Physical and Numerical Modeling of Tsunami Inundation using Coastal City Model

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Since a few physical experiments have been done focusing on urban areas, the benchmark of local inundation processes such as inundation depth, inundated area and flood velocity for numerical simulations are few and it is difficult to discuss them. In this study, tsunami inundation experiments were conducted using a coastal city model and spatial distribution of flood velocity and inundation area were measured using PIV and image analysis. We succeeded in capturing complex flow (changing in velocity and inundated area) due to structures. Furthermore, large eddies caused by the bathymetrical change were observed in a seaside area and it can affect the debris drift. The experimental results will be used as benchmark data for numerical simulation by nonlinear shallow water equation and the applicability of bottom roughness coefficient, drag force or porosity will be discussed.

Keywords: tsunami inundation, experiment, urban area, bottom roughness

