

## **Assessing Transportation Vulnerability to Tsunamis: Utilising Postevent Field Data from the 2011 Tohoku Tsunami, Japan, and the 2015 Illapel Tsunami, Chile**

This is an excellent piece of research and a great contribution to the scientific community. The paper is well written and lays out the problem and new research appropriately. I particularly like the inclusion of the limitations section so readers know when they can and cannot use the fragility functions.

Below are my minor comments and questions:

**Line 40:** add another “)” after the Koshimura et al., 2009 reference

**Line 49:** delete “field”

**Line 110:** change “infrastructural” to “infrastructure”

**Line 147:** delete extra “)” after the NZTA, 2014 reference

**Lines 169, 190 and Figure 4 and 6 captions:** it took me a while to realise that the area shown in Figure 4 and 6 is not the whole study area for the Tohoku event. Particularly when I was comparing the data in Figure 5a which shows thousands of bridges and Figure 6 which shows 20+ bridges. I would suggest at line 169 and line 190 in new sentences state the Figure 4 (Figure6) show an example of observes damage levels for roads (bridges) in the town of Ishinomaki within the study area. Or incorporate something similar into the Figure 4 and 6 captions.

**Line 208 and Figure 7 caption:** incorporate a similar phrase “DLO had a count of 573 road sections (too many to represent in Figure 7a), with five having a culvert.” into the caption of Figure 7.

**Lines 214-215:** “This was observed for road assets in Coquimbo as damage levels reduced with distance from the coast.” Is this the only reason for this trend? Could it be caused by other effects such as change in inundation depth, topography, change in road construction?

**Line 218:** add “s” after “function”

**Line 219:** In terms of the debris based level of service, was any consideration given to areas that, pre-tsunami, might have had a higher concentration of maternal that could become debris e.g. construction sites, industrial area, etc? These areas might have higher density of debris post-tsunami compared with the method you used.

**Line 222:** change “assets” to “asset’s”

**Line 225:** change “levels of service” to “service levels (SL)”

**Lines 227-229:** the sentence starting with “To account for potential horizontal...” seems to be missing some words before or after the brackets. I don’t know what is trying to be said to offer a re-write.

**Line 247:** spell out “CDF”

**Line 282:** delete “even”

**Line 286:** Start a new sentence after “(Figure 13b)”

**Lines 298-299:** Can you explain why these did not warrant the development of fragility functions?

**Line 326:** delete “also”

**Line 337:** “at around 2m” on Figure 19a it looks a lot less than 2m, maybe 0.2m?

**Lines 338-339:** the sentence starting with “However, the least squares regression...” is this correct? Looking at Table 3 it seems the coastal plains r<sup>2</sup> values are lower than the valleys.

**Line 348:** add references for “previous studies”

**Line 405:** change “behave” to “have”

**Line 407:** change “may a” to “may **be** a”