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Supplement of

Modelling the size distribution of aggregated volcanic ash and implications for operational atmospheric dispersion modelling

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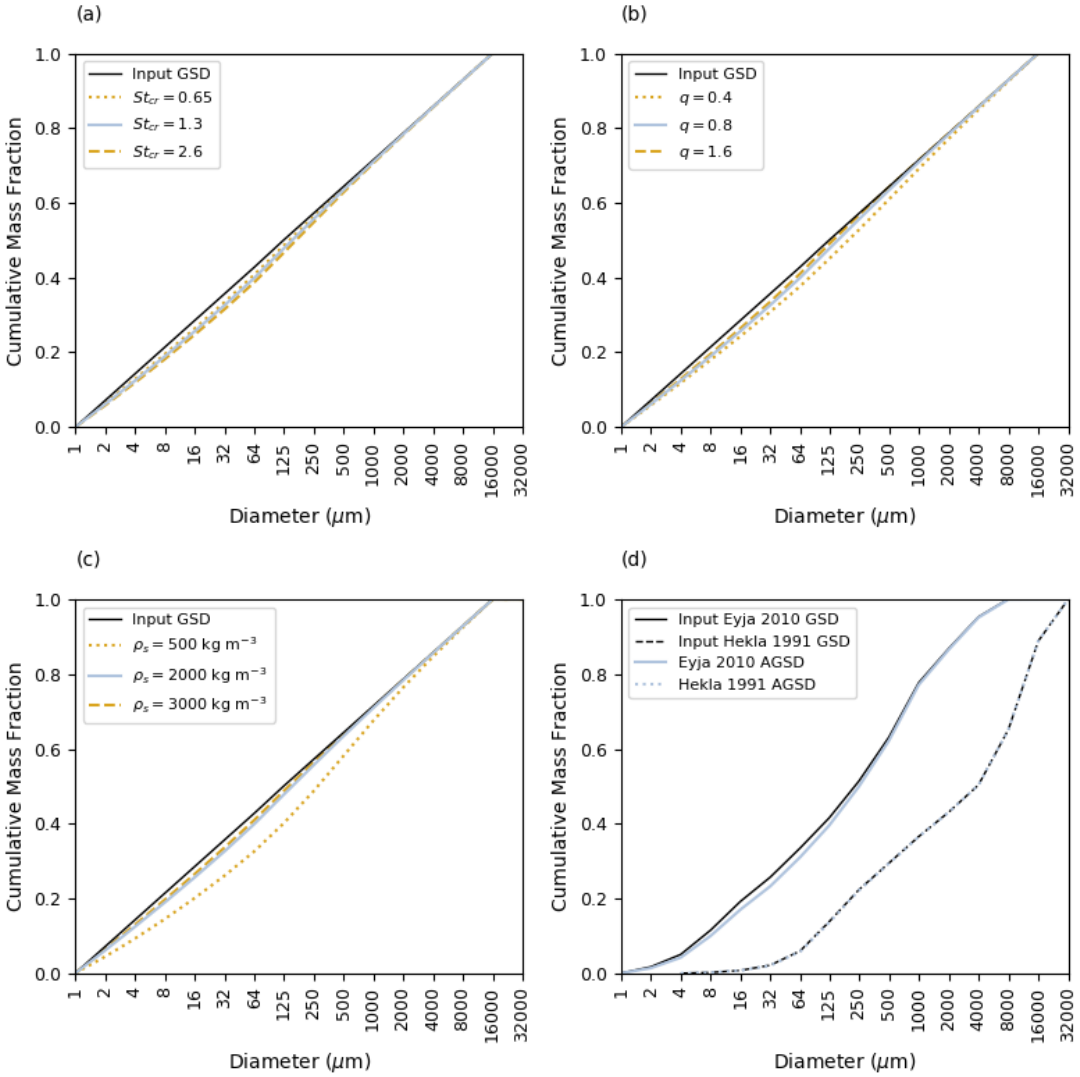

Figure S1: Sensitivity of the output aggregated GSD to the sticking efficiency parameters (a) St_{cr}, (b) q, and the physical characteristics assigned to the particles, (c) particle density (ρ_s) and (d) input GSD. Output is for 12:00 UTC on the 05/05/2010, plume height 5500 m asl.

