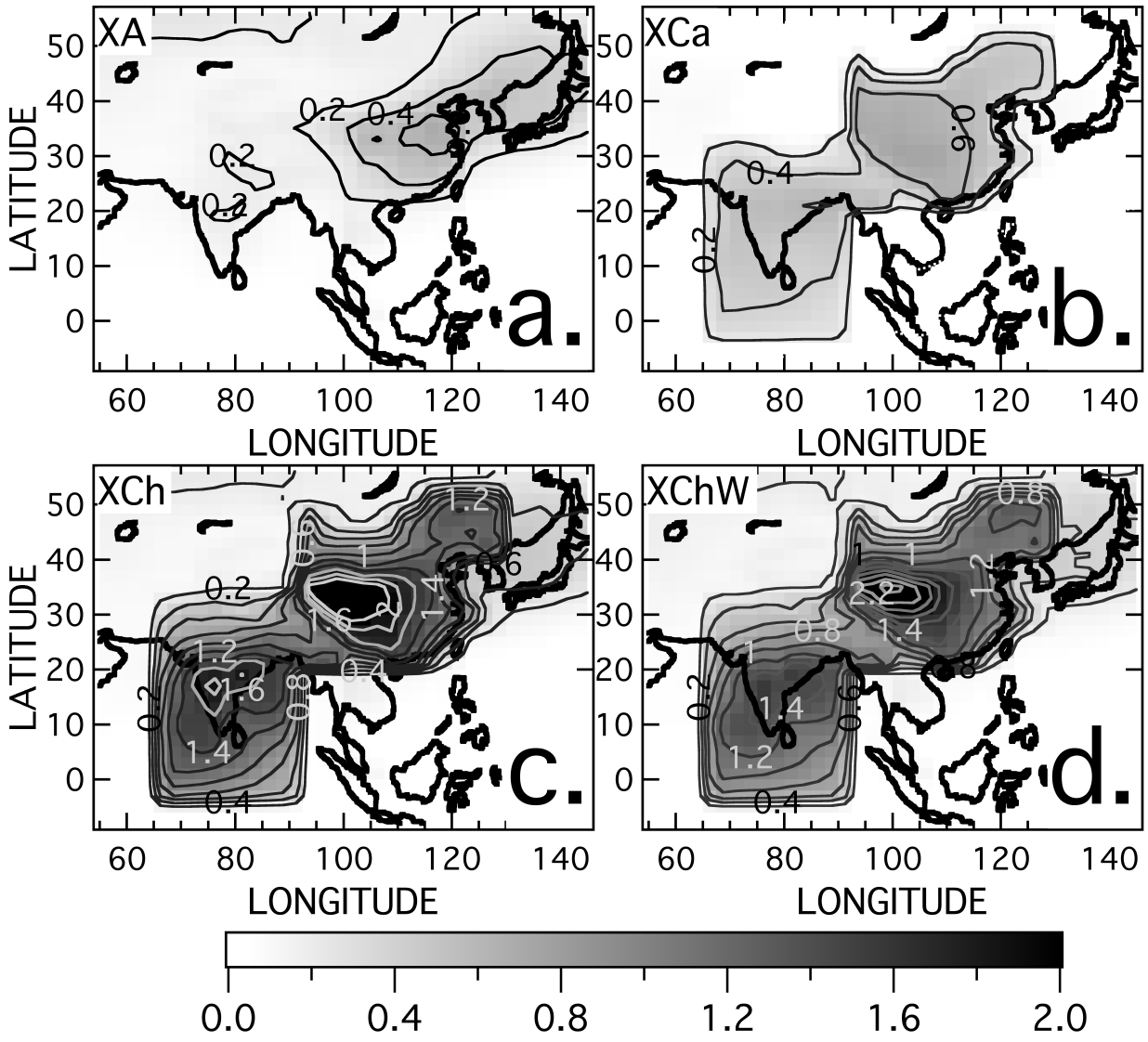

Figure 1. Column-integrated aerosol optical depth for each experiment differenced with respect to the BASE case ($\Delta\tau_a$): (a) XA, (b) XCa, (c) XCh, and (d) XChW. Note that this optical depth represents only the anthropogenic (BC, OC and SO_4) aerosol component (increase between 1950 and 1990) since the natural (dust and sea salt) component is shared with the BASE case. The contour interval is 0.2. Color figures are available online and in the plate section at the end of this article.

