

## **The Ups and Downs of Tropical Updrafts and Downdrafts**

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Recent studies in the literature have demonstrated significant departures in simulated convective updrafts and downdrafts when compared with Doppler observations of the same events. Some studies have attributed these departures to shortfalls in the representation of microphysical processes, particularly those associated with ice processes, while others have suggested that our inability to properly represent processes such as entrainment are responsible. Additional considerations in addressing these model-observational differences include factors such as model grid resolution, as well as the accuracy of models to correctly simulate convective environmental conditions. Four primary terms comprise the vertical momentum equation: advection, pressure gradient forcing, thermodynamics and turbulent contributions. The focus of this talk will be on the shortfalls in representing the thermodynamic contributions when simulating upward and downward vertical motion, including associated features such as cold pools. Potential future observational platforms that might be useful in improving the representation of simulated vertical motion will be suggested.