Supplement of

Assessing the destructiveness of tropical cyclone by anthropogenic aerosols under an atmosphere-ocean coupled framework

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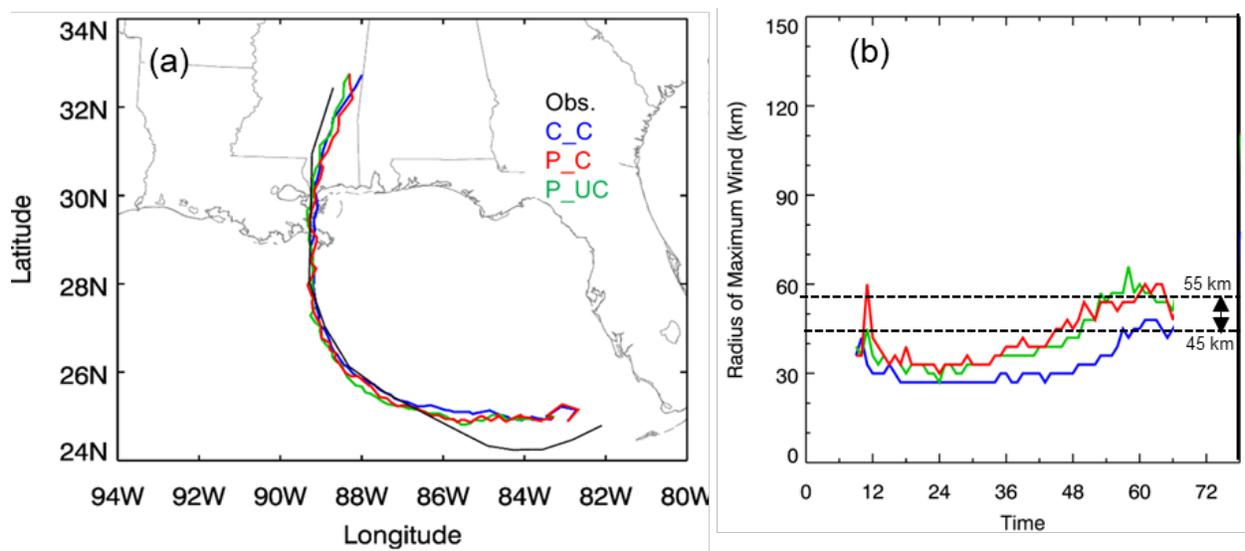
Figure S1. The simulated and observed evolution of the hurricane in terms of (a) storm track and (b) radius of maximum wind (RMW) for C_C (blue), P_UC (green) and P_C (red) cases. In (a) the black is the NHC Best Track Data; and in (b) the two dashed horizontal lines denote the range of observed RMW on 29 August, 2005 based on NHC Tropical Cyclone Report of Hurricane Katrina (https://www.nhc.noaa.gov/data/tcr/AL122005_Katrina.pdf).
