

Estimation of the climate change effect on the long-term variation in river temperature in a snow-covered watershed

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According to the effect of climate change such as global warming, it is possibly predicted that seasonal precipitation, snowfall, and river ecosystem changes in a watershed scale. Therefore, the estimation of climate change effect on river environment especially in a snow-covered watershed is important. In the present study, two different trends were found in the river temperature in western Japan; monthly decreasing trends and annual increasing trends. These trends could be explained by the hydrological process such as increase of snowfall and rainfall in the headwater area during winter seasons and increasing of the groundwater discharge to the river in summer seasons, respectively. An estimation of the temperature of river water by an extrapolation model in 2011-2050 indicates that annual temperature will increase.