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# Intercomparison of Wind Tunnels

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The Met Office checks anemometer performance with a standard test (between 8 and 68 knots) in wind tunnels. Over time different facilities have been used and it is most likely that this will continue in future. However, small differences between past wind tunnels have been noted.

There is little information on how wind tunnels compare with each other. There are some groups, such as MEASNET, where differences are known, but this is not universal. In order to address this issue, we performed our own 'round robin' intercomparison to ensure that the Met Office has traceability in its own wind speed measurements.

The wind tunnel intercomparison was performed using a 'test batch' of six A100L cup anemometers of varying ages kept as references by the Met Office. Each anemometer had only been used in lab conditions. The test batch of reference anemometers were sent to five wind tunnels in the UK and France. Three of the wind tunnels used a MEASNET style calibration (between 8 and 31 knots) and two used a Met Office style calibration (between 8 and 68 knots).
The anemometers within the test batch were calibrated at each facility and then compared with each other by ranking their performance. The ranking showed that the anemometers behaved consistently between the different wind tunnels.

All of the wind tunnels were shown to behave slightly differently. The differences were greatest at lower wind speeds below 10 knots and the percentage differences levelled off after 20 knots. In this work we do not attempt to explain differences, just record them.

For many users these differences are not significant. However, as we continue to improve our methods we anticipate including the wind tunnel performance in standard measurement metadata, so that it is readily available to users with a need for more detailed information.