Implementation of Organized Convection Parameterization in the Met Office Unified Model

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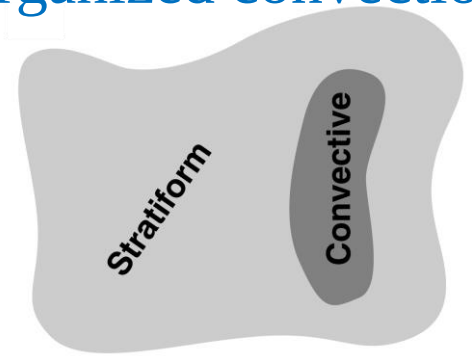
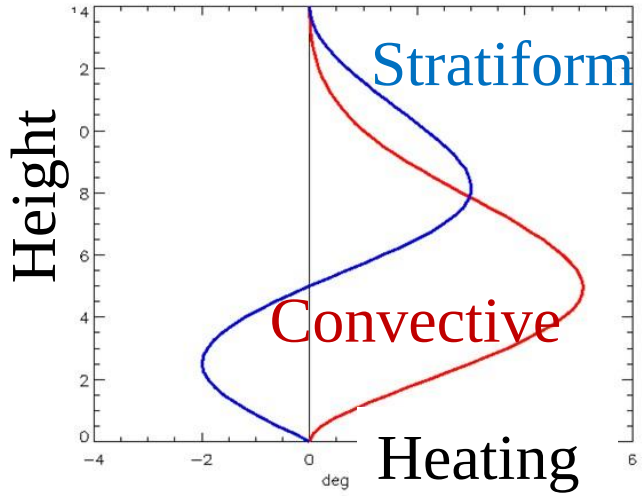
Background & Motivation

Organized convection



Houze 2004



Impact

Reshape large-scale circulations

Challenge

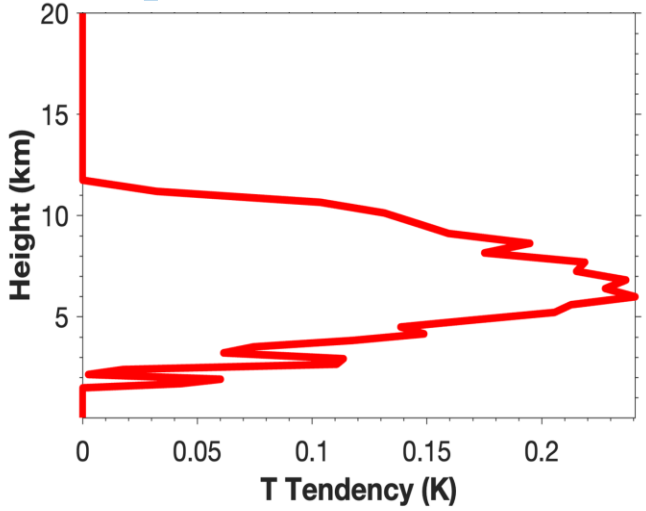
Models struggle to represent stratiform latent heating

Objective: Improve stratiform heating representation in the Unified Model

Triggering Conditions

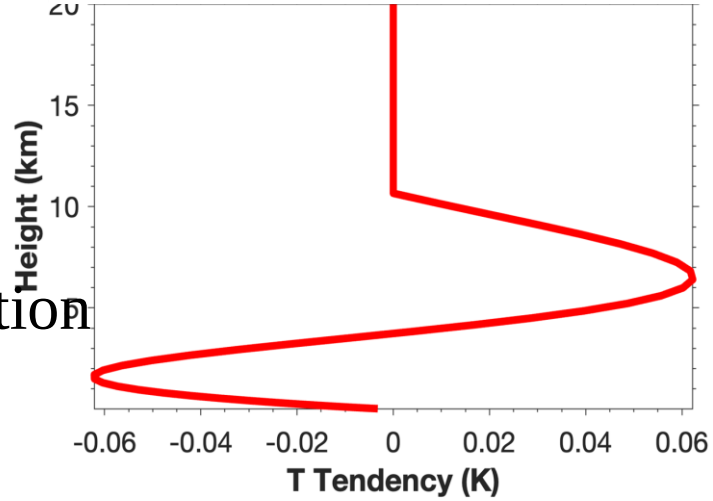
- Environment (strong vertical wind shear)
- Mixed phase deep convection (e.g., cloud top over freezing level)

Input convective heating



Multiscale Coherent Structural Parameterization (MCSP)

