An important topic was analyzed in this work and can be a significant scientific contribution. Some comments are explained here, with the aim of improve the analysis and discussions of this work.

We would like to thank the Dr Estay for his instructive feedback and comments regarding our manuscript. Below we explain below how we have addressed each of the issues raised.

Major comments:
1. Lateral (N-S direction) continuity of the SRF
An important discussion has been obviated: the lateral-continuity (in a N-S direction) of the vertical offset of the fault, and which implications have in the fault rupture length. For example, (c) and (d) profile in Figure 4 do not have a defined offset to argue the fault presence. Additionally, differences in the offset ranging between 119 m and 5 m, imply an unclear variability of the fault scarp. Does these offset represent the same geological process? Specifically, these offset also varies in the short-distance, for example varies between 30 and 2 meters in profiles (n) and (o) separated by only ∼ 1 km; or varies between 119 and 36 meters for profiles (h) and (i) separated only ∼1km. Thus, any obviously lateral-continuity is observed.

Then,
(1.1) which criteria define a continuously fault? and (1.2) which criteria define a fault offset? Additionally, Figure 4 does not have a descriptive caption to understand which represent the different colors of the lines (red, green and blue). (1.3) Please improve the caption of this figure.
- Thank you for raising this important point. We are interested in segmentation only at a relatively large scale, and assume that there is continuity of the fault (or at least a lateral length of it) at depth given the overall geomorphic expression of the San Ramon mountains. Also the downsampling of the exposure to 1km, and the simplification of the GMPEs in terms of the distance to the fault, does not warrant trying to replicate the along strike variability of the fault too finely.

However, we agree that it is often difficult to determine the continuity of fault segments from geomorphological observations. This difficulty is compounded by ~8k years of erosion, slope degradation and the growth of folds as well as the urban expansion. The fault offset is estimated from the vertical offset between the best fit lines through the point cloud either side of the fault scarp. While these observations enable us to determine the active fault segments that comprise the San Ramon Fault, the variations in scarp height mean it is difficult to trace specific historical ruptures along the fault.

As discussed in the text, profile (d) shows no clear offset probably because of slope degradation due to the Mapocho river. We have included additional text in Section 2 of the manuscript discussing the issue of scarp continuity along-strike of the fault.

We have added additional information to the caption of Fig. 4 to improve clarity as suggested.

(1.4) In the same Figure 4; Why red and green lines have different length including different number of points to make the linear regression? i.e. in profile (e), and (i) the green line starts in 0 distance, but in other profiles arbitrarily start at different distance.
- The variable topographic slope along the fault means it is difficult to fit lines of equal length through the point clouds for each profile. In most cases we have tried to ensure a fit through at least 500m, but where possible ~1km, of points either side of the fault scarp. We have added this clarification in the text.

(1.5) If one of the main goals of this work is define the fault trace: please discuss (1) lateral continuity,

(2) the meaning of the fault surface expression and (3) comparison with the inferred sub-surface fault.
- We have included additional text in Section 2 of the paper discussing the issue of fault segmentation and our justification for using earthquake scenarios in our model that rupture across both main strands of the San Ramon Fault.

2. Peak Ground acceleration results
The PGA values are extremely important for this work, and must be presented, analyzed and discussed in the main manuscript. Please discuss the result of the PGA values and presented it in the main manuscript.

From these results, arise the following questions:
(2.1) Why the PGA results of the SRF (upper panels in Figure S5) concentrated the higher values in a E-W elongated shape?
(2.2) Please use the same PGA-scale for all the earthquakes scenarios (Figure S5), to allow the comparison between them.
(2.3) Please add the USGS PGA map of the Mw=8.8 Maule earthquake.
- (2.1) The shape of the San Ramon ground motion was due to an error in the way the OpenQuake engine calculated rupures in segmented faults. We have now corrected this and made the necessary amendments to the manuscript. We have also included a figure of the ground motions in the main manuscript (Fig. 8) and additional text in section 3.4.
- (2.2) As suggested we have changed the ground motion figures to use the same colour scale for the San Ramon, Santiago splay and Maule scenarios. However if we set the colour scale to the largest ground motions (San Ramon 7.5), the spatial variation in ground shaking is not clearly visible for the intrslab case. Therefore while we have changed the colour scale to be same for all panels in Fig. 8 in the main manuscript we have decided to keep the intraslab colour scale in the supplements.
decided to leave the colour scale for the intraslab case as they are for .
- (2.3) We have included an additional figure in the manuscript (Fig. 8) showing the ground motions for the largest earthquakes on each fault and the USGS PGA map for the Mw8.8 Maule earthquake.

