

Interactive comment on “Analysis of extreme wave events in the southern coast of Brazil” by P. V. Guimarães et al.

Anonymous Referee #2

Received and published: 30 July 2014

“Analysis of extreme wave events in the southern coast of Brazil” by P.V Guimarães, L. Farina and E. Toldo, Submitted to NHESS

===== General Comments: =====

This paper presents an analysis of six extreme wave events which occurred during 2000 to 2010 in the southern coast of Brazil, particularly, at Rio Grande do Sul coast. It is stressed that this kind of analysis is scarce in the South Atlantic, since there is usually little information available concerning data on waves and tidal elevations. Therefore, this paper represents an added value for coastal zone management in that region. The waves are modelled and validated with a buoy data located near Tramandaí. The third generation wind wave model WAVEWATCH III is used to predict several parameters

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as significant wave height, peak period and mean direction at the peak period and the nearshore waves are then simulated using SWAN (Simulating Waves Nearshore). The results seem consistent, suggesting that extreme waves are determining factors for sediment transport in that region. The topic is important regarding the hydrodynamic behaviour under such conditions and its validation and the results seem convincing and will be of interest to the readership of Natural Hazards and Earth System Sciences. This reviewer recommends the article to be published in NHESS with consideration given to the specific comments listed below.

===== Specific Comments: =====

Introduction, page 4365, line 3: By stating that storm surges are also the major geological risk in low coastal areas, the authors should consider adding a reference to support it or detail what kind of geological risk they wish to point.

Materials and methods, page 4369, line 5: The location given in Fig 1 is from Tramandaí city or from the buoy? The way it is written seems confusing. Further on, on page 4371, line 5, it is written “data measured by a tide gauge on side of the Tramandaí inlet”. The sentence sounds strange (“on side”).

Results, model validation, page 4372, line 16: Within the paragraph the analysis is performed considering that the coefficient of determination reflects a percentage of cases. In my opinion that should not be assumed, since this coefficient is used to measure the agreement between observed and modeled values. It is a statistical measure of how well the regression line approximates the real data points and therefore the paragraph should be revised.

Extreme wave events, page 4373, line 10: The “Tramandaí coastal point” means the buoy location? It could be clarified.

Page 4377, line 15: The last sentence of the paragraph is not clear.

Figure 5 and 6. The text of the captions is quite small, making it difficult to read.

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===== Technical corrections: =====

Page 4366, line 16: 'tidal range' not 'tidal rage'

Page 4366, line 17: 'are responsible for' not 'are responsible for'

Page 4366, line 20: 'wave storms' not 'waves storms'

Page 4367, line 3: 'The net longshore sand transport to northeast is' not 'The net longshore sand transport to northeast are'

Page 4367, line 3: 'for the increase of coastal' not 'for the increase the coastal'

Page 4367, line 20: 'During the event' not 'During the a event'

Page 4367, line 23: 'have found' not 'has found'

Page 4368, line 13: 'pattern' not 'patter'

Page 4368, line 22: 'one analyzed' not 'there were analyzed'

Page 4371, line 10: 'employing its' not 'employing the its'

Page 4372, line 3: 'peak' not 'pick'

Page 4372, line 10: 'there is no linear correlation between the variables' not 'there is less of a relationship'

Page 4372, line 22: 'the model underestimates in the order of 50 cm' not 'the model predicts something less by 50 cm'

Page 4373, line 3: 'Table 2 shows' not 'Table 2 show'

Page 4373, line 20: 'at this event' not 'at these event'

Page 4375, line 4: 'operations, but it is insufficient' not 'operations. But is insufficient'

Page 4376, line 4: 'with the' not 'com a'

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Page 4376, line 26: 'event E05, which had' not 'event E05, with had'

Page 4377, line 14: 'lower wave energy' not 'lesser wave energy'

Page 4377, line 23: 'where one of the most important ports of Brazil is located' not 'where is located one of the most important ports of Brazil'

Page 4378, line 6: 'allowed a good simulation of' not 'allowed well simulating'

Page 4378, line 9: 'and have been satisfactory for shallow water waves' not 'and satisfactory for shallow water waves'

Page 4378, line 6: 'for each examined beach.' not 'for each of beaches examined.'

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 4363, 2014.

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