**Evaluation of the Effects of Stochastic Convection Scheme in E3SMv1**

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A stochastic deep convection parameterization is implemented into E3SMv1 for both the 1-deg and the regionally refined mesh (RRM) versions. Here we evaluate its performance on the precipitation simulation. Compared to the default model, the probability distribution function (PDF) of rainfall intensity in the new simulations are greatly improved. The “too much light rain and too little heavy rain” problem is alleviated in both tropical and midlatitude convection. In North America, where the RRM has a 0.25-deg resolution, the stochastic convection has a larger impact on the precipitation intensity simulation compared to the low-resolution (1-deg) version. This is consistent with the fact that convection is more stochastic in higher-resolution models. The less frequent occurrence of convection contributes to the suppressed light rain, while both more intense large-scale and convective precipitation contribute to the enhanced heavy total rain. The heavy rain contributes more to the total precipitation when the stochastic convection parameterization is used, and this is seen at both 1-deg and 0.25-deg resolutions. The sensitivity of the rainfall intensity PDF to the model vertical resolution is examined and explained in terms of the relationships between convective precipitation and convective available potential energy (CAPE) and between large-scale precipitation and resolved-scale upward moisture flux.