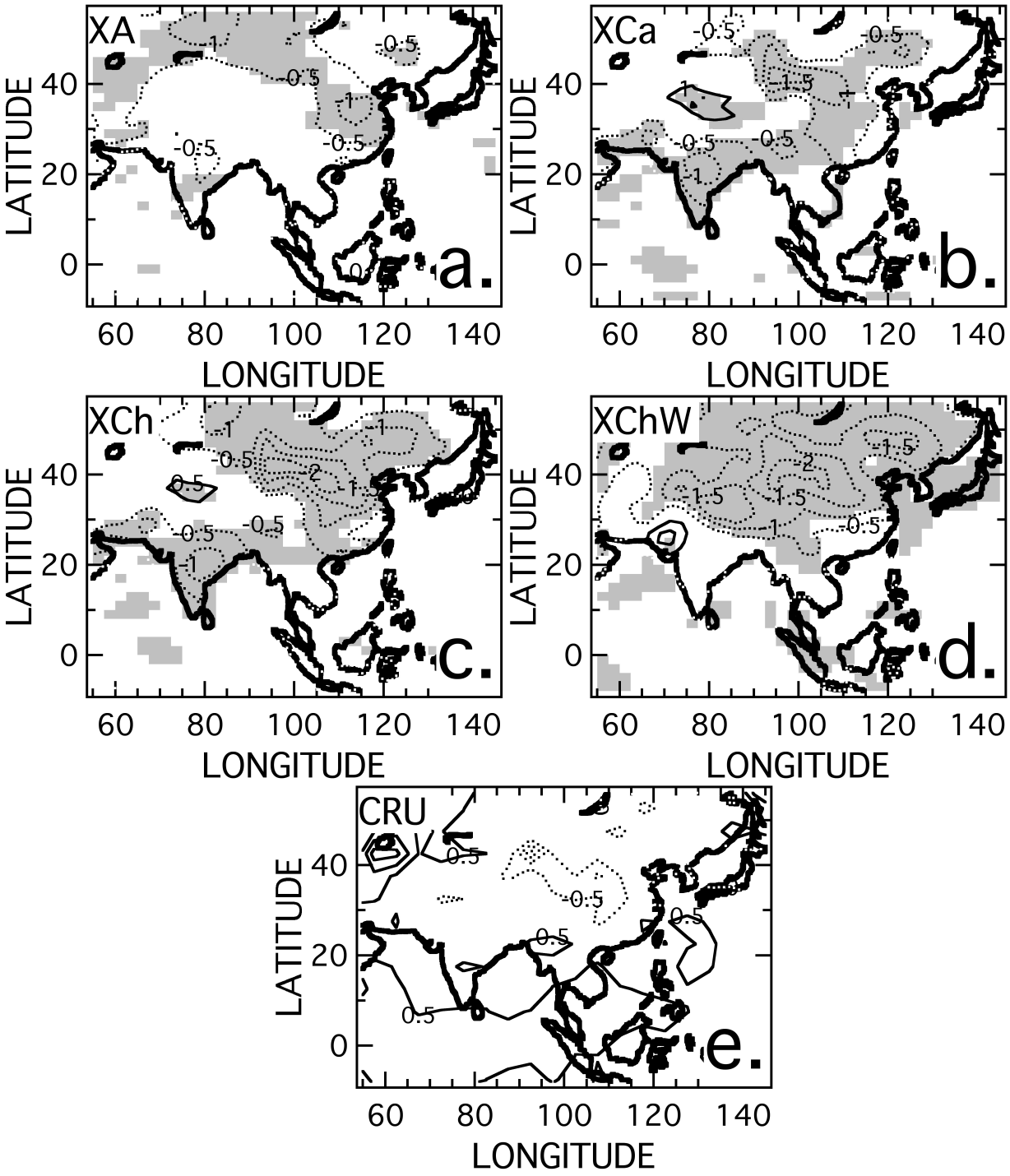

Figure 2. JJA change in surface temperature (ΔT_s) [K] between the BASE case and (a) XA, (b) XCa, (c) XCh, and (d) XChW. (e) Observed mean ΔT_s between the 1945-1955 and 1985-1995 decades from the CRU database [*Brohan et al.*, 2006]. Thin, solid (dotted) lines indicate positive (negative) ΔT_s (contour interval 0.5 K). Gray shading indicates regions where ΔT_s is at or above the 90% confidence level.

