Supplementary Figures

Figure S1: Long-term mean cloud fraction and estimated cloud albedo from the 29 AMIP6 models and satellite observations during 2003-2014.
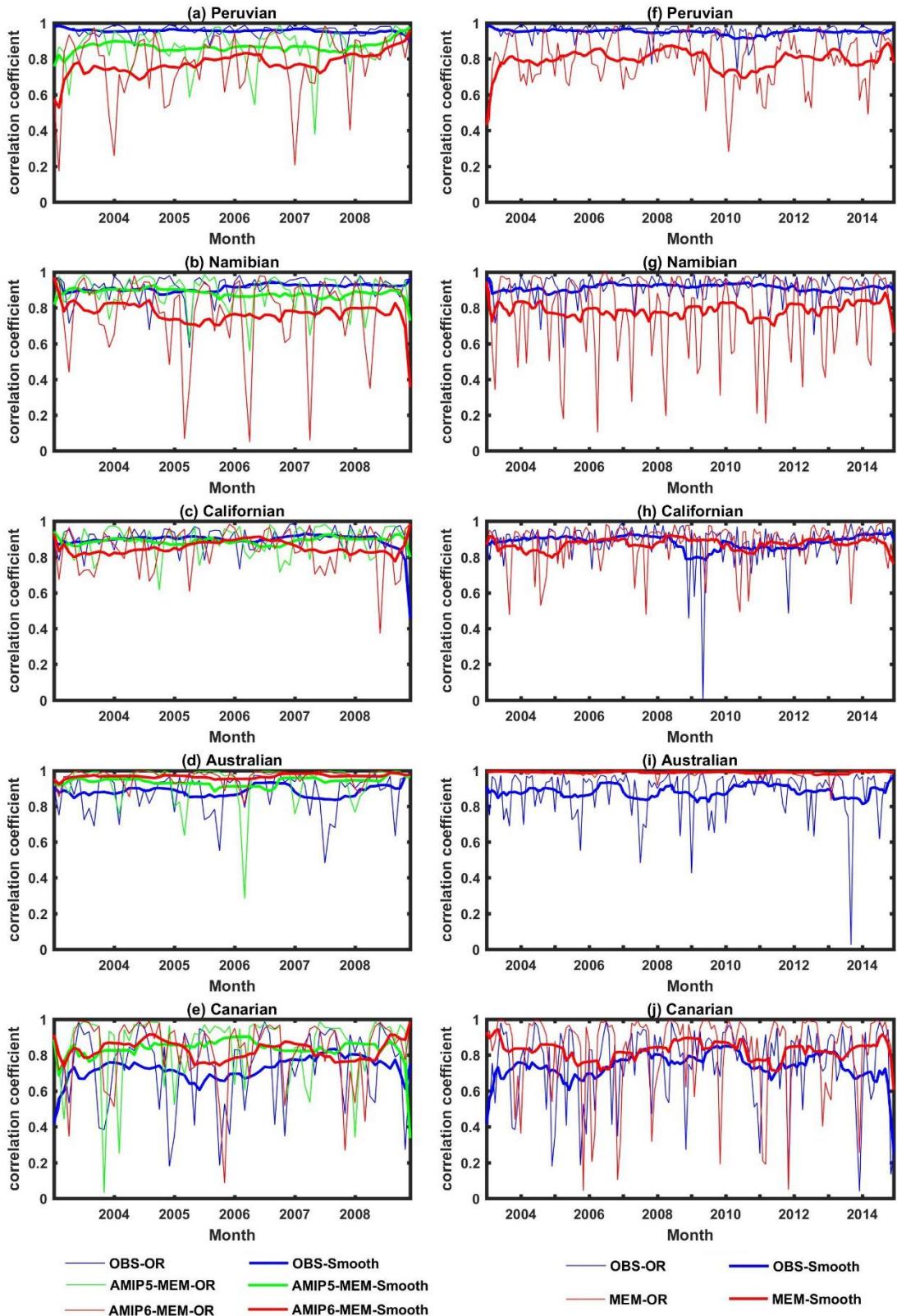
Figure S2: Monthly mean time series of correlation coefficient between cloud fraction and planetary albedo (a-e) from AMIP5 and AMIP6 multimodel ensemble mean during 2003-2008, and (f-j) from

AMIP6 multimodel ensemble mean during 2003-2014 compared with satellite observations, over the (a, f) Peruvian, (b, g) Namibian (c, h) Californian, (d, i) Australian and (e, j) Canarian regions.
