Natural Hazards and Earth System Sciences
Discussions

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1
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Comment on nhess-2021-293

Anonymous Referee #1

Referee comment on "Invited perspectives: Challenges and future directions in improving bridge flood resilience" by Enrico Tubaldi et al., Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2021-293-RC1, 2021

Challenges and directions of future research in bridge flood resilience are discussed in this perspective article, based on the results of a workshop and a survey organised by the University of Strathclyde with experts from different fields. The article is timely, well-written and deserves publication. I have a few comments and suggestions for improvement:

- Please highlight the innovation of the paper against the state-of the art. If this is an agenda-setting paper, please comment on the timescales and mechanisms needed for solving these issues/problems. Why do the authors believe these challenges still exist? Perhaps a table explaining the causes and suggested solutions would be useful. This could include technical (engineering) but also other factors (accessibility, lack in methods, financial (resources), organisational, governance etc) to improve the significance of this paper.

- It is suggested to discuss the challenges and knowledge gaps in the definition of sufficient risk and resilience metrics for flood critical bridges. Also, discuss the challenges in the communication of risk and resilience assessments to the stakeholders and decision makers.

- It is suggested to illustrate the impact of uncertainties on the hazard, vulnerability and restoration models, in the resilience assessment of flood critical assets. For example, show qualitatively how these uncertainties can change the resilience curve.

- Figure 5: please improve the figure, also explain the symbols Vs, Vm, D, A, Q

- Please check the citations, eg, line 244-245 should be Argyroudis and Mitoulis (2021) instead of Argyroudis et al (2021)