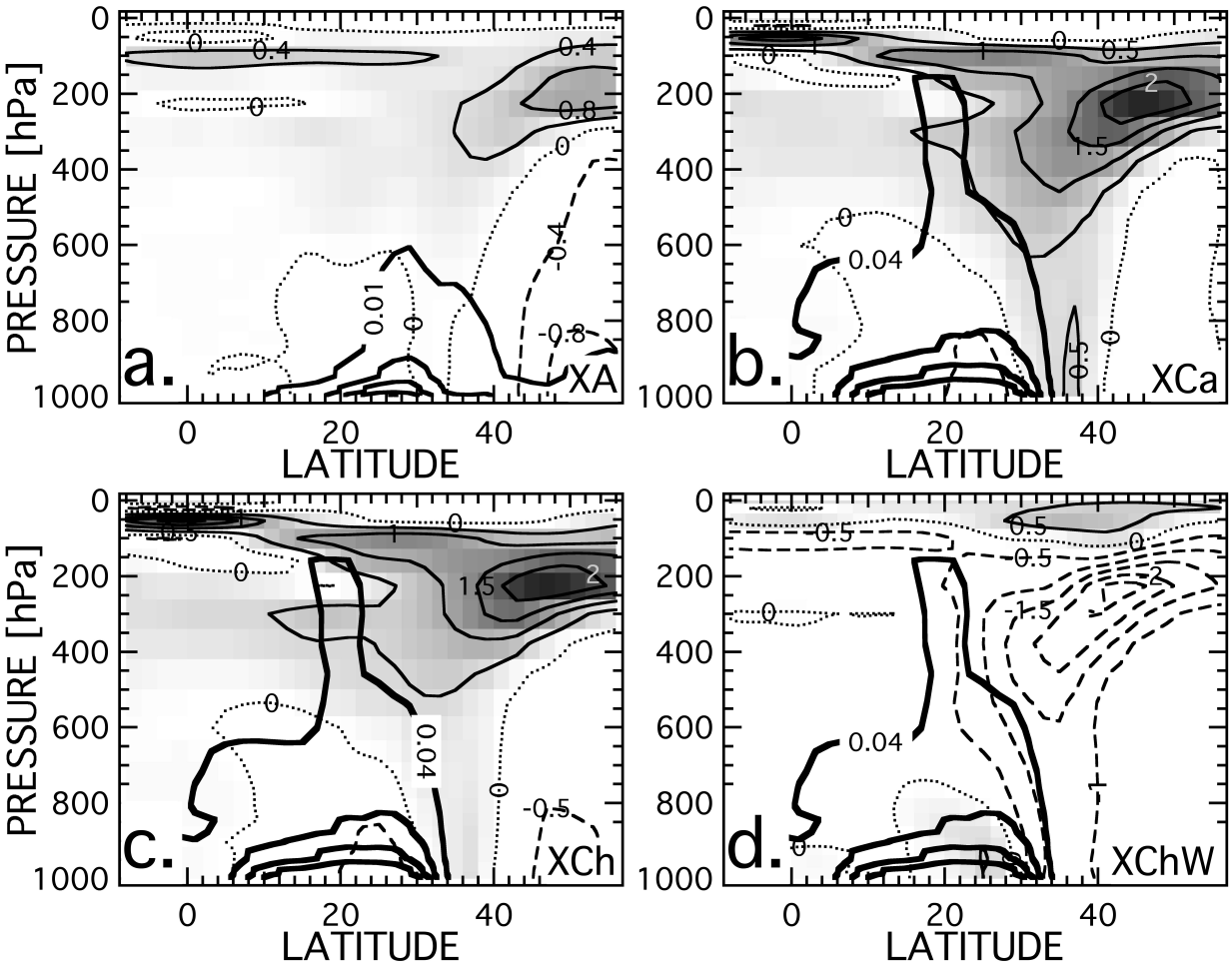

Figure 3. Zonally averaged change in JJA atmospheric temperature (ΔT_{atm}) [K] over India (65°E-90°E) between the BASE case and (a) XA, (b) XCa, (c) XCh, and (d) XChW. Shading highlights regions of positive ΔT_{atm}. Thin, solid (dashed) contours indicate positive (negative) ΔT_{atm} (contour intervals of 0.4 K and 0.5 K for the LOD (XA) and HOD regimes, respectively). Change in BC mixing ratio relative to the BASE case (thick black contours) with contour interval of 0.01 μg m^{-3} in the LOD regime (XA) and 0.04 μg m^{-3}in the HOD regime. See the color figure in the plate section at the end of this article for the change in shortwave heating rate [K d^{-1}].

