

## Negative pressure pulse, 25<sup>th</sup> May 2009

A strong negative pressure pulse crossed Wokingham near 0840 GMT on the 25<sup>th</sup> May 2009. The event was captured on the open-scale barograph at my home, and also by the Setra CS100 pressure sensor on the Wokingham AWS.

A plot of the one minute AWS MSL pressure readings between 0800 and 0900 GMT is shown in Fig1, together with spot readings from Stephen Burt's AWS at Stratfield Mortimer, about 14 km WSW of Wokingham, and also those from Richard Griffith's AWS at Horsham, about 50 km SSE of Wokingham.

A series of hourly synoptic charts covering the southeast of England for the 25<sup>th</sup> May, 0700 to 1000 GMT, on which isopleths of hourly pressure tendency were plotted, were used to track the area of pressure falls,. At 0800 GMT, pressure falls were evident in the Isle of Wight/Solent area, with hourly tendencies of  $-4.2$  mbar reported at Thorney Island, and  $-3.4$  mbar at Southampton. Wind gusts from the ENE were in the order of 30 knots in the same area, though the wind was generally light and rather variable over the rest of southern of England.

The pressure pulse was recorded at Horsham at 0832 GMT, min p 1013.7 mbar. It arrived at Stratfield Mortimer at 0835 GMT, min p 1014.0 mbar. The Wokingham AWS gave a min p of 1013.0 mbar at 0843 GMT, and the pulse coincided with an ENE wind gusting 25 kt., see Fig 2. On the 0900 GMT chart hourly tendencies were  $-4.3$  mbar at Wokingham,  $-4.8$  mbar at Shoreham, and  $-4.6$  mbar at Herstmonceux. The almost coincidental arrival of the pulse at Horsham and Stratfield Mortimer suggests an orientation of 305 to 125 degrees for the line joining the min p.

By 1000 GMT, hourly tendencies of  $-4.8$  mbar were seen at Gravesend and  $-3.5$  mbar at Dover, with ENE wind gusts of 27 Kt. at Gravesend. The speed of movement of the pressure pulse calculated from its probable position on the charts, and by the actual time of passage through the three stations where this is known, give interesting and very differing results. Taking the direction of movement to be towards 035 deg, at right angles to the suggested orientation of the pulse, the overall speed between 0800 and 1000 GMT is 18.1 m/s . However, the timing between Southampton and Stratfield Mortimer gives an apparent 25.9 m/s, from Stratfield Mortimer to Wokingham, 20.8 m/s, and from Horsham to Gravesend, 15.1 m/s.

The reason for these rather variable results is most likely associated with development in or changes to the overlying effects producing the pulse. It can be said for certain that the pulse moved across southeast England in a generally NE direction. The event seem to have been related to an area of vigorous deep convection over northeast France, which moved from near Rouen at 0600 GMT to near Amiens at 0900 GMT, a movement ENE at 14 m/s.

It is quite likely that the dynamic processes associated with descent beneath the outflow from this storm, which satellite imagery and upper winds show to lay over southeast England, could have produced the dramatic fall of surface pressure observed.

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Fig 1.

25 May 2009

Pressure comparison

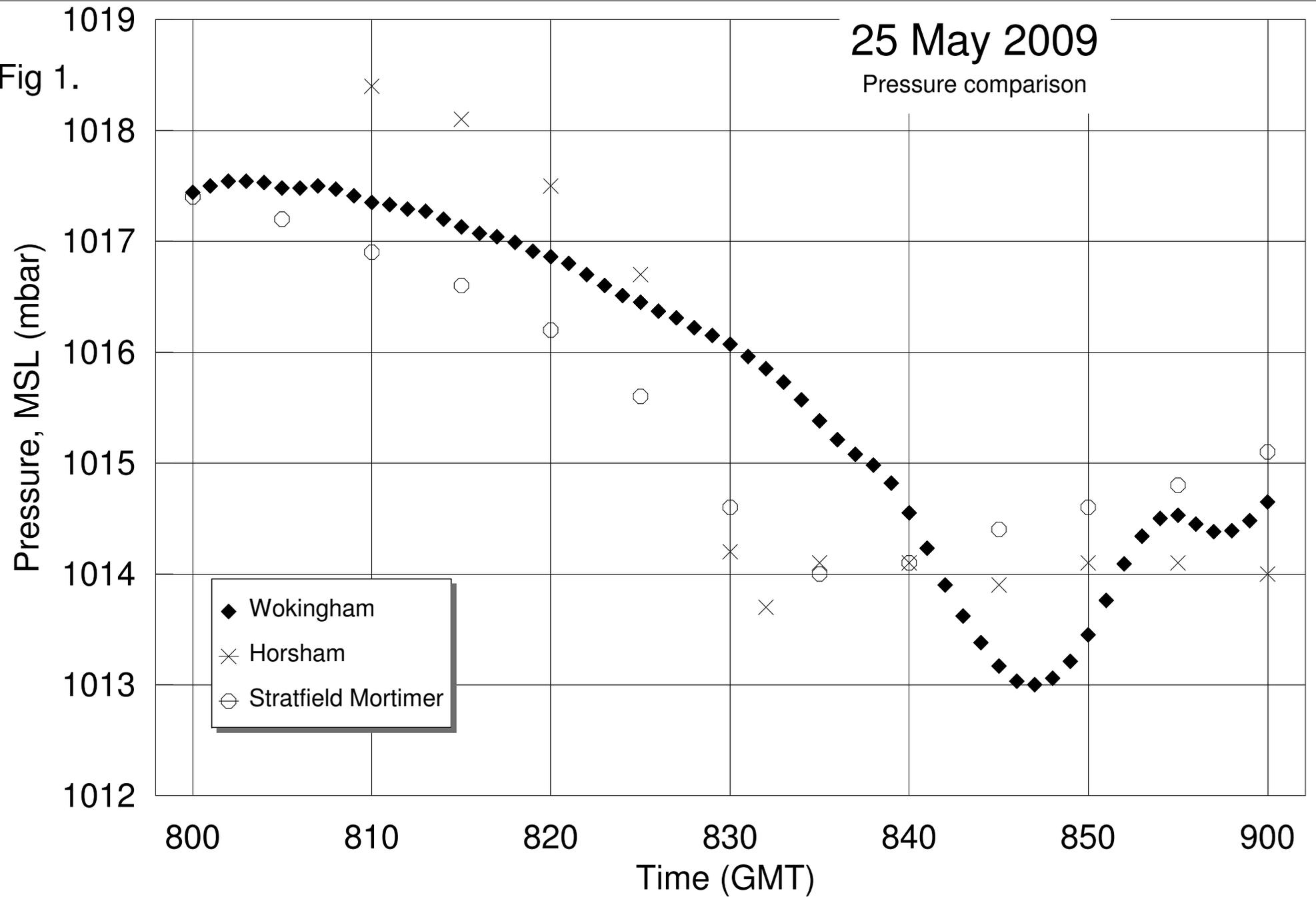


Fig 2.

25 May 2009  
Wokingham AWS

