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Mesoscale Ocean Large Eddy Simulations BRODIE PEARSON, BAYLOR FOX-KEMPER, SCOTT BACHMAN, FRANK BRYAN, Brown University — The highest resolution global climate models (GCMs) can now resolve the largest scales of mesoscale dynamics in the ocean. This has the potential to increase the fidelity of GCMs. However, the effects of the smallest, unresolved, scales of mesoscale dynamics must still be parametrized. One such family of parametrizations are mesoscale ocean large eddy simulations (MOLES), but the effects of including MOLES in a GCM are not well understood. In this presentation, several MOLES schemes are implemented in a mesoscale-resolving GCM (CESM), and the resulting flow is compared with that produced by more traditional sub-grid parametrizations. Large eddy simulation (LES) is used to simulate flows where the largest scales of turbulent motion are resolved, but the smallest scales are not resolved. LES has traditionally been used to study 3D turbulence, but recently it has also been applied to idealized 2D and quasi-geostrophic (QG) turbulence. The MOLES presented here are based on 2D and QG LES schemes.

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