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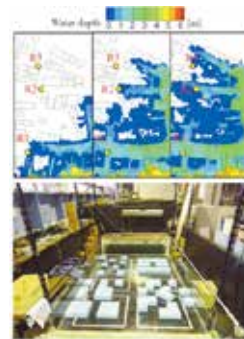
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## Developing practical numerical flood simulations in urban areas

Numerical simulations of floods in urban areas are useful for establishing evacuation programs and revising future city planning. In the present study, a set of shallow water equations was used to simulate the swift current on the streets to characterize horizontal flow diversion and concentration considering actual building configurations. The finite volume method was applied to an unstructured triangular mesh system to express the orientation and physical characteristics of each building based on a detailed city map. Recently, we conducted laboratory experiments and applications for actual events to develop more accurate and practical simulations of floods in urban areas.



## ALB measurements of channel bathymetry for river management tasks

Recently, an airborne laser bathymetry (ALB) system using simultaneously pulsed lasers of two kinds (green and near infrared types) has attracted the attention of river and coastal engineers for use as an efficient cost-saving surveying tool. This technology is effective for high-resolution measurement of planar bathymetry including the underwater bed profile. For this study, we applied a developed ALB system and examined the accuracy in the targeted section by comparing the ALB data of 2 m horizontal resolution with existing survey data obtained using the conventional method. Then we evaluated the effects of using high-resolution ALB data in river flow analysis.

