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Natural Hazards and Earth System Sciences
Discussions
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Interactive comment on "Simulations of Moving Effect of Coastal Vegetation on Tsunami Damping" *by* Ching-Piao Tsai et al.

Anonymous Referee #2

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General comments:

A numerical investigation of tsunami damping over coastal vegetation is presented. The authors show that the moving effects of the emergent cylinders have less wave height damping and turbulent kinetic energy dissipation than the stationary, emergent cylinders. The paper is well structured and the purpose of the paper is clear; however, the English grammar and sentences are not well written and need to be improved. The manuscript can be acceptable in Natural Hazards and Earth System Sciences after a major revision with further treatment of the following sections:

Specific comments:

Page 2, line 9 – 10: Paul et al., 2012 showed submerged seagrass mimics attenuate wave height. , but authors need to provide more literature reviews to convince readers

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mangroves are considered as moving vegetation motion.

Page 4, line 19 – 20: There are several references referring to flexible vegetation and authors need to provide in the introduction and to validate your model.

Page 5, line 3 – 4: The paragraph is repeated as before. They should be deleted.

Page 5, line 5: Figure 2 is not clear to show the meshes around the cylinders and please explain why the mesh with 0.002 m can achieve accuracy.

Page 5, line 7 – 8: Authors need to explain why you used the specific of the cylinder 0.25 and the spring constant 1 kgw/m and why they are appropriate coefficients to the moving mangroves.

Page 5, line 23: It would be nice to calculate the wave reflection coefficient from the stationary cylinders and the moving cylinders.

Page 5, line 31 – 32: usually we use Dalrymple et al. (1984) equation or Kobayashi et al. (1993) equation to calibrate the wave height damping coefficients according to your Fig. 8 from G3 to G6 for different incident wave heights.

Page 6, line 7 – 8: Can you explain why you used RNG k-epsilon model instead of k-epsilon or k-omega model?

Page 6, line 7: Authors mentioned TKE dissipation rate (epsilon) but did not discuss that. It would be interesting to see the vertical profiles of TKE budget for both stationary and moving cases.

Page 6, line 15: Please define DTKE. How did you calculate DTKE values in your model?

Page 9: Figure 1., the figure doesn't look good. Some number is not necessary to show from G2 – G3 and the fonts are too small.

Page 11: Figure 4., it seemed like Maza et al. (2015) results at G7 have wave reflection.

Can you explain why?

Page 13: Figure 8., y axis would plot only vegetation field, e.g. G3 to G6 and you can define Kv as the vegetation transmission, Kv(x)

Technical corrections:

1. Page 2, line 17: Typo. Substitute 'IHFORM' with 'IHFOAM.'

2. Page 4, line 25: Typo. Substitute 'IHFORM' with 'IHFOAM.'

3. Page 5, line 17: 'through each cylinder' should be re-written as 'through G3 to G6' and corresponding Fig. 6 needed to increase the font size of G3 to G6. Also, caption needs to be changed as well.

4. Page 6, line 26: Typo. Substitute 'moving object (GMO)' with 'general moving object (GMO).'

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