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Simulation of stably stratified atmospheric flows using WRF-LES model

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Large Eddy Simulation (LES) of atmospheric flows requires modeling of subfilter scale (SFS) stresses. The Smagorinsky and TKE SFS models used in WRF both use constants that can not be generalized to work well across different grid resolutions, and predict incorrect near-wall behavior. Dynamic SFS models, on the other hand, do not have any adjustable constants, hence are more general. In this study, the scale-dependent Lagrangian dynamic SFS model and the dynamic reconstruction SFS model are tested in simulating stably stratified atmospheric boundary layers.