



Impact of cloud turbulence on growth of cloud droplets

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The impact of cloud turbulence on either diffusional or collisional growth of cloud droplets has been hypothesized for decades. Only relatively recently, however, computational resources, numerical tools, and observational techniques became sufficiently advanced to address this issue in a quantitative way. Some impetus for such investigations came from laboratory and theoretical studies of particle-laden turbulent flows undertaken by the engineering community. However, relevant parameters for these studies are typically different from those concerning clouds, which does not allow direct application of results from the engineering community into cloud physics. This paper will review recent progress in the area of the impact of cloud turbulence on growth of cloud droplets. Two separate issues will be reviewed, namely the impact of turbulence on the diffusional growth of cloud droplets and on the growth by collision/coalescence. The main conclusion is that small-scale turbulence appears to have insignificant impact of the diffusional growth, but the effects on the collisional growth are significant. Directions for future theoretical research and cloud observations will be outlined.