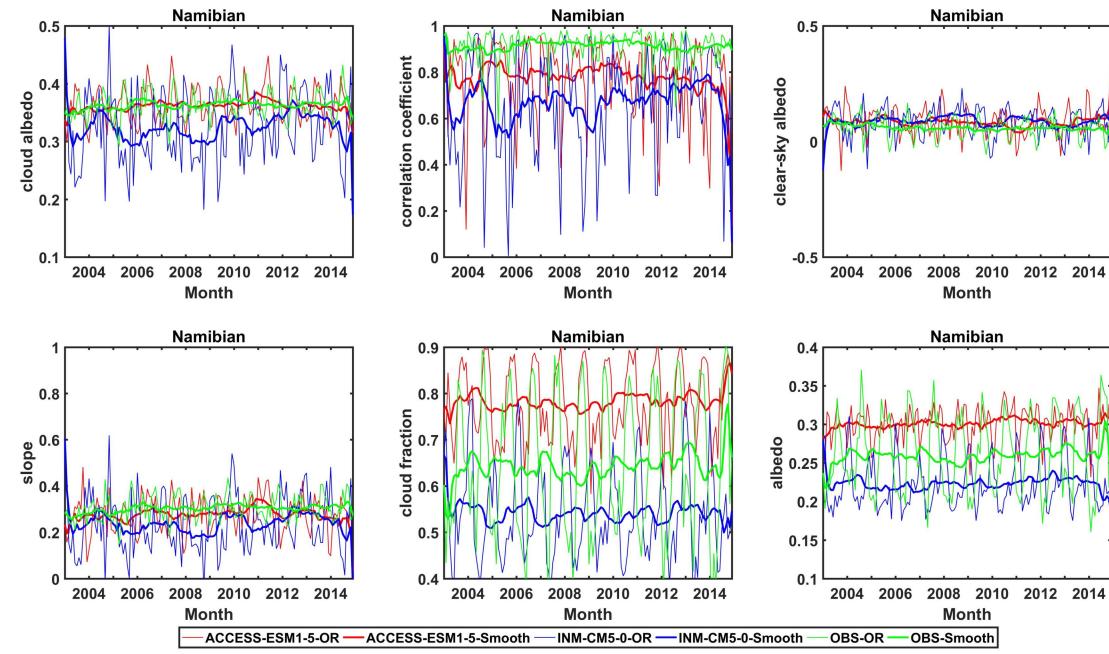
Figure S3: Monthly mean time series of estimated cloud albedo, correlation coefficient between cloud fraction and planetary albedo, clear-sky albedo, regressed slope, cloud fraction and planetary albedo over the Namibian region from 2 models compared with satellite observations.
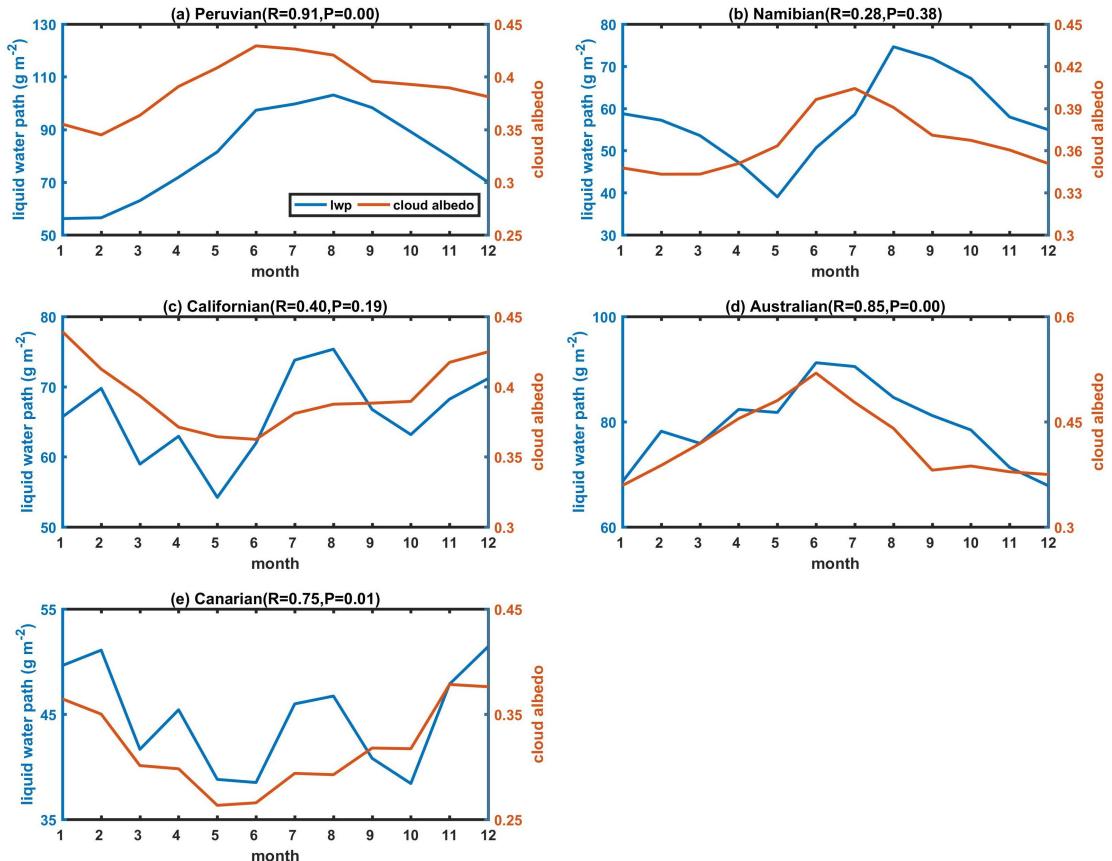
Figure S4: Annual cycles of the estimated cloud albedo and LWP from satellite observations during 2003-2014 over the (a) Peruvian, (b) Namibian, (c) Californian, (d) Australian, (e) Canarian regions. The temporal correlations (R value) and P value (if P<0.10, indicating the correlation R is significant) between cloud albedo and LWP are given in parentheses.

28
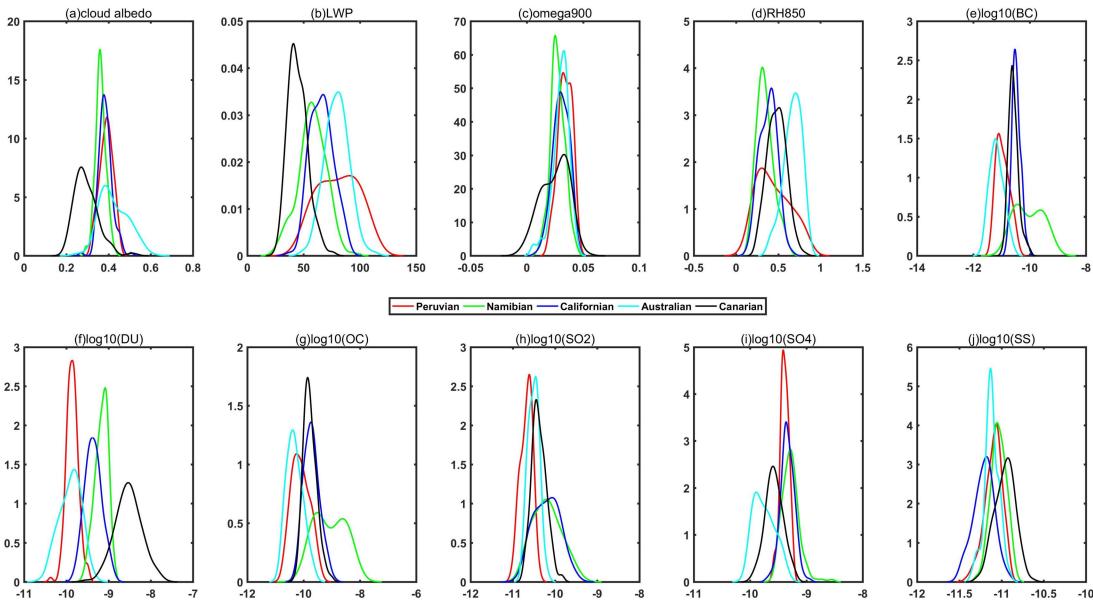
Figure S5: The probability density functions (PDF) of (a) cloud albedo, (b) LWP, (c) omega900, (d) RH850 and (e-j) log10 mass concentrations of different aerosol types over the five stratocumulus regions.