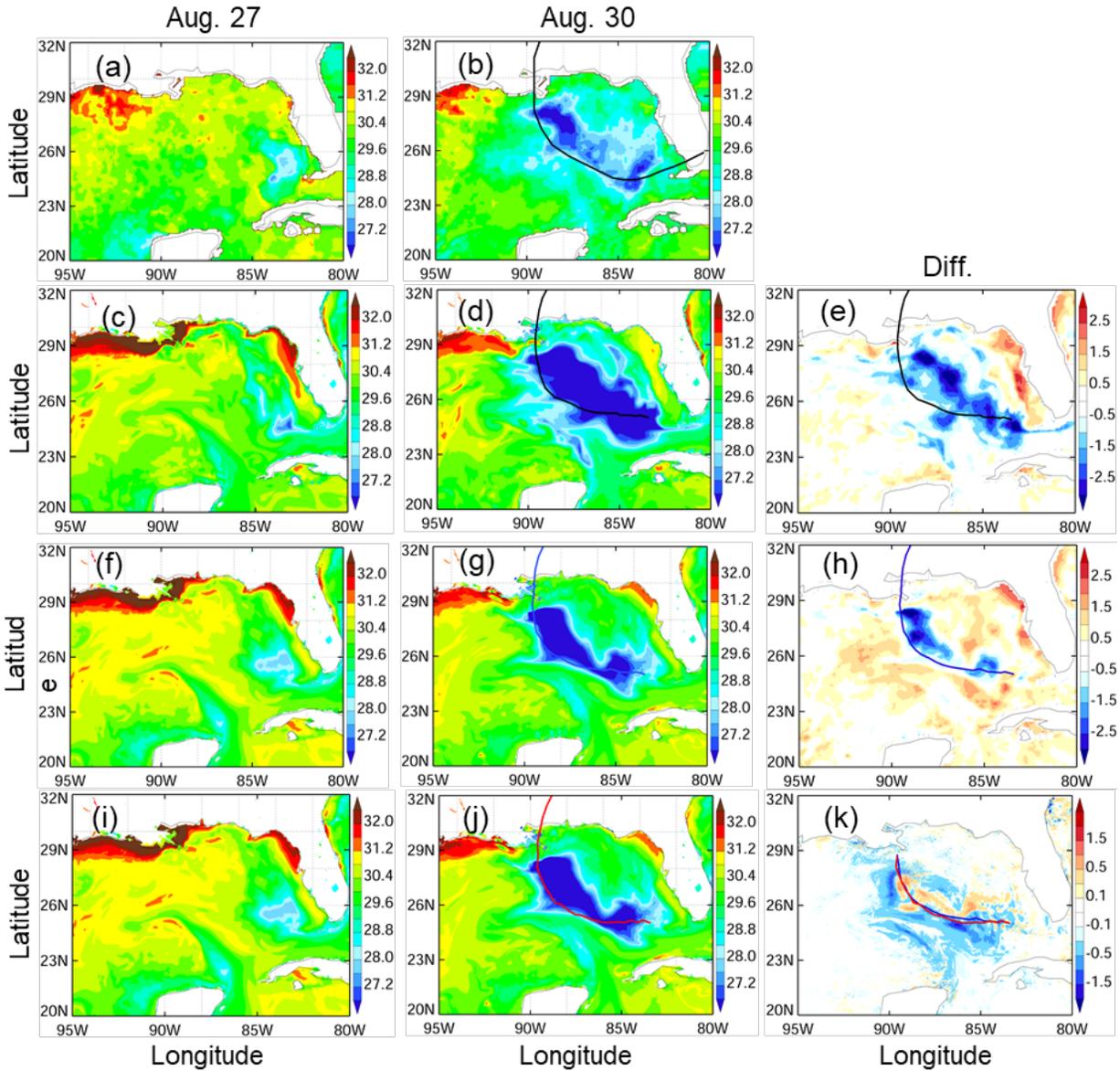
Figure S2. Daily mean SST fields before (Aug. 27) and after Katrina passage (Aug. 30) of (a,b) OI MW_IR SST observations, (c,d) HYCOM, (f,g) the clean coupled simulation (C_C), and (i,j) the polluted coupled simulation (P_C); the differences between (e) HYCOM and the observations on 30 August, 2005, (h) C_C and observations on 30 August, 2005, and (k) P_C and C_C at 12:00Z 29 August, 2005 when Katrina made the landfall. The curves in panels denote the hurricane tracks.
