



Mechanisms and Simulation of accelerated shrinkage of continental glaciers: a case study of Urumqi Glacier No. 1 Eastern Tianshan, Central Asia

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Similar to most mountain glaciers in the world, Urumqi Glacier No. 1 (UG1), the best observed glacier in China with continued glaciological and climatological monitoring records of longer than 50 years has experienced an accelerated recession during the past several decades. The purpose of this study is to investigate the acceleration of recession. By taking UG1 as an example, we analyze the generic mechanisms of acceleration of shrinkage of continental mountain glaciers. The results indicate that the acceleration of mass loss of UG1 commenced first in 1985 and second in 1996 and that the latter was more vigorous. The air temperature rises during melting season, the ice temperature augment of the glacier and the albedo reduction on the glacier surface are considered responsible for the accelerated recession. In addition, the simulations of the accelerated shrinkage of UG1 are introduced.