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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Scenario-based numerical modelling and the palaeo-historic record of tsunamis in Wallis and Futuna, Southwest Pacific" *by* G. Lamarche et al.

Anonymous Referee #2

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This paper shows numerical modeling results to characterize the tsunami hazard along the Futuna and Wallis archipelagos. Both sites could be prone in particular by large local tsunamis, and also by teletsunamis. This paper is an outcome for the knowledge on tsunami hazard in Wallis and Futuna and on the development of tsunami hazard methodologies.

There are some questions concerning the table 4 : the comparison of the values of several seismic parameters for several earthquakes needs some explanation. 1) Concerning the Tohoku earthquake, the length of this event from most authors is much smaller (500 km), and the slip larger. Why did you choose a model with such long fault

length ? 2) The ratio of the values of parameters for the case 1 Tohoku and the case 3 Aleutian is incorrect. (1) Tokoku : M 9.0 - width 50 km ; (3) Aleutian : M 8.6 - width 150 km . Length and slip are similar. It is not correct to have a ratio 3 in Seismic moment (Mo) Mo (3) $\sim$ 3xMo (1), Mo(3) » Mo(1). The seismic moment of the case 3 is larger than the seismic moment of case 1. This is the opposite of the magnitude values M 8.6 (1) < M 9.0 (3). Is there an error in the values in this table or not ?. Please explain.

A suggestion concerning the maximum waves elevation map. Figure 15 is very similar to Figure 12. The fact is that the Mw 9.1 Tonga earthquake is generating the most hazardous tsunami for the Futuna island. This is obvious because the Tonga trench is the near field large sources zoneand Futuna is just of the boarder of the tsunami beam. The consequence is that this figure 15 focused on the Tonga 9.1 contribution and don't provide any information about the contribution of the 14 other cases.

It would be very useful to build another maximum elevation models map without the Mw 9.1 Tonga event, to be able to analyse what are the contributions by the 14 other tsunamis.

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