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Towards global scale coastal flood hazard in Delta Cities with 30-meter SRTM and 3D$_i$

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Most attempts to globally simulate inundation at the land-coast interface rely on maximum flood level GIS-based flood spreading models. These are generally not mass conservative, do not account for the genesis of tidal and surges in time, and do not include channel geometry and surface roughness. Furthermore, these methods cannot be used to study the impact of hazard reducing intervention measures that increase roughness at the land-coast interface. These measures include breakwaters and coastal ecosystems, such as mangrove forests and shell fish and coral reefs. Recently, new datasets and models are becoming available that allow us to greatly improve simulation of inundation in global deltas in a rapid and computationally feasible way. In this poster we demonstrate the feasibility of modelling all global deltas with strongly urbanised areas explicitly using these datasets and models. This will allow initiatives such as the 100 resilient cities (Rockefeller foundation) and the "making cities resilient" campaign (UNISDR) to tackle the issue of coastal flood risk efficiently. We propose to use the following materials:

1. A subgrid enabling 1D-2D model code
2. Outputs from a global tidal and storm surge model
3. Open topographical data

We demonstrate the feasibility of this approach by modelling the Mississippi delta with: a) a lidar derived topography dataset (www.gis.ms.gov/); and b) the recently released 30 meter elevation dataset from the Shuttle Radar Topography Mission. We use the new 3Di subgrid code to rapidly schematise the vast delta area with a quadtree mesh. We force the model at the boundaries with water level estimates during the Katrina cyclone. We invite scientists working on global scale inundation modelling to visit our poster in order to discuss possibilities and limitations of the proposed methods related to model codes, data quality and calibration.