

## ***Interactive comment on “A study on some basic features of seiches, inertial oscillations and near-inertial internal waves” by Shengli Chen et al.***

### **Anonymous Referee #2**

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The authors set out to describe inertial oscillations in a lake (or a cross section of an embayment – I’m not quite sure which). We are never told why they do this, or what the overall aim/hypothesis is, or what new knowledge we are going to get. The writing is sketchy and needs to be improved. However, at the end of the day, I don’t think there is much new in this study, and I will outline why below.

More specific comments: L60: it is only 2-layer if the stratification is 2-layer. Please clarify/amend. Introduction: what is the purpose of this study? What research question/hypothesis will be answered/tested? Why? How does the set-up used relate to a real world scenario? Section 2: The model description is far too brief and sketchy. Why was the specific geometry chosen and how does that relate to the ocean? With closed ends it is more like a lake, unless we are looking at a cross section. Also, 2m vertical

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resolution seems quite coarse for the study. We are never told what the 2-layer stratification look like (i.e., layer depths and densities). How long are the simulations? Why the chosen magnitude of the wind? It must also be noted that the barotropic Rossby radius is almost 500 km for the current set-up, so there will be interactions within the basin which must be quantified. Section 3.1: The discussion about seiches doesn't anything new to the field, and the analytical solution can be found in textbooks. That even mods cancel out is quite fundamental and not a novel result (and it doesn't require a numerical model simulation to be shown). L175 and onwards: Again, this is nothing new and the mechanism is already described by the authors: the flow must balance and cancel, hence the vertical structure. The description is fundamental and doesn't give any new insights – the same conclusions can be drawn from, e.g., the text by Csanady (1982). L223-224: show the computation and use SI units. L242-243: why is your case different from theory? Appendix: this is textbook stuff and can be omitted. Instead a reference can be added.

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