Comments from the Editors and Reviewers (if available):

Reviewer #1: The authors have replied to all previous review comments/suggestions and a detailed presentation of the model/scheme(s) is now included, along with relevant computational tests/verifications. This may be proven a useful addition to the relevant literature of the numerical approximation of nonlinear dispersive models
for water wave propagation.

Reviewer #2:
GENERAL COMMENTS

The authors have taken into account the most relevant observations made in the previous revision. In general, their responses are satisfactory.
The material added in section 3, the new section 4 and the new examples presented in section 5.7 are considerable improvements.
However, there remain some less clear issues and other inaccuracies that need to be clarified/corrected.

SPECIFIC REMARKS

In section 4:
- The equations (59a) and (60a) are the same. An equation should not be repeated with different numbering.
Equations (59a) and (60a) have been merged.

- An index j is missing in equations (74) and (75).
Done.

Section 5:
- ps. 20-26, results to the 6th decimal place are neither justified nor physically correct.
Six decimal numbers changed to three.

- p. 20, the domains shown in Figure 3 are [-200m, 700m] and [-50m, 250m], and not [-250m, 250m].
This has been corrected.

- p. 21, why not using the third order scheme with a coarser grid? Analyzing the error in function of Dx would be useful for real-world applications.
This is a useful suggestion but we feel that this needs to be considered in a subsequent paper.

- p. 22, "The first-order scheme has a relative error in the simulated energy that is one-order of magnitude greater than both the second and third-order schemes. The second-order scheme exhibits an energy loss that is only twice that of the third-order scheme." What is the meaning of "...one-order of magnitude greater than..."? What magnitude? And also "...an energy loss that is only twice that of..."? I suggest rephrasing or deleting this text.
This paragraph has been reworded.

- p. 22, I suggest a comparison of results obtained by second-order and third-order schemes using the same grid.
Figure 3 is a comparison of the first, second and third-order schemes using the same grid for the different \epsilon cases. Figure 4 also provided the reader the opportunity to compare the three schemes for the same grid.

- ps. 22-23, results of the simulated examples in Sections 5.2-5.4 reflect only good qualitative behavior and this should be clearly stated.
Yes, this is the case and comments have been added in the text. There is no known analytical solution to the Serre equations for the problems used in Sections 5.2-5.4. This is clearly stated in these sections.

- p. 23, the domain shown in Figure 6 is [-150m, 250m], and not [-200m, 250m].
Corrected.

- p. 24, "at the boundary h(0,t) = 0.192 m and u(0,t) = 0.192 m3/s..."; correct.
No, it is not correct, u(0,t) = 0.199m3/s which has been corrected in the paper.

- p. 25, "There is an excellent agreement between the simulated and observed results". The numerical results are good (not excellent) for the phase but not as good in amplitude.
Toned down the agreement between the simulated and observations.

- p. 26, "...and c(h(5.7m,t), t) = sqrt [g (h(5.7m, t) - h0)].
This definition of celerity is incorrect. We used sqrt [g (h(5.7m, t)). We have performed the simulations using the celerity from the linear theory wave theory sqrt(gh) and for the Serre phase velocity. The best results could be obtained by using something in-between these, but this would be difficult to justify. The results, for sqrt(gh) are slightly better, visually than those obtained using the Serre phase velocity. This is the same boundary condition used by Beji and Battjes (1994).

- p. 26, "…with minor discrepancies at the Gauge WG6 and Gauge WG7 behind the bar"; these are not "minor discrepancies". In fact, Serre's standard model, with weakly dispersive characteristics, does not allow simulating the flow behavior behind of the submerged bar. The dispersive effects predominate in this region; therefore, only a model with improved dispersion characteristics would allow obtaining better results. However, I expected better results where non-linear effects predominate, up to the gauge WG4 in Figure 11 and even gauge WG5 in Figure 10. This cannot be due to an incorrect definition of the celerity?
This is not due to the incorrect definition of the celerity. It is due to the inadequacies of the Serre equations as identified by the reviewer. We have emphasised the inadequacies of the Serre equations in this situation in the text.

