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Discussions

Interactive comment on "Laboratory experiments on the influence of stratification and a bottom sill on seiche damping" *by* Karim Medjdoub et al.

Anonymous Referee #3

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The authors conduct a series of experiments in a flume with a two-layer fluid to study internal wave generation and propagation forced by a prescribed deformation of the free surface of the fluid, both with and without a topographic seamount. The authors report two paths of barotropic to baroclinic energy conversion.

My overall view is that a revised version of this paper might be suitable for publication in OS. In revising the paper I invite the authors to address the following points: 1. The experiments do not address the generation of seiches over the continental shelf, where the domain is "semi-infinite. The seiche generation mechanisms discussed rely on quantization of the wavelength along the axis of the tank, or between the obstacle and the ends of the tank. Clearly, if the domain is semi-infinite the seiche generation mechanisms will be modified. A discussion is required about this. Indeed, the authors

have overlooked the study by Davies, Xing and Willmott (2009) Ocean Dynamics, 9, 863. 2. The role of topography in seiche generation leaves for questions than answers. Why this shape of topography? Why is it always at a fixed point in the flume? From an oceanographic perspective it would be more interesting to have a representation of the continental shelf and slope. As it stands, the experiments discussed in this paper have at best tenuous relevance to the ocean. 3. The way the seiches are generated looks rather crude with the configuration of six foam bumpers. I am not convinced that you can accurately deform the free surface into the prescribed waveforms. Why not fabricate a solid material (planiform) with a surface that represents a linear external standing wave as characterised by the along channel modal number m? 4. The presentation of the results in the paper is sloppy. Please include a figure of the side elevation of the tank showing the two layer fluid, the depths H1, H_2, h, L, delta rho etc. The "golden rule" is that each mathematical symbol MUST be defined when it is first introduced in the paper. The authors appear to be unaware of this rule! 5. Why is there a problem with the m=5 standing wave? Using a more refined way of setting up the initial free surface displacement may well resolve this problem. 6. Figure 3, and elsewhere. A colour scale is required. 7. The analysis of time series of the interfaces was only conducted near the end walls of the flume. Why not at other locations. 8. The paper has not ben thoroughly proof read which is off putting for the referees. E.G. Line 10 "bulk" to "interior"; Figure 2 requires a definition of the symbols on each line; Table 1 the units of density are wrong; line 83 has a type; line 90, standing waves are not....;line 130, the dispersion relation has a typo; line after eqn (3), where k denote....; caption of figure 6, based on (6).... There is no eq (6)!

In conclusion, I would be willing to review revised version of this paper which addresses the above points. As it stands I am not able to recommend publication of this paper.

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