

The (other) coupling of clouds to circulations: the role of convective momentum transport

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Abstract:

Despite playing a key role in the atmospheric circulation, the representation of momentum transport by moist convection (cumulus clouds) has been largely overlooked by the model development community over the past decade, at least compared with diabatic and radiative effects of clouds. In particular, how *shallow* convection may influence surface and boundary layer winds is not thoroughly investigated. In this talk, I will discuss the idea that shallow moist convection slows down large-scale circulations, such as the Hadley circulation. I will use turbulence resolving simulations and observations to explain the processes that underlie this idea. Furthermore, I will show how convective momentum transport by shallow clouds may play a role in explaining a long-standing bias in near-surface winds in a global NWP model.