

Abstract Submitted  
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**Large Eddy Simulation of stable and unstable atmospheric boundary layers over heterogeneous terrain**<sup>1</sup> STIMIT SHAH, ELIE BOUZEID, Princeton University — Large Eddy Simulations (LES) of the atmospheric boundary layer (ABL) are performed using a recently developed dynamic subgrid-scale (SGS) model. The model calculates both the Smagorinsky coefficient and the SGS Prandtl number dynamically based on the Lagrangian scale-dependent model in which required averages are accumulated in time, following fluid trajectories of the resolved velocity field. Simulations for both stable and unstable atmospheric boundary layers with heterogeneous surface fluxes are carried out to investigate the effect of surface variability on the turbulent kinetic energy budget and mixing in the ABL, with a special emphasis on the implications for turbulent transport similarity and turbulence closure in coarse atmospheric models.

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