



1 **Figure 13.** Model-simulated  $w$  ( $\text{m s}^{-1}$ , color, scales on the right) and (a) total  $p'$  (hPa, contours,  
 2 every 0.3 hPa, dashed for negative values) and horizontal winds ( $\text{m s}^{-1}$ , vectors, reference  
 3 vector at bottom), (b)  $p'_b + p'_d$  (hPa, contours) solved by the relaxation method, and (c)  $p'_d$   
 4 (hPa, contours, every 0.2 hPa) solved by the relaxation method and vertical wind shear ( $10^{-3}$   
 5  $\text{s}^{-1}$ , purple vectors, reference vector at bottom) at 550 m at 06:30 UTC 8 August 2009. (d-f)  
 6 and (g-i) as in (a-c), except at 1050 and 2050 m, respectively. For horizontal wind and vertical  
 7 wind shear, vectors at the closest model output level (547, 1058, and 2013 m, respectively)  
 8 are plotted, and the “x” marks the updraft center in each panel.