

## Response to Dr. Wells and Dr D.J. Webb (Referee)

Dear Dr. Wells, we sincerely thanks for your handling our manuscript and for your decision. We have addressed all comments given by Dr. Webb which are helpful in further improving our manuscript. Our response to his comments is given below. In this response, his comments are copied in black, our replies are shown in red, and the following abbreviations are used:

R2 – Revision #2 – the second updated manuscript, which will be submitted together with this response.

Received and published: 18 February 2019

This is much improved. I have a few comments below but I will not need to see the paper again.

### 1. Abstract.

The fact that the gulf is dominated by diurnal tides does not indicate that the resonant frequency of the gulf is close to one cycle per day. It 'might be taken to indicate', but then as the paper shows there can be other reasons.

Reply: We agreed with this comment, and the sentence "... which indicates that the resonant frequency ..." has been replaced with "... which might be taken to indicate that the resonant frequency ..." in R2.

Later: "of the tidal resonance in the Gulf of Thailand". This should be "... the resonance affecting the Gulf ..."

Reply: This comment has been adopted. "... of the tidal resonance in the Gulf of Thailand ..." has been changed to "... of the resonance affecting the Gulf of Thailand ...".

### 2. Introduction

Re: "cycles per day". As a unit Wikipedia recommends 'cpd' ([https://en.wikipedia.org/wiki/Cycle\\_per\\_second](https://en.wikipedia.org/wiki/Cycle_per_second)).

Reply: In R2, the units "d<sup>-1</sup>" and "h<sup>-1</sup>" have been replaced with "cpd" and "cph", respectively.

### 3. Section 2.1

Line 4: Try:

" $R$  indicates the Earth's radius,  $\Omega$  its angular velocity,  $g$  gravity,  $H$  the undisturbed water depth and  $\tau$  the linearized bottom friction coefficient".

Reply: This suggestion has been adopted. In R2, "...  $R$  indicates the Earth's radius;  $\Omega$  refers to the angular speed of the Earth's rotation;  $g$  is the gravitational acceleration;  $H$  denotes the undisturbed water depth; and  $\tau$  represents the linearized bottom friction coefficient" has been replaced with "...  $R$  indicates the Earth's radius,  $\Omega$  its angular velocity,  $g$  gravity,  $H$  the undisturbed water depth and  $\tau$  the linearized bottom friction coefficient"

4. Line 7: Try:

"The numerical model covers the ocean lying between 99°E, 131°E, 1.5°N and 42°N."

Reply: We accepted this suggestion. In R2, "The computational domain selected is in the range of 99-131 °E and of 1.5-42 °N" has been replaced with "The numerical model covers the ocean lying between 99 °E, 131 °E, 1.5 °N and 42 °N".

### 5. Section 3.2.

Line 15: Personally I would not expect the response curves of linear model to be affected by the phases

used to force the open boundary - but as you did this you should keep it in.

Reply: Since we only investigate the phase changes (see Eq. (6)), the phase lags specified on the open boundary in principle can be arbitrary. The phase lags generated by random generator as in our work can avoid all or some of the waves to have the same phase at a certain time, which can lead to the simultaneous unreasonably high or low sea levels.

6. Line 20: "In the last cycle of 1024 hours". How long was the model run before this last cycle?

Reply: According to this comment we add a sentence "The model is run for  $3 \times 1024$  hours (see Cui et al., 2015, Fig.2)." before "In the last cycle of 1024 hours".

7. Section 4. Line 11: Try:

"we conduct six numerical experiments. In experiment 1 ... " or "... In Expt 1 ...". You do not need to repeat yourselves.

Reply: We accepted the suggestion. In R2, we have deleted the words "": Exp. 1 to Exp. 6".

8. Line 19:

You refer to different "resonant frequencies" in the Gulf and the South China Sea. It would be more correct to refer to the peak amplitudes in the two regions - which are close together in frequency and appear to be due to the same underlying resonance.

Reply: We agreed with this comment. In R2, "... the resonant frequency of the SCSB appears at  $0.99 \text{ d}^{-1}$ , while that of the GOT is  $1.01 \text{ d}^{-1}$  The resonant frequencies of these two areas are basically the same ..." has been replaced with "... the frequency corresponding to peak amplitude in the SCSB appears at  $0.99 \text{ cpd}$ , while that in the GOT is  $1.01 \text{ cpd}$ . The frequencies corresponding to peak amplitude in the two areas are basically the same ..."

9. Page 6, line 28.

I would suggest replacing 'tidal resonance' by 'tidal response' as there is no quarter wave resonance of the Gulf of Thailand.

Reply: Revised as suggested. In R2, "... on the tidal resonance of the GOT ..." has been replaced with "... on the tidal response of the GOT ...".

10. Figure 3.

The figure has four parts. The caption only refers to two.

Reply: Thank Dr. Webb for pointing out this omission. We have added "... of the SCSB, and response functions of the SCSB (c) and the GOT (d) for different topographies of the GOT and closure of the GOT ..." in R2.