Saito, I., T. Gotoh, and T. Watanabe, 2019: Broadening of cloud droplet size distributions by condensation in turbulence. *J. Meteor. Soc. Japan*, **97**, 867-891.
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Plain Language Summary: The Fokker-Planck equation is derived for the size distribution of cloud droplets growing by condensation in turbulence. The steady state solution for the size distribution is derived and shown to be proportional to $R\exp(-cR^2)$, where R is the droplet radius and c is a constant. The results of direct numerical simulations are shown to agree well with the theoretical prediction and also with the results from the PI-chamber, a laboratory cloud chamber.

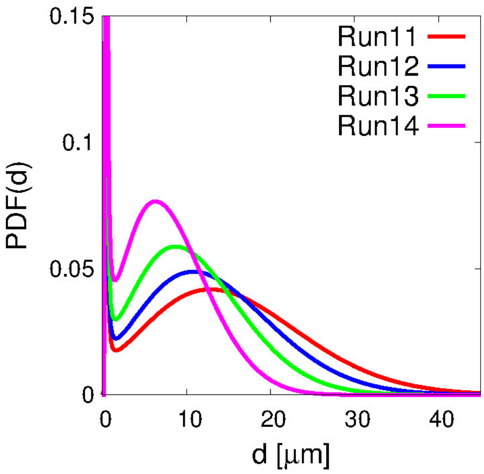

Figure 1. PDFs for the diameter of the cloud droplets in statistically steady states obtained from direct numerical simulations of turbulence and cloud droplets. The mean number density of cloud droplets is 20, 80, 200 and 500 cm^{-3} for Runs 11-14, respectively.

- The Fokker-Planck equation is derived for the size distribution of cloud droplets growing by condensation in turbulence.
- The aerosol (curvature and solute) effects are introduced into the Fokker-Planck equation as the zero-flux boundary condition at R^2=0, where R is the droplet radius.
- The steady state solution for the size distribution is derived and shown to be proportional to $R\exp(-cR^2)$, where c is a constant.
- The results of direct numerical simulations are shown to agree well with the theoretical prediction and also with the results from the PI-chamber, a laboratory cloud chamber.