Insights of warm cloud biases in CAM5 and CAM6 from the single-column modeling framework and ACE-ENA observations

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Figure S1. The same with Fig. 3 but the samples are selected based on the criteria of consecutive cloud layers lasting more than 2 hours with the cloud top heights less than 3 km, in order to focus on the signals of stratus and stratocumulus clouds.

Figure S2. The same with Fig. 3 but for the sensitivity experiment in which all Q related variables (both state variables and tendency terms) are scaled down by a factor of 0.85 in the large-scale forcing dataset.
Figure S3. Vertical profiles of SCAM6 simulated aerosol number concentrations of Aitken mode (a, d); Accumulation mode (b, e); Coarse mode (c, f), during the Summer (brown) and Winter (purple) ACE-ENA IOPs.
**Figure S4.** Vertical profiles of SCAM6 simulated Aitken mode aerosol chemical component mass concentrations of sulfate (a, e); SOA (b, f); NCl (c, g); Dust (d, h), during the Summer (brown) and Winter (purple) ACE-ENA IOPs.