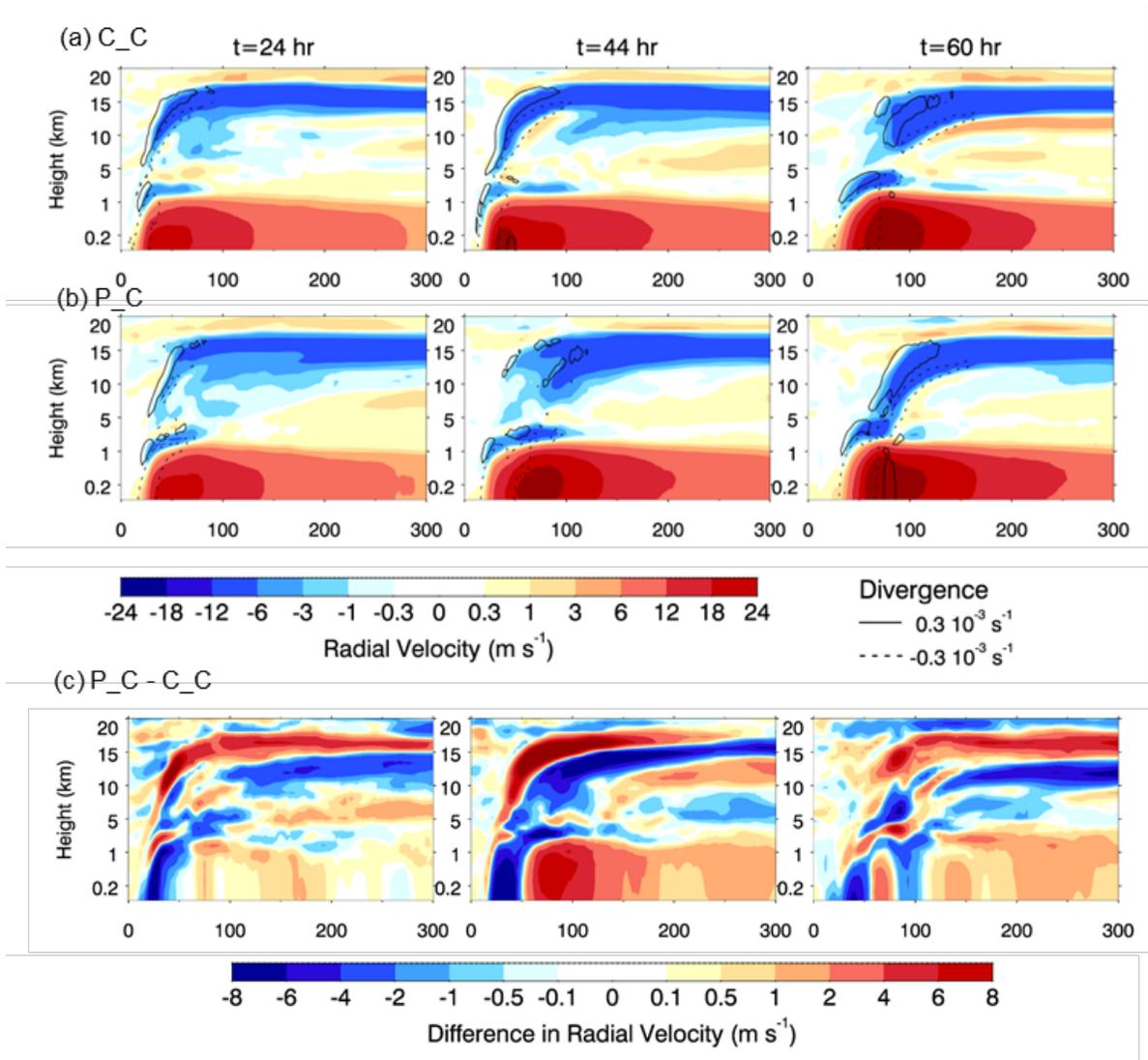
Figure S4. Vertical-radial cross-sections of azimuthal means of radial velocity for C-C case (a) and P_C case (b), as well as their difference (c).
