

# **Review of revised version of “An Effective Communication Topology for Performance Optimization: A Case Study of the Finite Volume WAVE Modeling (FVWAM)” by Renbo Pang, Fujiang Yu, Yuanyong Gao, Ye Yuan, Liang Yuan, and Zhiyi Gao**

The revised paper is greatly improved. I especially welcome the addition of Open MPI results. I believe the article is nearly ready for publication in GMD. I have just a few minor comments.

## **Minor comments**

- Following my suggestion, the authors renamed grid IDs to cell IDs in the text. However, figures 4 and 5 still refer to grid IDs. This needs to be fixed.
- In Section 4.1 the authors show new performance results of halo exchange with Intel MPI and Open MPI in small-scale parallel experiments. They compare the graph-based and point-to-point implementations for each MPI library. They conclude that there is a large speed-up from using the distributed graph topology only with the Intel library. However, I don't see any discussion of the fact that the point-to-point method using Open MPI is significantly faster than the same method with Intel MPI for inter-node communication. This suggests that the large speed-up from using the graph implementation with the Intel library is partly because the point-to-point implementation is performing poorly. I think this should be mentioned in the paper.
- The added plots of communication data volume are interesting, but, for me at least, there are too many of them. I don't think it is necessary to show the process versus process plot for every process count. Most of them are very similar and don't add much. It would be sufficient to show them only for the smallest and the largest number of processes.
- In Table 2 it would be good to include compilation options again. Otherwise, it looks like only the Intel runs used compiler optimization. Also, why is the version of NetCDF included in Table 1 ? I don't see how it is relevant, considering the paper doesn't discuss I/O performance.