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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Typhoon Haiyan's sedimentary record in coastal environments of the Philippines and its palaeotempestological implications" *by* Dominik Brill et al.

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Dear Editor and authors, the work by Brill et al. presents an insight into the Typhoon Haiyan's sedimentary record in coastal environments of the Philippines and its palaeotempestological implications. I commend the authors on a well-written and interesting manuscript.

The authors addressed a topic with particular societal relevance due to the consequences of these catastrophic events for coastal areas. In this case, it is particularly relevant to say that the authors conducted extensive fieldwork and were also able to complement that with results derived from the application of some sedimentological proxies (grain-size, XRD and magnetic susceptibility). The data set gathered seems to

be solid and very interesting from a scientific point of view.

Overall, the manuscript has a clear structure and aims. However, in my opinion, several aspects should be addressed by the authors before the manuscript is accepted for publication, please see details below.

Although most of the issues I raise (please see below) are minor, I would like to stress that the authors need to be more consistent in terms of the vertical datum that they used. They should rewrite some of the numbered lists and make the text more easy to follow. They need to address more clearly the differences between tsunami and storm deposits and they should discuss transport modes and its implications for the depositional signature of the Typhoon Haiyan's sedimentary record in coastal environments of the Philippines (Jaffe et al., 2012 - Sed Geol). On top of this, they should stress that although local settings and sediment source are fundamental aspects that control storm deposit bed formation, there are a group of common features between the studied sites and that they share characteristics with deposits elsewhere (maybe adding a table summarizing these sedimentological features would help to the reader).

Other aspects: Abstract - the abstract is clear and well written. However, the authors need to clarify if they are studying 3 or 4 sites (they mention 4 sites here but mention 3 sites on page 3 line 10). I also suggest that the authors need to provide more comparisons with palaeotsunami data to sustain their sentence in line 20. In my opinion, that sentence should end "(...) typhoon signatures that can be used for palaeotempestological studies." the rest of the sentence should be deleted unless discussion is enriched with further topics on the comparison between tsunami and storm depositional signatures.

Introduction - Page 2, line 18, once we started talking about using geological record for several millenia we should also mention (and take in consideration) sea-level changes especially when we are using just a few specific study sites. - Page 2, line 25 - "naturaare" - spelling mistake - Page 2, line 27 - suggest you delete text up to line 30...

"Here, we report..." - Page 3 - I believe you should clarify or stress again the aims of your work, in particular at the end of the Introduction.

Study area - Page 3, line 10 - "three study areas"??? - Page 3, line 28 - when you refer to Samar please make reference to Figure or provide some clues about the specific location. - Page 4, line 5 - "three distinctive wave pulses" - Three sets of waves? How was this established? Was it measured? What was the Hs difference between the different pulses? Where any of these pulses related with infra-gravity waves? - Page 4, line 10 - i) and ii) and iii) - numbered lists were used intensively in this manuscript. I do not think they were used properly. Each numbered topic is very extensive and the reader is not guided properly. I suggest you rewrite all parts in the manuscript were you used numbered lists. Either you simplify the topics or you should write them as different sentences and start the sentences with "on the other hand" or "moreover" or etc. - Page 4, line 11 - "model-predicted". Throughout the manuscript you mention several times this but provide no details about modeled data. I strongly suggest you do that! Which model was used? What was the source data? What equations were used to calculate Hs, etc? etc, etc? - Page 4, line 13 - throughout the paper you refer to, at least 3, height (vertical datum) units (atl, msl, above mean low water and depth below surface). This makes it really hard for the reader. I strongly suggest you convert all to m above mean sea level! - Page 4, line 24 - please provide reference after "Philippine plate". - Page 4, line 29 - suggest you replace "originating" with "originated" and add "denser" to make the sentence ..."darker and denser minerals..." - Page 4, line 31 - Please see comment to page 4, line 10.

Methods - Page 5, line 12 - "along-shore perpendicular transects". So, cross-shore? What was the space between consecutive profiles? Did you created a DEM? - Page 5, line 16 - heights - Please see comment to page 4, line 13. - Page 5, line 21 - please replace "was" with "were". - Page 5, line 23 - this is a relevant aspect of the manuscript. Here, you suggest that in some locations you only used one core? Do you think this is enough for well supported interpretations? Especially, when later you

refer to all local specific conditions and lateral variations of the deposit!! - Page 5, line 13 - suggest you compare your approach with Quintela et al. (2016 - Quaternary International) methodology to identify allochthonous Foraminifera species within high-energy deposits.

