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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Rogue waves in a wave tank: experiments and modeling" *by* A. Lechuga

Anonymous Referee #2

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The manuscript presents some experimental results on deterministic periodically appearing unidirectional propagating wave groups with a sharp-peaked envelope observed in a large wave tank. An attempt to relate those groups to appearance of rogue waves is made. The experimental results are compared with solutions of Ginzburg-Landau equation and show some qualitative resemblance. The results of this study are interesting and may eventually deserve publication in NHESS, but only after a substantial revision, as specified in sequel. In fact, in the present form the manuscript does not constitute a complete paper but rather offers some comments added to a poster apparently presented at some meeting (see line 13, p. 2). The English presentation is well below any acceptable standards. Even more essential is the fact that many details are lacking, thus preventing critical evaluation of this study. The Introduction contains few references to previous works that were seemingly randomly selected without any apparent guide line. This Section, as well as all others, suffer from incomplete pre-

sentation. For example, in Section 2 (Experiment), the dimensions of the tank are presented, but no information is given about the shape of the wavemaker, its control, and the location and number of the wave sensor(s). What is the driving signal of the wavemaker and how was it selected? How the wave concentration mentioned in the text manifests itself, is it observed close to the wavemaker because of the prescribed initial shape, or rather attained in the process of the spatial evolution at some distance away? Once attained, is the waveform preserved over a significant distance? The basic wave group parameters are also not specified, including even the carrier wave length, so it remains unclear whether the waves studied belong to deep water range. All figures in this manuscript lack titles of the axes, not to mention units, so no quantitative estimates are possible. The resolution of the (frequency?) spectrum in Fig. 3 is not specified. Is it amplitude or power spectrum? The spectrum presented resembles a bimodal one, with just two significant harmonics, but there is no discussion of the prescribed at the wavemaker spectral shapes and its evolution along the wave field as a result of nonlinearity. Also, the spectrum is truncated at about $0.04<f<0.1$ (Hz??), thus preventing the reader from estimating the contribution 2nd order bound waves that should be non-negligible for waves as they look in the snapshot shown in Fig. 5. The existence of bound waves is apparently disregarded in computation of the envelope in Fig. 9. The application of statistical parameters such as significant wave height and kurtosis to the deterministic wave studied here seems to me displaced. The Theoretical background is also insufficient. No definition is given of different coefficients that appear in eq. (1), and there is no attempt to relate the variable u with the measured in the experiment quantities, such as the surface elevation. It is unclear whether the equation (1) is dimensional or not, and what scaling is applied. The governing parameters for which the solution plotted in Fig. 7 was obtained are not specified. The method by which this solution was obtained, as well as the initial and boundary conditions are not given. Fig. 8 does not contain any new information and should be deleted. The solution plotted in Fig. 7 is indeed somewhat similar to the NLS solution for envelopes of standing waves referenced in the manuscript, but the relation between the two cases is not explored.

These remarks should be properly addressed, and the whole manuscript should be rewritten and expanded before it can be evaluated again to assess its acceptability for publication.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 3201, 2013.