

Modeling of Koryto Glacier to reconstruct past climate in Kamchatka Peninsula, Russia

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http://www.bosai.go.jp/seppyo/mokuji/mokuji_framepage.htm

Koryto Glacier, on the Kronotsky Peninsula on the east coast of Kamchatka Peninsula, Russia, is regarded as one of the most extreme maritime type glaciers and is very sensitive to climate change. Using field data, we developed a one-dimensional numerical glacier model for Koryto Glacier that fit the behavior of Koryto glacier very well. Specifically, the model predicted that the cause of the recent rapid retreat rate must be the decrease of winter precipitation. We used data on the glacier terminus from the location and dates of six terminal moraines between the years 1711 and 1930 to reconstruct the fluctuation in ELA (equilibrium line altitude) with the model. Using summer temperatures inferred from dendrochronology, the model predicted that the winter precipitation from the middle of the 19th century to the early 20th century was about 10% less than that at present. This trend is shown to be consistent with ice-core results from a nearby ice cap in central Kamchatka Peninsula