

Risk assessment method for flood control planning considering global climate change in urban river management

MASARU MORITA

Shibaura Institute of Technology, 3-9-14 Toyosu, Koto-ku, Tokyo 135-8548, Japan
morita@sic.shibaura-it.ac.jp

Abstract This study presents a methodology for assessing flood risks, dealing in particular with decreased risk achieved by flood protection projects and increased risk due to climate change in a framework of flood risk management for urban rivers. “Flood risk” is defined as the product of flood damage potential and the probability of its occurrence. Flood inundations and their monetary damages are calculated with the Flood Damage Prediction Model (FDPM) using XP-SWMM. The increased cost of risk caused by climate change can be estimated from the difference between the potential damages before and after the predicted climate change using the Return Period Shift method. The change in risk cost is finally interpreted as a Flood Risk Impact Factor (FRIF) defined as the ratio of the change in risk cost to the present risk cost. The factor evaluates the changes in flood risk due to different causes using the same scale.

Key words flood risk assessment; climate change; return period shift method; flood risk impact factor; urban river management