



Orographic gravity wave parameterization in the Community Earth System Model

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This presentation will discuss recent developments to the orographic gravity wave drag scheme used in the NCAR Community Earth System Model (CESM). The new scheme includes ridge orientation effects as well as low level nonlinear effects. A novel aspect of the CESM scheme is the use of a scale-selective, feature-based algorithm to identify topographic obstacles. The algorithm estimates quantities such as ridge height and orientation for individual features rather than using strict subgrid variances. We believe this results in a more accurate characterization of orographic wave forcing than previous approaches.

The performance of the scheme in CESM is compared with that of the earlier isotropic orographic wave scheme. We will show results from extended climate simulations as well as from data assimilation experiments utilizing both schemes.