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Statistically Steady-State Large Eddy Simulations of Subtropical Clouds With Time Varying Large Scale Forcing KYLE PRESSEL, California Institute of Technology, TAPIO SCHNEIDER, ETH Zurich and California Institute of Technology, JOAO TEIXEIRA, Jet Propulsion Laboratory, California Institute of Technology, ZHIHONG TAN, California Institute of Technology — Despite the substantial effort directed towards understanding the role played by clouds in determining perturbed climate states, the combined effects of clouds remain a major, if not the most major, source of uncertainty in predictions of perturbed climate states. Here we discuss a new set of tools brought to bear on the cloud-climate problem, in particular statistically steady-state Large Eddy Simulations (LES) with dynamically consistent time-varying forcing provided by an atmospheric general circulation model (GCM). The simulations are used to investigate the response of subcloud-scale dynamics to variations in large scale dynamics for various perturbed climate scenarios. The results of this investigation are used to characterize the response of subtropical clouds to climate perturbations.

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