Natural Hazards
and Earth System
Sciences

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Discussions

Interactive comment on "Indirect flood impacts and cascade risk across interdependent linear infrastructures" *by* Chiara Arrighi et al.

Anonymous Referee #1

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Overall a very relevant empirical paper that contributes to an area which is still lacking such studies.

On language I am not qualified to judge, but you may run a grammar check on some sections where "a" or "the" seem to be missing such as in line 25.

Abstract first sentence: check for usage of hazard instead of threat. I suggest to modify it to "one of the..." which seems more realistic given the wide spectrum of what could be regarded a natural threat/hazard. Earthquakes are more frequent, for example, but you probably mean a certain combination with magnitude.

Line 9: add "for example", since indirect effects occur not only through infrastructure.

Line 42-44. Linear structures can be come complex, but must not. Within complexity

theory, linear systems often are not understood as complex. Also I am not sure why point infrastructure should not become complex regarding interactions. Considering Rinaldi et al 2001 on interdependency types, I would assume that for example, logical interactions between point objects can become quite complex, i.e. non-linear. I therefore suggest to formulate it a bit more cautiously. Also, why must it be ad-hoc modeling and not before and event? "Three models are ..." you may add "in this study"

Line 47: I think this claim is not backed by a thorough literature analysis, so I suggest to omit it or make it more precise; related to the specific location. Some of the authors you have mentioned above, for example, have done such assessments, too. But many others, too. Line 48 provide some examples of fields where it could be applied.

Line 50: "Systems" are not just "CI systems"; correct the wording. Line 52: Some sources have rightly criticized that CI are more than just physical or organizational; they include staff, humans as user, environment, non-structural aspects such as regulations etc., too.

Line 70. A "more thorough understanding" should also go beyond traditional magnitude/probability formula, some argue and should include impacts in terms of different types of impact spheres (human, environment etc.) but also include questions of which quality, quantity and volume of values are affected and what types of risk management or protection goals exist to help prioritize such criticalities.

135: check the term "shorts-out"

166 Add a source to AAL. What about the maintenance and repair cars and teams that are mentioned above as a main motivation?

202: instead of the tiny URL, provide a proper source description. What type of railway is this etc.

302: sources for the quantitative measures? or is this computed by you? until 320: it seems you have computed those values; what data did you use to achieve it (i.e. road

network data sources, types etc.?)

Table2 very nice and relevant results. Could you provide estimates of possible error margins? A sentence or two would suffice, maybe in the discussion. Just since this looks to exact.

356 check grammar

359 do those SUVs permit higher wading depths, such as trucks (0,5m)?

399 This must not be so, road nodes and section, crossing could also be of interest. Maybe just add "within this study"

403 add a source for Value of Time, or VOLL

428-433 Interesting areas for future work. Might be illustrative for readers to add a few sources as examples who covers bridges, power supply, operation times etc.

Literature Some sources cited in the text are missing in the reference list.