

Interactive comment on “Update of the tsunami catalogue of New Caledonia using a decision table based on seismic data and maregraphic records” by J. Roger et al.

J. Roger et al.

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Dear Referee, We are pleased to provide answers to your comments below.

You mentioned the fact that decision table is more appropriate than algorithm and you are right. We agree and change the word in the manuscript.

Considering the 1960 tsunami, we mentioned it in the abstract as well as at the end of the part 1.

Comment about role of the rupture characteristics and dynamics on the tsunami generation has been considered in section 2.4.

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As requested, the choice of the distance criterion linked to the magnitude criterion has been more discussed in section 2.4. We are aware of the role played by the strike at a given subduction zone, but the objective was to select all the events able to trigger a tsunami being recorded on tide gauges in New Caledonia.

In section 2.5 the search procedure is applied to the whole dataset. There is no succession of conditional tests. Of course, we have removed the 6-digit accuracy of the columns in table 2 and 3, as requested by another reviewer.

The locations of Grande Terre, Loyalty Islands, Nouméa, Ponérihouen, Isle of Pines, Canala and Mou have been added to figure 5. Concerning the potential of tsunami record in Nouméa (along the West coast), paragraph 2.6 has been improved as requested.

We cut off the sentence about the arrival azimuths of tsunamis in section 2.6.

We fully agree with you about the confusion on the magnitude criterion of 6 or 6.3 at the beginning of section 3. It doesn't make any change on the results since the events between 6 and 6.3 were located outside of the Pacific Ocean and/or they did not produce a sufficient tsunami to be recorded in New Caledonia, we decided to look only at earthquakes of magnitude $M_w > 6.3$ as you indicated.

Section 3.1 has been re-organized and better hierarchized as you recommended.

The sentence dealing with the different percentages for the 2 studied periods (1900–>2009, 2009–> 2019) has been improved. By the way, the Sahal catalogue is based on a different approach and our methodology doesn't help to improve the catalogue before 2009.

Although we noticed a difference of signal amplitude 3 times more important at Chaleix than at Numbo during one event, we have not explored the issue further as the two tide gauges are in different bays and are likely affected by different resonance mechanisms.

The data concerning the December 5, 2018 tsunami are kept for a further publication

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focusing on this event. We added a sentence in the sea-level data section to describe our method for de-tiding. For the Nouméa tide gauge, it is done with a multiyear time-series and it is therefore very accurate.

Figure 12 only shows the results of our study: the location of the earthquakes having triggered a tsunami recorded in New Caledonia. By analyzing the Pacific data about tsunamis (NOAA NGDC catalogue) we found that no tsunami triggered by distant earthquake located far from Nouméa (> 2500 km) and deeper than 100 km was recorded in New Caledonia. The same way, no regional tsunami has been related to an earthquake deeper than 100 km and with magnitude lower than 7.5. The scale bar has been modified in accordance (depth > 100 km has been removed).

Unfortunately, the scarce tsunami amplitude data along the coast of New Caledonia does not allow yet to produce a relevant graph of tsunami heights as a function of the earthquake magnitude to be useful for pre-operational procedures. We still think that the distance criterion is a relevant to analyze the dataset. Note that a shallow (< 100 km) earthquake with magnitude higher than 7.5 is kept in our process.

Concerning paleotsunami research, it is true that we do not mention that point because there is no published research on this topic in New Caledonia. A paleotsunami research project has just been funded and will be held in a few month in 2019.

Answers to the other remarks: - L.36-37: the sentence has been modified as requested. - L. 55: corrected. - L. 69: corrected. - L. 98: modified. - L. 222: corrected. - L. 232: corrected. - L. 282: corrected. - L. 325: modified. - Figure 1: The inactive subduction zones are indicated on the figure as red dashed lines. Convergences rates have been added. Legend has been modified. - Figure 2: improved with the two requested lines. - Figure 4: done. - Figure 5: added.

Thank you very much for providing valuable comments and your detailed review.

Best regards, The authors.

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