NHESS_2018_238 'The occurrence of rogue waves in the interior of the oceans: A modelling and computational study'
by K. W. Chow, H. N. Chan, and R. H. J. Grimshaw
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Reply to Referee 1:

We thank Professor Pelinovsky for his insightful and supportive comments. We respond in detail as follows.

(1) '*…it would be reasonable to give an example of rogue wave characteristics in numbers using formula (1), for instance, characteristic lengths of carrier and envelope waves in 100m-depth basin…*'

Response: Thank you for pointing out the need to verify the actual numerical orders of magnitude. For a basin depth (h) of say 500m, the critical wavelength (λ_c), wavenumber (k_c) and internal wave mode (n), the formulation in the text gives

$$\lambda_c = \frac{2\pi}{k_c} = \frac{2h}{n(4^{1/3}-1)^{1/2}}$$

and with h = 500m, we can construct the following table:

n (internal mode number)	Rogue waves and instability can occur for wavelengths longer than λ_c given by (in meters)
1	1305
2	652
3	435
4	326
5	261

Hence ranges of 'shallow' and 'intermediate' depths are covered. We will add this appropriate text. (Note: we change the suggested depth to 500m, to get a better approximation for the oceanic situation.)

(2) '*…rogue waves now occur for the shallow water regime…, but this conclusion has been made earlier in the paper…*2010, *and previous papers…*2011…'

Response: Thank you for reminding us of these works, which are certainly relevant and will be referenced in the revision stage. However, there is a subtle difference between the two approaches. In the previous works by one of the authors in 2010 and 2011, the starting point was a long wave model, the extended Korteweg-de Vries equation. There is thus an assumption of long waves in the basic carrier wave envelope. In contrast, the Taylor-Goldstein equation for linear modes is utilized in

the present approach, and hence the fast oscillations inside the carrier envelope need not be in the long wave regime.

'*…the author's criterion should include the positivity of cubic nonlinear term in (the) Gardner (equation) as a particular case. Is it correct?*'

Yes, if we take the small wavenumber regime for the Taylor-Goldstein equation, then we can recover the Korteweg-de Vries and Gardner equations. However, such an asymptotic calculation will take us way beyond the 4-page limit of a 'brief communication' paper. Nevertheless, we will mention this connection.

(3) '*…important result is that the modulation instability can occur not only in shallow water,…but also in the intermediate depth basin*.' (underline = our re-phrasing)

Response: Yes, that is exactly one of our messages in writing this paper and we will emphasize this point.

(4) '*…the following papers…should be cited.*'

Response: Thank you, we shall add citations of these papers.