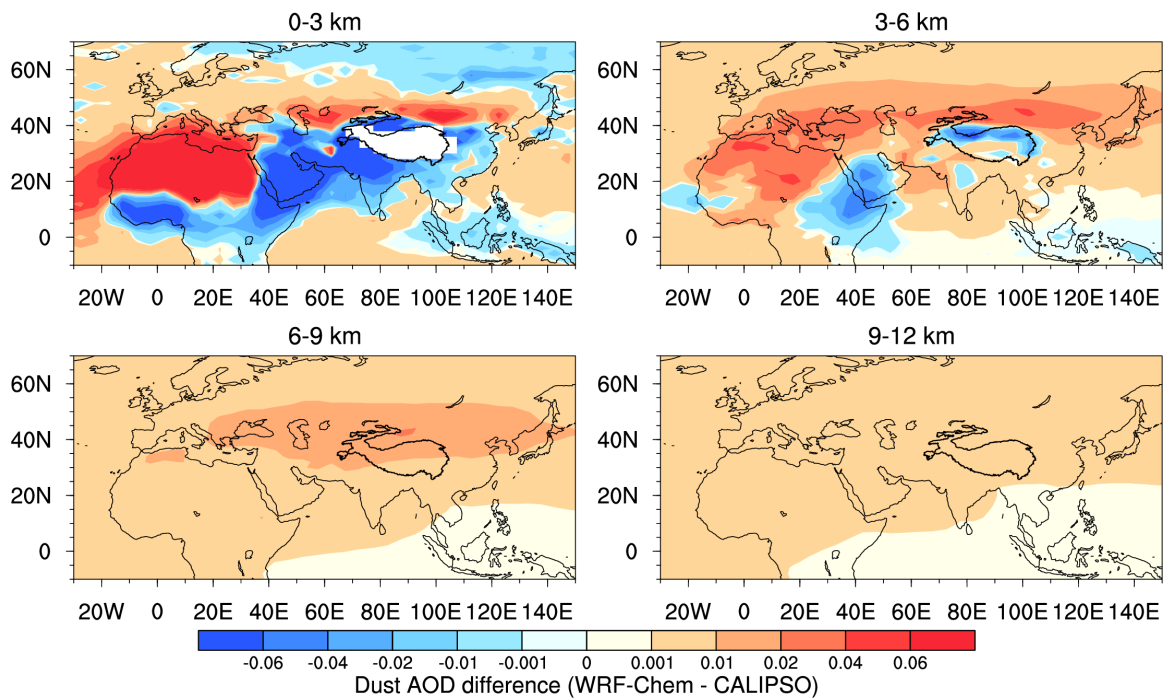


**Figure S1.** Spatial distributions of seasonal mean AOD difference at 550 nm from the retrievals of MODIS and MISR onboard Terra and the WRF-Chem simulation for the period of 2010–2015. The daily results from MISR, MODIS, and WRF-Chem are only sampled for averaging when all of them have valid values at the same location and time.



**Figure S2.** Spatial distributions of annual mean dust AOD difference from CALIPSO and WRF-Chem between 0–3 km, 3–6 km, 6–9 km, and 9–12 km for the period of 2010–2015.