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>> SYNTHESIZE MOUNTAINS OF KNOWLEDGE <<

Submitted Abstract

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Abstract

Jostedøla river basin is amongst many highly glacierized drainage basins with complex terrain and local climate in Western Norway. Most headwater streams of the Jostedøla river and its tributaries are connected to the outlet glaciers of the largest icecap in mainland Europe - Jostedalsbreen icecap. These headwater streams contribute to hydropower production and support economically important fisheries.

In this study, we utilize a linear reservoir, water routine model with a daily temporal and 100m ×100m spatial resolution to investigate glaciers' contribution to streamflow and the climate elasticity of ungauged headwater stream in Jostedøla river basin in 2000-2014. The results are analyzed for 19 sample sites located at the glacial headwater streams as well as the main river. The mean annual contribution of the water coming from the glacier-covered region ranges from 61.5% downstream the river to 100% at the glacier terminus. These waters are composed of mostly snow meltwater and glacier meltwater with rainwater being a minor contributor. The proportion of snow meltwater and glacier meltwater are different at different sample sites. The climate elasticity index of river basin incorporating both temperature and precipitation changes ranges from 0.7 to 1.7 with different precipitation change scenarios.

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