Authors' Response (by Guohong Fang and Di Wu)

Topic Editor Decision: Publish subject to minor revisions (review by editor) (09 Feb 2021) by Joanne Williams
Comments to the Author:
Dear authors,

Thank-you for your extensively revised manuscript. It has been re-reviewed by the original referee who requested the extension to 4 areas, and as you see they are satisfied with your changes. Their only further request is that you specify (p 17 & 19) the tendency of phase-lag changes of the Kelvin wave in KS according to length, width and depth change of JS. I suggest that the sensitivity would also be valuable, and that this is done in the form of specific examples, eg "if the bathymetry is increased by 1 m this leads to a shift in phase of x" etc. It should be quite quick to calculate.

Reply: Thank you very much for handling our manuscript and your decision. According to your comment, we have added the following statement to the text after page 17, line 3, in which a more representative phase-lag difference $\Delta = \pi - 2\delta$ has been introduced and calculated:
Comparison of Eq. (35) with Eq. (33) indicates that the phase-lag increase is now 2δ instead of π. Their difference $\Delta = \pi - 2\delta$ characterises the influence of Area2 upon the phase-lag increase at the connection of two areas. To show the influence of the length, width and depth of Area2 on the value of Δ, we first retain the width and depth unchanged and increase the length by 10%, it is shown that the value of Δ for K_1 is reduced by 15% (reduced to 10.44° from 12.27°), and that the value of Δ for M_2 is reduced by 37% (reduced to 2.37° from 3.78°). Next we retain the length and depth unchanged and increase the width by 10%, it is shown that the value of Δ for K_1 is reduced by 9% (reduced to 11.16° from 12.27°), and that the value of Δ for M_2 is reduced by 9% (reduced to 3.44° from 3.78°). Then we retain the length and width unchanged and increase the depth by 10%, it is shown that the value of Δ for K_1 increases by 1% (increases to 12.42° from 12.27°), and that the value of Δ for M_2 increases by 9% (increases to 4.12° from 3.78°).

Comments of Referee #2：
In Pg.19, lines 13-14 of the revised manuscript authors state that the length, width and depth of the JS is also important in determining the phase-lag increase of the reflected Kelvin wave in the KS. Similar statement appears in Pg.17, lines 2-3.
This statement is correct but not good enough. It is requested to include somewhere in the main results the tendency of phase-lage changes according to the length, width and depth changes.

Reply: Please see Reply to Topic Editor above.

Modification list

Page 17.

Line 3. “Comparison of Eq. (35) with Eq. (33) indicates that the phase-lag increase is now 2δ instead of π. The difference $\Delta = \pi - 2\delta$ characterises the influence of Area2 upon the phase-lag increase at the connection of two areas. To show the influence of the length, width and depth of Area2 on the value of Δ, we first retain the width and depth unchanged and increase the length by 10%, it is shown that the value of Δ for K_1 is reduced by 15% (reduced to 10.44° from 12.27°), and that the value of Δ for M_2 is reduced by 37% (reduced to 2.37° from 3.78°). Next we retain the length and depth unchanged and increase the width by 10%, it is shown that the value of Δ for K_1 is reduced by 9% (reduced to 11.16° from 12.27°), and that the value of Δ for M_2 is reduced by 9% (reduced to 3.44° from 3.78°). Then we retain the length and width unchanged and increase the depth by 10%, it is shown that the value of Δ for K_1 increases by 1% (increases to 12.42° from 12.27°), and that the value of Δ for M_2 increases by 9% (increases to 4.12° from 3.78°).” has been inserted.