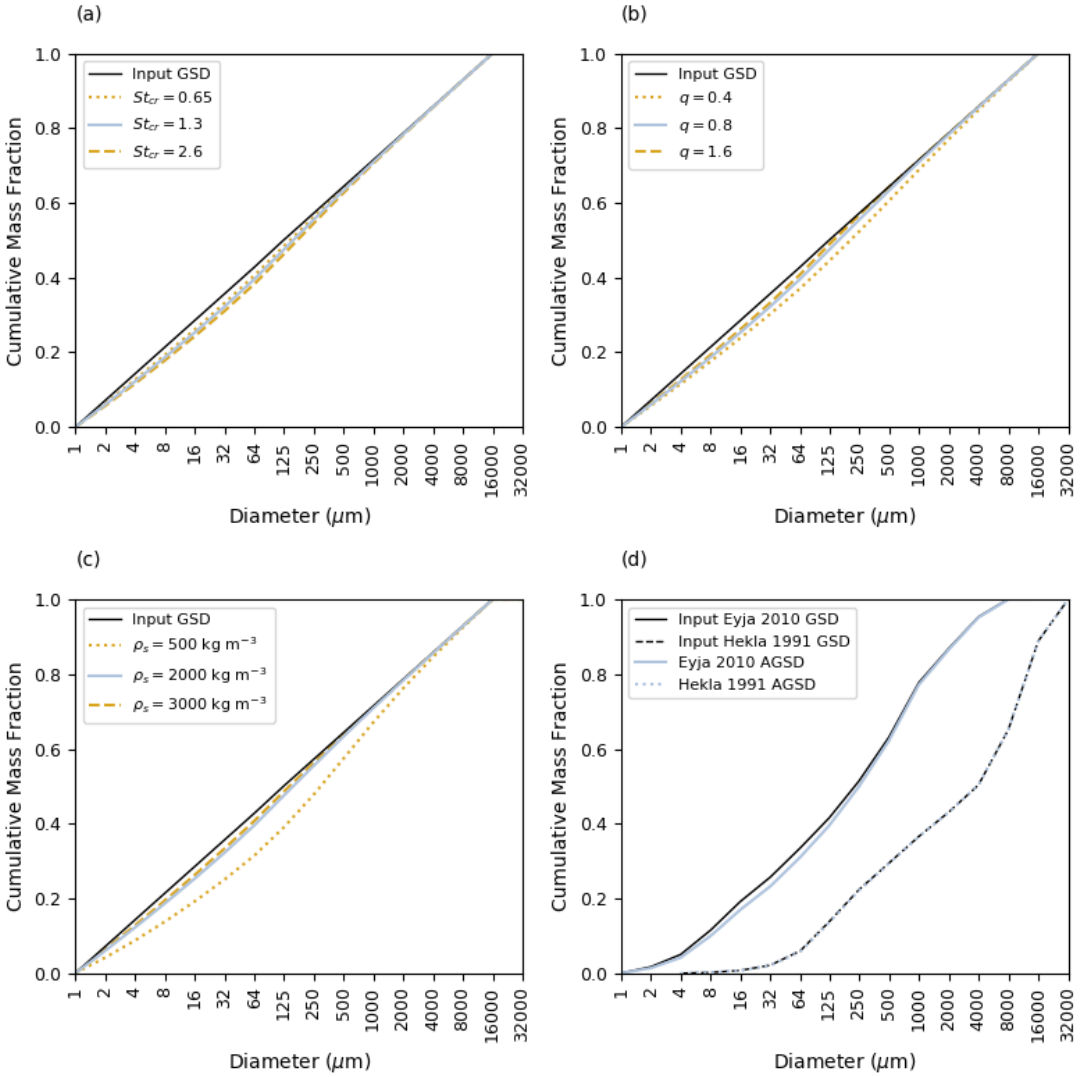

Figure S2: Sensitivity of the output aggregated GSD to the sticking efficiency parameters (a) St_{cr}, (b) q, and the physical characteristics assigned to the particles, (c) particle density (ρ_s) and (d) input GSD. Output is for 13:00 UTC on the 06/05/2010, plume height 10000 m asl.