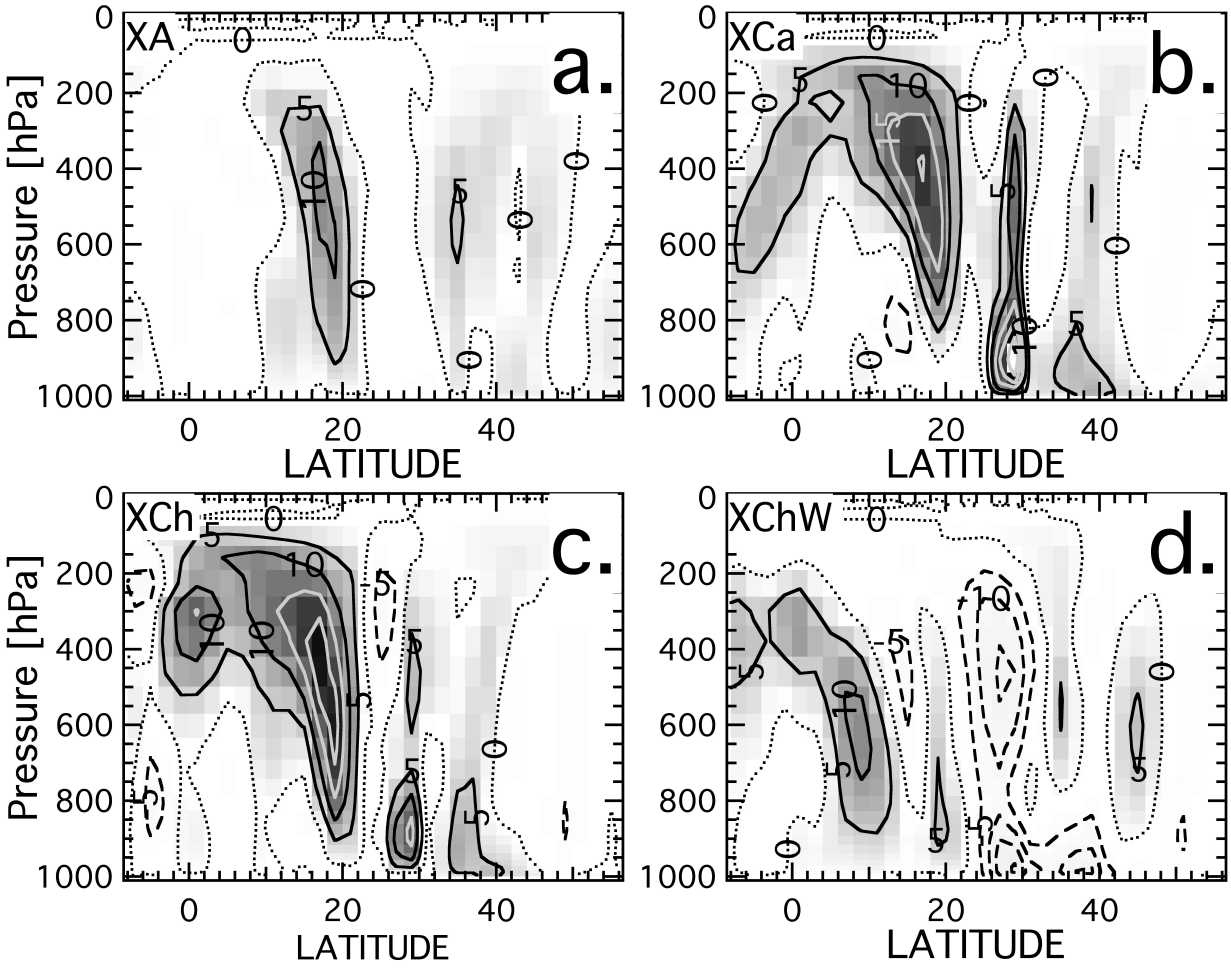

Figure 4. Zonally averaged JJA change in vertical velocity ($\Delta(-w) = \Delta\frac{-dp}{dt}$) between the BASE case and experiments over India (65°E-90°E) for (a) XA, (b) XCa, (c) XCh, and (d) XChW. Note that the negative of the vertical pressure velocity is taken such that solid contours indicate increased vertical motion and dashed contours indicate relative subsidence. The contour interval is 5×10^{-5} hPa s^{-1}.

