Impacts of climate change on mountain hazards and infrastructure

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High mountain areas are now experiencing amplified climate change, glacier melt, and permafrost thaw. The accelerating glacier retreat and permafrost degradation are associated with frequent hazards including rockfalls, landslides, debris flows and lake outburst floods from glacial lakes and landslide-dammed lakes. Greater amounts of sediment are mobilized, and fluvial sediment fluxes are increasing. Such mountain landscape instabilities can be largely attributed to climate change and are threatening infrastructure and livelihoods for billions of people. In this talk, I will give an overview of how modern climate change drives the icy landscape changes in the high-mountain areas of Asia. I will also discuss the implications of the increasing mountain hazards and sediment supply for hydropower systems. The talk will end by discussing my future research, focusing on improving the quantification of changes in mountain landscapes and large Asian river systems under climate change and increasing human pressures. The Pearl River Basin and the Greater Bay Area will also be my future interests.

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Dr. Dongfeng Li is a Research Fellow in the Department of Geography, National University of Singapore. His research focuses on how mountain hazards and hydropower systems respond to climate change, using remote sensing, field measurements and modelling approaches. He has published lead-author articles in Science, Nature Geoscience, etc. He was awarded the UN-IPCC early-career award and the Wang Gungwu Medal. His research has been featured by Scientific American and The Straits Times. He serves as the Associate Editor of JGR: Earth Surface, editorial board of Hydrological Processes, guest editor of Geomorphology and a core-member of the International Association of Geomorphologists.

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