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Interactive comment on "Storms or cold fronts? What is really responsible for the extreme waves regime in the Colombian Caribbean coast" *by* L. J. Otero et al.

Anonymous Referee #1

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Journal: NHESS Title: STORMS OR COLD FRONTS? WHAT IS REALLY RESPON-SIBLE FOR THE EXTREME WAVES REGIME IN THE COLOMBIAN CARIBBEAN COAST Author(s): L. J. OTERO et al. MS No.: nhess-2015-121 MS Type: Research Article

I think it is important to know which areas in the Colombian Caribbean coast are affected by hurricanes, so the question entitle the paper is adequate. And the objective is to determine the source of wave extreme value conditions, a very relevant issue. But as general comment, I think the database used to study that issue are not appropriated chosen; they have to justified the use of 15 years of data to characterize the extreme

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wave regimen and if hurricanes behavior are included.

I recommend accept the paper, but mayor revision should be done.

GENERAL COMMENTS:

Extreme wave regime is based on 15 years of data. As you say in the introduction (p 3025 line 13) wave climate presents long-term variations; intra-annual variability of extreme waves could be studied with 15 years of data? Do Martínez & Coria (1993) use 10 years to fit extreme value distribution functions? (other authors, ie Holthuijsen 2007 says "a few dozen years"). Are 15 years of data enough to study hurricanes wave regime? Please provide robust justification.

No reference about the database are provided, except the WWIII model (p 3029 line 25), the atmospheric forcing and spatial resolution is necessary to know for evaluating if hurricanes are included. Also the WWIII model version.

Discussion with other data sources should be interesting: http://coast.noaa.gov/hurricanes/. The hurricane list of Colombian strikes should be incorporated and evaluated the agreement with the re-analysis used. Were 2 hurricanes over the 15 years of data? (p 3034 lines 11-12)

A table with Long-Lat position and depth for 15 virtual buoys and 3 buoys complements figure 2 and 1

In figure 6 how do you estimate 2 Hs data with more than 50 years of return period based on time series with 15 years of data?

SPECIFIC COMMENTS:

P 3029 line 24: "re-analysis buoys" I don't understand this kind of database.

Do you used 41195 buoy data?

Which is the case fitted with Gumbel's maximum distribution? (p 3031 line 20)

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In page 3033, lines 1-5 you explain that you calculate 2 extreme regimes, isn't it? You could name somehow both extreme regimes.

I suggest not to say probability of exceedance of . . . if you have already said the return periods (p 3033, line 16-18)

Puerto Colombia damage is a good example to motivate the study, it is a good example to point out in the introduction, but is no relevant for the analysis of results. I recommend to eliminate it from page 3035 (lines 22-29) and figure 9.

It is no clear for me the last paragraph in page 3037 and the first paragraph in page 3038. Please explain it a little better. Is Hs=5m 25 or 50 years return period? Do you use 15 or 50 years of data? or since 1900 (Ortiz et al., 2014)?

I don't understand figure 4.(a) panel represent 42058 calibration (legend say 41194). The added value of (b) & (c) should be the comparison of calibrated data (linear and power) with buoy 41194 (not used in the calibration procedure) to validate the calibration.

TECHNICAL CORRECTIONS:

Mistake in Ref: Sampedro, 2010 → Tomas, 2009. Mistake in figure references (p 3033, line 10): Figs. 6-9 → Figs, 5, 8 & 10. Roses in figures don't distinguish properly the colors. In figure 3 grid on and axis equal could benefit to compare Buoys and WWIII datasets

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 3023, 2015.