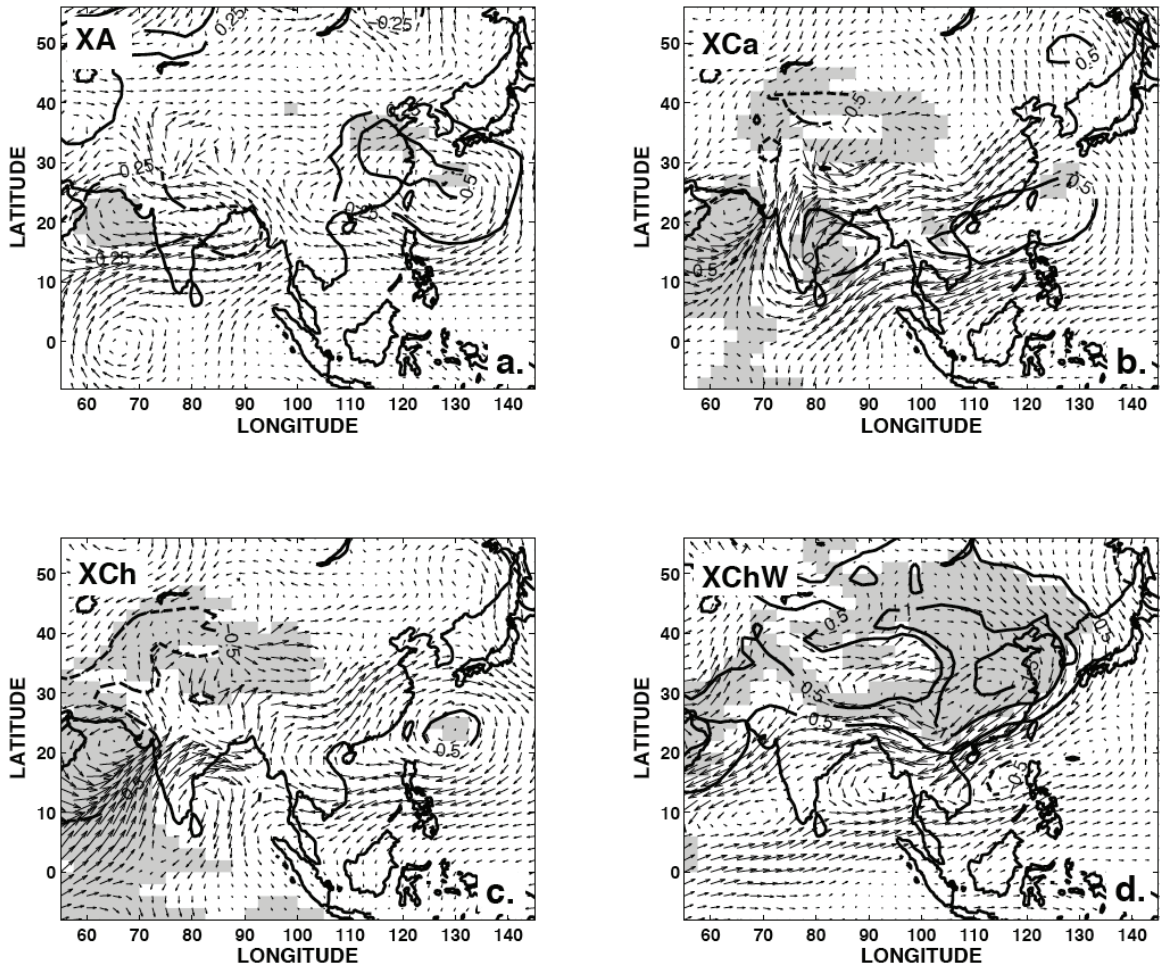

Figure 5. Change in JJA surface pressure (ΔP_{sfc}) [hPa] relative to the BASE case for (a) XA, (b) XCa, (c) XCh, and (d) XChW. Solid (dashed) contours indicate positive (negative) ΔP_{sfc} (contour interval 0.25 hPa in the LOD regime (XA) and 0.5 hPa in the HOD regime). Gray shading indicates regions where ΔP_{sfc} is at or above the 90% confidence level. Changes in the 850 hPa winds relative to the BASE case are plotted as vectors.

