

Impacts of earthquake-induced surface elevation changes on flooding: a case example from Mobara area, Japan

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Earthquake-induced surface elevation changes may affect the extent of flood inundation. We have studied the possible effect of earthquake-induced elevation changes in the Mobara area, Japan, as a case example. Based on our dynamic flood modelling results, around 10 % additional inundation areas were calculated to be exacerbated by the ground elevation changes in the flood event of the year 2004. However, variety of uncertain variables were included in the modelling approach. Here, we present some important issues associated with the uncertainty in flood inundation impacts of earthquake-induced surface elevation changes. We selected topographic representation, saturated hydraulic conductivity, and the inundation projection technique for this discussion as uncertain variables/methodology. Results revealed that the choice of the resolution of DEM and the threshold water depth to discuss the extent of floods greatly affected the appearance of the inundation areas. In this presentation, we summarize the influence of these uncertainties on flood modelling and discuss the effective ways in balancing the efficiency and reliability of the approach and results.

Keywords: Flood modeling, Uncertainty, Earthquake-induced elevation change, Inundation projection