Results - Page 6, lines 19, 26, 27, 28 - heights - Please see comment to page 4, line 13. - Page 6, line 23 - please refer to Figure 2 (?). - Page 7, line 3 - I believe you should provide/describe more grain-size data information. I suggest you add information on the D10, D90, sorting and unimodal or bimodal character of your samples. - Page 7, line 9 to 13 - I feel that in the discussion you should refer to the relationship between reworking and sediment concentration. Did you detected more reworked material in the basal sector of the storm layer or on the top? How was this correlated with grain-size? - Page 7, line 23 - again, the heights...what vertical datum did you used this time? - Page 8, line 2 - please refer to Figure. - Page 8, line 29 - I guess you should cite it as personal communication. - Page 8, line 30 - heights - Please see comment to page 4, line 13. - Page 9, line 16 - Rsubt was collected at approximately what depth? - page 10 - line 14 to 17 - the fact that the basal sector is slightly finer than the middle section is not just a consequence of the more erosive character of the initial stage of the event? The following phases benefited from a lowered coastal sector thus were capable of transporting coarser sediments farther inland. - Page 11, line 16 to 19 - this just reflects the dominance of the original (2nd cycle) sediment source. - Page 11, line 20 - I believe it is the first time you refer to principal components analysis, I suggest you refer to it in full. Line 12 - line 13 - this strongly suggests this area as the main sediment source.

Discussion - Page 12, line 27 - again the numbered list. - Page 12, line 30 - "normally graded or massive layers of sand". This implies totally different sediment transport modes (suspended grading and traction). I believe you should add a sentence here to comment on this and discuss reasons for the differences observed. - Page 13, line 3 - I suggest you add references from one of the several works conducted by Donnelly et

al. or Liu et al. in the eastern coast of the US. - Page 13, line 8 - I believe you should also mention infra-gravity waves. - Page 13, line 13 - very very interesting but why? Can you add a comment on this? - Page 13, line 16 - now it is important to know at what depth was your sample (Rsubt) retrieved!! - Page 13, line 25 to 29 - I suggest you rewrite this sentence. - Page 14 - line 1 - you must refer, for example, to the work of Komar and Wang (1984) or Komar (in Mange, 2007). - Page 14, line 6 to 9 - Agree with interpretation. - Page 14, line 18 to 20 - I accept your interpretation but I think formation of ridges implies a "continuum in time" more suitable with normal storm regime and a succession of events. - Page 14, line 21 - please see comment to page 4, line 10. - Page 14, line 27 and 28 - I think this partially contradicts statements above. I suggest you rewrite it. - Page 15, line 3 - please quantify the "remarkable amplification". - Page 15, line 4 - which models? - Page 15, line 8 to 14 - Reasoning perfectly reasonable - Page 15, line 15 - in fact, you can add that sediment source is always a decisive factor. - Page 15, line 24 to 27 - please rewrite this sentence. - Page 15, line 28 - is backwash really relevant for depositional imprints in storm events? Against gravity? - Page 16 - line 4 to 7 - here, you acknowledge that site-specific limits extrapolations of your conclusions. I agree and it really is hard to overcome this but, in my opinion, this field of science will progress will a multitude of sites, settings and events being studied. maybe you can add a sentence regarding future work. - Page 16, line 20 - you need to add a comment on the different settings studied by Hawkes et al. (2007) and Goto et al. (2011). - Page 16, line 20 to 27 - your conclusions are somewhat constrained because you did not compared tsunami and storm deposits in the same locations (e.g. Kortekaas and Dawson, 2007). - Page 16, line 28 to 31 - 2 units by one event is totally different from 2 units by more than one!! You need to discuss this!!

Conclusions - Page 17, line 2 - "local factors"... After so much work, it is important to stress the relevance of local conditions. In fact, I suggest you provide a geomorphological sketch (conceptual) model that describes accurately the initial pre-event conditions and the deposit after the event.

References - I suggest you add the above mentioned references.

Figures - The figures have very good quality, are well-designed and are informative.

Supplementary material - Useful.

I believe that in scientific terms the authors developed quality work that clearly deserves publication in NHESS, subject to very few minor changes. Regards Pedro J. M. Costa

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