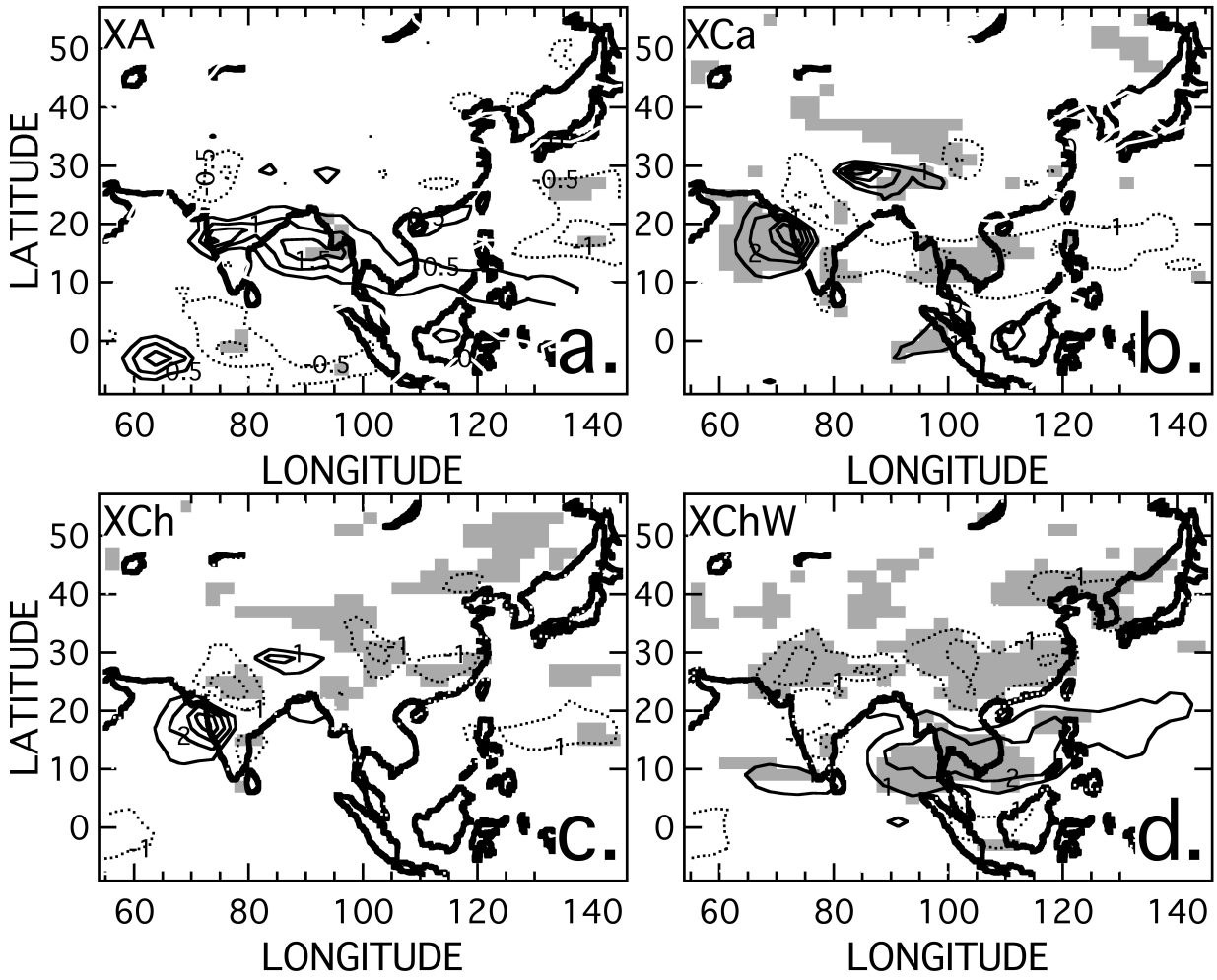

Figure 6. Change in JJA precipitation rate (ΔP) relative to the BASE case for (a) XA, (b) XCa, (c) XCh, and (d) XChW. Solid (dotted) contours indicate positive (negative) ΔP (contour interval of 0.5 and 1.0 mm d^{-1} for the LOD (XA) and HOD regimes, respectively). Gray shading indicates regions where ΔP is at or above the 90% confidence level.