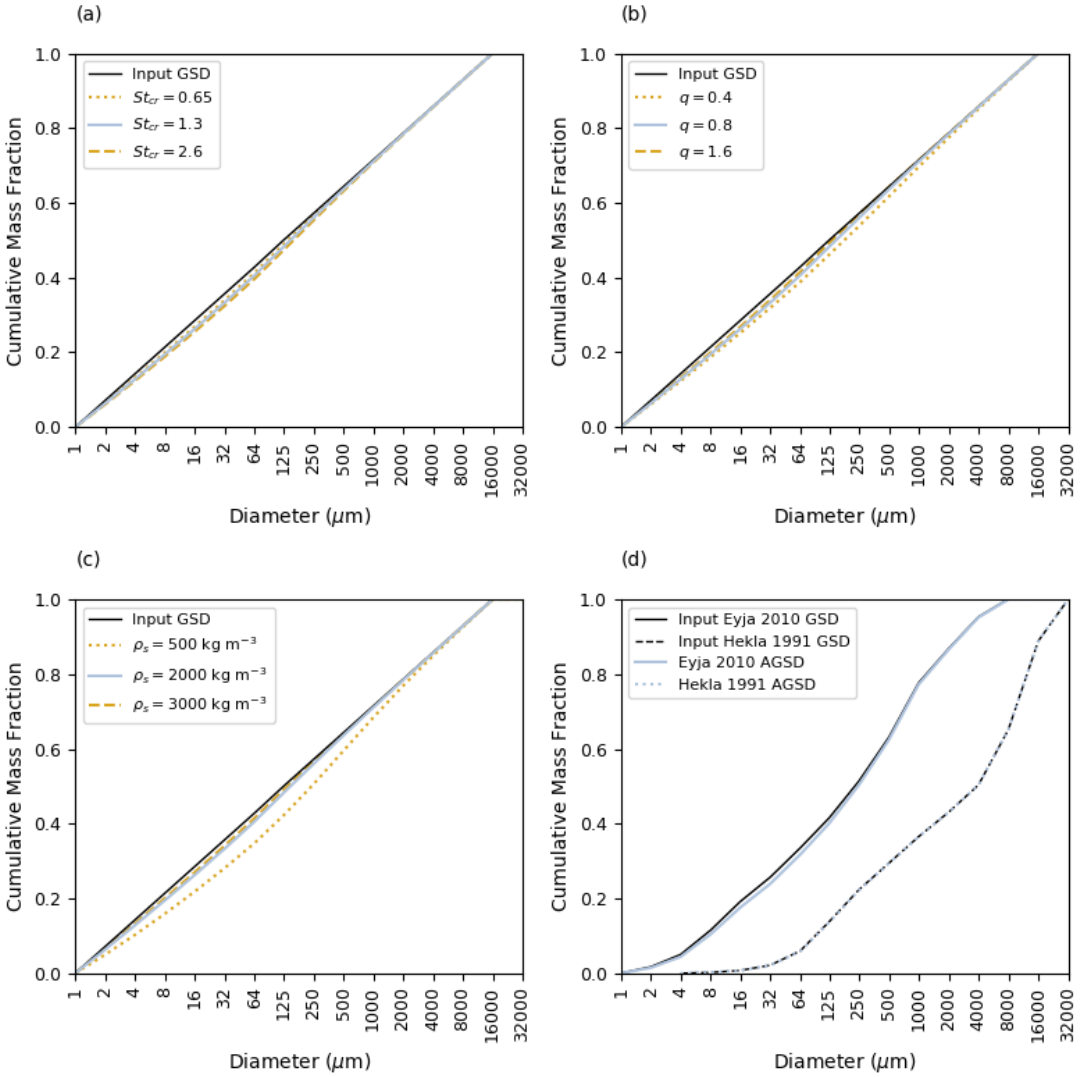

Figure S3: Sensitivity of the output aggregated GSD to the sticking efficiency parameters (a) St_{cr}, (b) q, and the physical characteristics assigned to the particles, (c) particle density (ρ_s) and (d) input GSD. Output is for 12:00 UTC on the 07/05/2010, plume height 5500 m asl.

