

## ***Interactive comment on* “Brief communication: The occurrence of rogue waves in the interior of the oceans: A modelling and computational study” by Kwok Wing Chow et al.**

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At the beginning, I would like to say that I liked the article due to its presentation clarity and the clarity of the results. The authors focused on internal rogue waves appearing due to modulation instability only and demonstrated modulation instability conditions for internal waves in the constant buoyancy ocean. Nevertheless, I have a few minor comments.

1. Taking into account the specificity of the journal (Natural Hazards...), it would be reasonable to give an example of rogue wave characteristics in numbers using the formula (1), for instance, characteristic lengths of carrier and envelope waves in 100m-

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depth basin.

2. The authors state in Conclusion that “internal waves, modulation instabilities and rogue waves now occur for the shallow water regime”. But this conclusion has been made earlier in the paper (Grimshaw, R., Pelinovsky, E., Talipova, T., and Sergeeva, A.: Rogue internal waves in the ocean: Long wave model, *Eur. Phys. J. Special Topics*, 185, 195–208, 2010) and in previous papers with Roger Grimshaw, where nonlinear Schrodinger equation has been derived from extended Korteweg-de Vries (Gardner) equation with positive cubic nonlinear term (see also Talipova T.G., Pelinovsky E.N., Kharif Ch. Modulation instability of long internal waves with moderate amplitudes in a stratified horizontally inhomogeneous ocean. *JETP Letters*, 2011, vol. 94, No. 3, 182-186). In the reviewed paper the nonlinear Schrodinger equation is derived from initial equations with full dispersion using Grimshaw’s and his co-authors’ previous papers. It means that author’s criterion should include the positivity of cubic nonlinear term in Gardner as a particular case. Is it correct?

3. I think that the new important result is that the modulation instability cannot occur only in shallow water (according to the authors), but also in the intermediate depth basin.

4. Speaking of physical mechanisms of surface rogue wave formation in shallow water, perhaps, the following papers (Pelinovsky E., Talipova T., Kharif C. Nonlinear dispersive mechanism of the freak wave formation in shallow water. *Physica D*, 2000, vol. 147, No. 1-2, 83-94: Didenkulova I., and Pelinovsky E. Rogue waves in nonlinear hyperbolic systems (shallow-water framework). *Nonlinearity*, 2011, vol. 24, R1-R18) should be cited.

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