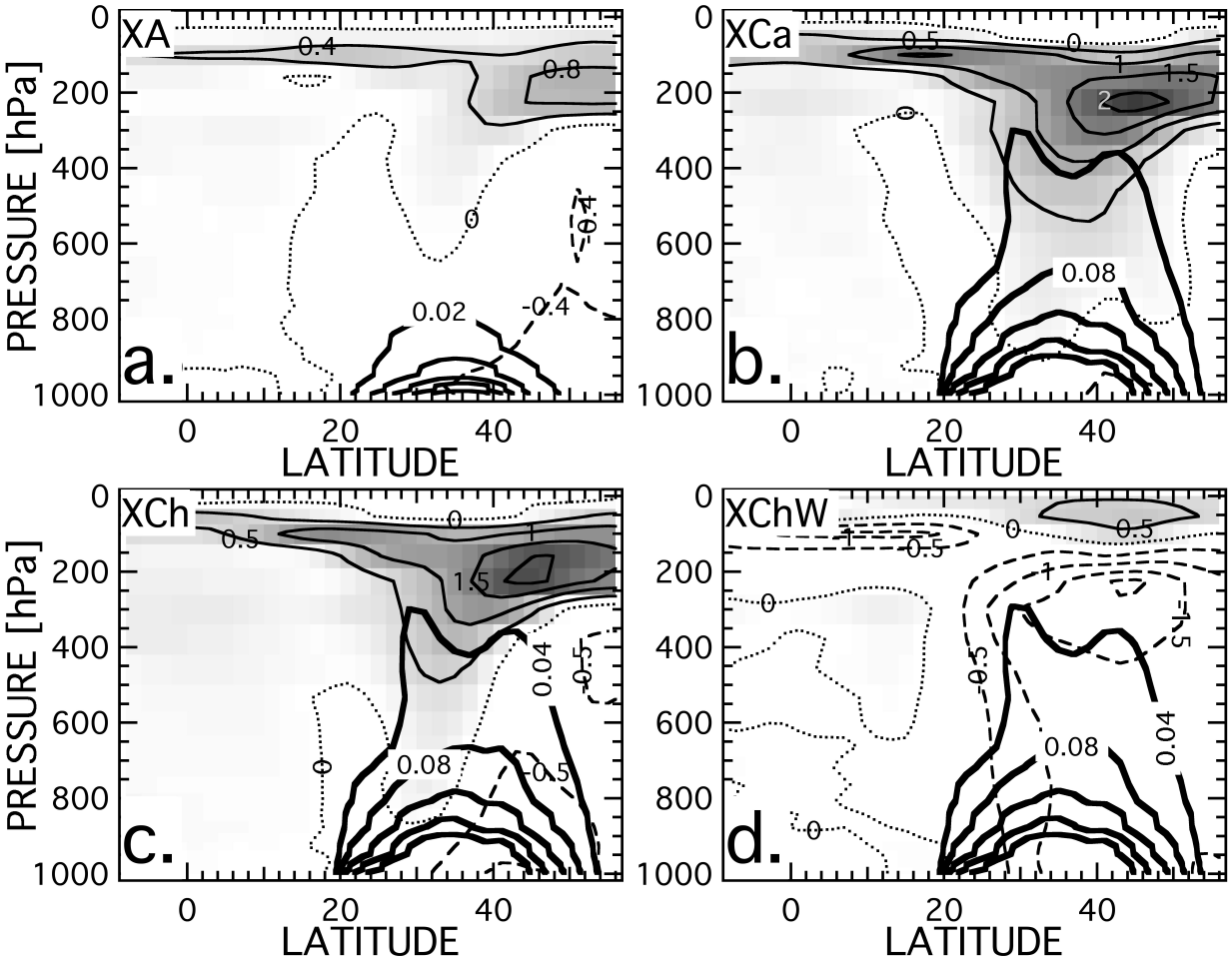

Figure 7. Same as Figure 3 (black and white version; ΔT_{atm} and BC mixing ratio change) except zonally averaged over China (90°E-130°E). See color figure in plate section for change in shortwave heating rate [K d^{-1}].

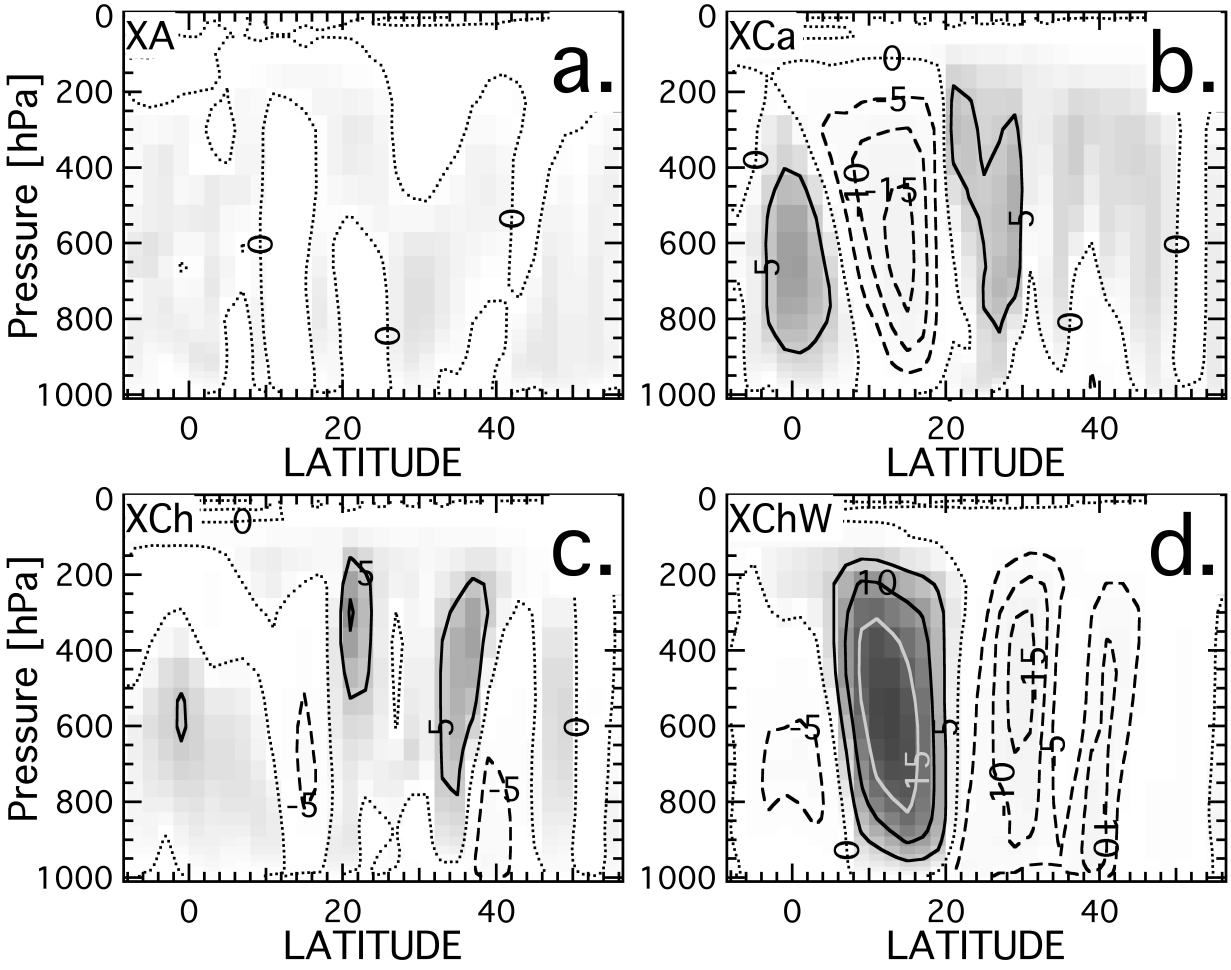

Figure 8. Same as Figure 4 (black and white version; $\Delta(-w) = \Delta\frac{-dp}{dt}$; contour interval 5×10^{-5} hPa s^{-1}) except zonally averaged over China (90°E-130°E).

