Geoscientific Model Development Discussions

Geosci. Model Dev. Discuss., author comment AC4
https://doi.org/10.5194/gmd-2021-102-AC4, 2021

Reply on EC1

Jingyuan Li et al.

Author comment on "ISWFoam: a numerical model for internal solitary wave simulation in continuously stratified fluids" by Jingyuan Li et al., Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2021-102-AC4, 2021

Dear Editor:

I am the first author of Manuscript gmd-2021-102, Jing Yuanli, Thank you for your help during this time. The comment of the second reviewer is unreasonable. From the code and governing equations, ISWFoam is a brand-new solver and has nothing to do with interFoam.

At present, the official version of OpenFOAM® does not have a solver that can solve the interaction between internal solitary waves and complex structures and topography in continuously stratified fluids. The field observation data of the fixed-point temperature chain of the Asian Ocean International Acoustic Experiment (ASIAEX) show that continuous density stratification is the prerequisite for the generation of internal solitary waves in the actual ocean environment. Obviously, the two-layer fluid model (such as interFoam) cannot fully characterize the internal solitary waves under the actual ocean. In order to solve the internal solitary waves in the real ocean environment, a new solver (ISWFoam) was developed by independent programming to simulate internal solitary waves in continuously stratified, based on a fully three-dimensional (3D) Navier-Stokes equation. The turbulence model has also been modified accordingly to the variable density field.

I hope you will consider this paper again.

Looking forward to your reply, and I hope that viruses from the natural world will not affect the lives of you and your family. Good luck with your scientific research. Looking forward to face-to-face communication and learning.

With best regards,