

Exceptional rain rate during a heavy thunderstorm, 19 June 2007.

During the late afternoon of the 19th June 2007, at Wokingham, Berkshire, an active thunderstorm moved northwards across the town. Very high rain rates were experienced, and visual observations during the storm indicated that the torrential rain reduced visibility to 600 m or less. Thunder was first heard at 1723 (all times GMT) to the Southwest. At 1744 I noted that lightning and thunder were frequent to the South and Southwest. The first spots of rain fell at 1752. By 1808 lightning was close and frequent, and this was the case until 1822, (I counted 30 flashes during one minute interval), by which time the main storm cells had moved to the north of the station. The visibility improved rapidly near 1826, indicating that the edge of the rain shaft was approaching, but it was several minutes more before the rain finally petered out. The last thunder was recorded at 1840, to the North. The hail pad showed that a few small hail stones fell sometime during the storm, but these were not observed visually.

A record of the event was faithfully logged by the AWS at Wokingham Emmbrook, about 500m from my observation point. The TBR, set to tip at each 0.1 mm, is interrogated at half second intervals, thus the time of each tip is known to the nearest half second. The resulting rain rate is corrected for known losses for this type of gauge. However, although this TBR on average produces close to 100 % of the nearby 5 inch check gauge, on this occasion with very high rates, the losses were higher than normal, perhaps due to out-splashing from the gauge funnel, as the check gauge recorded a total of 27.0 mm, while the TBR logged only 23.2 mm, which after correcting for known losses, would only have given 25.8 mm.

A graph of the rain rates during this storm is shown below. The figures used are derived from the average rate over 3 tips, and the graph shows the highest value for each minute. Using the average over 3 tips at rain rate of 300 mm/hr reduced the error bar from over 200 mm/hr for 1 tip to 40 mm/hr for 3 tips. As indicated above, the losses in this case seem to have been larger than normal, thus the rain rates shown would also be expected to slightly underestimate the true rates. The highest rate for a single tip was 506 mm/hr, at a time when the rate over 3 tips was 314 mm/hr.

For those interested, the TBR is a Young model 52202, connected to a Campbell Scientific CR10X data logger.

Wokingham AWS 19 June 2007

Rain Rate (highest each minute)

