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Turbulence in atmospheric clouds

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Atmospheric clouds, a crucial piece of the climate change problem, are almost iconic as visualizations of turbulence. Some of the many aspects of turbulence interacting with cloud particles and radiation fields will be reviewed: from inhomogeneous mixing, to inertial clustering, to stochastic coalescence. The fundamental role of the Lagrangian viewpoint in the cloud-particle coalescence problem will be discussed in the context of a toy model of stochastic rain formation. This provides a context for discussing the emerging recognition of the dominant role of fluctuations in cloud processes.