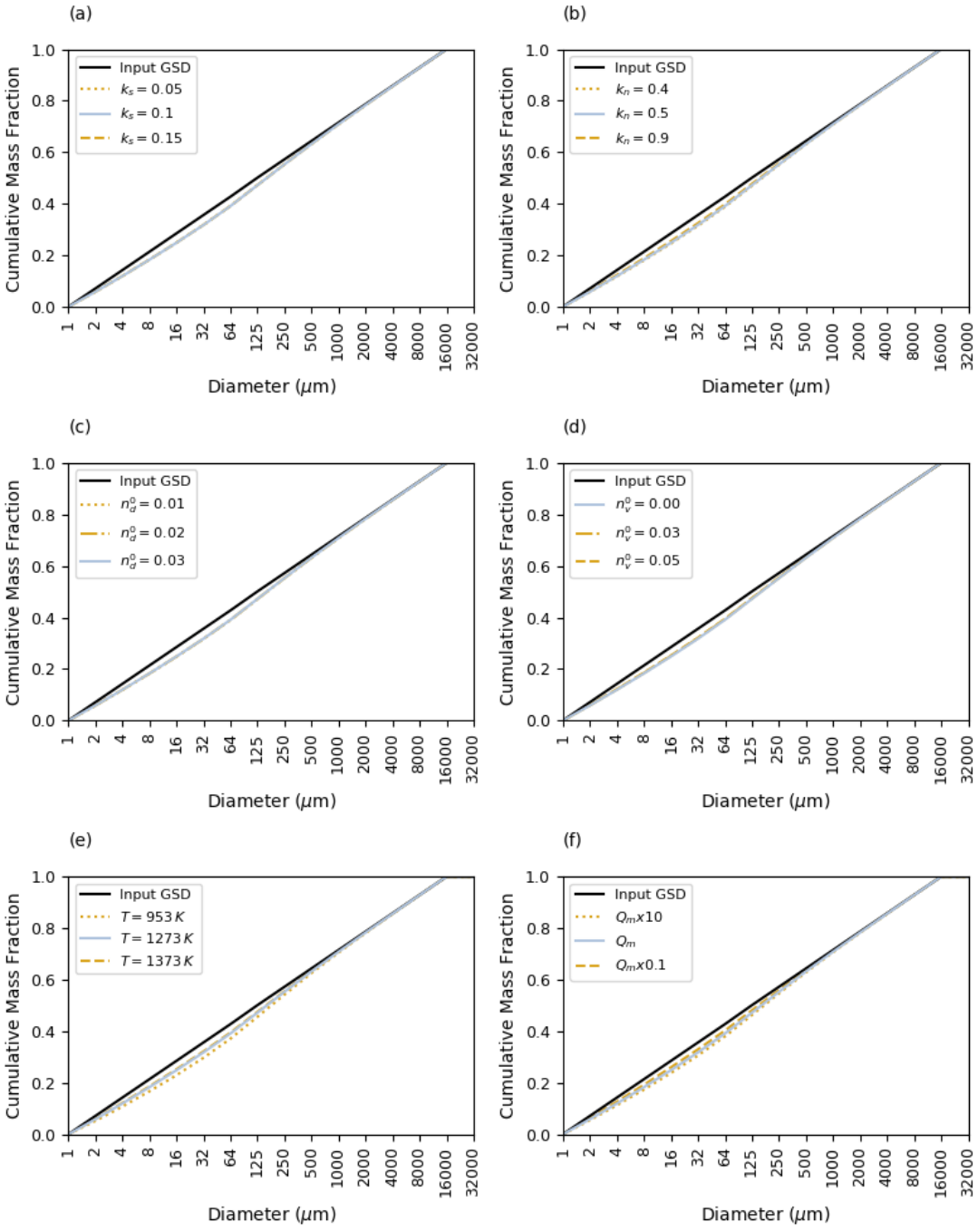

Figure S4: Sensitivity of the output aggregated GSD to the entrainment coefficients (a) k_s, (b) k_n, the fraction of dry air (c) n_d and water vapour (d) n_v, the temperature of the plume at the source (e) T_0 and the source mass flux (f) Q_m. Output is for 19:00 UTC on the 04/05/2010, plume height 7000 m asl.

