky. For the bubble chase activity if you end up less than about 3m (or 3 adult paces) from where you started after 10 bubbles then enter **T** for turbulent. For the bubble race you can try reducing the distance to as little as 3m, but remember to record the new distance in your workbook. If this doesn't work record **T** for turbulent.

Make sure that you give your bubbles the best exposure to the wind that is possible in the place you are in. If you are in a group don't all crowd around the bubble blower, don't stand too close to a wall, tree, or other large object, and don't interfere with the path of your bubble by following it too closely in the bubble chase.

If I record T does this mean the experiment hasn't worked?

No. This is still a really useful result for us to know about. There may be other people doing the experiment on the same day or under similar conditions in other parts of your town, city, or county. So it would be of real value to see where these turbulent conditions are occurring and where they are not.

My bubbles go in a completely different direction to the clouds measured in activity 2, how does that happen?

The winds near the ground are much more changeable than those at the height of clouds because of all the obstacles that the wind has to move over or around. In certain places and under the right conditions the winds you measure with bubbles could even go in the completely opposite direction.