

## ***Interactive comment on “Reciprocal Green’s Functions and the Quick Forecast of Submarine Landslide Tsunami” by Guan-Yu Chen et al.***

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### General comments:

The authors present a method for quick forecast of submarine landslide tsunami in coastal areas using Reciprocal Green’s Function approach. The methodology is sound and the results are convincing. This study provides an alternative to commonly used pre-calculated Green’s Function approach in tsunami forecast and early warning, and is valuable to the advancement of knowledge and technology required for tsunami hazard mitigation in coastal areas vulnerable to submarine landslide tsunamis. This study is of great interest to landslide tsunami hazard evaluation and hazard mitigation communities. The topic is suitable for publication in NHESS.

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However, in its current form, the manuscript does not fully meet the quality requirements for publication, largely due to its writing. I strongly recommend the authors to further polish the manuscript to improve its clarity and readability. A minor revision is recommended before it can be accepted.

Detailed comments: \* Please check the consistency of the use of term tsunami throughout the manuscript. in the manuscript, sometime it is treated as countable noun, sometimes as uncountable, and some locations "tsunami" is treated as plural, e.g. at line 41. \* At line 11 in Abstract, please change "of" to "in" in the sentence of "the forcing of the continuity equation.....". \* At lines 16-20 on page 1, I don't fully agree with the statements here. "quickly" and "satisfactory accuracy" are related to the time we would have. It will be extremely difficult to achieve satisfactory accuracy for local source tsunamis. In the first 20-30 minutes after a local earthquake, we even may not have a finite fault solution available. \* At line 20 and other locations, please change "Green’s function" to "Green’s Fuction", change "reciprocal Green’s function" to "Reciprocal Green’s Function" as here is where abbreviations GF and RGF are defined. \* At lines 25-26, add reference(s) to "previous studies" mentioned in this sentence. \* At lines 31-32 on page 2, for this event, more accurately, the tsunami was caused by the flank failure of Anak Krakatau volcano. \* At line 39 on page 2, in "On the other hand, an SMF forces.....", change "an" to "a". \* In multiple locations, it seems better to change ":" to ".", e.g. at lines 46, 130, 220. \* At line 53 on page 2, please add reference "Wang and Power 2011" here. \* At lines 64-70 on page 3, strictly speaking, the term "mass flux" used here refer to "volume flux" as it is missing the factor of density. Please change it accordingly. \* At line 65 on page 2, for the description "....., and equals the average velocity multiplied by the undisturbed water depht d", please note that this statement may be true only when the vertical distribution of horizontal velocity is linear or uniform. \* At line 98 on page 5, "Wang and Liu 2006" is missing in References. \* In 3 Results section, "direction simulation of COMCOT" is better to be changed to "direct COMCOT simulation". \* At lines 148-149 on page 7, the last sentence is a bit confusing. Should it be something like "The whole rectangular areas is subsiding at a

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velocity of -0.025 m/s for 120 seconds"? \* At line 154 on page 8, please change "of" to "in" in the sentence ".....by the red line of Fig. 1(c)". \* At line 162 on page 8, in "The record has it that when .....", a typo?, should "has it" to be "shows"? \* At line 200, please change "Conclusion and Discussions" to "Discussions and Conclusion". \* At lines 130-136 on page 7, could you please elaborate more about computational demands for pre-calculating GFs vs. pre-calculating RGFs? In computing pre-calculated GF or RGF with impulsive sources, the waves will be highly dispersive considering small spatial scales of the impulsive sources, e.g. 2 min mentioned for the 2011 Tohoku source area. It seems that SWEs are used in the calculation, however SWEs are non-dispersive. This leads to a theoretical inconsistency. Maybe I don't interpret it correctly. Could you please provide some discussions on this?

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