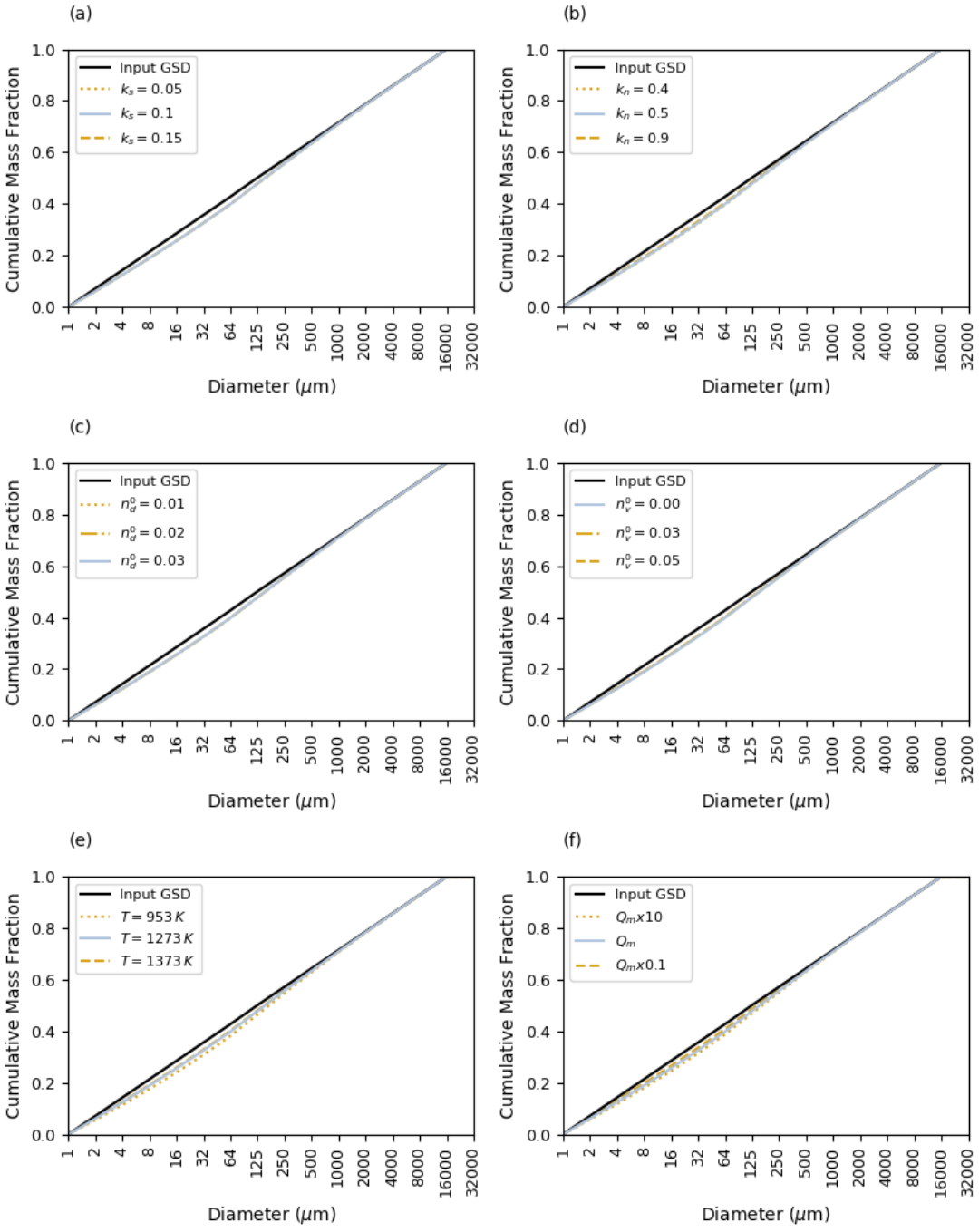

Figure S5: Sensitivity of the output aggregated GSD to the entrainment coefficients (a) k_s, (b) k_n, the fraction of dry air (c) n_d and water vapour (d) n_v, the temperature of the plume at the source (e) T_0 and the source mass flux (f) Q_m. Output is for 12:00 UTC on the 05/05/2010, plume height 5500 m asl.