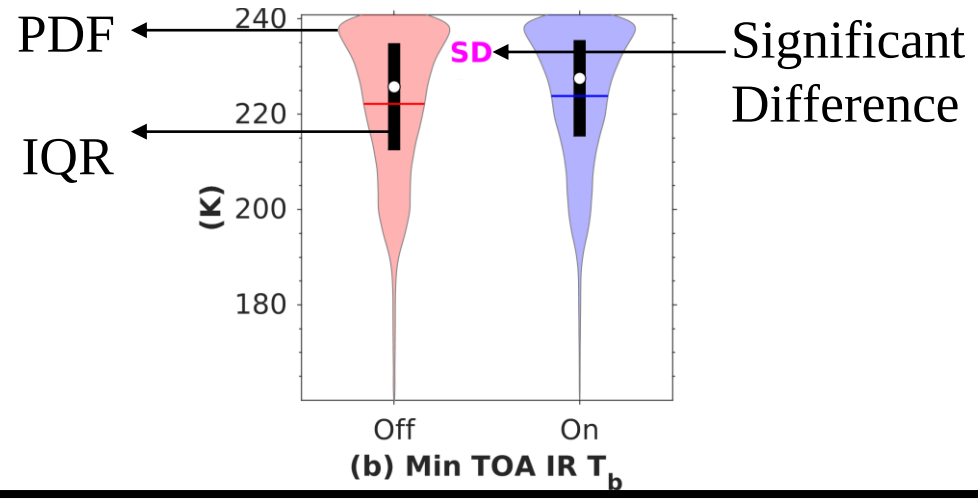
Emulated stratiform heating



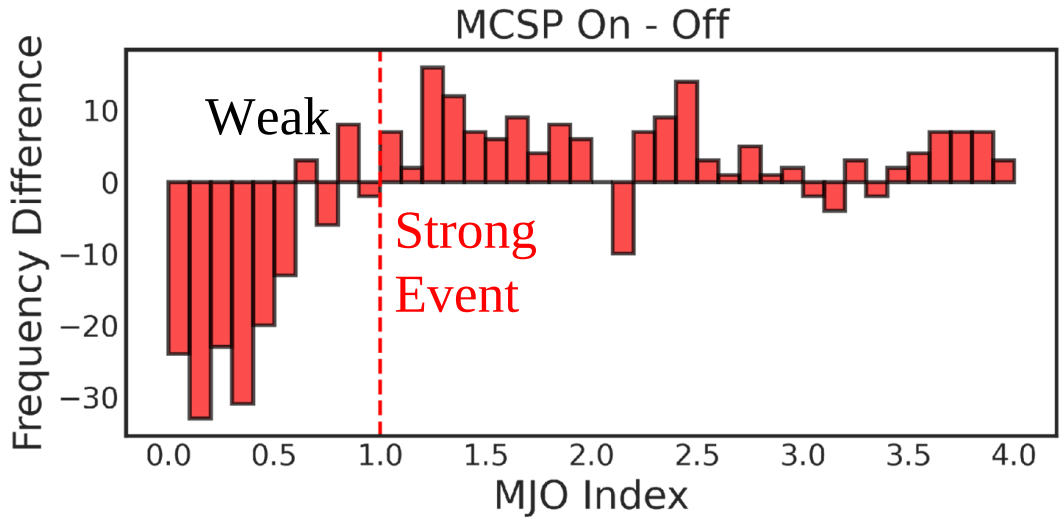
Scheme Effect

Storms become shallower

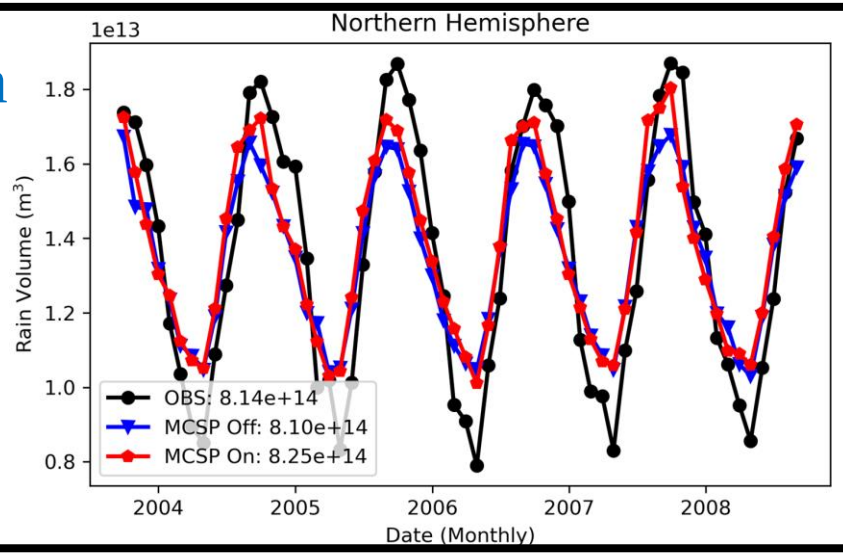
Top-Of-Atmosphere Brightness Temperature



Enhance Madden-Julian Oscillation



Improve precipitation seasonal cycle



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