Figures:
- In all Figures, the symbology must appear in a Legend or in the Caption.
We are not sure what this means. We use the LaTex package PSTRICK which replaces symbology in the postscript with latex commands which results in figure symbols that are in proportion to the fonts size used in the document, as shown in the annotated version of the revised paper.

References:
- As far as I can judge, at least two references are not cited in the text ([8] and [51]). Check citations and references.
Sorry, reference to [51] is our error but [8] appears on page 2 as [2-9]. All the references have been rechecked.

Lastly, a careful review of the entire text is recommended, particularly checking the punctuation and some phrases/statements. Just a few examples:

- p. 17 "The coefficients in the matrix, (65) for the exact solution ..."
Changed to "The coefficients in the matrix (65), for the exact solution ..."

- p. 20 "The convergence rate of the proposed schemes for solving the Serre equations are verified using.."
Changed to "The convergence rates of the proposed schemes for solving the Serre equations are verified using.."

- p. 23 "In the sequel we will only be presenting the results of using the...
Changed to "In the sequel, the results from the second-order scheme applied to a hypothetical example involving variable bathymetry and data from three laboratory experiments only will be presented.."

- p. 25 "The upstream and downstream boundary conditions remain constant at, h1 = 10 cm and u1 = 0 m/s."
Changed to "At both the upstream and downstream boundary, h1(t) = 10 cm and u1(t) = 0 m/s.

- *p. 1 Abstract changed punctuation.*

- *p. 2 Changed punctuation.*
- *p. 2 Changed phrase.*
- *p. 3 Changed punctuation.*
- *p. 4 Changed phrase.*
- *p. 4 Included bed terms in equation (4).*
- *p. 5 Inserted extra word.*
- *p. 5 Deleted word.*
- *p. 5 Added reference.*
- *p. 6 Changed phrase.*
- *p. 7 Inserted extra word.*
- *p. 7 Section 2.2.1 first paragraph has been re-structured.*
- *p. 7 Equation (18) changed and h_0, u_0 are constant and z_b_0 = 0 added.*
- *p. 7 Deleted the definitions |h_1| <<|h_0|, |u_1| <<|u_0|, and |b_1| <<|b_0| which are not required.*
- *p. 7 Explicitly state that dzb/dt = 0.*
- *p. 8 Removed "frequency dispersion".*
- *p.9 Defined SSP.*
- *p.10 Changed punctuation.*
- *p.10 Corrected equation.*
- *p.11 Bed term included in c_j.*
- *p.11 Deleted word.*
- *p.12 Equation (48) subscripts corrected.*
- *p.12 Changed phrase.*
- *p.12 Equation (51) subscripts i replaced by j.*
- *p.12 Equation (53) subscripts i replaced by j.*
- *p.13 Removed "wave number".*
- *p.14 Changed punctuation.*
- *p.15 Changed punctuation.*
- *p.15 Changed phrase.*
- *p.15 Changed grammar "propagate" to "propagating".*
- *p.15 Inserted extra words.*
- *p.16 Changed phrases.*
- *p. 17 Changed phrase.*
- *p. 17 Deleted words.*
- *p. 17 Spelling.*
- *p. 17 Added reference to term D^x/M/\Delta x F^{h,u}.*
- *p. 19 Corrected Exact values in the Table from \omega to k.*
- *p.20 Changed punctuation.*
- *p.20 Changed "amplitude" to "non-linear".*
- *p.20 Changed and reworded paragraph after (77d).*
- *p.20 Changed "is" to "are".*
- *p.21 Deleted word.*
- *p.21 Spelling.*
- *p.21 Changed "travel" to "travelling".*
- *p. 23 Changed phrase.*
- *p. 24 Changed phrase.*
- *p. 25 Changed phrase and grammar.*
- *p. 25 Replaced "producing" with "with a".*
- *p.26 Changed punctuation.*
- *p.26 Changed spelling.*
- *p.26 Added missing reference*
- *p. 26 Changed phrase.*
- *Figure 10 corrected spelling mistake.*