Table 3. Recommended values of f, g, and p for different values of accumulation mode geometric standard deviation (σ_{acc}).

σ_{acc}	Old f_{acc}	New f	Old g_{acc}	New g	Old p	New p (for $\zeta/\eta_i > 1$)
1.4	0.66	0.37	1.08	0.67	1.50	0.88
1.6	0.86	0.60	1.11	0.60	1.50	0.96
1.8	1.18	~~0.53~~ TS1	1.14	0.53	1.50	1.01
2.1	1.97	~~0.45~~ TS2	1.18	0.45	1.50	1.03

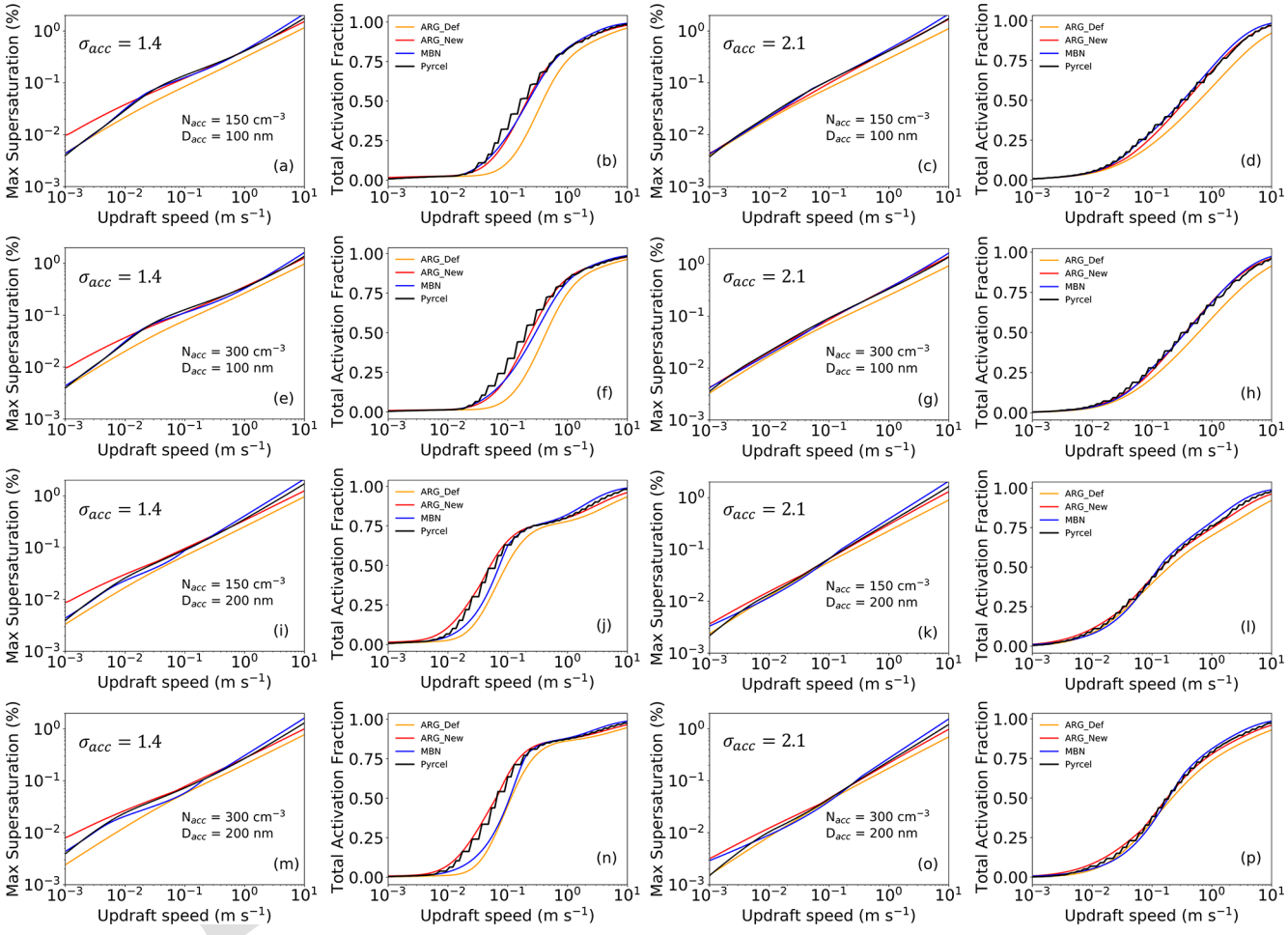

Figure 1. Maximum supersaturation (S_{max}) and total activated fraction (TAF) predicted by Pyrcel, ARG with and without modifications (ARG_New and ARG_Def in the figure legends), and the MBN parameterization, as a function of updraft speed. The accumulation mode width $\sigma_{acc} = 1.4$ (left side) and 2.1 (right side). The accumulation mode geometric mean diameter is 100 nm (top 4 panels) and 200 nm (bottom 4 panels). The number concentrations are set to 150 cm^{-3} (first and third row) and 300 cm^{-3} (second and fourth row). The Aitken and coarse mode concentrations and geometric mean diameters are kept fixed at 50 cm^{-3}, 5 cm^{-3}, 40 nm, and 800 nm respectively, while the hygroscopicity is 0.6, the pressure 101 325 Pa, and the temperature 293 K.

propose in this work. The bias in the default ARG scheme for the conditions plotted in Fig. S5 changes from −7.7 % to −5.8 % as α_c changes from 1.0 to 0.1, while the bias of the updated parameterization changes from −1.5 % to 0.9 %.

In Fig. 2 we show S_{max} and total droplet number concentrations (N_d) as a function of aerosol number concentrations in the accumulation mode (up to 10^5 cm^{-3}) for $\sigma_{acc} = 1.4$. The eight different pairs of subfigures show updraft velocities of 0.2 and 1 m s^{-1}, Aitken mode number concentrations of 500 and 50 cm^{-3}, and accumulation mode diameters of 100 and 200 nm. We compare the default ARG (orange solid lines), the updated ARG (red solid lines), and the MBN scheme (blue solid lines) with the Pyrcel model (black solid lines). The transitions to the kinetically limited regime in the