

Future projected streamflow and policy implications for flood insurance in Canada and the United States

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Abstract: Floods are generally considered as one of the most significant extreme events in terms of casualties and losses. While flood losses are expected to increase in the future, an important question remains for actuaries about how to integrate climate change in their risk assessment and management of future floods. In this presentation, we discuss physical risk assessment and catastrophe risk modelling in the context of future flood risk in Canada and the United States. We leverage statistical and climate models along with machine learning to simulate future streamflow for each of 1996 U.S. and Canadian stations using bias-corrected outputs from 24 CMIP6 global circulation models. We therefore analyze future flood hazard and risk over the near future (2021-2060) and far future (2061-2100) with two SSP-RCP scenarios. This study aims to provide critical insights as to how climate change may affect the insurance industry and policymakers at different levels of governments.