

Abstract Submitted
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The fluid dynamics of atmospheric clouds DAVID A. RANDALL,
Colorado State University — Clouds of many types are of leading-order importance for Earth's weather and climate. This importance is most often discussed in terms of the effects of clouds on radiative transfer, but the fluid dynamics of clouds are at least equally significant. Some very small-scale cloud fluid-dynamical processes have significant consequences on the global scale. These include viscous dissipation near falling rain drops, and “buoyancy reversal associated with the evaporation of liquid water. Major medium-scale cloud fluid-dynamical processes include cumulus convection and convective aggregation. Planetary-scale processes that depend in an essential way on cloud fluid dynamics include the Madden-Julian Oscillation, which is one of the largest and most consequential weather systems on Earth. I will attempt to give a coherent introductory overview of this broad range of phenomena.

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