

Interactive comment on “Flood modeling can make a difference: Disaster risk-reduction and resilience-building in urban areas” by Jorge A. Ramirez et al.

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To respond to the reviewer, we believe our manuscript is novel for several reasons. Crucially, we address the challenges of modelling flood exposure in data scarce, densely populated, urban regions by developing a method that utilizes an open source model and freely available data sets.

- Our modelling approach is computationally efficient and can be applied over large spatial and temporal extent without sacrificing fine-scale detail in topography (30 m).
- Within this method we consider uncertainty in flooding by adopting a scenario based approach to estimate flood depths and exposure for critical infrastructure, people, and

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income groups.

- Our results produced the first flood maps for a large Indian city (Surat) that explores the uncertainty in flood peak discharge and duration resulting from possible climate change and also estimate how this uncertainty cascades to flood exposure. These scenarios include catastrophic conditions that demonstrate the ineffectiveness of human alterations to the landscape (e.g. embankments) to protect the city from flooding.

Further novelty in our research is demonstrating how modelling directly motivated changes in preventing future floods and increasing the resilience of the city. These changes include: 1) demarcating flood depths on public lamp posts across the city, 2) preparing flood risk management plans with the flood maps (e.g. key locations to drop food and medical supplies) and 3) prioritizing the evacuation of the city using the flood maps. The results of this exercise is currently being used by the local government as a part of India's first urban end to end early warning system for floods. This work is currently acting as an exemplar motivating other Indian cities to undertake similar modeling exercises. Throughout our manuscript we have mentioned these points and provide additional information.

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