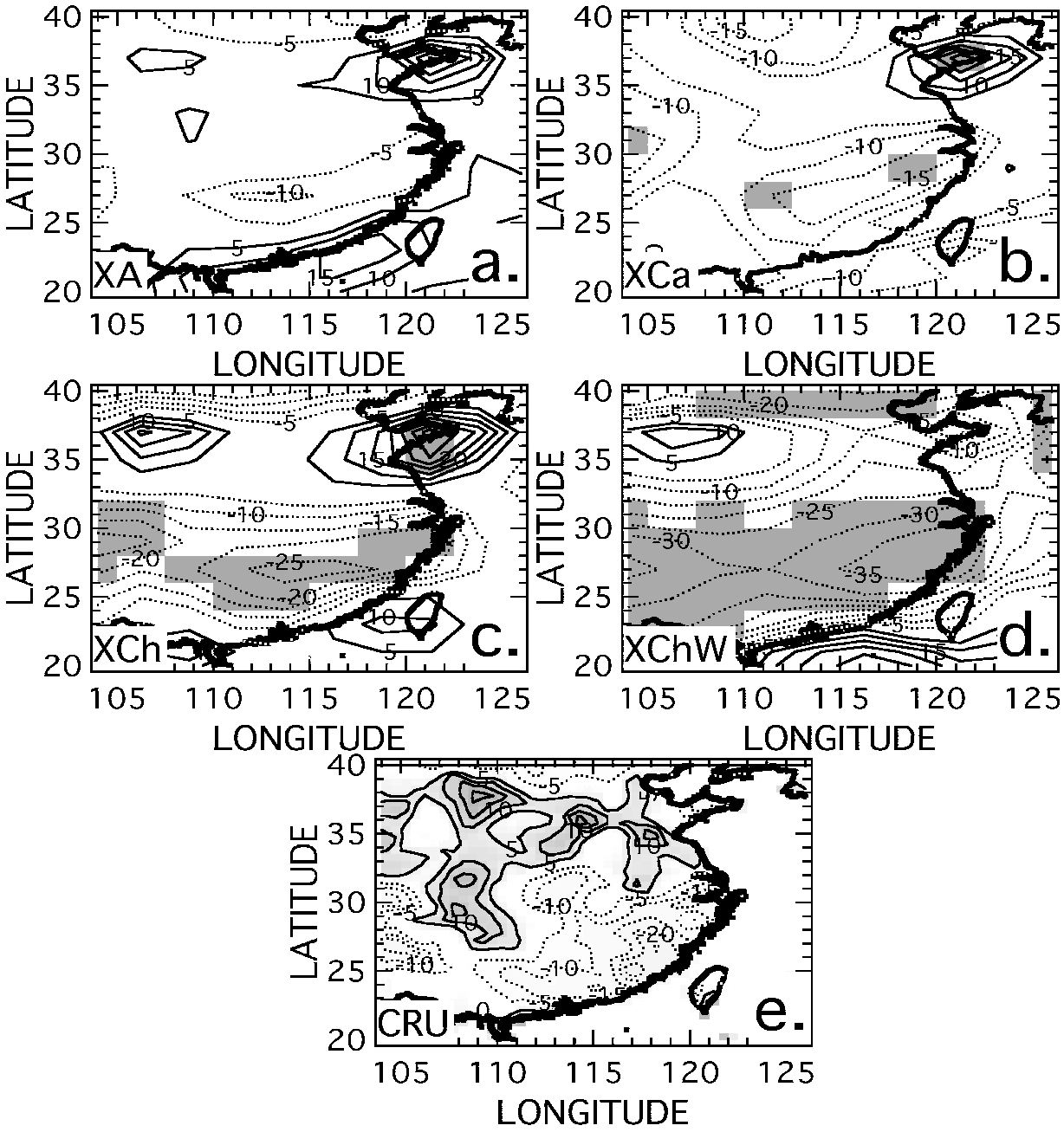

Figure 9. Percent change in total precipitation rate relative to the BASE case ((EXP-BASE)/BASE) × 100 over China for: (a) XA, (b) XCa, (c) XCh, and (d) XChW. (e) Observed percent change in total precipitation between the 1985-1995 decade and the 1945-1955 decade from the CRU database [*Brohan et al.*, 2006]. Solid (dotted) contours indicate increased (decreased) precipitation (5% contour interval). Gray shading represents regions where the change in precipitation is at or above the 90% confidence level.