

ABSTRACT:

The Trouble with Floods

Matthias Jakob and Mike Church

Canada does not properly manage its flood risk. “Flood management” aims to reduce harmful impacts to people, the environment and the economy of a flood-prone area, and “risk” combines consideration of the flood hazard and its consequences. But those consequences are not all or, at least, not systematically quantified and so a full appreciation of flood risk remains, in most instances, unknown.

A hazard is an existing or potential future event with an adverse effect. In contrast, risk is defined as the product of the likelihood of a hazard occurring and its anticipated consequence. Vulnerable floodplain assets may include residential developments and infrastructure, business developments and activities on the floodplain, business activities associated with transport of goods and services, as well as social, ecological and historical values.

In this commentary we argue that for any flood-prone area where significant losses can be expected during extreme floods a series of steps should be taken that quantify risk and provide decision makers and the public with the tools to assess the benefits of a variety

of flood risk reduction measures. Even though not widely implemented in Canada the need for flood risk assessments is strong, and flood risk analytical methods have been developed for some time and have achieved a high degree of sophistication (i.e. Ahmad and Simonovic, 2011).

Floods are the most widespread and most economically and socially significant geohazard on Earth. River and coastal floods, in an average year, kill more than 25,000 humans, affect 520 million people and render 3.2 million homeless, with annual cost to the world economy exceeding US \$60 billion (Simonovic, 2009). Canada is no exception, though the loss of life is typically low due to relatively low development density and better emergency planning. Notwithstanding, in Canada floods have claimed the lives of at least 200 people during the 20th century and created over \$2 billion in damage.

Flood hazard management in Canada is predicated on an event of arbitrary return period – the “design flood” – which forms the basis for the design of public infrastructure and flood protection. The design return period for river flooding through urban

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