

Abstract Submitted  
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**Growth of cloud droplets from aerosol in turbulence**<sup>1</sup> IZUMI SAITO, TOSHIYUKI GOTOH, TAKESHI WATANABE, Nagoya Inst of Tech — The purpose of this study is to show that a DNS model can reproduce a statistical relationship associated with aerosol indirect effects. The relationship, which predicts that the spectral width of the cloud-droplet size-distribution decreases with the increase of the cloud-droplet number concentration, was derived based on a simple Langevin model and confirmed by laboratory experiments in a previous study (Chandrakar et al, 2017, *Proc. Natl. Acad. Sci. USA* **113** 14243–14248). We used the “cloud microphysics simulator,” which was developed by the present authors in a previous study and is a DNS model resolving droplet dynamics, turbulence, and microscale thermodynamical effects. From the DNS results, it is shown that the statistical relationship holds very well, confirming the validity of the DNS for cloud turbulence study.

<sup>1</sup>JSPS Kakenhi 15H02218, HPCI hp160085 hp170189, JHPCN jh170013

Izumi Saito  
Nagoya Inst of Tech

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