

Research article: **Household resilience to major slow kinetics floods: a prospective survey of the capacity to evacuate in high rise buildings in Paris**

**New title:** Household resilience to major slow kinetic floods: a prospective survey of the **evacuation capacity** in high rise buildings in Paris

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Comments of anonymous Referee # 2	Response to anonymous Referee # 2
<p>My concern about this article is the positioning in terms of the potential aid for decision maker, at least the Paris City council services. About this I can see at least 4 weaknesses in the proposed research:</p>	<p>Thank you for taking the time to review our article. I have no doubt that we will be able to respond to the comments made.</p>
<ul style="list-style-type: none"><li>1. The paper is about evacuation capacities of high rise buildings in Paris, in a context of slow flooding process. The river Seine has indeed a slow flooding process and the evidence is that plenty of time is available to evacuate! Why a scientific method is needed for this? Does it really help anyone?</li></ul>	<p>You are right, this is a slow-kinetic flood. However, we wonder about the risk that unexpected water inflows and / or shutdowns (as was the case in the RERC in 2016) triggering sudden self-evacuation phenomena, difficult to predict, complicating management. crisis. Also, whatever the time allotted, the crisis management services of Paris Police Prefecture (Paris Defense and Security Zone) expressed at the end of crisis simulation exercises we attended, their need to know about the capacity of people to self-evacuate, and, above all, to self-evacuate. relocate, where to relocate, and if it is then possible for them to continue working and / or telework. We probably haven't made that clear. Also we added a sentence in this direction line 54</p> <p>We added line 54 to 59 : Above all, there remains a lot of uncertainty regarding the potential zoning of floods and the effects on the functioning of networks (Gache, 2014). The crisis management services fear that very few inhabitants will agree to self-evacuate as long as the effects of the flood remain barely noticeable, and that, suddenly, following the shutdown of certain services and / or unexpected water inflows (as was the case with the RERC or in the 16th</p>

	<p>district of Paris during the 2016 flood), a large number of people suddenly need to be taken care of (Edjossan-Sossou et al., 2020).</p>
<ul style="list-style-type: none"> <li>2. Another weakness in the approach choosed is the lack of integration of other services that need to act to protect themselves from floodings. I guess RATP, EDH and others have to act to reduce the vulnerability of their systems (see Serre and Toubin research for example) during this lap of time. These past research works showed that many services, as well as road availability is subject to uncertainties... Why this point is not included here despite its criticity?</li> </ul>	<p>Absolutely, the issue of networks is central and this is why we cite the work of Toubin et al., 2015 and Bocquentin et al 2020 in our introduction. Also, during our discussions, as part of a flood simulation exercise, the authorities of the Ile-de-France region (prefecture and city) very clearly communicated their questions to us concerning the number of people that should be taken care of. , especially at what times, according to the reactions to the instructions, the influence of the flooded surfaces and the shutdown of the networks. This last point being very uncertain, for example the REC was cut in 2016 and 2018 well before reaching the water level foreseen in the crisis management plan. Above all, the business continuity plans of network managers are constantly evolving, depending on the actions taken to reduce vulnerability, or conversely the discovery of new vulnerabilities (as was the case for the RERC in 2016). The objective is to produce information concerning the populations exposed to the risk and their behavior, regardless of the flood scenario and network interruption.</p> <p>We aded line 83 to 88 :Especially the knowledge on the zoning of floods and the business continuity plans of the network managers is constantly evolving, in particular according to the actions taken to reduce the vulnerability of the infrastructure and / or the discovery of new vulnerabilities (as was the case for the RERC in 2016). Thus, the objective is to produce information on the populations exposed to the risk and their behaviors that can be exploited regardless of the flood scenario and network interruption.</p>
<ul style="list-style-type: none"> <li>3. You tried to define vulnerability profile of inhabitants of such high buildings. Several researches in this area are available and recognised worldwide. Unfortunately these approaches are not even prestented in the paper. For example, how did your proposed evaluation is getting deeper than approaches proposed by Cutter for example?</li> </ul>	<p>Indeed, many authors have produced very interesting research concerning the vulnerability profiles of populations exposed to risks. Thus Cutter et al, 2003, who proposes a global social vulnerability index, often cited in references in our article. However, we do not seek to measure vulnerability profiles strictly speaking, but, more precisely, to quantify the ability to self-evacuate and to self-relocate. Thanks for your comment, we may have been imprecise, so we added lines 122 to 133:</p> <p>Several authors, such as Cutter et al. (2003) propose global social resilience indicators, at the level of regions or metropolitan areas (Cutter et al., 2014). This type of approach can provide very interesting information to give orders of magnitude aiding in crisis management planning. It enables the study of hazard zoning, exposure and assessment of the overall social vulnerability of</p>

	<p>populations. We mentioned in the introduction an approach of this type implemented in the Paris metropolitan area (Fujiki &amp; Renard, 2018). Using statistics, particularly social statistics, for the territory, it provides an overview of the evacuation problem. In addition to the results obtained by Fujiki &amp; Renard (2018), responding to concerns expressed by crisis managers, the prefecture (civil security) and the city of Paris, we wish here to provide some more detailed answers concerning, in particular, the factors likely to cause people to evacuate, their capacity to self-evacuate, the location of their self-hosting and whether it is possible for them to continue their professional activity.</p> <p>So we have added the references in our bibliography:</p> <p>19. Cutter, S. L., B. J. Boruff and L. W Shirley, Social Vulnerability to Environmental Hazards, Social Science Quarterly, 2003, vol. 84, n ° 1, pp. 242-261. DOI: 10.1111 / 1540-6237.8402002</p> <p>18.20. Cutter, S.L., R. Schumann, and C.T. Emrich. "Exposure, Social Vulnerability and Recovery Disparities in New Jersey after Hurricane Sandy", Journal of Extreme Events, 2014. 1 (1): 23 p</p>
<ul style="list-style-type: none"> <li>4. for me, the real problem in such flooding context is not the evacuation process: city managers know how to evacuate cities with million of people. The most important question is: how can we organise the come back home when flooding duration may exceed one month? To conclude, I do think the reserch proposed does not sound at all with the real need of the City of Paris and Prefecture need in terms of contingency and flood risk management and rescue strategies. For all these major reasons, I recommend to reject this article proposition.</li> </ul>	<p>I do not understand this remark, since the motivation for the work carried out comes from a discussion with the crisis management services of the Parisian territory: Paris Police Prefecture (Paris Defense and Security Zone), crisis management services of the city of Paris and the 15th arrondissement.</p> <p>See section Acknowledgments</p> <p>As we indicated in response to the previous questions, the authorities (Prefecture, City of Paris and town hall of the 15th district of Paris) told us of their concern to better understand the behavior of households likely to self-evacuate. We have therefore prioritized this point. In perspective, it may indeed be interesting to also study the subject of returning to their home during the recession phase, but this is the subject of another study. Note that we included in our survey elements concerning the capacity of the populations to work from the place where they have relocated, which could influence their time to return to their homes. Also, we added as a perspective the interest of such a study.</p> <p>We have added line 304-306: In perspective, it would also be interesting to study the phase of return to normalcy, and the factors likely to influence people to make the decision to return home.</p>