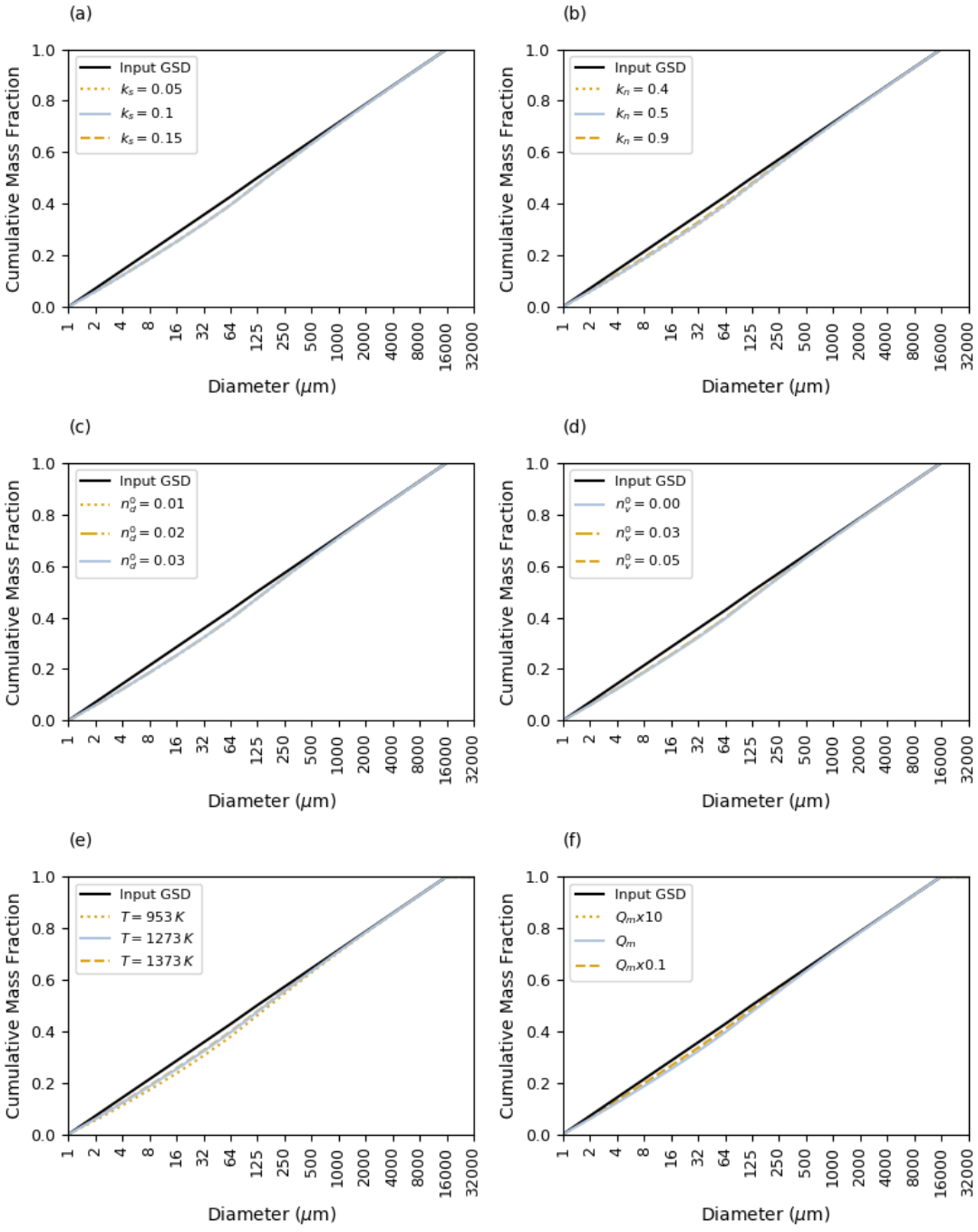

Figure S6: Sensitivity of the output aggregated GSD to the entrainment coefficients (a) k_s, (b) k_n, the fraction of dry air (c) n_d and water vapour (d) n_v, the temperature of the plume at the source (e) T_0 and the source mass flux (f) Q_m. Output is for 13:00 UTC on the 06/05/2010, plume height 10000 m asl.

