

Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

On the role of anisotropic term in subgrid-scale model for enhancing energy spectrum in high-wavenumber region¹ KENICHI ABE, Kyushu University — We investigate an anisotropy-resolving subgrid-scale (SGS) model for large eddy simulation, which is constructed by combining an isotropic linear eddy-viscosity model (EVM) with an extra anisotropic term (EAT) (Abe, *Int. J. Heat Fluid Flow*, 39, pp. 42-52 (2013)). In this study, to reveal the role of the EAT in the SGS model, we performed simulations using several combinations for the terms involved in the SGS model, e.g., only EVM, only EAT as well as full version (EVM+EAT). We calculate the power spectrum of the GS velocity component from the obtained data and then compared them in detail. The comparison shows that the EAT works well for enhancing small-scale structures, resulting in an apparent upshift of the power spectrum particularly in a high-wavenumber region. We further investigate another option for the EAT instead of the currently-used formulation, e.g., a modified Leonard-stress formulation.

¹The present computation was primarily carried out using the computer facilities at the Research Institute for Information Technology, Kyushu University, Japan. This research was supported by JSPS KAKENHI Grant Number JP19K12005.

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Date submitted: 01 Aug 2019

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