

# Coarse grained stochastic model for tropical deep convection

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## **Abstract**

We propose prototype coarse-grained stochastic parametrizations for the interaction with unresolved features of tropical convection. These coarse-grained stochastic parametrizations involve systematically derived birth death processes with low computational overhead that allow for direct interaction of the coarse-grained dynamical variables with the smaller-scale unresolved fluctuations. It is established for an idealized climate scenario that, in suitable regimes, these coarse-grained stochastic parametrizations can significantly impact the climatology as well as strongly increase the wave fluctuations about an idealized climatology.

*Joint work with A. Majda (NYU) and M. Katsoulakis (UMASS).*