Nat. Hazards Earth Syst. Sci. Discuss., 3, C2050–C2053, 2015
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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Review Article: A review and critical analysis of the efforts towards urban flood reduction in the Lagos region of Nigeria" *by* U. C. Nkwunonwo et al.

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Received and published: 15 October 2015

A very big thank you for the invaluable time you put into this review. Your comments and critical observations are very informative and constructive. The majority of the corrections and general comments are well noted, (see specific responses below) as well as the answers to some queries raised:

1. "Measure the author is lumping into the approach"

This is important since a discussion on the basis of these approaches will be useful in improving the quality the article. But the authors didn't really particularise on any

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approach. At this stage of the research, the actual implementation of flood risk management is not the main focus Instead, current approaches for doing so in Lagos area are reviewed. However, it's something the authors can think about.

2. "Living with floods"

The point here is noted. Living with floods is a fundamental idea that forms the basic framework of integrated approaches of flood risk management. It's a kind of paradigm shift from trying to control flooding to adapting to it. This idea needs to be explained more clearly.

3. "Why flood modelling is so important and why isn't done?"

This question is very fundamental because any study that promotes flood modelling must justify why it is so necessary and provide reasons why it's ignored. Basically, flood modelling is an essential component of flood risk assessment. It provides the data (water depth, extent and velocity) for assessing the probability of flood hazard. These data combine with exposure and vulnerability to determine flood risk. For the Lagos area, besides provision of flood hazard data, flood modelling will assist in the making of flood risk and flood hazard maps. These maps are indispensable in creating flood risk awareness and informing the decision of stake holders towards options to adopt in flood management. In view of cost benefit analysis (CBS), Lagos area will derive maximum benefit from flood modelling in the long run.

Flood modelling has been largely ignored in Lagos because of a number of issues. Firstly, data to run an existing model is lacking. Secondly, to develop a new flood model is skill intensive, while to acquire an existing model is capital intensive. Although there are open source versions of flood model, limited calibration, instability and extensive computation difficulties, their applications in external locations are uncertain. Agencies in Lagos do not have specific responsibilities to run do flood modelling. These are relevant discussions which need to be part of a review article.

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4. “Flood insurance”

This observation seems very crucial especially given the fact that its recommendation in this article is considered fundamental. It is true that other countries such as the US have explored and discarded this option for some obvious reasons. However, within the framework of non-structural flood risk management, it is still a viable option in many countries. A lack of preparedness and complacency among residents at risk of flooding and retraction of government’s incentive to invest fully in flood defense are odd sides of flood insurance (Lamond et al. 2009). However, its roles in flood risk management are clearly defined (Treby et al., 2006; Crichton, 2008). Flood insurance assist victim to recover and build back better and faster. It is still being applied in UK, Netherlands, and Indonesia, although the coverage is at a relatively low scale. Purchase of insurance is highly dependent on a number of factors, including its availability and cost, the level of the provision of disaster relief, general risk awareness, and attitudes to collective and individual risk (Lamond & Proverbs 2009). For the Lagos area, poor awareness of flood insurance is a major issue. Urban residents need to know that a means of assisting them recover from flood losses is possible. They must be given the opportunity to try flood insurance and if they must discard it, it must be on individual volition.

5. In view of whose responsibility to develop flood models, academic research seems to be the most likely option. However, as pointed out by NIHSA (2013), it appears such an intensive research should be funded by the government and other interested bodies. This discussion is important to reflect on in the article.

6. LiDAR is released to the public including researchers but at a prohibitive cost. Besides not having the funds, most researchers are not willing to pay such high price. Therefore, the availability of LiDAR data for research purposes is limited. Something the authors will think about is how to fashion the discussion to clarify this challenge instead of just saying that LiDAR is not available for research.

References

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Treby, E. J., Clark, M. J., & Priest, S. J. (2006). Confronting flood risk: implications for insurance and risk transfer. Journal of Environmental Management, 81(4), 351-359.

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/3/C2050/2015/nhessd-3-C2050-2015-supplement.pdf

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