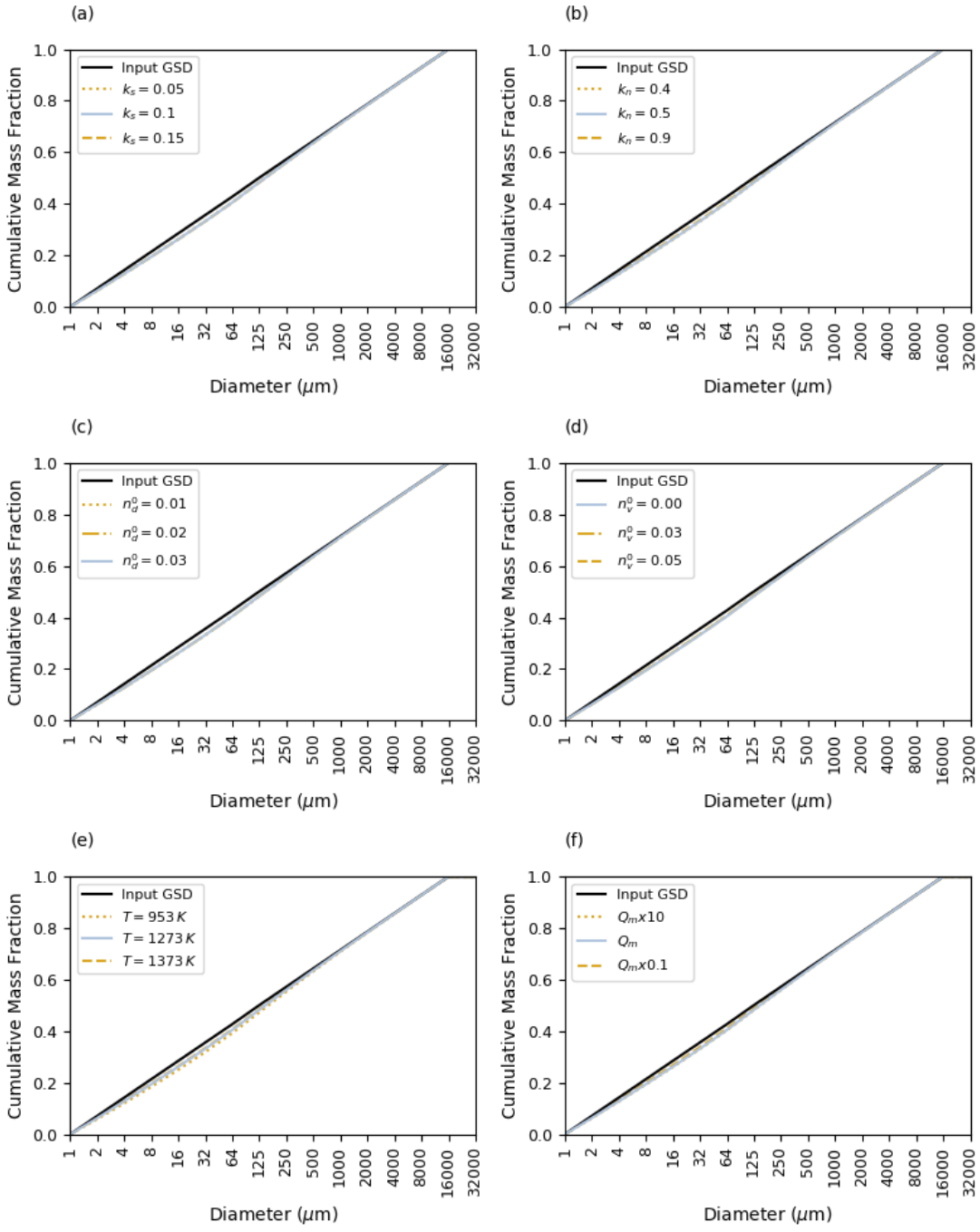

Figure S7: Sensitivity of the output aggregated GSD to the entrainment coefficients (a) k_s, (b) k_n, the fraction of dry air (c) n_d and water vapour (d) n_v, the temperature of the plume at the source (e) T_0 and the source mass flux (f) Q_m. Output is for 12:00 UTC on the 07/05/2010, plume height 5500 m asl.