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Supplement of

The effects of cloud–aerosol interaction complexity on simulations of pre-summer rainfall over southern China

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Section 3.1.3(S). The effects of ice- and mixed-phase processes on condensed-water paths

Figure S1 shows the relationships between cloud-liquid-, rain- and ice-water paths for the 5e8F, 5e6F and 5e6F_ACC experiments. In 5e6F_ACC the aerosol-number concentration is the same as in 5e6F, but warm-rain processes (auto-conversion and accretion) have been switched off when the temperature is warmer than -4°C. Note that Fig. S1(b) shows that 5e6F_ACC is more similar to the ‘polluted’ simulation, 5e8F, than it is to the cleaner 5e6F. This suggests that, without warm-rain processes, the response of the system to aerosol perturbations is significantly smaller than would otherwise be the case. Figure S1(a) shows the liquid-water paths in the simulations; note that, although 5e6F_ACC has much larger liquid-water paths than the other two experiments (because there is no loss of cloud-liquid by warm-rain processes), the rain-water paths in 5e6F_ACC resemble those in the more polluted 5e8F simulation.