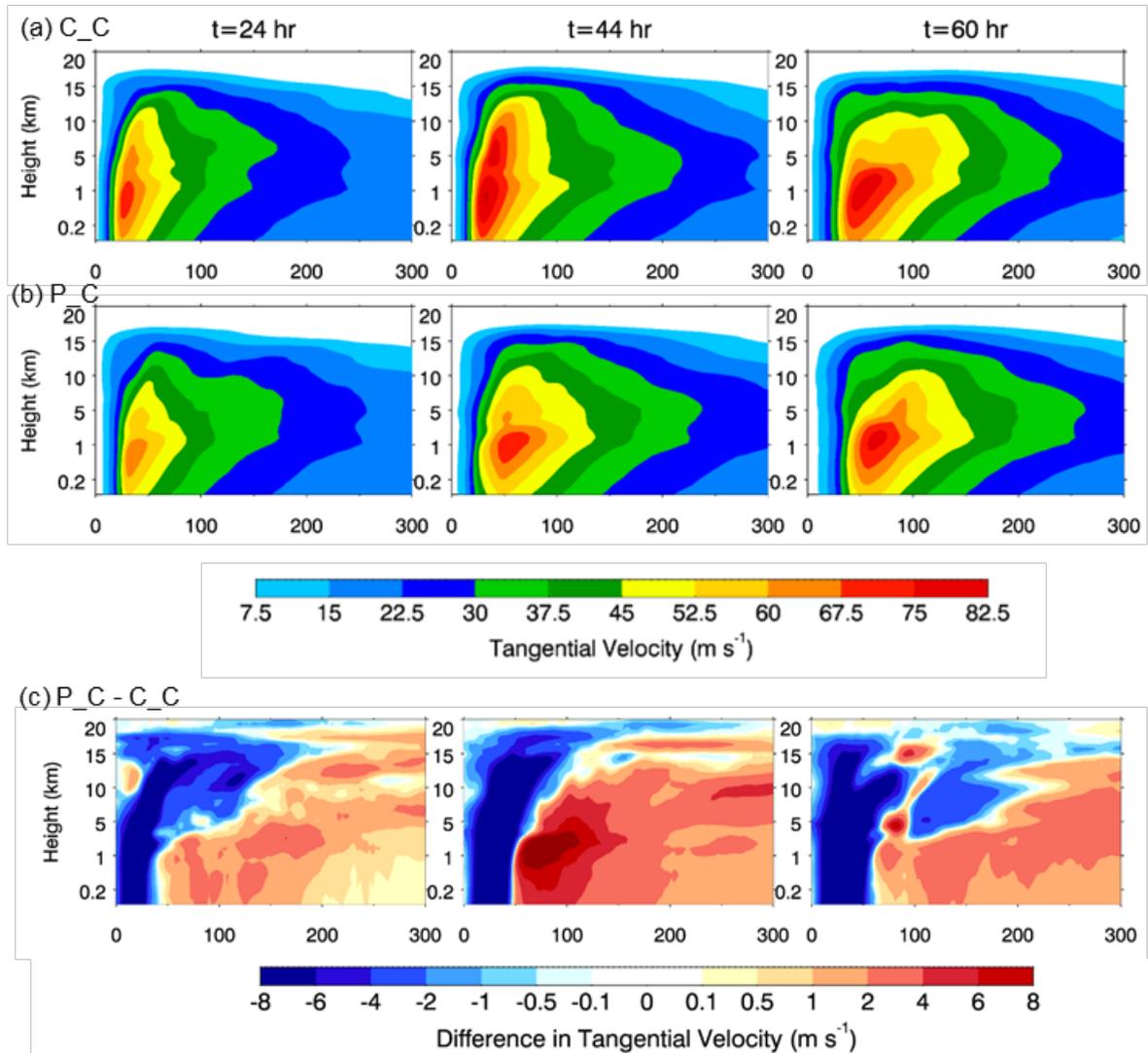
Figure S4. Vertical-radial cross-sections of azimuthal means of tangential velocity for C-C case (a) and P_C case (b), as well as their difference (c).
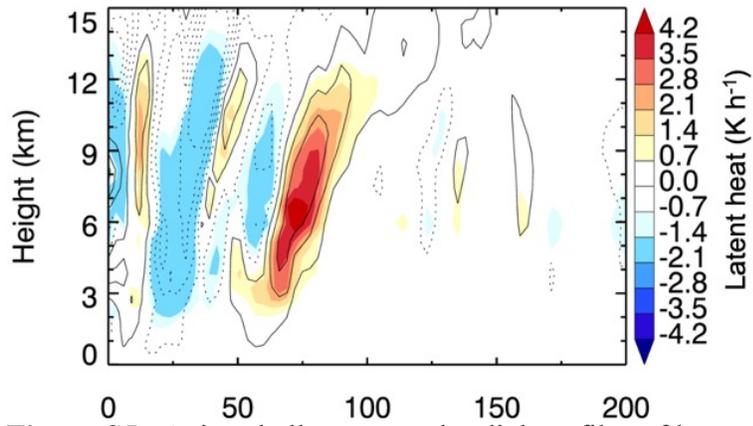
Figure S5. Azimuthally-averaged radial profiles of latent heating (color shading) and vertical velocity (contour lines with an interval 0.02 m s^{-1}) perturbations induced by ocean coupling effect during S2 (P_C - P_UC).