3. Applications of the fragility curve
Fragility curve of Villar-Vega et al. (2017) may not represent the appropriate function for the earthquake scenarios of this work. First, Villar-Vega et al. calculated its fragility curves with 300 seismic records mainly composed by subduction earthquakes. Local crustal earthquakes mean a different frequency range, time of expose and spectral response. Thus, crustal events need an unique and independent analysis to created fragility curves. Additionally, differences between Chilean, Argentinean, Ecuadorian, Colombian, and Peruvian seismic regulations for building need careful attention. “Despite the usefulness of these models, it is important to acknowledge their limitations and range of applicability. These fragility functions do not capture the specific features of the building stock at the local level. For the assessment of earthquake losses at a local scale, models derived using a more detailed methodology and considering the local characteristics of the building stock should be considered.” (Villar-Vega et al. 2017).
(3.1) Please discuss the applicability of the fragility curve to the Santiago building stock.
- Thank you for raising this important point. The methodology Villar-Vega et al. (2017) used for the fragility function analysis was to approximate each building typology as a single degree of freedom oscillator. So it is indeed correct that this method heavily simplifies the response of a building to ground shaking (and also one of the reasons why the uncertainties on the loss results are quite large). This approach would not work on a building-by-building scale analysis as mentioned in their paper.

However, we believe it is still sufficient to approximate the broader scale losses on a city district scale, which is why we show results summed over each district even though the initial calculations are done on a 1km x 1km grid.

We have included additional clarification of this point in the manuscript in section 3.3.

(3.2) Note that in supplementary figure S6. Fragility curve are referenced to Villar-Vega 2014.
- This has now been corrected
(3.3) How to explain losses and fatalities for earthquakes scenarios, if the Bessason et al. (2012) vulnerability curve only expose losses with PGA up to 1 g; and according to yours models the major PGA values are 0.8 g (Figure S5)? (3.4) Why do you present a MMI curve (Naguit et al. 2017) if your results are explained in terms of the PGA values?
- Vulnerability functions are generally empirically derived using loss data, usually collected through insurance claims or governmental reports. Therefore these are necessarily approximated from one region of similar tectonic setting to another. The OpenQuake-engine contains a database of these functions and automatically uses the most appropriate functions for the defined setting. Figs. S6e and S6f were representative examples shown for illustrative purposes only. We have replaced these more appropriate examples used in our calculations.

(3.5) How can you explain that the mean building collapse expected for the Mw=8.8 earthquake according to your results, it is overestimated 200% above of the observed damage?
- As explained in section 3.4 of the manuscript, 4,306 collapsed buildings were recorded in the Santiago Metropolitan region in the Maule earthquake. While the collapse count is smaller than our modelled estimate of 9, 800 ± 8, 000, it is within the error margin. The discrepancy could have arisen due to a slightly different exposure model. The actual exposure in 2010 would have been different than our exposure model estimates, which uses data from 2014. Moreover, there is often ambiguity regarding the classification and reporting of actual structural collapse and damage beyond repair (and thus in need of demolition). See Villar-Vega et al. (2017a) for a discussion of this topic.

(3.6) Can you compare the results of the Maule, 2010 earthquake in terms of the fatalities?
- While fatality estimates exist for the toal losses in the Maule earthquake we have not been able to find reported values for the Santiago Metropolitan region alone.

4. Conclusions and uncertain of this work
Section 5.4 discuss the limitations and uncertain of this work. However, these discussions are not explicit in the abstract and conclusion sections. To provide the limitation of this work, please add these uncertain at least in the conclusion section.
- We have expanded the conclusion section of the manuscript to also include an acknowledgement of the uncertainties in our model calculations.

Minor comments:
Page 5 Paragraph between line 13 and 20: The 1647 earthquake can be attributed to several sources, one of them is the splay fault beneath Santiago; but there are other options; (1) intraplate earthquake as the 1939 Chillan Earthquake; taking into account the ∼200 second of duration (ref libro); (2) another crustal fault next to Santiago, for example the West Andean Thrust faults (Armijo et al. 2010) or other fault describe by other authors (e.g. Farias et al. 2010). Further efforts must be done to state this paragraph, and any of these possibilities can be obviated and not mentioned.
- Thank you for these suggestions. We have expanded this paragraph to make clear these other

possibilities for the 1647 earthquake and our justifications for choosing the buried splay and/or the deep intraslab as likely candidates.

Page 9 line 12: “for the commune of Las Condes”
- Corrected

Page 11 Line 10: the reference is Vargas et al. 2018, not Easton et al. 2018.
- Corrected

Page 12: Line 12: Please add “According our models, it is clear that there is a trade-off”
- Amended as suggested