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Discussions

Interactive comment on "Seiche excitation in a highly stratified fjord of southern Chile: the Reloncaví fjord" *by* Manuel I. Castillo et al.

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Here we include the original comment and the answer associated

Reviewer 1: In their manuscript entitled "Seiche excitation in a highly stratiïňĄed fjord of southern Chile: the Reloncavi fjord", the authors present a detailed observational dataset spanning three months (August-November 2008) to study the variability in the Reloncavi fjord, Chile. Combining in-situ data (ADCP and temperature on three mooring lines, CTD casts) with meteorological and sea level monitoring data, the authors are able to analyze the variability of currents in the fjord. Their analysis demonstrates in particular the presence of internal seiches of period 3 days excited by the wind stress. They are able to infer a damping time of 9 days. This study is interesting as it provides a thorough analysis of the ïňĆow variability in a fjord using detailed observations. The

interpretation of the results is based on simple and robust theoretical frameworks, and the conclusions are convincingly drawn. I therefore recommend this manuscript for publication, pending some minor revisions that I list below.

Minor comments: 1) Lines should be numbered continuously throughout the entire document. Answer: We will continuously number the lines of the manuscript (MS) in the new version.

2) Line 9, p4: avoid repetition of the word "forcing" Answer: The word was deleted

3) Line 23, p8: You refer to a mean wave speed, but Equ. (1) deïňĄnes a time. Can you clarify? Answer: The eq. 1, define the fundamental period of oscillation of the basin which is a better way to estimate the oscillation period of a basin. The phase speed is related with the period based on the linear theory. The scope of the manuscript is based on the period of oscillation of the fjord because appear a marked spectral peak on one characteristic frequency (period) band, the three days. That is based on effective phase speed which take into account the changes of depth and lengths of every sub-basin you must notice that the period is related with the phase velocity (c) in the form showed on the eq. 1. Thus imply that, there is an effective period for the entire basin. We incorporated the terms effective phase speed or phase velocity and effective period on the manuscript to remarks the idea.

4) Line 11, p14: Change the sentence after the parenthesis. Answer: The sentence was changed

5) Line 1-2, p15: I hardly understand this sentence. Answer: Here we describe the percentage of variability explained by the first barotropic mode (known as mode 0), and then for the first three baroclinic modes (modes 1-3). Here the intention is remarks that the nature of the 3 days oscillations is baroclinic. We indicated that the percentage of variance explained in the 3 days band by the mode 0 is only 5% thus the nature of the oscillations is baroclinic.

6) Line 24, p15: remove ïňĄx this sentence. Answer: The sentence was removed

7) Line 10-28, p17: Do you really mean Fig. 5, or rather Fig. 4 in this paragraph? Answer: Thanks, we corrected the sentence

8) Line 1, p18: replace “perturb” with “perturbing” Answer: The word was replaced

9) Line 8, p19: “a way of estimating” Answer: The sentence was changed

10) Line 29 and Fig. 9: it would be very helpful if you would add the time evolution of W in Fig. 9, e.g. in the upper panel superimposed on the wind stress. Answer: We will include the time evolution of winds on the Figure.

11) Line 23, p20: What is the unit of k? Answer: The damping coefficient (k) has unit of [s-1] which is consistent with the dimensionless of the exponential and also with the argument of the cosine, here the units of x(t) it is given by the amplitude (A).

12) Line 6-9, p22: Restate this sentence. Answer: The sentence was restated

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