

Multi-layered Countermeasures against Widespread Devastating Flood Disasters

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The largest water vapor convergence since 1958 was recorded across western Japan in early July 2018, breaking the records of 24-to-72-hour rainfall at many stations in the area and causing devastating disasters including floods due to bank breaches and overflows, debris flows, and urban inundations. We also witnessed new types of disasters induced by multiple causes including the backwater phenomenon at confluence zones and floods involving a huge scale of floodwater and sediment transport simultaneously. Furthermore, eight dams in western Japan exhausted their flood control capacities and had to start emergency water-discharge operations to avert reservoir overflows from the heavy rainfall. In addition, we later learned that dam discharge warnings were not used effectively to support residents in safe evacuation. As a consequence, 232 people either died or went missing, and prefectures in western Japan suffered significant economic damage. The number of more than 200 victims was the worst case since 1982. To prevent the recurrence of devastating disasters over a wide area, the Council for Social Infrastructure Development analyzed the characteristics and issues of the July 2018 disasters and submitted a report including the recommended countermeasures based on the key strategies to the Minister of Land, Infrastructure, Transport and Tourism on December 13, 2018. Towards building a community where everyone evacuates proactively, the report recommends that each community develop a cooperative framework to strengthen self-help and mutual support by enriching information of hazards, risks and evacuation and improving communication methods in cooperation with the mass media and the ICT private sector. The report also proposes more resilient infrastructure design, development and operation against complex disasters and hazards which exceed infrastructure capacities and suggests strategies for the implementation of quick disaster responses and recoveries and extra considerations of disaster risks in community development. We need to promote such multi-layered countermeasures as a package to cope with unprecedented disasters.

Keywords: flood, debris flows, backwater, emergency water-discharge operations to avert reservoir overflows